OTTERPOOL PARK

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APPLICATION DOCUMENT | 3.21

ENVIRONMENTAL STATEMENT

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February 2019

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OTTERPOOL PARK

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ENVIRONMENTAL STATEMENT | VOLUME 2
MAIN REPORT

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GLOSSARY AND ABBREVIATIONS

AADT	Annual Average Daily Traffic
Agricultural Land Classification (ALC)	The system of grading land quality for use in land use planning purposes. This divides farmland into five grades according to the degree of limitation imposed upon land use by the inherent physical characteristics of climate, site and soils. Grade 1 land is of an excellent quality, whilst Grade 5 land has very severe limitations for agricultural use.
Agri-environment scheme	Government programmes set up to help farmers manage their land in an environmentally-friendly way.
Alluvium	Sand, silt, clay, gravel, or other material deposited by flowing water, for example in floodplains.
AMR	Annual Monitoring Report
AOD	Above Ordnance Datum
APIS	Air Pollution Information System
AQ	Air Quality
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
Arable	Growing and harvesting crops such as cereals, potatoes etc.
AURN	Automatic Urban and Rural Network
BAP	Biodiversity Action Plan
Baseline Environment	The environment as it appears (or would appear) immediately prior to the implementation of the proposed Development together with any known or foreseeable future changes that will take place before completion of the project.
BBS	Breeding Bird Survey
Best and most versatile land	Grades 1, 2 and 3a under the Agricultural Land Classification system.
BGS	British Geological Survey
BH	Built Heritage
BMV	Best and Most Versatile
BOA	Biodiversity Opportunity Area
BoCC	Birds of Conservation Concern
BPEO	Best Practicable Environmental Option
BPM	Best Practice Measures
BRE	Building Research Establishment
BRES	Business Register and Employment Survey
BS	British Standard
C&D	Construction and Demolition
C&I	Commercial and Industrial Waste
Calcareous soil	Soils containing calcium carbonate, usually derived from the underlying rocks (such as limestone or chalk).
CD&E	Construction, Demolition and Excavation
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CL:AIRE	Contaminated Land: Applications in Real Environments
Clayey soil	Soil comprised predominantly of clay-sized particles.
CLEA	Contaminated Land Exposure Assessment
CMP	Conservation Management Plan
CoCP	Code of Construction Practice
Code of Construction Practice	The Code of Construction Practice contains a series of measures and standards of work to be applied to the construction of a project ensuring a consistent approach to the management of construction activities. This forms the main mechanism for ensuring the implementation of mitigation measures during construction.
Committed developments/ schemes	Consented developments or local plan policy allocations considered to be of relevance to Cumulative Effects assessment
CoPA	Control of Pollution Act 1974
CRTN	Calculation of Road Traffic Noise
CS	Countryside Stewardship
CSM	Conceptual Site Model
CVNP	Construction Noise and Vibration Management Plan
CWS	County Wildlife Site
DDC	Dover District Council
Defra	Department for the Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency
EcIA	Ecological Impact Assessment
EFT	Emissions Factor Toolkit
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
ELS	Entry Level Stewardship
Environmental Assessment	A method and a process by which information about environmental effects is collected, assessed and used to inform decision-making. Assessment processes including Environmental Impact Assessment.
EPR	Environmental Permitting Regulations
ES	Environmental Statement
EU	European Union
Future baseline	Baseline conditions in future years without the proposed Development in place
FE	Further Education
FHDC	Folkestone & Hythe District Council (formerly Shepway District Council). The local planning authority in which the application site is located.
GCN	Great Crested Newt
GI	Green Infrastructure
GIS	Geographical Information Systems
GP	General Practitioner
Ground borne vibration	Vibrations that travel through the ground from a source and produce a noise as a result
Groundwater	All water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil
HCA	Home and Communities Agency
HDV	Heavy Duty Vehicle
HE	Historic England
Heavy Goods Vehicles	European Union term for any vehicle with a gross combination mass of over 3500kg
HGV	Heavy Goods Vehicles
Highways England	Highways England (in full)

HLC	Historic Landscape Characterisation
HLS	Higher Level Stewardship
HMSO	Her Majesty's Stationery Office
HRA	Habitat Regulations Assessment
HUDU	Healthy Urban Development Unit
IAN	Interim Advice Note
IAQM	Institute of Air Quality Management
IER	Important Ecological Receptors
JNCC	Joint Nature Conservation Council
KCC	Kent County Council
KHER	Kent Historic Environment Record
KJMWMS	Kent Resource Partnership, Kent Joint Municipal Waste Management Strategy
LAEI	London Atmospheric Emissions Inventory
Land drainage	Drainage of agricultural land, either through surface ditches or sub-surface pipes, to reduce the wetness of the soil.
LAQM	Local Air Quality Management
LB	Listed Buildings
LDV	Light Duty Vehicle
Limestone	A rock type comprised of calcium carbonate.
LLFA	Lead Local Flood Authority
LNR	Local Nature Reserve
LOAEL	Lowest Observed Adverse Effect Level
Loamy soils	Soils composed of a mix of sand and silt with a smaller proportion of clay particles.
LPA	Local Planning Authority
LTTE6	Long Term Trends projections from HA IAN 170/12v3
LWS	Local Wildlife Site
MH	Municipal Household
MPA	Marine Protected Areas
MSW	Municipal Solid Waste
Mudstone	A fine-grained sedimentary rock whose original constituents were clays or muds.
MUGA	Multi-Use Games Area
NARRS	National Amphibian and Reptile Recording Scheme
NBN	National Biodiversity Network
NE	Natural England
NEA	National Ecosystem Assessment
NERC (Act)	Natural Environment and Rural Communities Act
NMUs	Non-motorised users
NNG	Night Noise Guidelines
NO_2	Nitrogen Dioxide
NOEL	No Observed Effect Level
NO_x	Nitrogen Oxides
NPPF	National Planning Policy Framework
NPSE	Noise Policy Statement for England
NRMM	Non-road mobile machinery
NSRI	National Soil Resources Institute
OFMA	Otterpool Framework Masterplan Area. This forms the wider site which when fully developed would provide up to 10,000 homes and potentially an additional primary school and crèche facilities and green infrastructure.
OffPAT	Office of Project and Programme Advice and Training
ONS	Office of National Statistics
OPA	Outline Planning Application. The proposed Development of a new garden settlement accommodating up to 8,500 homes, (use class C2 and C3) and use class D1, D2, A1, A2, A3, A4, B1a, B1b, B2, C1 development with related highways, green and blue infrastructure (access, appearance, landscaping, layout and scale matters to be reserved).
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PM_{10}	Particulate matter less than 10 microns in aerodynamic diameter
$PM_{2.5}$	Particulate matter less than 2.5 microns in aerodynamic diameter
PPC	Pollution Prevention and Control
PRoW	Public Right of Way
RAF	Royal Air Force
RNR	Roadside Nature Reserve
SAC	Special Area of Conservation
Sandstone	A coarse-grained sedimentary rock whose original constituents were sands.
SDC	Shepway District Council. Former name of Folkstone & Hythe District Council
Sensitive Receptor	Receptors which are potentially sensitive to noise and vibration. Examples include dwellings, hospitals, schools, community facilities, designated areas (e.g. AONB, National Park, SAC, SPA, SSSI, SAM), and public rights of way.
SERTM	South East Regional Traffic Model
SFRA	Strategic Flood Risk Assessment
Site Waste Management Plan (SWMP)	A document that outlines how the Scheme will reduce, manage, and dispose of its solid waste.
SM	Scheduled Monument
SMP	Soil Management Plan
SNRHW	Stable Non-Reactive Hazardous Wastes
SOAEL	Significant Observed Adverse Effect Level
Soil erosion	The displacement of the upper layer of soil by water or wind action.
Soil structure	The way sand, silt and clay are organised into larger units within a soil.
Soil texture	The proportions of sand, silt and clay which make up a soil.
SPA	Special Protection Area
SPZ	Source Protection Zones
SSSI	Site of Special Scientific Interest
Statutory Organisations	Any principal council for the area where the land is situated, Natural England, English Heritage, the Environment Agency; and any other public authority which has environmental responsibilities and which the Secretary of State considers likely to have an interest in the project.
Study Area (SA)	The spatial area within which environmental effects are assessed (i.e. extending a distance from the project footprint in which significant environmental effects are anticipated to occur). This may vary between the topic areas.
Subsoil	The layer of soil under the topsoil on the surface of the ground, lacking in the levels of organic matter found in topsoil.
SuDS	Sustainable Drainage Systems (SuDS) are water management solutions designed to reduce the impact of surface water runoff from new and existing developments to the natural environment. The purpose of such systems is to improve water quality and store

	or reuse surface runoff to reduce the discharge rate to the watercourse.
Surface Water	Water that appears on the land surface that has not seeped into the ground, i.e. lakes, rivers, streams, standing water, ponds, precipitation.
Swale	Shallow, broad and vegetated channels designed to store and/or convey runoff and remove pollutants.
SWMP	Site Waste Management Plan
TA	Transport Assessment
TG	Technical Guidance
Toolbox talk	An informal meeting that is part of an organisation's overall programme of information sharing on safety, environmental issues etc.
Topsoil	The uppermost layer of soil, usually with the highest concentration of nutrients, organic matter and microorganisms.
TPO	Tree Preservation Order
TRICS	Trip Rate Information Computer System. A type of transport modelling database that calculates future trip generation from new developments.
TEMPro	Trip End Model Presentation Program. TEMPRO is an industry standard tool for estimating traffic growth when assessing the traffic impact of a development on the local highway network.
UXB	Unexploded Bomb
UXO	Unexploded Ordnance
VISSIM	A microscopic multi-modal traffic flow simulation software derived from Verkehr In Städten – SIMulationsmodell i.e. (Traffic in cities-simulation model)
WDA	Waste Disposal Authority
WCA	Wildlife and Countryside Act
WCS	Water Cycle Study
WDA	Waste Disposal Authority
WEEE	Waste Electrical and Electronic Equipment
WFD	Water Framework Directive
WHO	World Health Organisation
WRAP	Waste Resources and Action Programme
WS	Walkover Survey
WSE	Waste Strategy England
WTSs	Waste Transfer Stations
ZoI	Zone of Influence. The land area capable of being affected by development whether by way of its construction or operation.
ZTV	Zone of Theoretical Visibility.

1 Introduction

1.1 Background to the Environmental Statement

1.1.1 This Environmental Statement (ES) has been prepared to accompany an outline planning application on behalf of Cozumel Estates Ltd to Folkestone & Hythe District Council (FHDC) as local planning authority for the redevelopment of approximately 580 ha of land in the area surrounding Sellindge, Newingreen and Lympne in Kent. The site is proposed to be developed with a new garden settlement including a mix of uses including commercial, retail, education, health and leisure, green infrastructure and associated open space. The application is submitted in association with Folkestone and Hythe District Council (FHDC), as Cozumel Estates Ltd and FHDC are joint promoters of Otterpool Park.

1.1.2 The proposed Development requires planning consent under the Town and Country Planning Act 1990 (as amended). In accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017 No.571) (Ref 1.1), the proposed Development constitutes “Schedule 2” development, based upon the scale of development exceeding 150 dwellings. Due to the nature and scale of the proposals and its associated infrastructure, the Development is likely to have significant effects on the environment, and therefore triggers the need for an EIA. The matters that are required to be addressed in an ES are described in Chapter 2.1.

2 EIA Approach and Methodology

2.1.1 This ES has been prepared by Arcadis, with the exception of the following parts:

- Socioeconomic Effects and Community Chapter, authored by Arcadis with input by Quod; and
- Various ES Appendices produced by sub-consultants and referenced accordingly.

2.1.2 The ES been prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 as amended (the 'EIA Regulations') (Ref 1.1). Reference has also been made to relevant good practice guidance relating to EIA process including:

- Impact Assessment Guidelines and ES Review Criteria (Institute of Environmental Management and Assessment (IEMA), 2004) (Ref 2.1);
- National Planning Policy Framework (NPPF) Planning Practice Guidance on Environmental Impact Assessment, 2014 (updated in 2017 and 2019) (Ref 2.2);
- Guidelines for Environmental Impact Assessment (IEMA / RPS, 2004) (Ref 2.3); and
- Guide on Environmental Statements for Planning Projects that Require Environmental Assessment (Department of Environment, 1995) (Ref. 2.4) and
- The State of Environmental Impact Assessment Practice in the UK (Ref 2.5)

2.1.3 Other specific guidance as relevant to each Chapter of this ES is referred to as appropriate in the relevant Chapter.

2.1.4 The requirements with regard to the content of an ES are set out in Regulations 18(3) of the EIA Regulations and in Schedule 4 thereto. Table 2-1 summarises these requirements and where the relevant information required is located within this ES.

Table 2-1 Schedule 4, Part 1 Requirements and Location within the ES

Summary of requirements of Regulation 18(3) and Schedule 4	Location of information in this ES
1. a description of the proposed development comprising information on the site, design, size and other relevant features of the development	Chapter 4 of this ES contains a description of the outline proposals for the Development and the scheme parameters. Further details of the proposed Development and demolition and construction are provided in Chapter 4.
2. a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment	Chapter 3 of this ES contains an outline of the alternatives considered.
3. A description of the aspects of the environment likely to be significantly affected by the proposed project.	Contained within the technical assessments in Chapters 3-17 of this ES. Sub-section x.7 of the individual ES Chapters contains the description of the existing baseline environmental conditions and features
4. A description of the likely significant effects of the proposed development on the environment.	Contained within the technical assessments in Chapters 3-17 of this ES. Sub-section x.8 of the individual technical Chapters contains the assessment of likely significant effects on the receiving environment.
5. a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment	Sub-section x.10 of the individual assessment Chapters contains information on the mitigation methods proposed.
6. A non-technical summary	Volume 1 of the ES is the Non-Technical Summary.
7. An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the developer in compiling the required information.	Sub-section x.6 of the individual ES technical Chapters contains the limitations and assumptions encountered for assessments.

2.2 EIA Process

2.2.1 EIA is an iterative process. In this ES it has been undertaken according to the stages discussed further in paragraphs 2.2.2 to 1.2.28.

Scoping and Consultation

2.2.2 Consultation focusing on environmental matters commenced during the initial baseline data gathering and scoping stages of the EIA and has continued throughout the course of the EIA process. Both statutory and non-statutory stakeholders have been consulted.

2.2.3 The appropriate bodies, including FHDC, the Kent Downs AONB Unit, Kent County Council, Natural England, Historic England, and the Environment Agency, have been consulted in order to obtain views on the proposed Development, discuss mitigation and to obtain information relating to constraints and opportunities as appropriate. Details of these consultations are tabulated in each of the relevant topic specific ES Chapters.

2.2.4 Formal scoping was undertaken for the EIA and a Scoping Opinion was sought from FHDC. A Scoping Report was submitted in February 2014 (Appendix 2.1). The Scoping Report set out the proposed scope of the ES. The scope of each of the topic assessments is described in Chapters 5-17 of the ES. The following environmental topics have been scoped into the EIA:

- agriculture and soils
- air quality;
- biodiversity;
- climate change;
- cultural heritage;
- geology, hydrogeology and land quality;
- human health;
- landscape and visual;
- noise and vibration;
- socioeconomic effects and community;
- surface water resources and flood risk;
- transport; and
- waste and resource management.

2.2.5 Consultation has also been undertaken throughout the design process with relevant statutory and non-statutory stakeholders. This addressed a number of matters including the scope and appropriate methodologies to adopt for the topic assessments listed above. This consultation process also informed the formal Scoping Opinion received from FHDC (Appendix 2.2). Specific assessment requirements from consultees as set out in the Scoping Opinion are addressed in the relevant topic assessment chapters of this ES.

Baseline

2.2.6 A range of baseline data has been gathered to define the local environmental conditions for the purpose of the assessment, including:

- published documentary information from a variety of sources including historical and contemporary records;
- site survey information, including background noise levels, background pollutant concentration levels, biodiversity features, landscape character; baseline traffic levels on the road and rail networks, community facilities and heritage assets;
- other survey information including, aerial photography, geo-environmental and socio-economic data; and
- data provided by key statutory and non-statutory stakeholders.

2.2.7 A description of the site and surrounding environment is given in Chapter 4. More detailed topic-specific baseline information is included in Chapter 5-17, appropriate to describe the likely significant adverse or beneficial environmental effects arising from the proposed Development.

Assessment

2.2.8 The assessment of likely significant environmental effects set out in this ES has had regard to and been informed by the following matters:

- An outline planning application for the site, for which a Development Specification and Parameter Plans is submitted to FHDC for planning approval; and
- Supporting information provided in other documents submitted with the application (see Chapter 2.4).
- The proposed Development as presented in the Development Specification and accompanying Parameter Plans has formed the basis of the majority of assessments for the EIA. The Parameter Plans should be read in conjunction with each other and together define the physical parameters which apply to the development. The parameter plans are also supported by a set of Phasing Plans in support which have been prepared to show the potential for build out over five year phases alongside associated infrastructure requirements. This has additionally been used to help inform the mitigation for ecology

Significance Criteria

2.2.9 Generally, significance of effect is determined through combining the value (or sensitivity) of a resource or receptor with the magnitude of the predicted change (or impact). The criteria for determining significance varies across topics, but in general takes into account some or all of the following:

- The existence of the development;
- Extent, magnitude and reversibility of the effect;
- Duration of the effect (whether short, medium or long-term);
- Nature of the effect (whether direct or indirect, reversible or interactive);
- Likelihood of effect occurring;
- Whether the effect occurs in isolation, is cumulative or interactive;
- Performance against environmental quality standards or other relevant pollution control thresholds; and
- Sensitivity of the receptor.

2.2.10 Some professional institutions have published guidance or bespoke methodologies for assessing the likely significance of effects. Where such topic-specific methodologies are available they have been applied in this ES to derive significance of effects. This includes the ecology and nature conservation assessment. These methodologies are outlined in the topic-specific Chapters.

2.2.11 There are, however, some topics (e.g. Climate Change) where no standard methodology has been established for determining the significance of effects. Where this is applicable, the advice on typical descriptors of environmental value, magnitude of impact and significance of effects set out in Volume 11 of the Design Manual for Roads and Bridges (DMRB) (Department for Transport, 2009) (Ref 2.6) has been used as the appropriate basis for assessment, along with professional judgement.

2.2.12 Table 2.2 presents an assessment matrix which, where appropriate, has informed the assessment of significance of effects (if appropriate for the topic under consideration). The significance of effects may be described as either adverse or beneficial. A combined assessment of sensitivity and magnitude is undertaken to assist in identifying how significant an effect is likely to be. Where effects are identified as likely to be significant they have been shaded.

Table 2-2 General Approach for Determining Significance

MAGNITUDE	SENSITIVITY: Low	SENSITIVITY: Medium	SENSITIVITY: High
High	Moderate	Moderate / Major	Major
Medium	Minor / Moderate	Moderate	Moderate / Major
Low	Minor	Minor / Moderate	Moderate
Negligible	Negligible	Negligible	Negligible

2.2.13 However, the methodologies described within each topic Chapter do not always use the same terminology and the matrix above has been adapted where appropriate on a topic by topic basis. Nevertheless, in general the principle is that higher magnitude effects on important resources are regarded as Likely To Be Significant with respect to the EIA Regulations (Ref. 2.1). Lower magnitude effects on less important resources are generally regarded as Not Likely to Be Significant with respect to the EIA Regulations (Ref. 2.1). The Conclusions Chapter of each topic Chapter clearly identifies those effects considered Likely To Be Significant with respect to the EIA Regulations (Ref. 2.1).

2.2.14 When determining the likely significance of effects, the following definition of ‘impact’ and ‘effect’ has been used:

- Impact: the change arising from the proposed Development. The extent of change anticipated as a result of the proposed Development is identified by the ‘magnitude of impact’; and
- Effect: the consequence of the impact (or change) arising from the proposed Development. The likely significance of effect is a combination of the value / sensitivity of a receptor and the likely magnitude of impact upon it.

Mitigation

2.2.15 Identifying appropriate mitigation for a development is an iterative process of seeking to reduce potential likely significant environmental effects via a hierarchy of avoidance (most desirable), reduction, amelioration and compensation. It is considered that mitigation measures fall into two broad categories:

- Mitigation measures embedded in the design of the proposed Development (hereinafter referred to as 'embedded design measures'). These have been identified throughout the development of the proposal and are incorporated with the design of the proposed Development, such that it avoids key areas (by changes to layout) or includes features that would minimise the identified potential impacts on specific receptors (e.g. by incorporating measures to avoid pollution in the construction activities); and
- Additional mitigation measures. These have been in response to specific potential impacts on key environmental receptors which have been identified via the impact assessment process. This includes any proposals for monitoring, where appropriate.

2.2.16 It is important to note that these two categories of mitigation have been assumed to be in place prior to the main impact assessment of residual effects.

2.2.17 The embedded design measures are described in the respective assessment ES Chapters 5 – 17.

2.2.18 Details of additional mitigation measures are also outlined within each relevant topic Chapter. These have been identified following identification of potential environmental effects resulting from the proposed Development and aim to reduce the significance of potential environmental effects upon receptors and the wider environment.

Cumulative Effects

2.2.19 The consideration of cumulative effects is also an integral part of undertaking an EIA and understanding the potential changes perceived by receptors. It plays an important role in consider the wider picture of potential significant environment effects that may arise. Cumulative effects can occur in two ways as a result of development activities:

- Inter-project cumulative effects; and
- Intra-project cumulative effects.

Inter-project Cumulative Effects

2.2.20 There is a need to consider the relationship between the proposed Development and other off site developments that will occur, or are expected to occur, which may give rise to “in-combination” effects The potential for inter-project cumulative effects depends on:

- The location of the off-site development; and
- The scale, nature and timing of the off-site development.

2.2.21 To identify if inter-project cumulative effects are likely in combination with the operation or construction of the proposed Development, the following types of development have been considered:

- schemes which have resolution to grant consent (subject to Section 106 planning obligation);
- Approved schemes that are under construction but not yet operational; and
- local plan policy allocations (where requested in the Scoping Opinion for inclusion in the assessment).

2.2.22 The committed development schemes reviewed by the EIA team are identified Appendix 2.5, Volume 3 of the ES and have been referred to as appropriate within the Cumulative assessment Chapters within each topic assessment Chapter.

Intra-project Cumulative Effects

2.2.23 The report ‘The State of Environmental Impact Assessment Practice in the UK (IEMA, 2011) (Ref 2.8) states that intra-project effects 'occur between different environmental topics within the same proposal, as a result of the development's direct effects'.

2.2.24 Intra-project effects (also known as 'impact interactions') may arise from two or more scheme-related effects having a combined effect on a single receptor.

2.2.25 Key assessments that have included the consideration of Intra-project effects during the construction and operational phases of the proposed Development include:

- Human health (Chapter 11) – which draws upon the combined effects of different impacts of the proposed Development on the health of the local population; and
- Socioeconomic Effects and Community (Chapter 14) – which assess socioeconomic effects of the proposed Development on the new residents of the Development and that of the local population and businesses.

2.3 Environmental Statement Contents

2.3.1 The ES comprises the following volumes:

- ES Volume 1 – Non-Technical Summary
- ES Volume 2 - Main ES report
- ES Volume 3 – Appendices 2.1 to 6.7
- ES Volume 4 – Appendices 7.1 to 7.11
- ES Volume 5 – Appendices 7.12 to 7.22
- ES Volume 6 – Appendices 9.1 to 9.17
- ES Volume 7 – Appendix 9.18
- ES Volume 8 – Appendices 10.1 to 17.1

2.3.2 A description of the contents of the ES Volumes is given below.

ES Volume 1 – Non-Technical Summary

2.3.3 A Non-Technical Summary has been prepared and bound separately to form Volume 1 of the ES. This summarises the information included in the ES in a non-technical language that can be easily understood by the general public.

ES Volume 2 - Main ES report

2.3.4 The results of the EIA are documented in ES Volume 2 (this document). The ES Chapters 5-17 structure within Volume 2 is provided in paragraph 2.3.8.

2.3.5 Chapter 2 (this Chapter) provides background to the EIA process and approach to the ES.

2.3.6 Chapter 3 explains the development need and the consideration of reasonable alternative development and the main reasons for the proposed scheme.

2.3.7 Chapter 4 provides an overview of the current site and surroundings and a description of the proposed Development.

2.3.8 ES Chapters 5 – 17 provide the environmental topic assessments scoped into the EIA. Each of the ES Chapters has a consistent structure including:

- an introduction;
- a review of relevant aspects of the proposed Development;
- legislation policies and guidance and standards specific to the environmental topic;
- the approach and methodology used for the topic assessment;
- a description of the scoping and consultation undertaken;
- a description of the limitations of and assumptions included in the topic assessment;
- the baseline data against which the likely significant (beneficial or adverse) environmental effects have been assessed;
- a description of the likely significant effects in-combination with those from other developments (‘inter-project cumulative effects’) and those from other environmental effects (‘intra-project cumulative effects’);
- a description of proposed mitigation measures to avoid, prevent, reduce or offset likely significant adverse effects, or enhancement measures to generate beneficial effects. It should be noted that mitigation measures are assumed to be in place prior to the assessment of residual effects assessment being undertaken;
- an assessment summary matrix identifying affected receptors, proposed mitigation/enhancement measures and the likely residual effects during construction and operation of the proposed Development.

ES Volumes 3-8 – ES Appendices

2.3.9 The main ES report findings are supported by additional data, detailed reports and plans provided in ES Volumes 3 to 8. References to the appendices data are provided to support the assessments as appropriate in the relevant ES Chapters.

Supporting Planning Application Documents

2.3.10 Additional documents to this ES have been prepared and submitted separately as part of the planning application and provide source information to some of the ES Chapters. These are as follows:

- Energy Strategy – informs ES Chapter 8 Climate Change
- Mineral Resources Assessment (SLR Consulting) – informs ES Chapter 10 Geology, Hydrogeology and Land Quality
- Transport Assessment – informs ES Chapter 16 Transport
- Health Impact Assessment – informs ES Chapter 11 Human Health
- Community Facilities Delivery Strategy (Quod) – informs ES Chapter 14 Socioeconomics and Community

2.4 The Project Team

2.4.1 The EIA process has been managed and the ES compiled by Arcadis (Consulting) UK Ltd. Arcadis is registered in the UK by the Institute of Environmental Management and Assessment (IEMA) as an Environmental Impact Assessor organisation and is a participant in IEMA's Quality Mark Scheme. The Scheme recognises that Arcadis produces ESs in accordance with current best practice standards and contributes to improved practice in the industry.

2.4.2 Regulation 18(5) of the EIA Regulations (Ref. 1.1) states that "in order to ensure the completeness and quality of the ES the developer must ensure that the environmental statement is prepared by competent experts; and the environmental statement must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts". The main contributors, including details of their professional qualifications, expertise and experience are outlined in ES Appendix 2.3.

2.4.3 In addition to the team preparing the ES, the following parties have contributed to the preparation of the planning application and have provided information that has been used in the preparation of the ES:

- Farrells and Partners – Masterplanners and
- Quod – Town planning consultancy and socioeconomic advisors.

2.5 References

Ref: 1.1 HMSO. Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017/571).

Re: 1.2 HMSO. The Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018

Ref. 2.1 IEMA (2004) Impact Assessment Guidelines and ES Review Criteria.

Ref. 2.2 NPPF (2017) Planning Practice Guidance on Environmental Impact Assessment.

Ref. 2.3 IEMA / RPS (2004) Guidelines for Environmental Impact Assessment.

Ref. 2.4 Department of Environment (1995) Guide on Environmental Statements for Planning Projects that Require Environmental Assessment

Ref 2.5 IEMA (2011) The State of Environmental Impact Assessment Practice in the UK

3 Development Need and Consideration of Alternatives

3.1 Need for the Development

3.1.1 The application of the approach to housing requirements enshrined in the National Planning Policy Framework (NPPF) reveals a pressing need for the development of a new garden settlement can be identified in the National Planning Policy Framework, 2012 (and as revised 2018 and February 2019). This is further supported by additional Government statements and the evidence base that is being prepared by the planning authority relating to quantifying housing needs in Folkestone & Hythe District Council (FHDC) up to 2037.

3.1.2 At national level, the NPPF (2018) explains that the overarching objectives of the planning system to deliver sustainable development include the need to:

"help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth" and

"support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations" (see NPPF paragraph 8)

3.1.3 The NPPF also states (paragraph 59) that "to support the Government's objective of significantly boosting the supply of homes, it is important that a sufficient amount and variety of land can come forward where it is needed,"

3.1.4 Paragraph 72 of the NPPF explains that:

"The supply of large numbers of new homes can often be best achieved through planning for larger scale development, such as new settlements or significant extensions to existing villages and towns, provided they are well located and designed, and supported by the necessary infrastructure and facilities."

3.1.5 The recognition that new settlements following garden city principles could make a significant contribution to housing supply on a national basis was pursued by the Government in 2016 when it sought expressions of interest from local authorities in providing new garden settlements in their areas. Folkestone & Hythe District Council, submitted a proposal for a new settlement of up to 12,000 houses in the Otterpool Park area. The Government announced in November 2016 that Folkestone & Hythe District Council had been successful in its expression of interest and determined to support the Council in further considering the potential for a new settlement to be accommodated in the Otterpool Park area.

3.1.6 Further national support for the principle of new garden settlements to address large scale housing needs can be seen in the 2017 Housing White Paper entitled "Fixing our Broken Housing Market". This document refers in paragraphs 1.35 and 1.36 to the potential for new garden settlements to make a significant contribution towards boosting housing supply across the country in the long term. Paragraph 1.36 states "The Government is already supporting a new wave of garden towns and villages and will work with these and any future garden communities to ensure that development and infrastructure development are as closely aligned as possible".

3.1.7 The draft Core Strategy Review applies the Standard Method for calculating housing need as required by the NPPF. This identifies a requirement for 676 new homes a year on average over the period 2018/19 to 2036/37 (19 years) or some 12,845 additional homes in total to the end of the plan period in 2036/37. The draft Core Strategy Review states at paragraph 4.43.

"This requirement will be delivered by development of the new garden settlement, other strategic sites, sites with planning permission and a number of small to medium sized site allocations in the Places and Policies Local Plan. An indicative housing trajectory is given in Appendix 3. "

3.1.8 Appendix 3 of the draft Core Strategy Review sets out an indicative housing trajectory which assumes that Otterpool Park will provide some 6,375 homes in the plan period to 2036/37). Policy SS6 also recognises that Otterpool park provides the potential for future growth to provide a total of 8000-10,000homes within the site allocation area beyond the plan period; . Housing needs beyond 2037 have not been specifically identified in the draft Core Strategy Review, however, such needs will continue beyond that date.

3.1.9 Lichfields has prepared the employment evidence base work and is reviewing employment options for the Otterpool Park area. FHDC has also published a Charter for Otterpool Park that sets out FHDC's aspirations for the garden town. It expands on the principles set out in the Expression of Interest submitted to the Government in 2016 to provide more detailed guidance and advice on how the new settlement should be planned, built out and delivered so as to create the foundations for a truly sustainable new community.

3.2 Consideration of Alternatives

3.2.1 One of the matters which Regulation 18(3) of the EIA Regulations requires an Environmental Statement to include is:

3.2.2 "(d) a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment…"

3.2.3 Further Paragraph 2 of Schedule 4 of the EIA Regulation provides further detail as to what should be included in the consideration of alternatives as follows:

" A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

3.2.4 The proposed Development has been designed with the above factors taken into consideration as is explained further below:

Policy Context

3.2.5 The Site is currently proposed to be allocated for housing within the emerging Core Strategy Review 2018 under Policy SS6. The Core Strategy sets out a spatial vision and strategy for the sustainable growth of the Folkestone and Hythe District for the period 2014 to 2037 and is expected to be adopted in autumn 2019. Draft Policy SS6 identifies the proposed Development and wider Framework Masterplan Site for 10,000 dwellings and the Development is expected to provide associated town centre uses.

Alternative Sites

3.2.6 The EIA Regulations refer to the requirement to assess reasonable alternatives considered by the applicant. The consideration of alternative sites and their relative merits was undertaken at a regional level, further details of which are provided below.

3.2.7 Prior to the announcement of the updated housing need figure in the SHMA (2017), AECOM produced three reports (Ref 3.1) for FHDC (then SDC) exploring the potential for development, at different scales and with different mixes of land use, on land adjacent to Junction 11 of the M20 and north of the A20. The purpose of the report was to assist the Council in its assessment of what might constitute appropriate development in the location and also to inform discussions between FHDC (formerly SDC) and the various landowners and others with an interest in the study area.

3.2.8 Following the new calculation of FHDC's Objectively Assessed Housing Need (OAHN) in the 2017 SHMA, AECOM undertook a district-wide Growth Options Study (2016 and 2017) to identify the options FHDC have for accommodating the updated level of growth identified up to 2037. The 2017 Study covered a number of assessment criteria including, agricultural land quality, transport and accessibility, landscape, infrastructure, heritage, regeneration potential, economic development potential and spatial opportunities and constraints.

3.2.9 The Study concluded that Otterpool Park is the most appropriate location to accommodate growth because it is the least constrained of the six areas identified throughout FHDC. The Study found that access to Westenhanger railway station and Junction 11 of the M20 presented significant benefits to development in this location but noted that upgrades to the local highway network and improvements to cycle and walking routes would likely be required. The Study found that Otterpool Park would be located on suitable land, subject to appropriate mitigation for dealing with potential impacts on the Kent Downs AONB for example through landscaping. The Study noted that development within the setting of Westenhanger Castle should be treated extremely sensitively. It was considered that, with appropriate mitigation, there would be minimal impacts on the setting of the Registered Park and Garden at Sandling Park located to the east of Otterpool Park. The Study advises that a buffer should be kept between new

development and Berwick House and Little Berwick to protect their setting and such a buffer would also help avoid coalescence with the village of Lympne. The Study considers that, north of Harringe Brooks Wood, there is a field to the north of Grade II-listed Otterpool Manor, which should be left undeveloped to respect the setting of this heritage asset. The Study found that land to the east of Westenhanger and close to Lympne Industrial Estate are found to be suitable for employment uses (with appropriate visual mitigation). Additionally, on the basis of the then emerging Employment Land Review 2017, it was considered in the AECOM 2017 Study that the land currently with permission for Phase 2 expansion of Lympne Industrial Park may be more suitable for housing instead.

The 'No Development' Alternative

3.2.10 One alternative to the proposed Development is that of leaving the site in its current state. No development would occur, leaving a shortfall of homes from the requirement set out in Policy SS6 of the Core Strategy Review 2018. The site is currently allocated for housing within the FHDC Core Strategy Review period 2014 to 2037 and is expected to be adopted in autumn 2019. Policy SS6 identifies the Site for approximately 10,000 homes and the proposed Development is expected to provide 8,500 of these, whilst the wider Framework Masterplan would make up the difference.

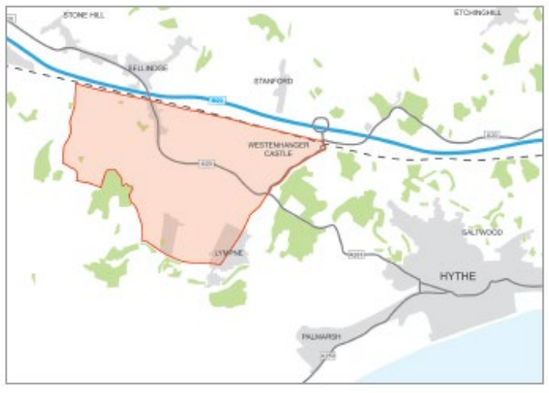
3.2.11 The Otterpool Garden Town was subject to Sustainability Appraisal (March 2018) at the plan-making stage. Therefore, preferred options and the final choice of allocations and policies should be the best of the reasonable alternatives for achieving the sustainable development objectives of the plan. The economic, environmental and social effects of the reasonable alternatives for achieving those objectives are reasonably expected to have been taken into consideration.

Site Constraints and Opportunities

3.2.12 Given the above consideration of alternative land uses (driven by policy) no development option and alternative sites, the following section describes the main alternative design layouts that were considered prior to the final decision being made, taking into account a comparison of the environmental effects.

Site boundary evolution

3.2.13 Baseline studies of the Otterpool Park project commenced with a Study Area that was used for the initial desktop studies, surveys and masterplanning (Figure 3- 1A). The site boundary was further amended (Figure 3- 1B) to create the Otterpool Framework Masterplan Area (OFMA) of approximately 765ha which was used for capacity testing, housing quantity studies and layout options. The OFMA or "Framework Masterplan" as referred to elsewhere in the ES includes plan for up to 10,000 homes as a longer term development area. Following this the site boundary was then further refined (Figure 3- 1C) and reduced to 580ha for the proposed Otterpool Park outline planning application based on 8,500 homes and associated uses.



A) Study Area Boundary Boundary

B) Otterpool Framework Masterplan Area

C) Otterpool Park Application Site Boundary

Figure 3- 1 Evolution of the Site Boundary

Site Constraints

3.2.14 In order to inform the development of a residential-led masterplan for the site a number of site surveys were undertaken at the outset of the design to establish the site constraints. A constraints plan was then produced This constraints plan formed the basis to proceed with concept design layouts.

3.2.15 The key site constraints which the wider Framework Masterplan area needed to respond to were as follows:

Landscape designations

- Kent Downs AONB
- Special Landscape Area

Geological Designations

- Otterpool Quarry SSSI

Ecology designations

- Harringe Brooks Wood: Local Wildlife Site and Ancient Woodland

Water features

- East Stour River and its tributaries

Heritage assets

- Westenhanger Castle (off-site Scheduled Monument)
- Listed buildings
- Prehistoric Barrows
- Roman Villa (discovered later in the masterplanning process and which influenced the later designs).

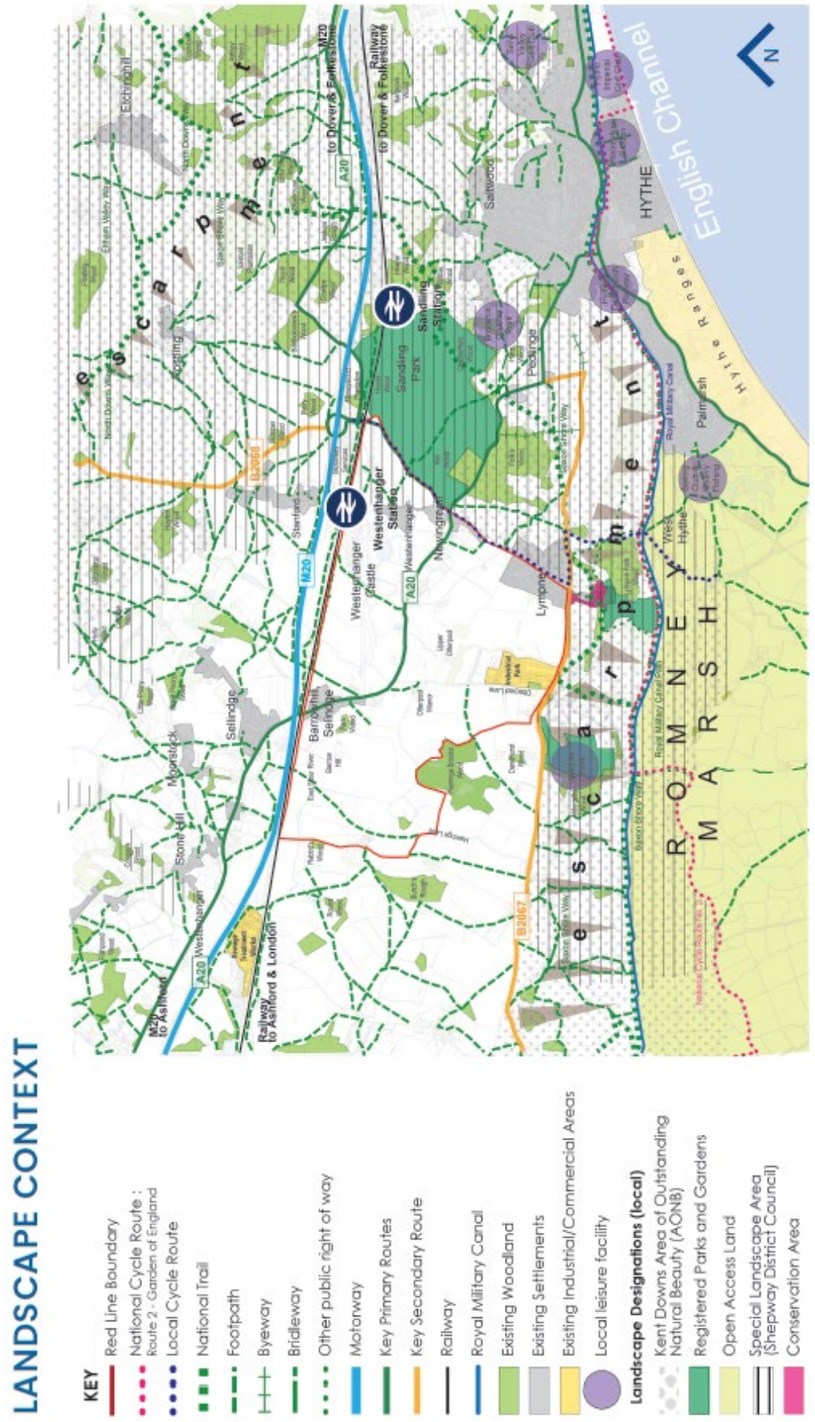


Figure 3- 2 Local Designations and Landscape Context

Site opportunities

3.2.16 The proposed Development represents the following opportunities that were also considered in the design:

- A new garden settlement 'neighbour' that will providing new facilities for use by new and existing nearby residents in terms of open spaces for sport and recreation, health and education facilities.
- Providing an enhanced setting for the existing grade 1 listed Westenhanger Castle also classified as a Scheduled Monument by Historic England. The Castle is located off-site but its grounds are present partially on-site.
- Gaining understanding of a previously undiscovered roman villa which the proposed development layout has been designed to retain;
- Raising the status of other heritage features such as prehistoric barrows by allowing for their presence in the scheme design;
- The potential for reuse of intensively used farmland to increase biodiversity value and create wildlife corridors across the site;
- The potential for a more interconnected connected landscape in terms of wildlife and people given that current access routes across the site are limited.

3.2.17 Taking into account the above environmental constraints and opportunities, and the policy requirement to provide up to 10,000 homes on the site, a series of masterplan options were developed for consideration which considered different options using different layouts of built development area and green spaces and their relationship with the nearby towns and villages.

Evolution of the Masterplan Design

3.2.18 Design layouts for the proposed Development have been based on key themes for the Otterpool Park Framework Masterplan in terms of its initial estimated capacity of up to 12,000 homes for the Garden Town, as set out below. These themes were based upon the "landscape-led" approach to the masterplan that formed a primary objective of the Garden Town, as set out in the initial guiding principles for the project. These principles were included in the initial proposals to the UK Government for Garden Town status, and are linked to the sensitivities associated with the setting of the nearby Kent Downs AONB.

3.2.19 All design options sought to:

- respect key views toward the site from the adjacent designated Area of Outstanding Natural Beauty which characterises the openness of the surrounding area as well as other key landscape designations, and
- enhance the currently limited visual setting of Westenhanger Castle, a nationally significant monument in heritage terms which lies adjacent to the northern boundary of the site.

3.2.20 Design layouts have also been largely influenced by the site's rich history of cultural heritage including archaeology, its ecologically valuable areas, and the known water scarcity in the south east of England. The five main design options are shown below.

Design layout 1: Landscape buffers

3.2.21 The design approach for this option (Figure 3-3) was based upon the creation of landscape 'buffers' of open space between existing villages and the proposed Framework Masterplan, as specified by the yellow shaded areas adjacent to the existing communities of Barrow Hill, Sellindge, Lympne, Newingreen, and Westenhanger.

Advantages

3.2.22 The key advantages of this design layout were considered to be:

- The layout would separate existing homes from the proposed development (the white areas in Figure of design layout 1 indicating built development).
- Some landscape in areas needed for habitat or flood mitigation.

Disadvantages

3.2.23 The main disadvantages of this design layout were considered to be:

- More fragmented new development sharing of services is more challenging.
- Separation increases distances travelled less walkable.
- Some landscape where not needed for habitat or flood mitigation.
- Some development would be in view from AONB and proposed landscaping is less effective for screening.

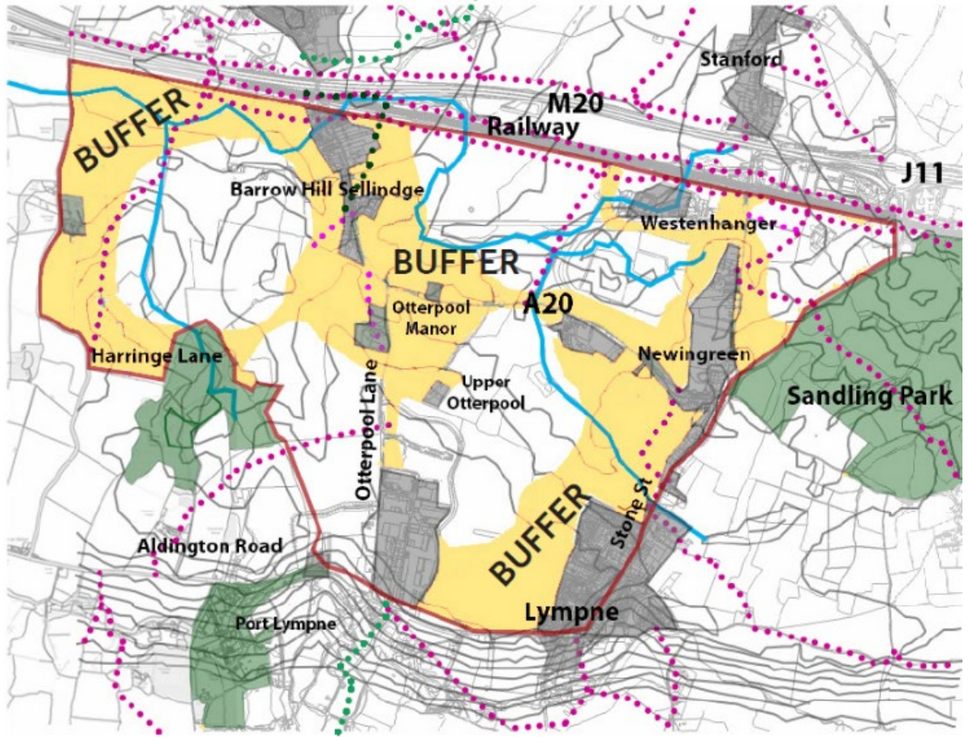


Figure 3-3 Design Layout Option 1 Landscape Buffers Between Existing and Proposed Development

Design layout 2:Landscape Ridges

3.2.24 This option (Figure 3- 4) considered the creation of green open space on topographic ridges that would act as a screen to the setting of the new settlement from the AONB to the north, with built development largely being on lower ground..

Advantages

3.2.25 The key advantages of this design layout were considered to be the following:

- Screens some proposed development viewed from AONB.
- Some landscape in areas needed for habitat mitigation.
- Potential for large park in middle with enhanced woodland landscape.
- Less fragmented development.
- Potential for varied character in settlements

Disadvantages

3.2.26 The key disadvantages of this design layout were considered to be

- Development conflicts with areas needed for flood mitigation.
- Less existing homes separated from proposed development.
- Little landscape or open space protection of the setting of Westenhanger Castle.
-

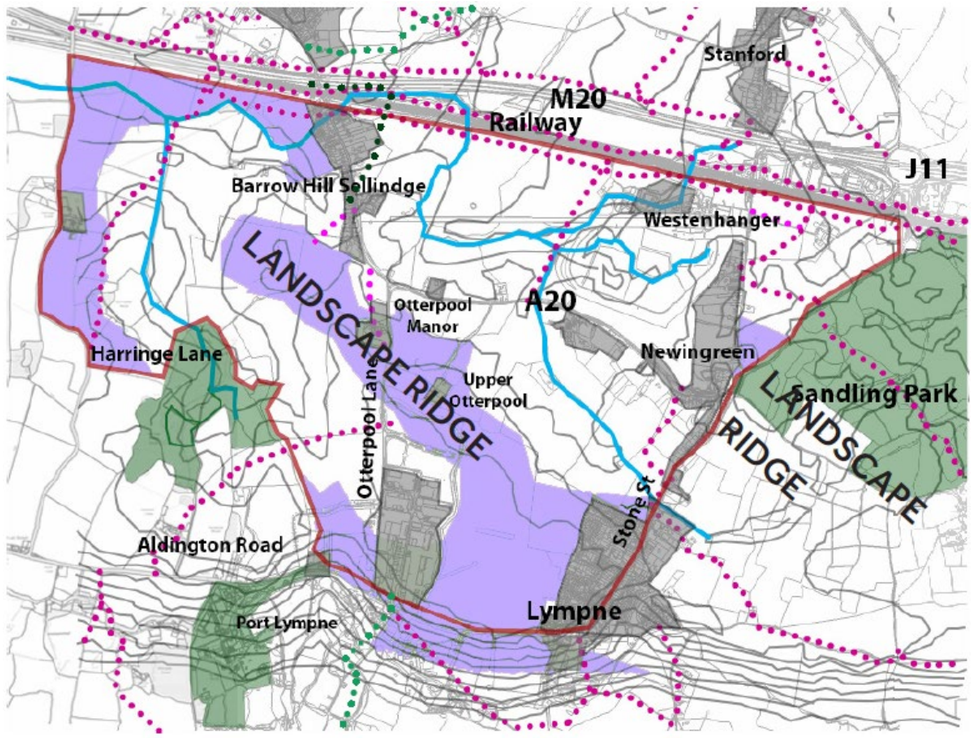


Figure 3- 4 Design Layout Option 2: Landscape Ridges as Visual integration to new settlement setting from the AONB

Design Layout 3: Landscape Valleys

3.2.27 This option (Figure 3- 5) considered the creation of green open space in lower valley areas around the existing streams with built development on higher ground.

Advantages

3.2.28 The key advantages of this design layout were considered to be:

- Landscaping can also provide natural features for necessary flood mitigation.
- Potential for a large park or open space in the centre of the development.

Disadvantages

3.2.29 The key disadvantages of this design layout were considered to be:

- Built development would be more visible, particularly in views from AONB with valley landscaping less effective for screening.
- More fragmented new development with sharing of services more challenging
- Separation increases travel distances discourages walkability and sustainable travel modes.
- Some landscaping may be required where it is not needed for habitat mitigation.
- Less existing homes separated from the proposed development.

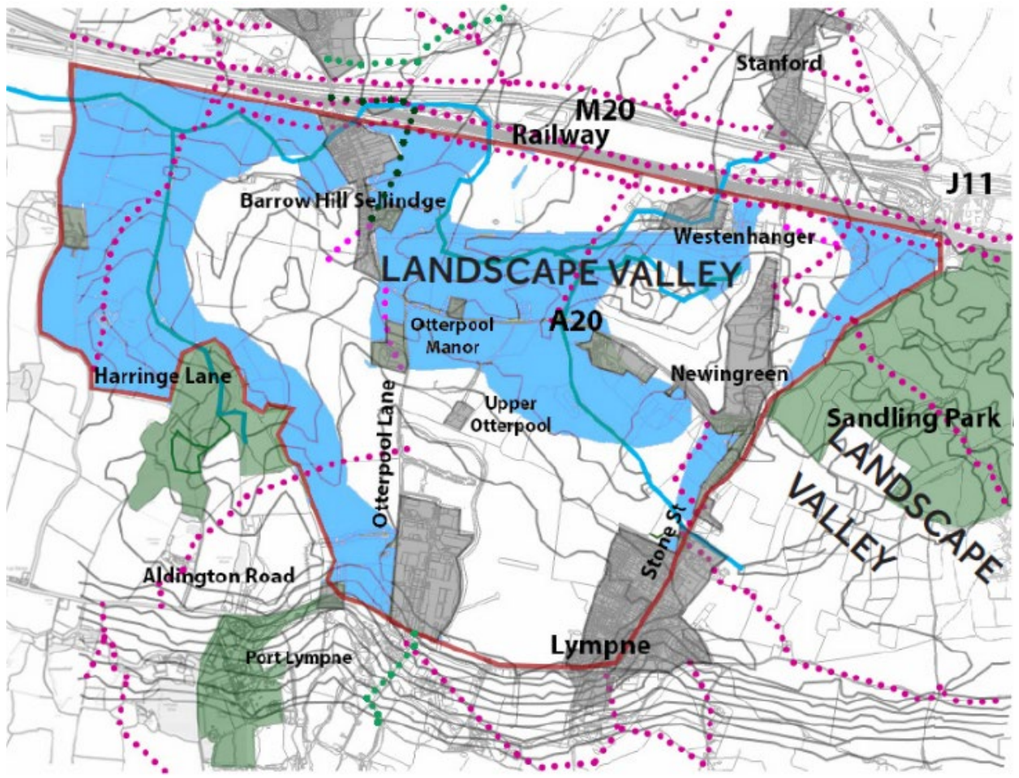


Figure 3- 5 Landscape Valleys in lower areas with existing streams

Design layout 4: Urban and Rural Green Links

3.2.30 This option (Figure 3- 6) considered the creation of green links between new and existing urban and rural parks and woodlands.

Advantages

3.2.31 The key advantages of this design layout were considered to be the following:

- Landscaping can also function as flood and habitat mitigation.
- Improved protection of the setting of Westenhanger through more open space and landscaping in its surrounds
- Potential for open space to be provided at various levels across the site rather than specifically in natural ridges or valleys

Disadvantages

3.2.32 The main disadvantages of this design layout were:

- It creates more fragmented new development with sharing of services more challenging
- Separation increases travel distances which discourages walkability within the development
- Some of the built development is in view from the AONB, with landscaping having less screening effect
- Fewer existing homes would be separated from the proposed development

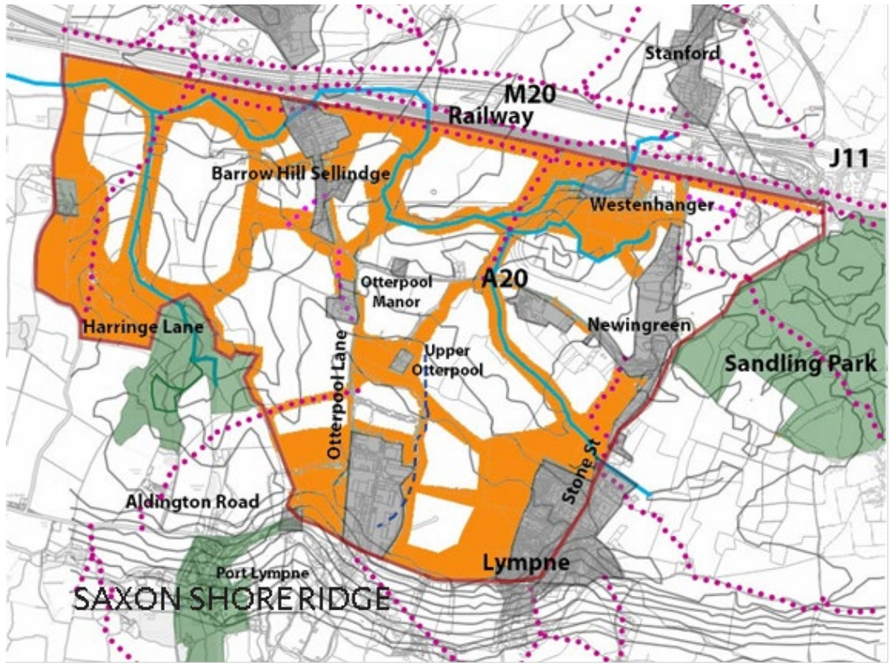


Figure 3- 6 Landscape Urban and Rural Green Links

The Preferred layout

3.2.33 The preferred option was chosen largely on the basis of concept layouts 1 and 4 to create a landscape of connectivity providing buffers between new and existing settlements. The rationale behind concepts 2 and 3 in terms of ridges and valleys were also incorporated into the masterplan to create open spaces for parks and wooded areas that would enhance the area's distinct topography, heritage and water environment.

3.2.34 The overall benefits of the final choice of development compared with previous layouts were considered to be:

- Provides a connected landscape that will provide habitat mitigation
- It has the potential to create parks and open spaces in upper and lower slopes of the development site
- Landscaping in the north will provide appropriate screening of important views from the Kent Downs AONB
- Landscaping can been retained in areas required for flood risk mitigation and will have a dual use of providing blue-green infrastructure for biodiversity mitigation, and recreation.
- Appropriate open space could still be provided to respect the historic landscape setting of Westenhanger Castle.

Figure 3- 7 Preferred Layout: Connectivity and Buffers (Otterpool Framework Masterplan for 10,000 homes)

3.2.35 The chosen layout design for the Otterpool Framework Masterplan Area was then refined in site area from 765ha to 580 hectares to enable the delivery of the proposed development of up to 8,500 homes and associated town centre uses.

3.3 References

Ref' 3.1 URS (a company that later became AECOM) (December 2014) M20 Junction 11 Masterplan, AECOM (July 2015) Land at Junction 11, M20 Advice Note, and AECOM (April 2016) Land at Junction 11, M20 Advice Note.

4 The Site and the Proposed Development

4.1 The Site and Surrounding Area

Site context

4.1.1 The site of the proposed Development is located on 580ha of land directly south-west of Junction 11 of the M20 motorway, and south of the Channel Tunnel Rail Link (CTRL) in the administrative area of Folkestone & Hythe District Council in Kent (see Figure 2 1). The site is centred around National Grid Reference TR112 365 in the general area of Otterpool Manor buildings. Much of the site is greenfield in nature and is predominantly occupied by agricultural uses and associated farm holdings, as well as some residential and light commercial uses. A range of historic land uses associated with both rural and commercial/industrial activities have been present on the site.

4.1.2 The site is located within an area that has been formed from the geological development of the Kent North Downs. The site topography generally slopes from the south toward the north-west where the East Stour River traverses the site from west to east, with variable undulating landforms present across the central parts. Site levels range from 57m above ordnance datum (AOD) in the north-west to 107m AOD in the south.

4.1.3 The site is linked off-site to the north-west and south-east via the A20 Ashford Road that traverses the central part of the site (Figure 2.2, Appendix 2.1). The site is bounded by a section of Harringe Lane and farmland to the west and Harringe Brooks Woods and more farmland to the south-west. The southern boundary wraps around Lympne industrial estate and either side is surrounded by farmland. The south-eastern and eastern boundary is bordered by the settlements of Lympne and Newingreen and further north the eastern boundary runs parallel with the A20 before terminating at the intersection of the A20 (Ashford Rd) with the CTRL (HS1) line. The northern site boundary runs largely parallel with and adjacent to the CTRL line, and borders the grounds of Westenhanger Castle, and the settlement of Sellindge. Within the main site area the site boundary excludes parcels of land at Otterpool Manor, Upper Otterpool and south of Westenhanger.

4.1.4 The site is characterised by the East Stour River that flows from east to west across the northern part of the site and to which a number of smaller tributaries and drainage channels are connected. The majority of these water courses flow from east and south to the north and west. The site has some associated flood risk associated with the East Stour River and its tributaries, as discussed in Section 15.

4.1.5 There are a number of existing land uses on the site although a large proportion of the site area is occupied by farmsteads and associated agricultural land for a mixture of arable and livestock breeding purposes. There are farmsteads located at Somerfield Court Farm (west of Barrow Hill, Sellindge), Farm (east of Barrow Hill Sellindge), Hillhurst Farm (east of Westenhanger) and several smaller practices located adjacent to the A20 in the area of Newingreen.

4.1.6 Land within the site that lies to the north of the A20 is mainly occupied by a mixture of agricultural land, the East Stour River watercourses and a man-made lake in the centre of the former Folkestone Racecourse which is now closed. Hillhurst Farm lies in the north-eastern corner of the site, whilst a number of disused racecourse pavilion buildings are present directly east of Westenhanger Castle. Barrow Hill Farm lies 50m east of the northern stretch of the A20 that runs through Barrow Hill, Sellindge. Close to the intersection of the A20 and Otterpool Lane is a café and small lorry parking area, beyond further north of which lies Barrow Hill Farm. At the eastern end of the A20 within the site lies Holiday Extras corporate office and a farm building.

4.1.7 To the south of the A20, the land east of Otterpool Lane is predominantly occupied by farm land and a number of small holdings along the A20 itself including a nursery. Part of the East Stour traverses the site from south to north, and disused quarry workings south of the A20 form a designated a geological Site of Special Scientific Interest.

4.1.8 Land to the west of Otterpool Lane and the northern stretch of the A20 is occupied mainly by agricultural land and the East Stour. Other features in the area include Park Wood and Somerfield Court Farm located west of Barrow Hill, Sellindge, and Springfield Wood located adjacent to the western site boundary.

4.1.9 The surrounding area is occupied by a mainly agricultural land uses and to a lesser extent, light industrial, commercial and residential uses. Much of the northern site boundary is bordered by the CTRL line, beyond which lies the M20 motorway that connects London with the Kent coast and ultimately Europe via the Channel Tunnel. The strip of land located between the CTRL line and the M20 consists of agricultural land, Westenhanger railway station and a motorway service station adjacent to junction 11 of the M20. Further to the north from the M20 lie the villages of Stanford and Sellindge, set within mainly agricultural land.

4.1.10 Land to the east of the site is occupied by predominantly agricultural uses and wooded areas in the north, and the settlements of Newingreen and Lympne further southward. The eastern site boundary is largely abutted by the Kent Downs Area of Outstanding Natural Beauty (AONB) which extends to areas north and south of the site (see Figure 2-2 and Figure 15-1, Appendix A).

4.1.11 To the south of the site, land uses comprise farmland with other notable features such as Lympne Industrial Estate, Port Lympne Wildlife Park and Harringe Brooks Woods, the latter being designated as ancient woodland. The Kent AONB boundary lies approximately 300m from the southern boundary at its nearest point. The AONB is this area forms an E-W orientated south-facing escarpment and is occupied by farm land, a number of woodlands and Lympne Castle (Figure 2-2). Further south of this lie Romney Marsh and the town of West Hythe.

4.1.12 Land to the west of the site is mainly in agricultural use with some interspersed woodland areas. Harringe Court is present approximately 50m from the site on Harringe Lane and comprises residential and farm buildings. Partridge Farm is present approximately 400m west of the site and a solar farm is located directly north-west of it. To the north of the solar farm between the CTRL and the M20 is a converter station and sewage works which are approximately 500m north-west of the site boundary.

Current Land Uses

4.1.13 The site is currently occupied by approximately 92 buildings that comprise predominantly a mixture of farms and associated residential premises, as well as some commercial and industrial uses. Table 4-1 provides a summary of the existing buildings and their uses on site by reference to Development Zones as shown in drawing OPM(P)1018J within ES Appendix 2.5.

Table 4-1 Current Buildings on Site

Address	Development Zone Ref	Building details	Number of buildings	Existing Use	Status within the application
Hillhurst Farm	2C	Two storey brick and slate farm house and single storey outbuildings	1	Dwelling house (C3) and sui generis	Retained
		Single storey brick and slate out buildings	1	Sui generis	Demolished
		Single storey sheds	3	Sui generis	Demolished
Stone Street	1C	Single storey sheds	3	Sui generis	Demolished
Benham Business Park & Benham Water Farm	3B	Single storey sheds	9	Sui generis	Demolished
Somerfield Court Farm	4	Two storey brick and slate farm house and single storey outbuildings	2	Dwelling house (C3) and sui generis	Demolished
		Single storey sheds	2	Sui generis	Demolished
Farm Cottage	1A	Two storey brick and slate detached property	1	Dwelling house (C3)	Retained
Rose Cottage	1A	One storey brick and slate detached property	1	Dwelling house (C3)	Demolished
Racecourse Buildings	1A	Three and part four storey grandstand	1	Sui generis	Demolished
		Two storey Victorian grandstand	1	Sui generis	Demolished

Address	Development Zone Ref	Building details	Number of buildings	Existing Use	Status within the application
		Single storey stables and accommodation	17	Sui generis	Demolished
		Single storey accommodation	1	Assembly and leisure (D2)	Demolished
Killymoon	P1A	Detached property	1	Dwelling house (C3)	Demolished
Tolgate Cottage	P1A	Detached property	1	Dwelling house (C3)	Retained
Westenhanger Station	P1A	Two storey brick and slate building	1	Business (B1)	Retained
The Airport Cafe	P6/7	Detached property and outbuildings	3	Restaurant and café (A3) and sui generis	Demolished
The White House	P6/7	Detached property and outbuildings	6	Dwelling house (C3) and sui generis	Demolished
Ashford Road, Newingreen, Hythe, Kent, CT21 4JD	P6/7	Two detached properties, a barn and outbuildings	5	Dwelling house (C3) and sui generis	Demolished
Red House Farm	P3B	Two detached properties, a barn and outbuildings in a state of disrepair	8	Dwelling house (C3)	Demolished
A20 Nurseries	P3B	Plant nursery	3	Shop (A1)	Demolished
The bungalow	P3B	Detached bungalow	1	Dwelling house (C3)	Demolished
Cydonia	P3B	Detached bungalow and annexe	2	Dwelling house (C3)	Demolished
Cob Tree Cottage	P3B	Semi-detached bungalow	1	Dwelling house (C3)	Demolished
2 Frank Villa	P3B	Semi-detached bungalow	1	Dwelling house (C3)	Demolished
Quorum	P3B	Detached property	2	Dwelling house (C3)	Demolished
Craylands	P3B	Detached proper and garage/outbuilding	2	Dwelling house (C3) and sui generis	Demolished
The Willows	2A	Detached property	1	Dwelling house (C3)	Demolished
Elm Acres	2A	Detached property	3	Dwelling house (C3)	Demolished
Land at the back of Elm Acres	2A	Outbuildings	2	Sui generis	Demolished
Elms Farm	2A	Detached property	2	Dwelling house (C3)	Retained
1 Barrow Hill Farm Cottage	7	Semi-detached property	1	Dwelling house (C3)	Demolished
2 Barrow Hill Farm Cottage	7	Semi-detached property	1	Dwelling house (C3)	Demolished
Paddock Cottage 1	1A	Semi-detached property	1	Dwelling house (C3)	Demolished
Paddock Cottage 2	1A	Semi-detached property	1	Dwelling house (C3)	Demolished

4.2 he Proposed Development

4.2.1 The proposed Development which forms the basis of the EIA is set out in the following documents provided in full as ES Appendix 4.1.

Development Specification

4.2.2 A Development Specification which sets out the quantum of land uses that are being submitted for outline planning permission, as summarised in the description below:

'Outline planning application seeking permission for the redevelopment of the site through the demolition of identified existing buildings and erection of a residential led mixed use development comprising up to 8,500 residential homes including market and affordable homes; age restricted homes, assisted living homes, extra care facilities, care homes, sheltered housing and care villages; a range of community uses including primary and secondary schools, health centres and nursery facilities; retail and related uses; leisure facilities; business and commercial uses; open space and public realm; sustainable urban drainage systems; utility and energy facilities and infrastructure; waste and waste water infrastructure and management facilities; vehicular bridge links; undercroft, surface and multi-storey car parking; creation of new vehicular and pedestrian accesses into the site, and creation of a new vehicular, pedestrian and cycle network within the site; improvements to the existing highway and local road network; lighting; engineering works, infrastructure and associated facilities; together with interim works or temporary structures required by the development and other associated works including temporary mean while uses. Layout, scale, appearance, landscaping and means of access are reserved for approval.'

Total Proposed Development

4.2.3 The application for Otterpool Park seeks permission for the amount of development floorspace described in Table 4-1.

Table 4-2 Proposed Development Schedule

Land Use	Units	Proposed No. of homes
Residential	Residential Units and Extra Care accommodation	8,500

Land Use		Proposed Floorspace (sqm)
Education	Schools, nurseries, creches	37,161
Community facilities	Health centres, place of worship, community centre	20,900
Hotel	Hotel	7,701
Leisure	Sports pavilion and indoor sports hall	8,250
Mixed retail and related uses	Shops, professional services, restaurants, cafes, drinking establishments, hot food takeaways, offices, businesses	28,875
Employment	Commercial business space in hubs, commercial business park, light industrial business park.	82,418
Total		185,305

Notes:

1. All floorspace areas are gross external areas;
2. The Table excludes certain infrastructure elements for which planning permission is sought in principle including roof top and basement plant, on site utilities such as substations, energy infrastructure, the potential waste water treatment plant, waste storage, any built structures proposed for use as service yards, service corridors, loading bays and any external hard landscaping, footways and roads;
3. The Table excludes floorspace for the creation of undercroft, surface and multi-storey car parking, for which planning permission is sought in principle;
4. The Table excludes floorspace for the creation of green infrastructure and open space and small built structures associated with this space including small changing rooms, toilet facilities, entrance booths etc. for which planning permission is sought in principle;
5. Residential floorspace includes retirement and extra care facilities; and
6. Planning permission is also sought in principle for such temporary development as may be necessary for the construction of the development.

Development Zones

4.2.4 The Otterpool Park site has been divided into a series of Development Zones. The Development Zones are shown on drawing OPM(P)1017H (ES Appendix Table 4-3 and Table 4-4 below defines how the total development floorspace as shown in Table 4-2 is divided between each Zone. This ensures that each Zone is supported by an appropriate level of facilities and services.

Table 4-3 Proposed residential units by Development Zone (%).

Development Zone	Size of Development Zone (ha)	Residential Units (No.)	Residential Units (as % of total number of units)
Z1A	61.09	1077	12.67
Z1B	46.28	945	11.12
Z1C	14.06	282	3.32
Z2A	19.87	51	0.6
Z2B	27.89	433	5.11
Z2C	35.16	400	4.71
Z3A	27.89	340	3.96
Z3B	53.43	898	10.58
Z3C	34	269	3.16
Z4	109.68	1021	12.02
Z5	24.56	210	2.47
Z6	30.80	823	9.68
Z7	56.36	1389	16.34
Z8	39.11	362	4.27
Total	580.19	8,500 units	100

Table 4-4 Proposed indicative non-residential floorspace by Development Zone (sqm) (GEA)

Development Zone	Education	Community Facilities	Hotel	Leisure	Mixed retail and related uses	Employment	Total
Z1a	4,329	6,160	7,701	3,300	9,900	8,316	39,706
Z1b	3,944	660	0	0	3,520	880	9,004
Z1c	0	0	0	0	0	0	0
Z2a	15,786	0	0	0	1,650	924	18,360
Z2b	385	550	0	0	2,200	220	3,355
Z2c	385	6,490	0	3,300	6,023	64,598	80,796
Z3a	3,944	440	0	0	770	440	5,594
Z3b	385	990	0	550	1,375	440	3,740
Z3c	0	0	0	0	0	0	0
Z4	4,329	2,420	0	1,100	1,375	440	9,664
Z5	0	0	0	0	0	0	0
Z6	2,904	1,320	0	0	1,375	4,400	9,999
Z7	770	1,870	0	0	687	1,760	5,087
Z8	0	0	0	0	0	0	0
Total	37,161	20,900	7,701	8,250	28,875	82,418	185,305

Residential

4.2.5 The overall mix of the C3 residential development for Otterpool Park is set out in Table 4-5. Each individual phase will have a balanced mix of housing which have regard to the scheme wide mix. A deviation from the proposed mix is proposed within each phase (as shown in Table 4-5) to ensure adherence to the overall unit mix whilst enabling phased flexibility to reflect phase specific considerations.

Table 4-5 Proposed Indicative Overall Mix of Residential Development

Housing Size	Proportion of Homes	Range of Provision
1 bed	8%	5 to 15%
2-3 bed	65.5%	50 to 80%
4-5 bed	26.5%	15 to 40%

4.2.6 Residential development includes residential units as well as residential accommodation for older people such as age restricted homes, assisted living homes, extra care facilities, care homes, sheltered housing and care villages.

4.2.7 Each Development Zone will offer a balance of residential development in accordance with the Housing Strategy.

4.2.8 The proposed Housing Strategy confirms that overall the development will achieve provision of 22% affording housing (in line with emerging policy requirements). Due to the significant infrastructure requirements of the development however, flexibility is sought for varying levels of affordable housing to be delivered for different Development Zones. (we will need to cover here details regarding C2/assisted/sheltered accommodation provision once housing strategy is provided by Keith)

Education

4.2.9 This floorspace includes schools (primary, secondary and tertiary), nurseries and crèches (use class D1).

4.2.10 Primary schools, each with up to 2 or 3 forms of entry (FE) from nursery to Year 6, will be delivered in Development Zones 1A, 1B, 3A, 4, and 6 within the areas marked for Primary Schools on Parameter Plan OPM(P) 1016L. The primary school in 1a will provide up to 3 FE. The primary schools in 1b, 4 and Z6 will include floorspace to provide up to 3FE, if this is needed to meet the needs of the development. The monitoring and triggers process will be defined in the S106 agreement. The remaining primary schools will provide 2FE. Schools may be phased to deliver at 1FE at a time.

4.2.11 Secondary provision (use class D1) will be delivered in Development Zone 2a. The school will have up to 10FE (including 6th form), which may be delivered in one or more phases.

4.2.12 The school year starts in September, so a school will first become operational, and all subsequent phases will become operational, in the September immediately after the trigger point. The trigger points will be agreed in the Section 106 legal agreement.

4.2.13 There is an allowance for nursery or crèche floorspace. This is located in Zones 1A, 1B, 2B, 2C, 3A, 3B, 4, 6 and 7.

Community Facilities

4.2.14 This floorspace includes health centres (use class D1 and D2). It could also be places of worship and include other non-residential institutions such as libraries and community centres. This floorspace is located in Zones 1A, 1B, 2B, 2C, 3A, 3B, 4, 6 and 7.

4.2.15 Up to 12,980 sqm GEA of healthcare floorspace is proposed. The likely need required as a minimum to provide primary care facilities is 2,000-2,500 sqm GIA (for 10,000 homes), so the amount provided is well in excess of what is required to mitigate the impacts of development and provides an opportunity for additional services.

4.2.16 The proposals includes one large practice, which will be delivered, at least in part, in Development Zone 1a. In order to retain flexibility, three other smaller sites have been allocated for potential health needs. These other sites may be released for alternative uses if they are not taken up by the NHS.

Hotel

4.2.17 Hotel floorspace (7,701sqm GEA, use class C1) is proposed to be provided in Development Zone 1a.

Leisure

4.2.18 This floorspace includes leisure and assembly uses (use class D2) such as the sports pavilion and indoor sports hall (8,250 sqm GEA). This floorspace is located in Zones 1a, 2c, 3b and 4.

Mixed retail and related uses

4.2.19 This floorspace includes uses such as shops, professional services, retail services, cafes, restaurants, drinking establishments, hot food takeaways (use class A -A5).

4.2.20 The delivery of the retail floorspace will be focused in Zone 1a although the majority of the zones will contain an element of retail and related services such as local neighbourhood retail shops, professional services and food and drink venues to meet local needs.

Employment

4.2.21 This floorspace includes B1 commercial business in hubs, commercial business park and B2 light industrial business park. This floorspace is located in all Zones apart from Zones 1C, 3C, 5 and 8.

Car, motorcycle and bicycle parking

4.2.22 The level of car, motorcycle and bicycle parking to be provided will be agreed at the reserved matters stage for each development zone. It is anticipated however that the development will be constructed in accordance with the FHDC standards at the time of submission of the relevant reserved matters applications.

Landscape and public realm

4.2.23 A key feature of any ‘Garden Town’ development is its inclusion of a rich Green Infrastructure (GI) and ability to maximise the natural environment. Otterpool Park has been planned as a holistic ‘Green’ development providing accessible routes between the residential setting, informal and formal sport, play spaces, food production areas, community space, work place and the wider surroundings.

4.2.24 A series of proposed GI typologies have been set to distinguish the ‘green’ spatial components and hierarchy across Otterpool Park and have been measured to ensure GI is suitably balanced with the built development parcels. A target figure of 50% GI is anticipated which will include Blue Infrastructure and Sports facilities.

4.2.25 The GI typologies provide a useful means of measuring the various component of the masterplan and to ensure a healthy balance is achieved. Primary measurable GI types can be summarised as follows:

- Green Open Space
- Formal Play
- Food Production
- Outdoor Sports

4.2.26 Supporting GI types include but are not limited to: Areas of woodland, Nature Play, Green Roofs, heritage features.

4.2.27 Parameter Plan OPM(P) 1008H, refines the hierarchy, structure and distribution of green infrastructure and open space across the site, including public realm and open space for leisure, sport and play.

4.2.28 Existing GI typologies including high value hedgerows / trees and woodlands have guided the placement of development parcels with a presumption towards vegetation retention where feasible. Existing vegetation has been assessment through Phase 1 habitat surveys, site walk overs and a high level Tree Constraints Plan. (TCP). Further detailed tree surveys shall be carried out to BS5837 as each phase of the master plan is developed.

4.2.29 Existing vegetation to be retained / removed is illustrated on Parameter Plan Ref: OPM(P)1007(H) submitted with the planning application.

4.2.30 Hard landscape materials for Otterpool Park will be part of a suite of materials that are fitting with the locality, hard wearing, durable and of a high quality in accordance with BREEAM classifications including the use of recycled material where appropriate. Hardscape materials that coordinate with SUDS options will be considered as part of the overall SUDS strategy.

4.2.31 The location of community provision is fixed by Parameter Plan OPM(P) 1008H. The precise configuration is however subject to detailed design at the reserved matters stage having regarded to the Parameter Plans and Design Guidelines.

Infrastructure and Utilities Requirements

4.2.32 Delivering Otterpool Park will require substantial upgrades of the existing utility infrastructure including a new electrical primary substation, onsite and off-site gas and potable water network reinforcement and provision of a fibre-to-home broadband network. Full details of the proposed works are:

Electricity

4.2.33 Discussions with UKPN have confirmed that an upgrade at Sellindge Grid Substation will be required for Otterpool to be supplied with electricity via a new primary substation, to be built on the site. A location for this substation has been identified on the masterplan, and this will be provided on land adjacent to the Otterpool Lane/A20 road junction. UKPN has confirmed that, minor off-site reinforcement works will be undertaken by UKPN at Sellindge Grid substation with upgrades to the existing circuitry. This upgrade will facilitate connections from Sellindge to the new onsite primary sub-station. Depending on connection options for the new primary substation, modifications to two pylons located within the Otterpool Park site may be required. Package substations will be provided in various locations throughout the development, linked by 11kV cable ring main, to supply power, in a lower voltage, to the individual development parcels. The actual number will be dependent on power demand as the build-out progresses and as such, will be delivered in a sequential, phased approach.

Gas

4.2.34 There is very limited existing gas infrastructure in the immediate surrounding area of Otterpool Park and there is not sufficient capacity of serve a development of this scale without significant reinforcement to the existing network. SGN has advised that network reinforcement could take as much as 6-years to implement for the full development. The provision of gas at Otterpool would however at least have a vital role to play in the early phases whilst the larger and more time-consuming electricity network upgrades are carried out by UKPN. It would also offer resilience to the electricity network and comfort to UKPN that the maximum capacity of the new onsite primary substation would not be reached. A low pressure (LP) gas supply could be provided through a point of connection near Berwick Farm, immediately to the east of the site to deliver the first 1,000 homes. Due to the significant lead in time to supply gas to the whole of Otterpool Park, the development would need to move to an all-electric energy supply after the first 1,000 homes have been delivered.

Water and waste water

4.2.35 There is an existing potable water network within the development sufficiently sized for the existing demand and with immediate additional capacity for the early phases of development. For over 1,500 homes to be delivered a new water main will need to be constructed between the development and Paddlesworth Reservoir, over a length of approximately 11Km. The water main will follow the same alignment as an existing water main, rather than upsizing the existing main.

4.2.36 Surface water will be carefully managed within the new development to provide a network of sustainable urban drainage features which will control surface water run-off and flooding incidence.

4.2.37 Three potential wastewater treatment options have been developed to manage the wastewater that is produced from Otterpool Park. Option 1 is to dispose of the wastewater off-site to the Southern Water's existing Sellindge Wastewater Treatment Works (WWTW) that is located approximately 1 km north west of the Site. This would involve upgrading Sellindge WWTW. Option 2 would dispose of wastewater by a new purpose built onsite WWTW in the north west corner of the site itself, which could then be operated by a New Appointment and Variation company rather than incumbent Southern Water. Option 3 would involve the provision of a direct rising main connection between a new pumping station on site and the Southern Water West Hythe WWTW (which is six kilometres west of the site).

4.2.38 To deliver integrated water management solutions at Otterpool Park it will require a collaborative and innovative approach going beyond the current normal practice of public water companies in the UK. Therefore, to address the potential risk uncertainty and decide the most viable, deliverable and sustainable solution through further detail appraisals, all options are proposed in the outline planning application and assessed as appropriate in the EIA. Options 1 and 3 would involve connections off-site and minimal land-take on site (for the pumping stations). Option 3 would require some land take on the site itself for the proposed WWTW plant. The proposed location of the WWTW plant for Option 3 is shown in the most north-westerly part of the application site.

Telecommunications

4.2.39 The aspiration is to provide a high speed or superfast broadband network to Otterpool Park. BT Openreach and Virgin Media have advised that there is no barrier to maximum broadband speeds that could be achieved at Otterpool Park. Fibre-to-the-cabinet (FTTC) is the most common setup for fibre broadband. Fibre-to-the-home (FTTH), meanwhile, means the entire line is fibre from the exchange all the way into the building. It allows for even faster speeds, but is not widely available and can be very difficult and expensive to install.

4.2.40 Further information is being sought from BT Openreach and Virgin Media to determine the nearest point of connection and connection costs, although it is understood that capacity for broadband, within the existing BT Openreach network, is available. Alternative broadband suppliers and Multi-Utility Service Companies (MUSCos) such as GTC, TriConnex and Energetics, could offer an alternative connection solution and this option will be investigated further.

Parameter Plans

4.2.41 A series of Parameter Plans form part of the Planning Application and provide the parameters for future reserved matters applications for the site.

4.2.42 The Parameter Plans identify those elements of the Proposed Development which are to be controlled as part of the planning permission for the new garden settlement and those elements that are reserved at this stage.

4.2.43 The parameter plans form part of the planning application package of documents for approval and set parameters within which details of reserved matters must be prepared, submitted and approved in substantial accordance with.

4.2.44 Paragraph 34 (Reference ID: 14-034-20140306) confirms that with an application for outline planning permission detailed consideration will always be required on the use or uses and amount of development proposed for each use. Under article 5(3) of the DMPO 2015, an application for outline planning permission must also indicate the area or areas where access points to the development will be situated, even if access has been reserved.

4.2.45 The Parameter Plans for approval are as follows:

- OPM(P)1018J – Existing buildings to be removed and retained
- OPM(P)1008H – Green infrastructure and open space
- OPM(P)1010G – Movement and access
- OPM(P) 1011G – Green Infrastructure Buffers
- OPM(P)1013H – Building heights
- OPM(P)1016L – Development areas

4.2.46 A copy of each Parameter Plan is provided in Appendix 4.1. The following text describes the purpose and key features of each Parameter Plan. These plans should be read in conjunction with each other.

a) OPM(P) 1018j – Buildings to be removed and retained

4.2.47 This plan shows where existing buildings are proposed to be retained and removed. The built heritage and ecological value of the buildings that are proposed to be removed has been addressed by the ES and DAS, concluding that the buildings shown can be demolished.

b) OPM(P) 1008H – Green infrastructure and open space

4.2.48 This plan illustrates the existing landscape features on and in close proximity to the application site as well as showing the location of the various proposed landscape features. This includes the parks, play areas, sports pitches, community orchards, allotments and burial ground.

c) OPM(P) 1010G – Movement and access

4.2.49 The purpose of this plan is to show the existing and indicatively proposed primary and secondary roads, cycle paths and footpaths, bridge crossings over streams, bus routes and bridleways. This shows the location of the proposed route hierarchy currently.

4.2.50 The route hierarchy is defined as follow:

- Primary roads, cycle path routes and footpaths – these are the indicative main routes through Otterpool Park.
- Secondary cycle paths and footpaths – these are indicative at this stage and support the primary roads, cycle paths and footpaths. They would utilise existing roads through the site and provide new connections where necessary to create a successful and permeable network of secondary routes.

4.2.51 The detail of these routes will come forward as reserved matters subject to a trigger to be agreed with FHDC.

4.2.52 Off-site highway works do not form part of this parameter plan but are expected to be achieved through s.106/s.278 legal agreements. These works include… [Confirm this when see final TA].

d) OPM(P) 1011G – Green Infrastrcture buffers

4.2.53 The purpose of this plan is to show where buffers will be created or maintained and to identify parts of the site classed as developable areas. The buffers will constrain and define the developable area of each development zone.

e) OPM(P) 1013H – Building heights

4.2.54 The purpose of this plan is to show the maximum building heights that would be permitted within different parts of the Otterpool Park development. The development heights reflect the character areas described in the DAS.

4.2.55 The parameter plan denotes the existing contours and heights in Above Ordnance Datum (AOD). The proposed heights of development are shown as metres above existing levels. The DAS provides the terms of reference for interpretation of the design intent and how their height will manifest itself within the reserved matters submission of external appearance. These maximum heights are to be read alongside the proposed landscape buffers within the EIA.

f) OPM(P) 1016L- Development areas

4.2.56 This plan shows the different land uses proposed on different elements of the Otterpool Park site. This includes development areas, green and blue infrastructure and transport proposals.

4.2.57 Residential uses are prominent across the majority of the site with commercial, leisure, retail and education uses located to the north east of the site, the town centre quarters and within the local centres.

Phasing Plans

4.2.58 The phasing plans form part of the planning application package of documents for approval and are what the Environmental Impact Assessment has been based on.

4.2.59 The phasing plans illustrate which elements of the Otterpool Park garden town will come forward in five year time periods over 25 years.

4.2.60 The phasing plans for approval are:

- OPM(P)211F - Phasing up to 0-5 years;
- OPM(P)212E - Phasing up to 5-10 years;
- OPM(P)203F - Phasing up to10-15 years;
- OPM(P)204F- Phasing up to 15-20 years;
- OPM(P)205F - Phasing up to 20-25 years;
- OPM(P)201F – Phase 0-5 years;
- OPM(P)202E – Phase 5-10 years;
- OPM(P)213F – Phase 10-15 years;
- OPM(P)214F – Phase 15-20 years
- OPM(P)215F – Phase 20-25 years

4.2.61 A copy of each phasing plan is provided in Appendix 4.1.

4.3 Demolition and Construction

4.3.1 The proposed Development is expected to be constructed over approximately 25 year period from approximately 2020 to 2044, with 8,500 homes provided by approximately 2042. The Otterpool Park Framework Masterplan that is expected to provide a further 1,500 homes, commercial space and a primary school is anticipated to be completed approximately 4 years after the completion of the proposed Development, in 2046.

4.3.2 The Development is to be phased as shown in the Phasing Plans for approval and shown in Appendix 4.1. Given the outline nature of the development proposals, the level of detail of proposed construction, techniques to be used is necessarily broad at this stage. Conservative assumptions of construction methods have been used to determine likely construction impacts.

4.3.3 Detailed Construction Method Statements for individual plots and buildings would be expected to come forward during reserved matters application stages, following the grant of outline planning permission.

4.3.4 The proposed Development will require the demolition of a number of properties as indicated on Parameter Plan OPM(P)1018H – Buildings to be Removed and Retained.

Construction hours and Workforce

4.3.5 Normal working hours will be:

- 08:00-18:00 Monday to Friday;
- 08:00 – 13:00 Saturdays; and
- No working on Sundays, Bank Holidays or other public holidays.

4.3.6 Under special circumstances it may be necessary to work outside of these hours. In such cases, the scope of works and durations of activities will be agreed with FHDC beforehand.

Code of Construction Practice

4.3.7 All construction activities as described above will be governed by a Code of Construction Practice (CoCP). The applicant will adopt the CoCP and it will be mandatory for all principal contractors appointed by the applicant (and their sub-contractors) and for all developers or others who deliver the development. This will be imposed by contract or other legal agreement with those parties as well as being enforceable by FHDC under a condition anticipated on the outline planning permission being sought.

4.3.8 The CoCP will include mitigation measures that would be implemented during the construction of the development e.g. control of noise, dust and construction traffic. Such recommended control measures have been identified in the Mitigation subsection of the ES Sections 5-17. Such CoCP measures have been assumed to be in place prior to the assessment of construction impacts for each topic assessment.

5 Agriculture and Soils

5.1 Introduction

5.1.1 This Chapter of the ES reports the environmental impact of construction and operation of the proposed Development with respect to agriculture and soils. A summary of relevant legislation, policy and guidance, and a description of the methodologies used to assess the potential effects of the proposed Development is provided in this Chapter. Baseline conditions are set out followed by the impact assessment which incorporates relevant design and other mitigation measures that would be employed during construction. A summary of the assessment is then provided.

5.1.2 This Chapter has been prepared by Dr Bruce Lascelles, employed by Arcadis Consulting (UK) Ltd. Dr Lascelles is a Chartered Environmentalist and Fellow of the British Society of Soil Science. He meets the requirements of the Professional Competency Scheme for Agricultural Land Classification (ALC: see PCSS Document 2 'Agricultural Land Classification of England and Wales': Ref 5.1). The Professional Competency Scheme is endorsed, amongst others, by the Department for Environment, Food and Rural Affairs (Defra), Natural England, the Science Council, and the Institute of Environmental Assessment and Management (IEMA).

Relevant Aspects of the Proposed Development

5.1.3 A description of the development is given in Section 4.2. Specific aspects of the proposed development that relate to agriculture and soils are all those areas of the proposed Development that will be affected by land take and ground disturbance, which would in turn have an impact on farm viability. This includes the areas on Site for the proposed Development as shown on the following parameter plans:

- OPM(P)1008H – Green infrastructure and open space
- OPM(P)1010G – Movement and access
- OPM(P)1016L – Development Areas

5.2 Assessment Methodology

Legislation, Policy and Guidance

5.2.1 This impact assessment has been undertaken in accordance with current national legislation, and national, regional and local plans and policies relating to agriculture and land use in the context of the proposed Development. A summary of the relevant legislation and policies, the requirements of these policies and the proposed Development response has been provided below.

Legislation

5.2.2 There are no legislative requirements governing the assessment of agricultural matters, and the framework of any assessment is derived from a combination of EU and national agricultural and land use policies and measures, combined with expert judgement.

Policy

5.2.3 The National Planning Policy Framework (NPPF; Ref 5.2) sets out the Government's planning policies for England and how these are expected to be applied. The NPPF provides a framework within which local and neighbourhood plans can be produced. Planning law requires that applications for planning permission must be determined in accordance with the development plan. The NPPF must be taken into account in the preparation of local and neighbourhood plans and is a material consideration on planning decisions.

5.2.4 Section 15 of the NPPF deals with conserving and enhancing the natural environment. This includes a requirement that planning policies and decisions should recognise "*the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland*."

5.2.5 A footnote to this adds that "Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality."

5.2.6 A Strategy for England; Safeguarding Our Soils (Ref 5.3) was published in 2009. This sets out the Governments aims in relation to protecting agricultural soils and in relation to protecting the soil resource during construction and development. This includes a requirement that planning decisions take sufficient account of soil quality, particularly where significant areas of the best and most versatile (BMV) agricultural land are involved.

5.2.7 Accordingly, whilst the presence of BMV agricultural land is a material consideration in taking planning decisions this is one of a number of matters that have to be taken into account including other sustainability considerations such as: biodiversity, the quality and character of the landscape, accessibility to infrastructure, workforce and markets and maintaining viable communities.

5.2.8 Folkestone & Hythe District Council (FHDC) Local Plan Review (Ref 5.4) includes Policies of relevance to this topic. Policy CO1 (Development in the Countryside) states that the Local Authority will protect the countryside for its own sake, with proposals being allowed if they maintain or enhance features of agricultural importance.

5.2.9 Policy SD1 requires that BMV agricultural land should be protected and enhanced. Policy LR3 requires that formal sport and recreation areas do not result in the irreversible loss of BMV agricultural land.

5.2.10 FHDC Core Strategy Review (2018: Ref 5.5) includes a Charter for Otterpool Park setting out the council's aspirations for the new settlement. This is reflected in Policies SS6, SS7, SS8 and SS9. Policy SS8 requires that construction and land-forming of the settlement shall be soil neutral to avoid importing or exporting of earth.

5.2.11 FHDC Places and Policies Local Plan (Submission Draft, February 2018; Ref 5.6) includes Policy HW3 (Development that supports Healthy, Fulfilling and Active Lifestyles) which states that proposals to deliver to this policy must not result in the loss of BMV agricultural land unless there is a compelling and overriding planning reason to do so and mitigation is provided through the provision of productive landscapes on-site or in the locality.

5.2.12 A response to the relevant policies is set out in the table below.

Table 5-1 Summary of project responses to relevant policies

Document	Policy/ Reference	Description in relation to Agriculture and Soils	Project Response
National Planning Policy Framework, as amended (2018)	Paragraph 170	Requirement to recognise the economic and other benefits of BMV land	The presence of BMV land is identified in the baseline and the impacts on this assessed.
FHDC draft Core Strategy Review (2019)	Policy SS8	The construction and land-forming shall be soil neutral	Appropriate soil handling and re-use measures and planning, as outlined in Section 5.4, will maximise the appropriate re-use of soil materials.
FHDC Places and Policies Local Plan (Submission Draft, February 2018)	Policy HW3 (Development that supports Healthy, Fulfilling and Active Lifestyles)	Loss of BMV agricultural land should be avoided unless there is a compelling and overriding planning reason to do so and mitigation is provided through the provision of productive landscapes on-site or in the locality	The proposed Development will result in the loss of BMV land to development, however there is a compelling and overriding reason to allow this loss in order to meet the existing and future housings needs of this area. The development includes approximately 50% of open space which includes allotments and open spaces which support health and well-being activities which enables the

			continued delivery of soil-related ecosystem services across this area.
FHDC Local Plan Review (2006)	Policy CO1	Requirement to protect the countryside for its own sake	The proposed Development includes approximately 50% of open space.
	Policy LR3	Requirement that formal sport and recreation areas do not result in the irreversible loss of BMV agricultural land	The development of sport and recreational space will not be irreversible.
	Policy SD1	Requirement that BMV agricultural land should be protected and enhanced and soil quality should be maintained and enhanced.	Appropriate soil handling measures, as outlined in Section 5.4, will maintain soil quality and maximise the opportunities for re-use of this resource.

Guidance

5.2.13 Within the Soils Strategy (see above) there is an aim of encouraging better management of soils during the construction process. Linked to this is the Construction Code of Practice for the sustainable re-use of soils on construction sites, also published by Defra (Ref 5.7) to protect soil resources disturbed on construction sites. Whilst the Code is not legislatively binding, the wider benefits of following the guidance (in terms of sustainability, cost savings and waste controls) are clearly set out.

Consultation and Scoping

Consultation

5.2.14 Table 5-2 provides a summary of Consultee issues raised with respect to agriculture and soils and how they have been addressed.

Table 5-2 Summary of Consultation

Consultee/Contact/Date	Summary of Consultee Issue	How Addressed?
Natural England Julia Coneybeer, Natural England, 7 December 2016	Concern raised regarding the presence of BMV land. As the site is likely to comprise >20ha of BMV Natural England would like to review detailed soil information from across the site.	The impact on BMV land is addressed in Section 5.5.
Natural England Rebecca Bishop, Natural England, 30 May 2017	Advice provided on sources of baseline information relating to soils and Agricultural Land Classification (ALC). These will all be used to inform the assessment of baseline conditions. Further available information on data associated with available detailed mapping was accessed.	All available data has been used to inform the assessment.
Natural England Rebecca Bishop, Natural England, 2 July 2018	Proposal to NE set out defining the approach to the ALC assessment based on use of existing data only and no further ALC surveys being undertaken	No response from NE was received. However, the rationale for the assessment methodology is set out in Section 5.2.

Scoping

5.2.15 Table 5-2 below provides a summary of consultee responses contained within the Scoping Opinion in relation to agriculture and soils, and the corresponding location in the ES where they are addressed.

Table 5-3 Summary of Scoping Opinion Response

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
Natural England	Clarity on the geographic scope	Study area clarified in Section 5.2.14
Natural England	Phasing of assessments should be clearly defined	Implications from phasing are highlighted in Section 5.5
Natural England	Mitigation measures for affected farm business and farm operations should be clearly defined for both construction and operation phases	Mitigation measures are set out in Sections 5.5 and 5.6
Natural England	Impacts should be assessed in light of Government policy for the protection of BMV land	The presence of BMV is included in this assessment

The Study Area

5.2.16 The study area for this topic comprises the land within the proposed Development Site boundary. Where an individual land holding includes land outside the boundary this has been taken into account when assessing the potential impact on farm viability.

Methodology for Establishing Baseline Conditions

5.2.17 The principal agricultural and related resources are the extent and quality of the agricultural land and the land management practices (along with the facilities/machinery required for such operations), as well as diversified activities on farms.

5.2.18 A range of existing information sources have been reviewed in order to assess the character of the site in terms of land use and soils, including:

- Ordnance Survey mapping and aerial photography to establish land use and settlement patterns
- Published Agricultural Land Classification details for the area (provisional and detailed (Post-1988); available from www.magic.gov.uk (Ref 5.8))
- Review of Land Information System Soilscapes database (available from www.magic.gov.uk)
- Extent of any agri-environmental schemes (available from www.magic.gov.uk)
- Information from landowners/farmers affected by the Proposed Development (including farming type, farming practices, agri-environmental schemes etc.)

Forecasting the Future Baseline

5.2.19 The agricultural grade of land is unlikely to change over time (unless ground for example becomes contaminated). Agricultural circumstances may change; landowner interviews have aimed to gain visibility of potential material changes in the future and, where required, these are assessed.

Defining the Importance/Sensitivity of resource

5.2.20 Apart from the EIA Regulations there are no legislative requirements governing the assessment of agricultural matters, and the framework of any assessment is derived from a combination of EU and national agricultural and land use policies and measures. The key elements of these can be summarised as:

- The conservation of the BMV resources of agricultural land
- Retention of a competitive and sustainable agricultural industry
- The diversification of individual farm businesses into supplementary non-agricultural activities
- The more positive engagement of individual farm businesses with the delivery of environmental benefits

5.2.21 The assessment of effects on agricultural land and businesses has also drawn on guidance provided in the DMRB Volume 11 'Environmental Assessment', Section 3, Part 6 'Land Use' and Part 11 'Geology and Soils' (Ref 5.9).

5.2.22 The sensitivity of relevant receptors is assessed using the criteria set out in the table below.

Table 5-4 Criteria for Determining Receptor Sensitivity

Sensitivity of the receptor	Description	Examples
High	Very high agricultural and land use value, quality or rarity on a national scale.	• National land use allocations • Grade 1, 2 and 3a agricultural land (i.e. BMV land) • Higher Tier Countryside Stewardship (CS)/ Higher Level Stewardship (HLS) land • Soils with a very low resilience to structural damage (e.g. clayey soil) • Pastoral Farms
Medium	High agricultural and land use value, quality or rarity on a national scale.	• Regional land use allocations • Grade 3b agricultural land; • Soils with some resilience to structural damage (e.g. loamy soils) • Mixed farms
Low	Medium agricultural and land use value, quality or rarity on a regional scale.	• Local land use allocations • Grade 4 and 5 Agricultural Land • Soils with a high resilience to structural damage (e.g. sandy soils) • Arable and grassland (including arable farms)

Methodology for Assessing Impacts

Impact Characterisation

5.2.23 Table 5-5 below sets out how the potential magnitude of impacts have been characterised.

Table 5-5 Magnitude of Impact Characterisation

Magnitude	Definition
Major Adverse	Loss of resource or severe damage to resource. For example: • Permanent loss or degradation of over 20ha of BMV land, or entire regional resource of BMV land (ALC Grades 1, 2, 3a). • Existing land-use would not be able to continue
Moderate Adverse	Where the extent of effects may be moderate. For example: • Permanent loss or degradation of 5-20ha of BMV land, or large proportion of regional resource of BMV land. • Existing land-use would be able to continue but with major changes such as loss of yield, additional land management or increased use of fertilisers and herbicides
Minor Adverse	Where the extent of effects is considered to be minor. For example: • Permanent loss or degradation of <5ha of BMV land, or small proportion of regional resource of BMV land • Existing land-use would be able to continue but with some changes such as loss of yield, additional land management or increased use of fertilisers and herbicides
Negligible	Very minor detrimental alteration to the characteristics of one or more receptor(s). • Permanent loss or degradation of non-BMV land (i.e. Grades 3b, 4 and 5). • Short-term impacts to receptors with no impact on integrity. No material change to existing land-use

Assessing Significance of Effect

5.2.24 Table 5-6 below sets out how the significance of effect is characterised.

Table 5-6 Significance of Effect Characterisation

Magnitude of Impact	Value of Receptor		
	High	Medium	Low
Major	Major	Major	Moderate
Moderate	Major	Moderate	Minor
Minor	Moderate	Minor	Minor
Negligible	Minor	Negligible	Negligible

Limitations and Assumptions

Limitations

5.2.25 No limitations have been identified to the assessment presented.

Assumptions

5.2.26 Based on available mapping, it is likely that a large proportion of the site will be high grade agricultural land. Available detailed mapping highlights that over 20ha would be BMV land, resulting in a High impact on a receptor of High value. As such, it is unlikely that further detailed ALC survey work at this stage would reduce the likely significance of the effect as a result of the proposed Development. It is therefore considered that the desk-based assessment allows the likely significance of effect on agricultural land to be identified.

5.3 Baseline

Existing Baseline

Geology

5.3.1 The site is underlain by sandstone and mudstone, with some Head deposits across the northern part of the site and alluvium associated with the watercourses.

Soils

5.3.2 The distribution of soils is shown on Figure 5.1. The soils present appear to fall into two main categories differentiated in the main by their drainage characteristics.

5.3.3 In the central part of the site the soils are described as loamy soils with naturally high groundwater, with slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils present in the north-eastern part of the site. In the eastern / southern parts the soils are described as freely draining slightly acid (in places base-rich) loamy soils.

5.3.4 The Soil Map of England and Wales (Ref 5.10) and associated Soil Survey Bulletin (Ref 5.11) describes the presence of three Soil Associations within the application Site boundary, as detailed below. A Soil Association represents a group of soil types which are typically found occurring together in a landscape. The Wickham 1 and Park Gate Associations are likely to represent the more poorly drained soils described above.

- Wickham 1 – soils formed in Cretaceous clay or mudstone drift which are slowly permeable seasonally waterlogged fine silty soils overlying fine loamy or clayey soils. These soils can remain wet for long periods and also dry out and become hard in summers. Land use on these soils can be dominated by pastoral farms.
- Park Gate – soils formed in aeolian silty drift which are deep stoneless soils variably affected by groundwater. These soils support horticulture, for example top fruit and hops, as well as cereals and grassland.
- Malling – soils formed in Cetaceous sand, loam and limestone which are well drained non-calcareous fine loamy soils over limestone at variable depths. Some deep well-drained course loamy soils and similar fine loamy over clayey soils. Some fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging. Occasional shallower calcareous soils over limestone. These soils form fertile land generally without waterlogging in the upper 70cm, used extensively for arable production (chiefly cereals with potatoes and some field vegetables.

5.3.5 The extent to which groundwater affects the Park Gate soils will depend on the depth to impermeable layers, their position in the landscape and the extent of artificial drainage provided. Where adequate drainage is provided these soils can support a wide range of uses with few restrictions on the grade of land the soils can support.

ALC Grades

5.3.6 The Provisional ALC mapping (at a scale of 1:250,000; available from www.magic.gov.uk) shows the land to be a mix of Grades 2 and 3, with some non-agricultural land also mapped associated with Lympne. This is shown in Figure 5.2. The provisional mapping suggests Grade 2 land is present across much of the Site, with lower grade land (Grade 3; not sub-divided into 3a and 3b) present at the western extent of the Site and in an area stretching northwards from Harringe Brooks Wood to Rabbits' Wood on Harringe Lane.

5.3.7 This mapping does not, however, distinguish between Sub-grades 3a and 3b. Some detailed mapping is available (see Figure 5.3). The eastern part of the Site has been mapped as predominantly Grade 2, with small areas of Sub-grades 3a and 3b. A small area around Newingreen has also been mapped as Grade 2.

5.3.8 Kent, including the Folkestone & Hythe District, has a higher proportion of Grade 1 and 2 land compared to the rest of England (Agricultural Land Classification (ALC) Statistics, undated; based on the digital 1:250,000 scale Provisional ALC maps as referenced above; Ref 5.12). In Kent there is a 20.5% cover of Grade 2 land, compared to an average for England of 14.2%. Grade 1 land cover in Kent is 9.0% compared to 2.7% for England. In FHDC the proportion of Grade 2 land is even higher at 32%, with 16.5% Grade 1 land.

5.3.9 These statistics also show that, compared to an average of 48.2% Grade 3 land in England, Kent has a slightly higher proportion (49.2%) and FHDC has a smaller proportion (26.9%).

Land Use

5.3.10 There are 18 farm and land-based rural units identified as being affected. The agricultural land is predominantly under arable production with some small parcels of land under pasture (for example along the East Stour River corridor). Field boundaries in arable areas have historically been removed creating large field units.

5.3.11 Small areas on field margins have been set aside, in some locations to support shooting operations. There is some diversification of land uses, for example a grass runway for powered hang gliders and a race track near Harringe Court in the western part of the Site.

5.3.12 Several land parcels are under Stewardship agreements, both Entry and Higher Level (see Figure 5.4; data from www.magic.gov.uk; Ref 5.8).

5.3.13 None of the land is reported to be under a woodland or forestry grant scheme (see Figure 5.5; data from www.magic.gov.uk; Ref 5.8).

Key Receptors and their Value

5.3.14 The key receptors are likely to be as follows:

- BMV land and the soils which support this;
- Farm businesses.

5.3.15 It is considered likely that the value of the agricultural land, given the presence of BMV land, is High. The agricultural businesses are considered overall to be receptors of Low value given the predominance of arable production within the Site.

Future Baseline

5.3.16 The land grade under the ALC system is unlikely to change over time.

5.3.17 The descriptions of the farm businesses affected is based on their current use and operation which may change in the future. However, currently no significant changes of use have been identified which would alter the baseline condition.

5.4 Design and Mitigation

5.4.1 A summary of the measures that have been incorporated into the design of the proposed development and that would protect the existing features of soil and agricultural interest are set out below.

Construction Approach and Mitigation of Construction Effects

5.4.2 The sustainable re-use of the soil resource would be undertaken in line with the Construction Code of Practice for the Sustainable Use of Soil on Construction Sites (Ref 5.6). This would be achieved by the development of a Soil Resources Plan (based on a detailed pre-construction soil survey) and a Soil Management Plan (SMP) to identify the soils present, proposed storage locations and handling methods and how the resource will be re-used. The SMP would form part of the CoCP measures which would be implemented include (but are not limited to):

- completion of a Soil Resources Survey and incorporate results into a SMP;

- link the SMP to the Site Waste Management Plan (SWMP);
- ensure soils are stripped and handled in the driest condition possible;
- confine vehicle movements to defined haul routes until all the soil resource has been stripped;
- protect stockpiles from erosion and tracking over; and
- ensure physical condition of the entire replaced soil profile is sufficient for the post-construction use.

5.4.3 A total of 49.2% of the Site (283.6ha) would be set aside as Green infrastructure (to include habitats, playing fields, amenity, parks, allotments, orchards and cemeteries). In addition, 22ha (3.8% of the site) will be retained in agricultural use. Implementation of appropriate soil handling and re-use measures would ensure that the soils used across the Site in these areas would be of the required characteristics and in the required condition to support a variety of specified activities. For example, surplus nutrient-poor soils (topsoil or subsoil) would be re-used in areas of habitat creation (to enable the development and sustainability of species-rich habitats) whilst surplus nutrient-rich soils would be prioritised for areas designated for food production or in areas of landscape planting. This will ensure that the retained soils can continue to provide a range of valuable ecosystem services.

5.4.4 All soils would be stored away from watercourses (or potential pathways to watercourses) and any potentially contaminated soil would be stored on an impermeable surface and covered to reduce leachate generation and potential migration to surface waters.

5.4.5 Industry standard measures would be put in place to control pollution, including from fuel or chemical stores, silt-laden runoff or dust.

5.4.6 Following the completion of construction activities all agricultural land taken temporarily would be fully reinstated as near as practically possible to its former condition. Topsoil would be prepared and seeded using an appropriate seed mix or returned immediately to cultivation depending on the time of year. This would include the restoration of any permanent surface water/ agricultural drains to their pre-construction condition.

5.4.7 A considerate construction approach would be used to minimise potential impacts on the remainder of the landholding and on neighbouring landholdings agricultural enterprises during the construction phase, including during different phases of the Development.

5.4.8 Toolbox talks would be used to inform all those working on the site of the requirements for soil handling and minimisation of disturbance to neighbouring agricultural activities.

5.4.9 All fencing around the proposed development would be sufficient to resist damage by livestock and will be regularly checked and maintained in a suitable condition. Any damage to boundary fencing would be repaired immediately.

5.4.10 Measures contained in relevant Defra and Environment Agency best practice guidance documents on the control and removal of invasive weed species would be implemented where appropriate.

5.4.11 Works would cease, and the Animal Health Regional Office would be advised, should animal bones be discovered which indicate a potential burial site.

5.4.12 All movement of plant and vehicles between fields would cease in the event of a disease outbreak and official Defra advice would be followed to minimise the biosecurity risk associated with the continuation of works.

5.4.13 The phasing of the development would take into account how each business operates, ensuring that the phasing does not, for example, lead to the severance of parts of an enterprise from the rest of the holding or lead to the undeveloped part of the enterprise becoming unviable for the period until it is brought into the development.

5.4.14 In relation to temporary and permanent land take requirements there will be liaison with landowners to understand and address their concerns. This would cover, for example, the loss of land, disruption, access restrictions and crop losses.

Scheme Design and Mitigation of Operational Effects

5.4.15 Effects on agriculture and soils occur during the construction phase and effects during operation will be minimal.

5.4.16 There is the potential for increased disturbance to agricultural operations, such as disturbance to livestock and fly tipping, on land adjacent to the proposed Development. The Development design would seek to ensure appropriate link up of footpaths and the appropriate design of access points to minimise the risk of areas being used for fly-tipping.

5.5 Assessment of Residual and Cumulative Effects

Introduction

5.5.1 The following sections outline the residual and cumulative effects once the mitigation measures described in Section 5.5 have been implemented.

Residual Effects from Construction

5.5.2 There would be a loss of land from primary agricultural production. The total agricultural land area affected is approximately 511ha, of which it is considered likely that in excess of 400ha comprises BMV land. Whilst 22ha would be retained in agricultural use the rest would be lost from primary agricultural production.

5.5.3 This is considered to be Major Adverse impact on a resource of High value, resulting in a **Major adverse** effect which would be considered to be **Significant**.

5.5.4 During construction, there would be impacts on the agricultural enterprises. Land would be lost to the businesses as each field was brought into the proposed development, reducing the area available for grazing or arable production. The measures outlined in Section 5.5 will minimise disruption to ongoing activities and minimise disturbance to remaining livestock. These should limit the likelihood of any of the enterprises becoming unviable. It is assumed that the phasing, and notice periods provided, will allow the enterprises to adapt or move such that the economic performance of the business remains unaffected, and as such it is considered that there would be no more than a short-term **Minor Adverse** effect on farm viability as they adapt through the changes required which is considered to be **Not Significant**.

Residual Effects from Operation

5.5.5 Effects on agriculture and soils occur during the construction phase and effects during operation will be minimal.

5.5.6 There is a residual risk that disturbance and fly-tipping could affect land holdings currently remote from urban areas. With the mitigation in place this is considered to be **Negligible** (i.e. short-term and not affecting business viability) and is therefore **Not Significant**.

Cumulative Effects

5.5.7 The following schemes are considered as being appropriate for inclusion in the assessment of cumulative effects, with reasons provided as shown in Table 5.7 below.

Table 5-7 Proposed Committed Developments for Inclusion in Cumulative Assessment

Appendix Map ID	Local Planning Authority	LPA Reference No.	Reason for inclusion in cumulative assessment
H	Folkestone & Hythe District Council	Y14/0873/SH	Development of greenfield site in current agricultural use (within approx. 10km of the proposed Development)
Q	Folkestone & Hythe District Council	Y15/0030/SH	Development of greenfield site in current agricultural use (within approx. 10km of the proposed Development)

PP23/24	Ashford	15/01586/AS & 02/00278/AS	Development of greenfield site in current agricultural use (within approx. 10km of the proposed Development)
PP14	Ashford	14/00906/AS	Development of greenfield site in current agricultural use (within approx. 10km of the proposed Development)
N/A	Folkestone & Hythe District Council	Otterpool Framework Masterplan Area	Additional 1,500 homes proposed in areas adjacent to the proposed Development boundary

5.5.8 As the impact of the proposed Development itself in relation to agricultural land is already **Major Adverse** significance and therefore significant, it is not considered that the schemes listed above would alter the assessment presented above.

5.6 Assessment Summary

5.6.1 **Error! Reference source not found.** provides assessment summary with respect to Agriculture and Soils and how they have been addressed

Table 5-8 Summary of assessment with respect to Agriculture and Soils

Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
Agricultural land	Approximately 511ha lost from primary agricultural production, of which a significant proportion will be BMV land	C	Best practice soil handling and approximately 50% of this land to be set aside for Green Infrastructure, retaining a range of valuable Ecosystem Services	Major Adverse - Significant
Agricultural businesses	Loss of land/disruption	C	Phasing to take into account how businesses operate. Individual discussions with landowners regarding compensation.	Not Significant
Agricultural businesses	Disturbance/fly-tipping to neighbouring land holdings	O	Appropriate detailed design	Not Significant

5.7 References

Reference	Title
Ref 5.1	British Society of Soil Science (2011). Professional Competency in Soil Science: Agricultural Land Classification of England and Wales
Ref 5.2	Department of Local Communities and Government (2018). The National Planning Policy Framework.
Ref 5.3	Defra (2009). A Strategy for England; Safeguarding Our Soils
Ref 5.4	Folkestone & Hythe District Council (FHDC) Local Plan Review (2006)
Ref 5.5	Folkstone & Hythe District Council Core Strategy Review (2018)
Ref 5.6	Folkestone & Hythe District Council Places and Policies Local Plan (Submission Draft, February 2018)
Ref 5.7	Defra (2009). Construction Code of Practice for the sustainable re-use of soils on construction sites.
Ref 5.8	www.magic.gov.uk – Geographic information about the natural environment.
Ref 5.9	DMRB Volume 11 'Environmental Assessment', Section 3, Part 6 'Land Use' and Part 11 'Geology and Soils'
Ref 5.10	Soil Survey of England and Wales (1983). Soil Map of England and Wales.
Ref 5.11	Fordham, S. J. and Green, R. D. (1980). Soil Survey Bulletin No. 9. Soils of Kent (published by Soil Survey of England and Wales, Harpenden).
Ref 5.12	MAFF (1983). Agricultural Land Classification of England and Wales. The Distribution of Grades.

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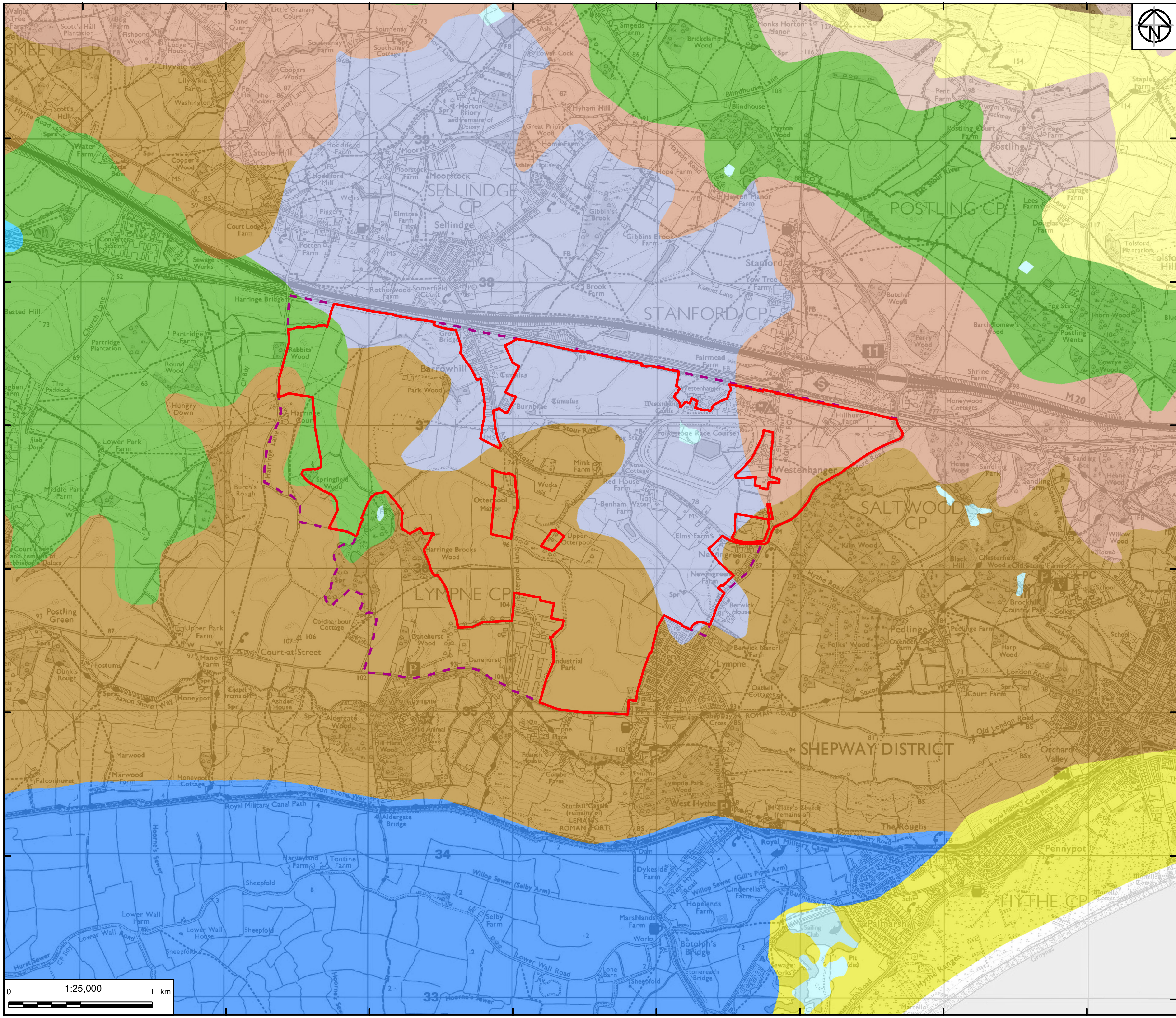

LEGEND

OUTLINE PLANNING APPLICATION BOUNDARY (OPA)

FRAMEWORK MASTERPLAN

FREELY DRAINING SLIGHTLY ACID BUT BASE-RICH SOILS

FREELY DRAINING SLIGHTLY ACID LOAMY SOILS

SLOWLY PERMEABLE SEASONALLY WET SLIGHTLY ACID BUT BASE-RICH LOAMY AND CLAYEY SOILS

LOAMY AND CLAYEY FLOODPLAIN SOILS WITH NATURALLY HIGH GROUNDWATER

LOAMY AND CLAYEY SOILS OF COASTAL FLATS WITH NATURALLY HIGH GROUNDWATER

LOAMY SOILS WITH NATURALLY HIGH GROUNDWATER

FREELY DRAINING LIME-RICH LOAMY SOILS

SHALLOW LIME-RICH SOILS OVER CHALK OR LIMESTONE

SAND DUNE SOILS

WATER

REV	Date	Description	Drawn	Check	Approv
1	23NOV18	FIRST ISSUE	MS	AH	BL

ARCADIS Design & Consultancy for natural and built assets
Arcadis House
34 York Way
London
N1 9AB

Folkestone & Hythe District Council

OTTERPOOL PARK

FIGURE 5.1
SOIL TYPES PRESENT

scale	original size	datum	grid
1:25,000	A3	Sx	BNG

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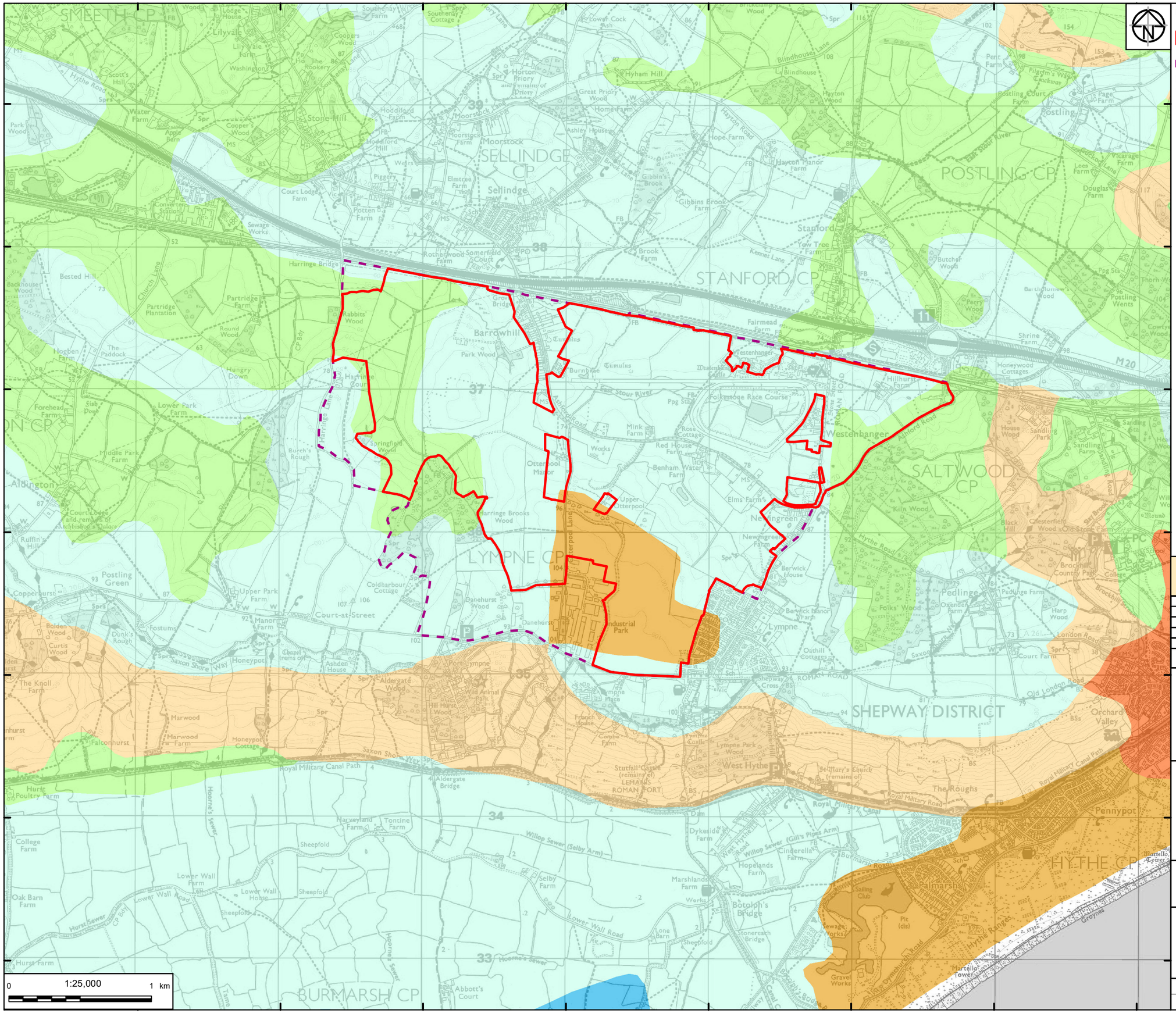

LEGEND

- OUTLINE PLANNING APPLICATION BOUNDARY (OPA)
- FRAMEWORK MASTERPLAN

PROVISIONAL AGRICULTURAL LAND CLASSIFICATION ALC

GRADE

- GRADE 1
- GRADE 2
- GRADE 3
- GRADE 4
- GRADE 5
- NON AGRICULTURAL
- URBAN

REV	Date	Description	Drawn	Check	Approv
1	23NOV18	FIRST ISSUE	MS	AH	BL

ARCADIS Design & Consultancy for natural and built assets
Arcadis House
34 York Way
London
N1 9AB

Folkestone & Hythe District Council

OTTERPOOL PARK

FIGURE 5.2
PROVISIONAL ALC MAPPING

scale	original size	datum	grid
1:25,000	A3	Sx	BNG

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LEGEND

OUTLINE PLANNING APPLICATION BOUNDARY (OPA)

FRAMEWORK MASTERPLAN

AGRICULTURAL LAND CLASSIFICATION (ALC) POST 1988 SURVEY

GRADE

- GRADE 1
- GRADE 2
- GRADE 3A
- GRADE 3B
- GRADE 4
- GRADE 5
- NOT SURVEYED
- OTHER

0 1:25,000 1 km

REV	Date	Description	Drawn	Check	Approv
1	23NOV18	FIRST ISSUE	MS	AH	BL

ARCADIS Design & Consultancy for natural and built assets

Arcadis House
34 York Way
London
N1 9AB

Folkestone & Hythe District Council

OTTERPOOL PARK

FIGURE 5.3
DETAILED ALC MAPPING

scale	original size	datum	grid
1:25,000	A3	Sx	BNG

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139 138 137 136 135 134 133

LEGEND

- OUTLINE PLANNING APPLICATION BOUNDARY (OPA)
- FRAMEWORK MASTERPLAN
- ENTRY LEVEL STEWARDSHIP
- ENTRY LEVEL PLUS HIGHER LEVEL STEWARDSHIP
- HIGHER LEVEL STEWARDSHIP
- ORGANIC ENTRY LEVEL STEWARDSHIP
- ORGANIC ENTRY LEVEL PLUS HIGHER LEVEL STEWARDSHIP

0 1:25,000 1 km

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1	23NOV18	FIRST ISSUE	MS	AH	BL

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34 York Way
London
N1 9AB

Folkestone & Hythe District Council

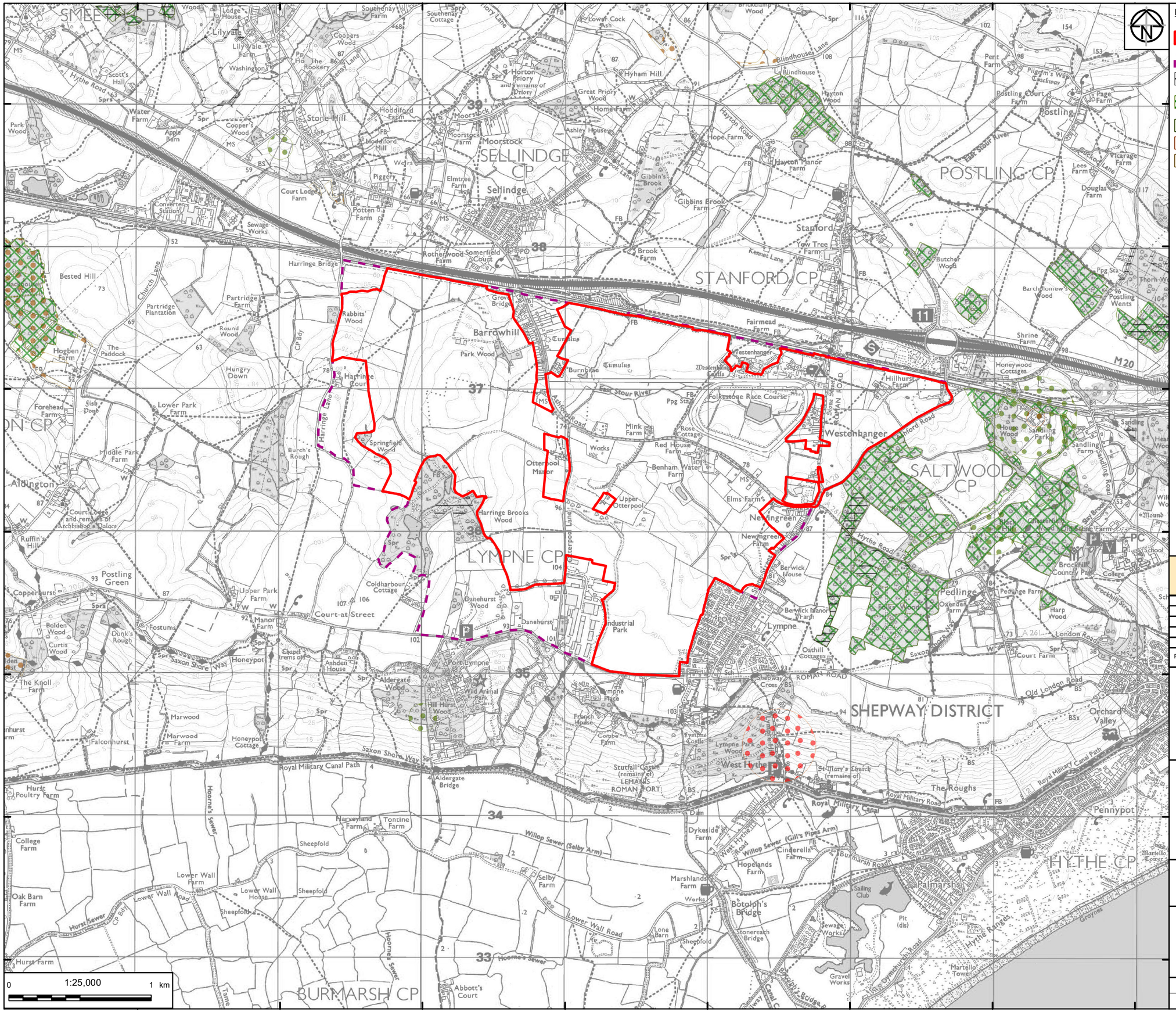
OTTERPOOL PARK

FIGURE 5.4
AREAS UNDER ENTRY LEVEL PLUS HIGHER LEVEL STEWARDSHIP

scale	original size	datum	grid
1:25,000	A3	Sx	BNG

608 609 610 611 612 613 614 615

139 138 137 136 135 134 133



LEGEND

- OUTLINE PLANNING APPLICATION BOUNDARY (OPA)
- FRAMEWORK MASTERPLAN
- FELLING LICENCE APPLICATIONS
- ENGLISH WOODLAND GRANT SCHEME
- WOODLAND GRANT SCHEME 1
- WOODLAND GRANT SCHEME 2
- WOODLAND GRANT SCHEME 3

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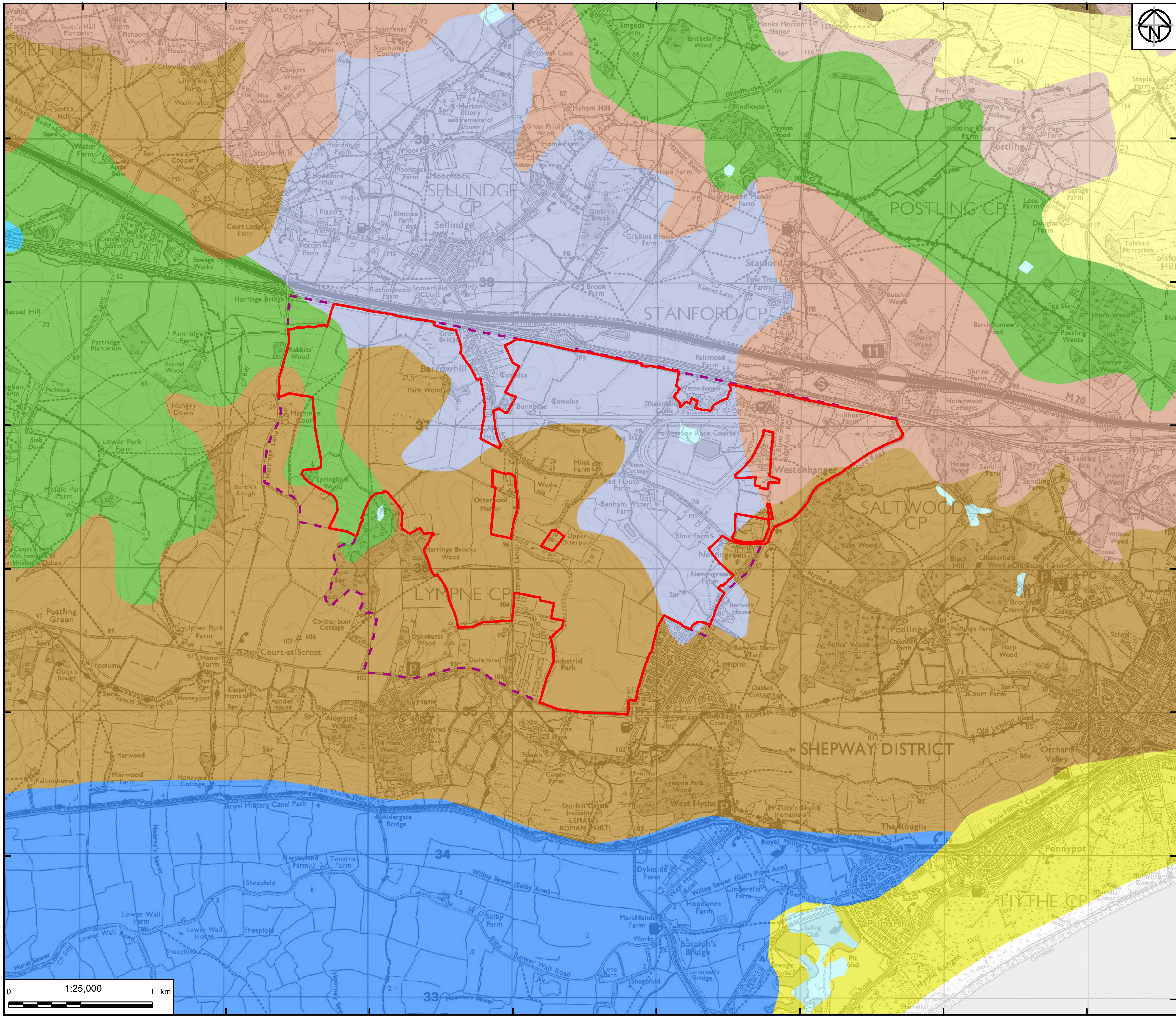
FIGURE 5.5
AREAS UNDER WOODLAND GRANT OR FORESTRY SCHEMES

scale	original size	datum	grid
1:25,000	A3	Sx	BNG



LEGEND

- OUTLINE PLANNING APPLICATION BOUNDARY (OPA)
- FRAMEWORK MASTERPLAN
- FREELY DRAINING SLIGHTLY ACID BUT BASE-RICH SOILS
- FREELY DRAINING SLIGHTLY ACID LOAMY SOILS
- SLOWLY PERMEABLE SEASONALLY WET SLIGHTLY ACID BUT BASE-RICH LOAMY AND CLAYEY SOILS
- LOAMY AND CLAYEY FLOODPLAIN SOILS WITH NATURALLY HIGH GROUNDWATER
- LOAMY AND CLAYEY SOILS OF COASTAL FLATS WITH NATURALLY HIGH GROUNDWATER
- LOAMY SOILS WITH NATURALLY HIGH GROUNDWATER
- FREELY DRAINING LIME-RICH LOAMY SOILS
- SHALLOW LIME-RICH SOILS OVER CHALK OR LIMESTONE
- SAND DUNE SOILS
- WATER

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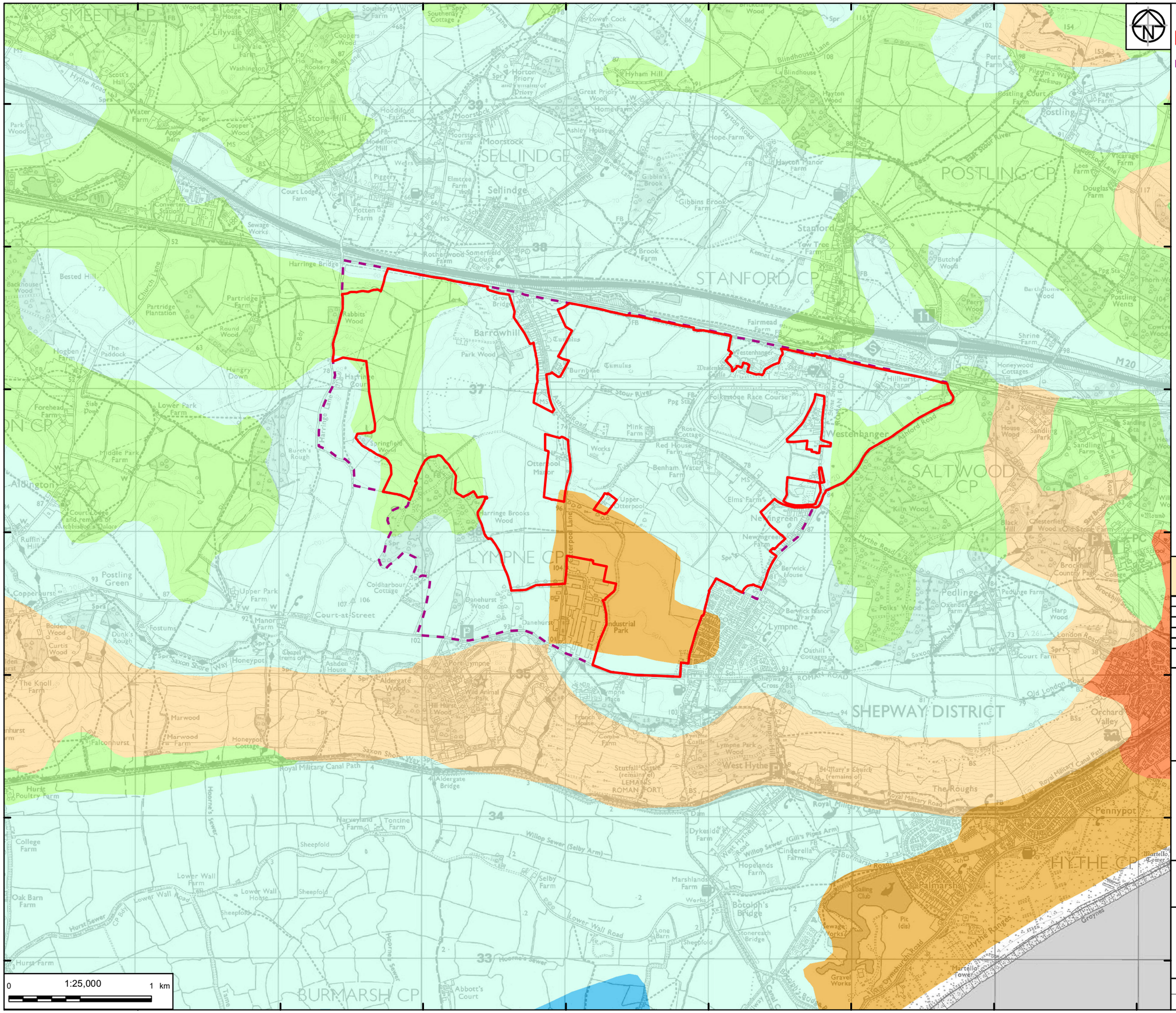
FIGURE 5.1
SOIL TYPES PRESENT

scale	original size	datum	grid
1:25,000	A3	Sx	BNG

608 609 610 611 612 613 614 615

139 138 137 136 135 134 133



LEGEND

- OUTLINE PLANNING APPLICATION BOUNDARY (OPA)
- FRAMEWORK MASTERPLAN

PROVISIONAL AGRICULTURAL LAND CLASSIFICATION ALC

GRADE

- GRADE 1
- GRADE 2
- GRADE 3
- GRADE 4
- GRADE 5
- NON AGRICULTURAL
- URBAN

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FIGURE 5.2
PROVISIONAL ALC MAPPING

scale	original size	datum	grid
1:25,000	A3	Sx	BNG

608 609 610 611 612 613 614 615

139 138 137 136 135 134 133

LEGEND

OUTLINE PLANNING APPLICATION BOUNDARY (OPA)

FRAMEWORK MASTERPLAN

AGRICULTURAL LAND CLASSIFICATION (ALC) POST 1988 SURVEY

GRADE

- GRADE 1
- GRADE 2
- GRADE 3A
- GRADE 3B
- GRADE 4
- GRADE 5
- NOT SURVEYED
- OTHER

0 1:25,000 1 km

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FIGURE 5.3
DETAILED ALC MAPPING

scale	original size	datum	grid
1:25,000	A3	Sx	BNG

608 609 610 611 612 613 614 615

139 138 137 136 135 134 133

LEGEND

- OUTLINE PLANNING APPLICATION BOUNDARY (OPA)
- FRAMEWORK MASTERPLAN
- ENTRY LEVEL STEWARDSHIP
- ENTRY LEVEL PLUS HIGHER LEVEL STEWARDSHIP
- HIGHER LEVEL STEWARDSHIP
- ORGANIC ENTRY LEVEL STEWARDSHIP
- ORGANIC ENTRY LEVEL PLUS HIGHER LEVEL STEWARDSHIP

0 1:25,000 1 km

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FIGURE 5.4
AREAS UNDER ENTRY LEVEL PLUS HIGHER LEVEL STEWARDSHIP

scale	original size	datum	grid
1:25,000	A3	Sx	BNG

608 609 610 611 612 613 614 615

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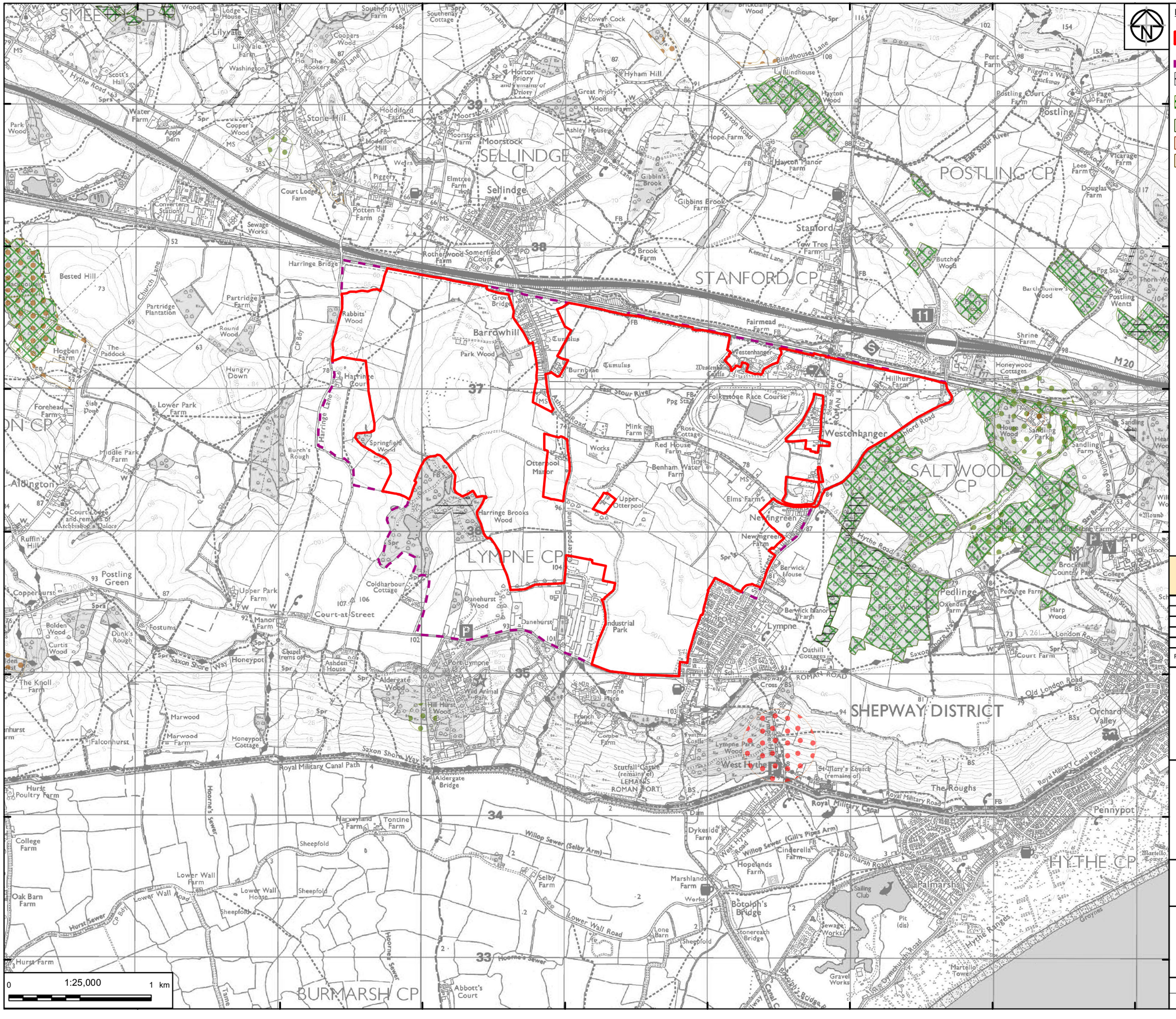

LEGEND

- OUTLINE PLANNING APPLICATION BOUNDARY (OPA)
- FRAMEWORK MASTERPLAN
- FELLING LICENCE APPLICATIONS
- ENGLISH WOODLAND GRANT SCHEME
- WOODLAND GRANT SCHEME 1
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FIGURE 5.5
AREAS UNDER WOODLAND GRANT OR FORESTRY SCHEMES

scale	original size	datum	grid
1:25,000	A3	Sx	BNG

6 Air Quality

6.1 Introduction

6.1.1 This Chapter of the ES reports the potential environmental impact of the construction and operation of the proposed Development with respect to air quality. The assessment incorporates relevant design and other mitigation measures that would be employed during construction of the proposed Development.

6.1.2 The Chapter outlines the methodology used to assess likely significant environmental effects, the baseline air quality conditions, the regulatory and planning policy framework, and proposes the mitigation measures that are assumed to be implemented in the assessment of residual air quality effects.

6.1.3 The site clearance and construction phase of the proposed development has the potential to result in temporary air quality impacts due to emissions of dust.

6.1.4 The operational phase of the proposed Development may also affect air quality due to:

- A change in vehicular emissions and pollutant concentrations resulting from changes to the flow, speed and composition of traffic on the road network.
- A change in road layout and alignment, leading to a change in vehicular emissions and/or a change in the distance between vehicular emissions and receptors.
- The introduction of new receptors on the Development site which may be exposed to poor air quality.

6.1.5 This Chapter should be read in conjunction with the supporting Appendices 6.1- 6.7. Appendix 6.1 contains Figures 6.1 to 6.7. Targeted references to the supporting material are made where appropriate in the text.

Relevant Aspects of the Proposed Development

Construction Phase

6.1.6 The construction phase associated with the Proposed Development encompasses the period between 2020 and 2044 (for the Outline Application) or 2046 (for the proposed Framework Masterplan). The duration and extent of the construction phase means there is the potential for significant dust emissions and long-term impacts from dust and construction vehicle emissions if left unmitigated.

6.1.7 Construction dust is typically emitted during the preparation of the land (for instance demolition, land clearance, and earth movement) and during construction. A large proportion of dust emissions are sourced to site plant and vehicles moving over temporary roads and open ground. These vehicles may then travel onto the local road network and deposit mud and dust onto the roads meaning that dust emissions can occur relatively far from site boundaries. The magnitude of dust impacts is dependent on the effectiveness of dust suppression and other mitigation measures which are applied.

6.1.8 Additionally the scale and duration of the build out of the Proposed Development means that there would be a number of additional journeys to and from the site through the increased use of construction vehicles which may impact on air quality in terms of exhaust emissions.

6.1.9 The proposed Development is due to be built over eight Development Zones in phases starting in 2020 with the final phase scheduled for completion in 2044. Additionally, a ninth Zone is expected to be developed by 2046 for the wider Framework Masterplan. The first on-site residential occupation is scheduled for 2022 (Zone 1B), therefore the site would be partially operational whilst the remaining Zones are built out. Therefore, there is the potential for receptors to be impacted on, within, and adjacent to the outline planning application boundary and Framework Masterplan boundaries both during operational and construction.

Operational Phase (impact on local air quality)

6.1.10 The construction of 8,500 residential units (and a further 1,500 in the proposed Framework Masterplan) and supporting employment and education infrastructure means that a significant number of additional vehicle trips would be generated as the Development is constructed and becomes occupied. The exhaust emissions associated with the additional vehicle trips generated have the potential to impact on local air quality. Both existing receptors (adjacent to the existing road network in the vicinity of the application site) and future (on site) receptors may be affected by the additional vehicle journeys.

6.1.11 It is anticipated that there would be no significant point source emissions such as on-site energy centre(s) or Combined Heat and Power (CHP) units therefore the operational assessment focusses on the impact of transport emissions on local air quality.

6.1.12 The proposed development also includes provision of a wastewater treatment plant, however there is currently insufficient detail in terms of design and input parameters to undertake an odour assessment. An odour assessment would need to be undertaken during the reserved matters stage to ensure that there are no unacceptable impacts as a result of odour from the operation of the plant. FHDC's environmental health team were consulted on this decision and had no objections.

6.1.13 The potential effects on carbon dioxide emissions as a result of increased heating/power demand were examined in the separate energy statement that is submitted in support of the Otterpool Park OPA.

6.2 Assessment Methodology

Legislation, Policy and Guidance

Legislation

6.2.1 The following pieces of legislation are relevant to the assessment:

- EU Framework Directive 96/62/EC: (Ref 6.1) implemented between 1996 and 1998 this Directive aims to protect human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants.
- Directive 2008/50/EC on ambient air quality and cleaner air for Europe: (Ref 6.2) This Directive defines objectives for ambient air quality designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole. Air quality impacts are considered in relation to Air Quality Strategy (AQS) objectives/EU limit values in paragraph 6.2.42.
-
- Part IV of the Environment Act (1995): (Ref 6.3) requires the government to produce a national Air Quality Strategy which contains standards, objectives and measures for improving quality. The ambient air quality standards and objectives relevant to air quality assessment are given statutory backing in England through the Air Quality Regulations (2000) Ref 6.4), the Air Quality (Amendment) Regulations (2002) (Ref 6.5) and the Air Quality Standards Regulations (2007) (Ref 6.6). The Air Quality Standards Regulations (2010) (Ref 6.7) came into force during 2011 and transposed the requirements of the European Union Directive 2008/50/EC.
- Environmental Protection Act (1990): (Ref 6.8) The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations 2010 and subsequent amendments, such as construction sites, are those provided in Section 79 of Part III of the Environmental Protection Act 1990. Potential impacts from construction dust are and the mitigation required to minimise impacts is discussed in section 6.4.

Policy

6.2.2 The following policy documents are of relevance to the assessment and are summarised in Table 6-1.

Table 6-1: Summary of Policy Documents relevant to the air quality assessment

Document	Policy/ Reference	Description in relation to air quality	Project Response
Air Quality Plan for tackling roadside nitrogen dioxide concentrations in South East (UK0031) (Ref 6.9)	Section 1.3 Zone Status	The Air Quality Plan (AQP) sets out the respective anticipated dates of compliance in 2023 and 2022 with the Air Quality Directive (2008/50/EC) in South East England when baseline measures to reduce NO_2 are considered and when additional measures detailed in the Air quality plan for nitrogen dioxide (NO2) in UK (2017) (Ref 6.10) are considered.	The assessment contains an appraisal of the compliance risk associated with the proposed development in 2022, 2029 and 2046. It is carried out in broad accordance with Highways England's IAN 175/13.
National Planning Policy Framework (NPPF, 2018) (Ref 6.11)	Paragraph 103 - Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes.	Consideration of sustainability in terms of transport choices serves to reduce congestion and emissions and improve air quality and public health.	A number of measures have been embedded in the design of the proposed development to minimise the number of trips generated in the operational phase and to minimise congestion. These are considered in paragraph 6.4.21.
	Paragraph 181 – Planning policies and decisions should sustain and contribute towards compliance with relevant limit values/objectives and take into account the presence of Air Quality Management Areas and Clean Air Zones, and cumulative impacts from individual sites in local areas.	The NPPF details the various significant considerations that should be made when making planning decisions and writing planning policy.	The assessment gives an indication of whether objectives will be exceeded as a result of the proposed development in section 6.5. The baseline review (section 6.3) undertaken for the assessment indicates that there are no Clean Air Zones or Air Quality Management Areas in the vicinity of the proposed development. Additionally, as a result of the scoping opinion, the impact of the development on an AQMA in Canterbury (outside of the traffic microsimulation area) has been subject to a sensitivity test presented in Appendix 6.7. An assessment of the compliance risk (with regards to Directive 2008/50/EC) associated with the operational phase of the proposed development is presented in section 6.5.
Folkestone & Hythe District Council Core Strategy Review (2019) (Ref 6.12)	Aim 2 (*Minimise local carbon emissions, maintain air quality, control pollutants and promote sustainable waste management*) of Strategic Need B '*The challenge to enhance management and maintenance of natural and historic assets*'	The aim states that local carbon emissions should be minimised, (good) air quality should be managed (particularly along A20 corridor) and maintained and pollutants should be controlled.	The impact on carbon emissions is presented in Chapter 8 (Climate Change) of the ES. The air quality assessment appraises whether the proposed development is likely to result in an unacceptable impact on existing air quality. The risk of impacts (if left unmitigated) has been evaluated in paragraph 6.4.9 to 6.4.19; and has prompted the recommended application of a number of construction phase mitigation measures (summarised in 6.4.20 and fully detailed in Appendix 6.3) which should be embedded into the CoCP to ensure that good air quality is maintained during construction. Impacts along M20 and A20 corridor have been appraised in section 6.5.
	Saved Policy SS7	Policy SS7 states a distance buffer should be implemented between the Garden Settlement and the M20/High Speed transport corridor for air quality and noise purposes. The Policy adds that this barrier should be created through planting and habitat creation.	Further information relating to this saved policy is presented in Chapter 4 (The site and the proposed development) and Chapter 7 (Biodiversity).
Shepway District Council Core Strategy Local Plan 2013 (Ref 6.13)	Strategic Need B of the Local Plan is 'The challenge to enhance the management and maintenance of the rich natural and historic assets in Shepway'; aim 2 of Strategic Need B is to 'Minimise local carbon emissions, maintain air quality, control	The aim states that local carbon emissions should be minimised, (good) air quality should be maintained and pollutants should be controlled.	The impact on carbon emissions is presented in Chapter 8 (Climate Change) of the ES. The air quality assessment appraises whether the proposed development is likely to result in an unacceptable impact on existing air quality. The risk of impacts (if left unmitigated) has been evaluated in paragraph 6.4.9 to 6.4.19; and has prompted the recommended application of a number of construction phase mitigation measures (summarised in 6.4.20 and fully

Document	Policy/ Reference	Description in relation to air quality	Project Response
	pollutants and promote sustainable waste management'.		detailed in Appendix 6.3) which should be embedded into the CoCP to ensure that good air quality is maintained during construction.
Shepway District Local Plan Review: Policies Applicable 2013 onwards (2013) Ref 6.14)	SD1, part h)	In 2013 FHDC reviewed the 2006 Local Plan in order to detail those policies of the 2006 Local Plan that were to be saved following the publication of the 2013 FHDC Local Plan. Relevant saved policies include Policy SD1 which discusses how all development proposals should take account the broad aim of sustainable development and details environmental criteria of how this might be achieved. Part h) of the environmental criteria states that air quality should be maintained.	The air quality assessment appraises whether the proposed development is likely to result in an unacceptable impact on existing air quality. The risk of impacts (if left unmitigated) has been evaluated in paragraph 6.4.9 to 6.4.19; and has prompted the recommended application of a number of construction phase mitigation measures (summarised in 6.4.20 and fully detailed in Appendix 6.3) which should be embedded into the CoCP to ensure that good air quality is maintained during construction.

Guidance

6.2.3 The following guidance documents are of relevance to the assessment and are discussed below:

- The National Planning Practice Guidance (2014) (Ref 6.15): The Government has revised and updated national planning practice guidance to support the NPPF in order to make it more accessible. The guidance includes advice relating to; planning and air quality, the role of Local Plans with regard to air quality, when air quality is likely to be relevant to a planning decision, what should be included within an air quality assessment and how impacts on air quality can be mitigated. The assessment follows the guidance which contains recommendations when undertaking an air quality assessment for the purpose of applying NPPF policy. The guidance encourages early communication with local planning and environmental health departments, which has been included in the proposed development assessment work undertaken to date.

6.2.4 For construction phase impacts the following guidance was used to inform the assessment:

- Holman et al (2014). IAQM Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London (Ref 6.16, hereafter referred to as the 'IAQM (2014) construction dust guidance'): The Institute of Air Quality Management (IAQM) construction dust guidance provides a mechanism for the assessor to consider both the magnitude of emissions and sensitivity of an area in order to define the level of risk of dust soiling and human health impacts during the construction phase. Defining the construction dust risk levels allows appropriate mitigation measures to be adopted and incorporated into a CoCP.

6.2.5 For the assessment of operational impacts the following guidance was followed:

- Moorcroft and Barrowcliffe. et al. (2017) Land-use Planning & Development Control: Planning for Air Quality. v1.2. Institute of Air Quality Management, London. (Ref 6.17). *(*Hereby referred to as the 'IAQM (2017) development control guidance'): The IAQM Land Use Planning and Development Control guidance is applicable for assessing the effect of changes in exposure of members of the public resulting from residential-led mixed-use developments such as the proposed Development/Framework Masterplan. It provided guidance on; how to decide whether an air quality assessment is required, how to undertake a suitable assessment of operational impacts and whether these are to be considered significant or not, and how to identify whether additional mitigation was required.
- Highways England Interim Advice Note (IAN) 170/12v3 (2012): (Ref 6.18) Application of the methodology detailed in IAN170/12v3 allows air quality assessments to take into account the impact of future alternative more pessimistic nitrogen dioxide projections. This therefore accounts for current uncertainty in vehicle emissions.
- Design Manual for Roads and Bridges (DMRB), Vol 11, Section 3, Part 1, Annex F: Assessment of Designated Sites: (Ref 6.19) Annex F of DMRB provides guidance on how to assess the impact of traffic emissions on ecologically-designated sites. It details which designated sites are at risk of impacts, how to model NO_x and N-deposition, and how to process the results.
- Highways England Interim Advice Note (IAN) 174/13 (2013): (Ref 6.20) This IAN has been used to supplement the approach to screening and assessing ecologically designated sites detailed in DMRB. It provides advice on the magnitude of change in NO_x which would prompt the user to calculate nitrogen deposition impacts on affected ecological receptors.
- Highways England Interim Advice Note (IAN) 175/13 (2013): (Ref 6.21) - Updated advice on risk assessment related to compliance with the EU Directive on ambient air quality and on the production of Scheme Air Quality Action Plans for users of DMRB Volume 11, Section 3, Part 1 Air Quality (HA207/07). This IAN provides a methodology for assessing the risk of non-compliance with the Air Quality Directive (2008/50/EC) associated with the operational phase of the proposed development.

Consultation and Scoping

Consultation

6.2.6 Consultation has been undertaken with FHDC from autumn 2016 during RIBA Stage 1 of the Development design. Table 6-2 provides a summary of Consultee issues raised with respect to air quality and how they have been addressed.

Table 6-2: Summary of Consultation undertaken with FHDC.

Consultee/Contact	Date	Issue raised	Outcome
FHDC (Wai Tse, Environmental Protection Officer, Environmental Health)	October 2016	Arcadis requested FHDC 2016 Annual Summary Report detailing baseline air quality data	Report supplied by FHDC.
	March 2017	Agreement on sought on proposed Arcadis monitoring locations	FHDC happy with method and location of Arcadis monitoring.
	March 2018	Arcadis requested FHDC 2017 Annual Summary Report detailing baseline air quality data	Report supplied by FHDC.
	September 2018	Arcadis sought feedback from FHDC on proposed assessment years, rationale for assessment, and aspects to be screened out	FHDC indicated agreement with proposals, stating proposed assessment and modelling years are considered a reasonable approach and added no further comments.

Scoping

6.2.7 A request for a Scoping Opinion was submitted to Folkestone & Hythe District Council (FHDC) in spring 2018 (ES Appendix 2.1). This included the proposed scope of the Air Quality assessment, outlined the work that had been undertaken to date, and also proposed additional work that would be undertaken for inclusion within the Environmental Statement (ES). A Scoping Opinion was issued by FHDC in June 2018 (ES Appendix 2.2). Table 6-3 provides a summary of consultee responses contained within the Scoping Opinion in relation to air quality, and the corresponding location in the ES where they are addressed.

Table 6-3: Summary of Scoping Opinion and further consultation

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
FHDC	Methodology proposed and assessment of significance of effects in relation to air quality considered acceptable.	Methodology detailed in section 6.2, significance of effects presented in section 6.5.
FHDC	Study area of 200m within affected roads considered acceptable. Need to detail full study area extent when it is known.	Definition of study area detailed in paragraphs 6.2.17 to 6.2.18

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
FHDC	Any land use which could give rise to significant odour effects requires an odour assessment.	Screened out of the assessment owing to a lack of design parameters and detail. Proposed to be assessed at reserved matters stage.
Canterbury City Council (CCC)	The development may generate significant vehicle movements which may impact on Air Quality Management Areas (AQMAs) located in Canterbury.	A sensitivity test has been carried out using available traffic data on two roads in Canterbury. Please refer to limitations section in paragraphs 6.2.104 to 6.2.108 and Appendix 6.7 for findings of sensitivity test.

6.2.8 Following the EIA scoping response from CCC, the extent of the transport modelling study area was extended to include routes between Otterpool Park and Canterbury. Kent County Council were consulted in June and July 2018 to determine the scope of modelling required. Following a detailed analysis of traffic flow increases on these routes, Kent County Council stated that the scope of modelling should include the Old Dover Road junctions with Nackington Road and St Lawrence Road. Full information is provided within the transport assessment. Available ATC data was used to derive AADT flows from peak hour flows. Due to the limited availability of ATC data at the time, AADT flows were calculated for Old Dover Road and Nackington Road only. However, the scoping exercise with Kent County Council determined that the effect of flow increases due to the Otterpool Park development on other links was not expected to be significant in capacity terms.

The Study Area

Construction Phase – Dust Impacts

6.2.9 The IAQM (2014) construction dust guidance requires that construction dust impacts are assessed up to 350m from the locations of demolition, construction and earthworks activities. The construction phase study area also covers within 50m from the route(s) used by construction vehicles on the public highway up to 500m from the main site entrance(s).

6.2.10 The construction dust study area therefore covers Lympne, Barrow Hill, Sellindge, Newingreen, Westenhanger and the southern edges of Sellindge and Stanford.

6.2.11 Exhaust emissions from construction vehicle flows are considered if the increase in flow is greater than 100 Annual Average Daily Trips (AADTs) on a road during the construction phase. Emissions from construction vehicles were assessed at those receptors comprising the operational air quality study area receptors. The construction vehicle flows were integrated into the 2022 and 2029 with proposed development operational traffic datasets. Further detail is presented in 6.2.32 onwards.

Operational Phase (Local Air Quality) Assessment Criteria

6.2.12 For the operational phase, the IAQM (2017) development control guidance does not explicitly specify the geographical extent within which impacts should be assessed. The Design Manual for Roads and Bridges (DMRB) states that all impacts within 200m of those roads which meet any of a set of traffic change criteria should be assessed. Impacts from traffic emissions beyond 200m of the emission source are generally accepted to be negligible.

6.2.13 The IAQM guidance details its own indicative criteria with respect to change as a result of a proposed Development that if met, highlight the need for an assessment, rather than necessarily defining the boundaries of a study area. The criteria relevant to the proposed Development are:

- A change in Light Duty Vehicle (LDV) flows of >100 AADT within or adjacent to an Air Quality Management Area (AQMA), or >500 AADT elsewhere.
- A change in Heavy Duty Vehicles (HDV) flows of >25 AADT within or adjacent to an AQMA, or >100 AADT elsewhere.
- Where a road is realigned by 5m or more and is within an AQMA.
- Where a junction is added or removed close to existing receptors.
- Where there is one or more substantial combustion processes where there is a risk of impacts at relevant receptors.

6.2.14 Should any of the above criteria be exceeded, then further assessment may be required. For the proposed Development, the magnitude of change in traffic flows define the extent of the study area. However, it should be noted that the guidance states that “the criteria provided are precautionary and should be treated as indicative; in some instances, it may be appropriate to amend them on the basis of professional judgement.” Therefore, the decision to proceed to further assessment should also be based on professional judgement rather than the criteria alone.

6.2.15 The traffic data was screened against the IAQM criteria and number of roads identified as affected. The air quality impacts associated with the proposed development were assessed across the entire geographical extent of the traffic microsimulation rather than assessing only those roads that met the IAQM criteria. This represents a conservative approach.

6.2.16 The assessment considered worst case sensitive receptor locations within 200m of those links which comprise the traffic microsimulation model and modelling predictions were compared against UK AQS objectives as appropriate.

Operational Phase Assessment Geographical Extent

6.2.17 The operational phase air quality assessment comprised the road network presented in Figure 6.1 and Figure 6.2 and includes the following areas:

- The M20/A20 between north east Ashford and Capel-le-Ferne.
- A20 Hythe Road
- The proposed development and surrounding roads
- Lympne
- Newingreen
- Westenhanger
- Hythe
- North Folkestone
- Sellindge

6.2.18 Additionally the received scoping opinion requested that the impact of the proposed development upon the Canterbury No.3 AQMA. The traffic dataset was extended to include the traffic flows without and with the proposed development, for Nackington Road and the Old Dover Road in eastern Canterbury which feeds into the AQMA. Further detail on the Canterbury sensitivity test is provided in Appendix 6.7.

Methodology for Establishing Baseline Conditions

6.2.19 The existing baseline comprises the existing air quality conditions in the area that is likely to be affected by the proposed Development. A review of the baseline has been undertaken to establish an understanding of existing air quality, to identify areas that are likely to be sensitive to changes in emissions as a result of the proposed Development and to inform air quality computer model verification. Baseline information on air quality has been collected from the following sources:

- Online map and aerial photograph resources (Including Google Maps, www.magic.gov.uk, and digital Ordnance Survey mapping).
- Defra UK Air website (http://uk-air.defra.gov.uk/)

- FHDC website (https://www.folkestone-hythe.gov.uk/home)
- Ashford Borough Council (ABC) website (https://www.ashford.gov.uk/)
- Kent Air website (http://www.kentair.org.uk)
- Arcadis Air Quality monitoring survey
- Air Pollution Information System (APIS, http://www.apis.ac.uk/)

6.2.20 The information acquired from the sources above is summarised in the following section 6.3.

Local authority monitoring data

6.2.21 Monitoring data collected by FHDC and ABC as part of their Local Air Quality Management (LAQM) duties and NO_2 diffusion tube data collected by field survey was obtained to inform the baseline and for the purposes of model verification. A summary of the 2017 bias adjusted results recorded by FHDC and ABC tubes within the operational phase study area is shown in Section 6.3. To ensure reliability and representativeness, only those diffusion tubes that met the following criteria were included in the model verification process;

- Monitors with greater than 75% data capture for 2017. Local Air Quality Management (Technical Guidance (16)) (Ref 6.22) states that data capture rates of 75% or less should be treated with extreme caution, particularly when comparing the data against annual average AQS Objectives.
- Monitors near roads that were within 50m of the operational air quality study area.
- Monitors with verified location coordinates.

6.2.22 The results from these sites are presented and discussed in section 6.3.

6.2.23 FHDC and ABC do not currently undertake monitoring for PM_{10} or $PM_{2.5}$. This suggests that concentrations of particulate matter in the vicinity of the application site are not sufficiently high enough to warrant concern.

Arcadis monitoring data

6.2.24 It was acknowledged that there was a lack of local authority air quality baseline monitoring in and around the proposed Development site, especially with consideration of the nearby M20 motorway. Consequently, following consultation with FHDC it was agreed that a six month air quality monitoring survey was to be undertaken centred around the application site in order to better inform baseline air quality. The monitoring survey was undertaken during the period between April and October of 2017. The diffusion tubes were supplied by Staffordshire Highways Laboratory.

6.2.25 The monitoring locations were selected as there were only five FHDC monitoring sites located along the roads within 5km of the application site which are likely to be affected by the proposed Development. The locations of the monitoring sites that were eventually utilised in the model verification process are presented in Figure 6.3.

6.2.26 Due to the inherent bias associated with passive NO_2 diffusion tubes, it was necessary to determine a bias adjustment factor which was applied to the raw diffusion tube results. Three diffusion tubes were co-located at the Maidstone Rural automatic monitor for the duration of the monitoring survey in accordance with the advice in LAQM.TG(16).

6.2.27 The results from the automatic monitor can be compared against those measured in the same location by the three diffusion tubes to derive a local bias adjustment factor. The local bias adjustment factor was found to be 0.71. The factor suggests that the diffusion tubes were systematically over-reading ambient concentrations of NO_2. The local factor was applied to the monitoring dataset in accordance with LAQM.(TG(16)) which recommends that a local factor is more representative for surveys less than nine months in duration as it captures the adjustment over a matched time period whereas using the national annual factor would not.

6.2.28 As the duration of the survey was not a full year in duration, the data needed to be annualised in order to be representative of 2017 annual mean concentrations. This was undertaken following the guidance detailed in box 7.9 of LAQM.(TG(16)); and the Annualisation factor was calculated to be 1.3. This factor was applied to the bias adjusted short-term monitored concentrations.

6.2.29 The bias-adjusted and annualised data was then deemed to be suitable for use in the model verification process.

Baseline Traffic data

6.2.30 The year 2017 was used for the purposes of characterising the baseline environment (i.e. identifying those areas which may be sensitive to change in air quality) and for the purposes of dispersion model verification, which compares observed 2017 air pollutant concentrations against modelled 2017 concentrations. Therefore 2017 estimates of traffic data based on localised ATC surveys were provided by Arcadis transport planning team for use in the air quality assessment.

6.2.31 The dispersion model verification approach is explained in further detail in ES Appendix 6.2.

Forecasting the Future Baseline

6.2.32 The following future baseline years (i.e. Base Case years) were assessed to in order to determine the impact of the Development (Development Case). A summary of the assessed future years is provided in Table 6-4. The subsequent paragraphs discuss the rationale for the three assessments in greater detail.

Table 6-4: Summary of Operational Phase Assessment Years and Rationale

Assessment Number	Assessment Future Year	Emissions Data Year	Residential Units completed	Rationale
1) First year of residential occupation	2022	2022	325	Worst case emission rates and background concentrations. Assessment will confirm whether site is suitable for residential occupation.
2) Peak construction year	2029	2029	2975	2029 is anticipated to be the busiest year in terms of residential units built and non-residential floor space created. The Development would be approximately 30% complete.
3) Completed masterplan (2046) modelled in air quality tools horizon year (2030)	2046	2030 (Horizon year)	10,000	Framework masterplan is expected to be fully built out in 2046. Current air quality tools have a horizon year of 2030, therefore assessment beyond 2030 is not possible. The assessment of 2046 development vehicle flows using 2030 air quality tools is likely to be worst case.

6.2.33 The first future baseline year which was assessed was 2022. This was considered as it represents the first year that there would be in residential occupation on the application site as the first 325 residential units constructed as part of Zone 1B would be occupied. Therefore the suitability of the future air quality needed to be assessed in order to demonstrate that new residents would not be subjected to unacceptably poor levels of air quality. Additionally, of all the assessment years 2022 is likely to be the assessment year associated with the highest per-vehicle emissions and background concentrations as these are both expected to decrease with time as the proportion of the vehicle fleet comprised of cleaner vehicles (such as Euro VI, hybrid and electric vehicles) increases. The 'with proposed Development' scenario included both the additional traffic flows from construction vehicles and the traffic generated by the partial operation of Zones 1A/1B.

6.2.34 The second future year which was assessed was 2029. This was considered as 2029 is anticipated to be the peak construction year as Zone 1A is completed and construction of Zone 3A begins. The year 2029 is scheduled to include the construction of 400 residential units, a hotel, 6000 m^2 of retail space, 3800m^2 of commercial space, a sports hall and additional health provision. Therefore it is anticipated that 2029 would give rise to the largest number of construction vehicle journeys to and from the site. Emissions

from these vehicles have the potential to affect receptors within the application site and those outside the application site boundary. The assessment also considers the operational impacts of traffic associated with the built-out development up to the end of 2029 as 2,975 units are expected to be built in total by this time.

6.2.35 The final future year which was assessed was 2046 which represents the anticipated date that the Framework Masterplan would be fully built out and occupied. The fully constructed Framework Masterplan (10,000 residential units by 2046) was assessed in place of the proposed Otterpool Park OPA Development (8500 residential units by 2044) as the Framework Masterplan would have a greater impact on air quality due to higher trip generation associated with the additional 1500 residences and supporting infrastructure. The rationale for this is that it can be confidently assumed that the completed Otterpool Park Development (2044) would not result in significant air quality effects if the larger Framework Masterplan (2046) itself does not result in significant air quality effects.

6.2.36 Whilst traffic forecasts (without and with the Framework Masterplan) are available for 2046, existing air quality tools issued by Defra have a horizon year of 2030 (this means that the tools do not contain any projections beyond 2030) Therefore the 2046 traffic data was processed through the tools as the year 2030 which is likely to be worst-case as emission rates and background concentrations are expected to decrease over time following government interventions such as the proposed ban on the sale of new petrol and diesel cars from 2040 (Ref 6.23)

6.2.37 Therefore the term 'proposed Development' as referenced in the assessment results are inclusive of the Framework Masterplan development quantum.

Future Baseline Traffic Data

6.2.38 Cumulative air quality effects may occur during the operational phase due to traffic associated with future committed developments in addition to traffic generated by the proposed Development.

6.2.39 The method for forecasting background flows for assessment was agreed with Kent County Council, Folkestone & Hythe District Council and Highways England. The method involved a combination of the use of TEMPro (v7.2), forecast development flow information available for specific committed developments and National Road Traffic Forecasts (for freight on the M20). TEMPro input information was updated to include the latest housing and employment forecasts for Folkestone & Hythe, Ashford and Canterbury.

6.2.40 It should be noted that growth rates derived from TEMPro for the with proposed development scenario assume that the housing and employment forecasts in each authority would be met in full. Growth rates derived from TEMPro for the without proposed development scenario assume that Folkestone & Hythe District Council would not meet their housing and employment forecasts if the Otterpool Park development did not go ahead as described in the Application. The with proposed development scenario therefore tests significantly greater household and job growth than the without proposed development scenario. This assumption is understood to be consistent with the emerging Folkstone & Hythe District Council Core Strategy. This means that the comparison between the with and the without proposed development traffic flows show an absolute worst case in terms of any increases in traffic flow, highway network delay and queuing associated with the operational phase of the proposed development. Traffic flow increases in the without proposed development scenario could be up to 15% greater on links in the Folkestone & Hythe area if the Folkestone & Hythe housing and employment forecasts are met without the Otterpool Park development.

Defining the Importance/Sensitivity of resource

Air Quality Criteria

6.2.41 For the pollutants of concern (NO_2, PM_{10} and $PM_{2.5}$), ambient air quality criteria for the protection of public health are set by the EU and transposed into UK law by The Air Quality Standards Regulations 2010 and those implementing the UK National Air Quality Strategy (AQS).

6.2.42 The criteria set out in the AQS include standards and objectives for local authorities to work towards achieving. These apply in locations with relevant public exposure which are defined in the Defra's technical guidance document LAQM.TG(16).

6.2.43 The standards set by the EU are legally binding Limit Values (LV) requiring national government compliance. Failure to achieve compliance (for a compliance agglomeration zone) can lead to infraction proceedings by the EU against the Member State (such as those launched by the European Commission against the British government mostly recently in May 2018).

6.2.44 Local air quality criteria relevant to the air quality assessment for the proposed Development are summarised in Table 6-5.

Table 6-5: Air Quality Objectives and EU Limit Values

Pollutant	Criteria	AQS Objective Compliance Date	EU Limit Value Compliance Date
NO_2	Hourly average concentration should not exceed 200 µg/m^3 more than 18 times a year	31 December 2005	1 January 2010
	Annual mean concentration should not exceed 40 µg/m^3	31 December 2005	1 January 2010
PM_{10}	24-hour mean concentration should not exceed 50 µg/m^3 more than 35 times a year	31 December 2004	1 January 2005
	Annual mean concentration should not exceed 40 µg/m^3	31 December 2004	1 January 2005
$PM_{2.5}$	Annual Mean concentrations should not exceed 25µg/m³	2020	1 January 2015

6.2.45 The objectives in the AQS column are referred to in the text as the AQS objectives.

6.2.46 Defra's LAQM TG.16 states that predicting exceedances of the 1-hour mean NO_2 AQS objective is not straightforward due to high annual variance and that dispersion models cannot predict short term concentrations as reliably as annual mean concentrations. Further to this, model verification for short term concentrations is likely to be challenging as a result of the aforementioned reasons

6.2.47 Measurements across the UK have shown that the 1-hour mean NO_2 AQS objective is unlikely to be exceeded unless the annual mean NO_2 concentration is greater than 60µg/m³. Therefore exceedances of 60µg/m³ as an annual mean NO_2 concentration are used as an indicator of potential exceedances of the 1-hour mean NO_2 objective.

6.2.48 Similarly, LAQM.TG(16) also provides a relationship between the annual mean PM_{10} concentration and the number of exceedances of the 24-hour objective: those areas where the annual mean concentration is greater than 32µg/m³ were demonstrated to be at risk of exceeding the 24-hour objective. Thus exceedances of 32µg/m³ as an annual mean PM_{10} concentration are used as an indicator of potential exceedances of the 24 hour mean PM_{10} objective.

Health Impacts

6.2.49 The health impacts associated with the modelled pollutants are summarised in Table 6-6.

Table 6-6: Health Impacts from NO_2, PM_{10} and $PM_{2.5}$

Pollutant	Main Health Impacts
NO_2	Studies have shown associations of NO_2 in outdoor air with adverse effects on health, including reduced life expectancy. It has been unclear whether these effects are caused by NO_2 itself or by other pollutants emitted by the same sources (such as traffic). Evidence associating NO_2 with health effects has strengthened substantially in recent years and it is now thought that, on the balance of probability, NO_2 itself is responsible for some of the health impact found to be associated with it in epidemiological studies. Short-term exposure to high concentrations may cause inflammation of respiratory airways. Long-term exposure may affect lung function and enhance responses to allergens in sensitised individuals. Asthmatics are particularly at risk according Committee On the Medical Effects of Air Pollution (COMEAP) (Ref 6.24).
PM_{10}	Particulate matter can affect human health. The available evidence as detailed by COMEAP (Ref 6.25) suggests that it is the fine components of PM_{10} that are formed by combustion, that are the main cause of the harmful effects of particulate matter. Particles cause the most serious health problems among those susceptible groups with pre-existing lung or heart disease and/or the elderly and children. There is evidence that short- and long-term exposure to particulate matter cause respiratory and cardiovascular illness and even death. It is likely that the most severe effects on health are caused by exposure to particles over long periods of time.
$PM_{2.5}$	Inhalation of particulate pollution can have adverse health impacts, and there is understood to be no safe threshold below which no adverse effects would be anticipated. The biggest impact of particulate air pollution on public health is understood to be from long-term exposure to $PM_{2.5}$, which increases the age-specific mortality risk, particularly from cardiovascular causes. Several plausible mechanisms for this effect on mortality have been proposed, although it is not yet clear which is the most important. Exposure to high concentrations of PM (e.g. during short-term pollution episodes) can also exacerbate lung and heart conditions, significantly affecting quality of life, and increase deaths and hospital admissions. Children, the elderly and those with predisposed respiratory and cardiovascular disease, are known to be more susceptible to the health impacts from air pollution. Potential mechanisms by which air pollution could cause cardiovascular effects are described in the COMEAP report (Ref 6.25) on particulate matter.

Receptors

6.2.50 The AQS Objectives only apply where members of the public are likely to be regularly present for the averaging time of the objective (i.e. where people will be exposed to pollutants). The annual mean objectives apply to all locations where members of the public might be regularly exposed; (see para 6.2.53). The 24-hour mean objective applies to all locations where the annual mean objective would apply, together with hotels and gardens of residential properties. The 1-hour mean objective also applies at these locations as well as at any outdoor location where a member of the public might reasonably be expected to stay for one hour or more, such as shopping streets, parks and sports grounds, as well as bus stations and railway stations that are not fully enclosed.

6.2.51 As per paras 6.2.46 and 6.2.48 exceedances of 60µg/m³ as an annual mean NO_2 concentration are used as an indicator of potential exceedances of the 1-hour mean NO_2 objective. Also exceedances of 32µg/m³ as an annual mean PM_{10} concentration are used as an indicator of potential exceedances of the 24-hour mean PM_{10} objective.

6.2.52 LAQM.TG(16) provides the following examples of where annual mean AQS objectives should apply:

- residential properties,
- schools,
- hospitals, and
- care homes.

6.2.53 These are all locations where sensitive subsets of the population could potentially be exposed to air pollutants over a long term period. Worst case locations were selected for assessment; which were those locations where existing pollution concentrations are highest and/or where the proposed Development is expected to have the largest impact. Increases in traffic associated with the proposed development have the potential to affect air quality at existing sensitive receptors near to the local road network in the vicinity of the application site and proposed sensitive receptors that would be constructed and occupied in the future as part of the proposed development (future receptors).

6.2.54 The proposed development areas detailed in the parameter plans (OPM(P)1017G) were used to select a number of future roadside receptor locations where air pollutant concentrations are expected to be the highest within the application site.

6.2.55 Figure 6.4 (presented in Appendix 6.1) shows the location of the modelled receptors in relation to the Proposed Development.

Ecological Receptors

6.2.56 Some air pollutants (such as NO_x) can have an effect on vegetation. Ambient concentrations of pollutants and deposition of particles can damage vegetation directly or affect plant health and productivity. Deposition of pollutants (such as nitrogen) to the ground and vegetation can affect the characteristics of the soil, which in turn can then affect plant health, productivity and species composition.

6.2.57 Geological sites such as the Otterpool Quarry SSSI are not sensitive to nitrogen deposition or dust impacts and therefore do not require assessment.

6.2.58 It is for these reasons why it is important to appraise potential air quality impacts on sensitive ecological receptors in the vicinity of the proposed Development. These receptors are typically those with the following ecological designation:

- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Ramsar sites

6.2.59 Given the above, a number of sensitive sites, including ancient woodland have been identified for assessment. These sites are summarised in Table 6-7 and displayed on Figure 6.5 (presented in Appendix 6.1).

Table 6-7: Ecological Sites considered for assessment

Site Name	Location in relation to site	Assessed for construction dust impacts?	Assessed for local air quality impacts in 2022, 2029 and 2046?
Hatch Park SSSI	3.6km to north west	No – outside of construction dust study area	Yes
Seabrook Stream SSSI	3.6km to east	No – outside of construction dust study area	Yes

Site Name	Location in relation to site	Assessed for construction dust impacts?	Assessed for local air quality impacts in 2022, 2029 and 2046?
Folkestone to Etchington SSSI/SAC	3.6km to north east	No – outside of construction dust study area	Yes
Lympne Escarpment SSSI	0.3km to the south	Yes	Yes
Gibbins Brook SSSI	0.6km to the north	Yes	No – site located greater than 200m from roads which meet the traffic change criteria detailed in paragraph 6.2.13
Otterpool Quarry SSSI	Within application site boundary	No – site classified for geological features which are not sensitive to nitrogen or dust.	
Folks Wood Ancient Woodland	0.3km to the east	Yes	Yes – on request of ecologist
Harringe Brooks Wood Ancient Woodland	Within FM boundary	Yes	Yes – on request of ecologist

Methodology for Assessing Impacts: Construction Dust

Impact Characterisation

6.2.60 There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined in the IAQM (2014) construction dust guidance. The methodology is summarised in the following paragraphs. However, detailed assessment steps are presented in Appendix 6.3 for reference.

6.2.61 In terms of defining a study area, if there are no ecological or human receptors within 350m of the site boundary or within 50m of the haul routes (up to 500m from the site entrance(s)) then the need for a construction dust assessment is to be screened out. However, if there are receptors within in these distances then an assessment should be carried out.

6.2.62 The most common air quality impacts that may arise during demolition and construction activities are;

- Dust Deposition (soiling), resulting in the soiling of surfaces and reduction in amenity; and
- Elevated PM_{10} concentrations, as a result of dust generating activities on site.

6.2.63 These impacts may affect human receptors, and dust soiling may affect ecological receptors. The IAQM guidance defines a human receptor as:

"any location where a person or property may experience the adverse effects of airborne dust or dust soiling, or exposure to PM_{10} over a time period relevant to the Air Quality Objectives. In terms of annoyance effects, this will most commonly relate to dwellings, but may also refer to other premises such as buildings housing cultural heritage collections (e.g. museums and galleries), vehicle showrooms, food manufacturers, electronics manufacturers, amenity areas and horticultural operations (e.g. salad or soft-fruit production)."

6.2.64 An ecological receptor is defined as:

"any sensitive habitat affected by dust soiling. This includes the direct impacts on vegetation or aquatic ecosystems of dust deposition, and the indirect impacts on fauna (e.g. on foraging habitats)'.

6.2.65 The risk of dust emissions from construction/demolition activities causing an adverse effect on human or ecological receptors depends on:

- The type of construction activities being undertaken, and the duration of these activities;
- The size of the construction site:
- The meteorological conditions (such as wind speed, wind direction and rainfall);
- The proximity of the receptors to the construction activities;
- The effectiveness of the dust deposition mitigation measures; and
- Receptor sensitivity to dust.

6.2.66 Construction activities on the proposed development application site are divided into four types to reflect their different potential impacts. These are demolition, earthworks, construction, and trackout (the vehicle-borne transfer of mud and debris onto the highway).

6.2.67 The potential for dust emissions was assessed for each activity that is likely to take place and considers three separate dust effects including annoyance due to dust soiling, harm to ecological receptors and the risk of health effects due to an increase in exposure to PM_{10}.

Assessing Significance

6.2.68 The IAQM construction dust guidance seeks to categorise the unmitigated risk of dust impacts on human health and amenity (rather than ascribe a significance of impacts) as a means of identifying proportional dust emissions mitigation required to ensure that residual impacts are no greater than negligible.

6.2.69 A higher dust impact risk rating means that more stringent mitigation measures are required in order to limit residual impacts to negligible.

Methodology for Assessing Impacts: Operational Impact on Local Air Quality

Dispersion Modelling

6.2.70 The ADMS (Atmospheric Dispersion Modelling System)-Roads model (version 4.1.1.0) has been used to predict the impacts associated with the operation and construction of the proposed Development in the assessment years of 2022, 2029 and 2046 (both for the without and with proposed development scenarios). The extent of the modelled roads is shown on Figures 6.1 and 6.2 (presented in Appendix 6.1) for the without and with proposed development scenarios. In addition to the roads, the tunnel portals at the Roundhill Tunnel on the A20 (located 9km east of the application site) have also been modelled using the ADMS-Roads Tunnel Portal feature. The following inputs and tools are required to undertake the air quality dispersion modelling:

- Traffic Data
- Emission Factors
- NO_x to NO_2 conversion
- Meteorological Data
- Future Assumptions based on observed trends

6.2.71 These inputs are described in detail in the following sections and in Appendix 6.4.

Traffic Data

6.2.72 As cited in paragraph 6.2.30, traffic data used in the assessment was generated in a traffic microsimulation model. The traffic data derived from the traffic model was converted into the format required for the air quality assessment. Traffic data were provided in 24hr Annual Average Daily Traffic (AADT) flow format (average 24 hour total traffic flows in a year) for the Base Year 2017, and the without and with proposed development scenarios for years 2022, 2029 and 2046. Heavy Duty Vehicle (HDV)

flows were also supplied for each of the modelled road links. Speeds were based on the speed limit for the modelled road.

6.2.73 As construction would be ongoing during 2022 and 2029, the additional expected construction vehicle flows have been integrated into the 2022 and 2029 with proposed development traffic datasets. This has been undertaken in conjunction with the information presented in the ES Chapter 17 - Waste and Resource Management.

Emission Factors

6.2.74 Emission factors were utilised from Defra's Emission Factor Toolkit (v8.0.1) based on vehicle fleet composition, traffic speeds and road type. The emissions rates were calculated using emissions projections for the 2017 base year and the 2022, 2029, and 2046 scenarios. The 2046 scenario utilised 2030 emissions as the projections embedded in the current set of Defra tools used in the assessment do not include any emission factors beyond 2030. As per vehicle emissions rates are expected to decrease over time, it is considered that the 2046 assessment will be highly conservative.

6.2.75 Within the air quality study area there are two tunnel portals which comprise the Roundhill Tunnel on the A20 approximately 9km east of the proposed Development. The dimensions of the tunnel were obtained and the tunnel portal option in ADMS-Roads was used to determine the concentrations around the portals. The road tunnel modelling option modifies the dispersion of pollutants from a road source to take into account dispersion from the tunnel portals.

NO_x to NO_2 conversion

6.2.76 In accordance with LAQM.TG(16) all modelled road-based concentrations of NO_x have been converted to annual mean NO_2 using the 'NO_x to NO_2' calculator (Version 6.1, released November 2017). The traffic mix and local authority used for the conversion from NO_x to NO_2 were selected depending on the modelled receptor and diffusion tube locations.

Meteorological Data

6.2.77 Meteorological data was acquired from Lydd, which is the nearest (at 17km to the south west) and therefore most representative meteorological monitoring station of the proposed Development site. The year of 2017 corresponds to the availability of traffic data and actual monitoring data, and allows for verification of modelled outputs with the meteorological data for 2017. The wind rose for Lydd is presented in Figure 6.6 (below). The predominant wind direction is from the south west and is associated with the highest wind speeds.

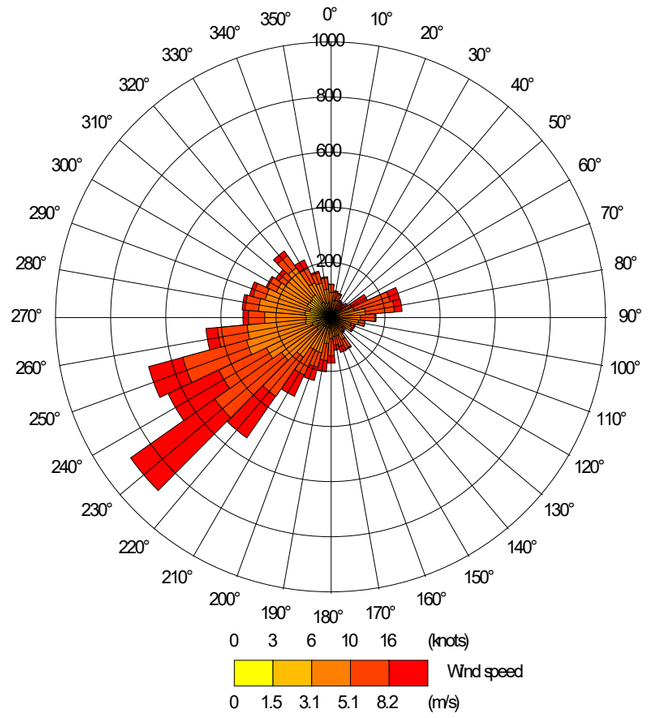


Figure 6.6: Wind Rose derived from meteorological data recorded at Lydd (2017)

Assumptions on future trends in emissions

6.2.78 A report produced on behalf of Defra '*Trend in* NO_x *and* NO_2 *emissions and ambient measurements in the UK'* (Ref 6.26) considers NO_2 monitoring data from across the UK and suggests that reductions in roadside concentrations have slowed in recent years. Therefore, it is now agreed amongst many air quality professionals that future predictions of NO_2 concentrations may be underestimated. Defra updated the associated air quality tools (new EFT, background maps, NO_x/ NO_2 converter) with the aim of closing this 'gap' between forecast and monitored NO_2 trends. However, it is considered that future NO_2 levels based on these updated tools are still likely to underestimate future concentrations. Highways England issued advice in IAN 170/12v3 (November 2013) which provides an approach which uplifts the modelled outputs derived from the Defra tools.

6.2.79 The Long Term Trends uplift adjustment was applied to the 2022 and 2029 scenarios.

6.2.80 For the year 2046 scenario the emissions and backgrounds were assumed to be 2030, which is the latest year available in the suite of tools issued by Defra. The year 2046 has therefore been modelled using 2030 tools which assumes that there is no decrease in per vehicle emission rates and pollutant background concentrations between 2030 and 2046 which is highly worst case.

6.2.81 The Long Term Trends NO_2 gap analysis is based on adjustment of the opening year modelled concentrations for both the without and the with proposed development scenarios using 2017 modelled base year NO_2 concentrations and an alternative projection factor (based on a projected base year, which is the base year traffic data with opening year emissions and backgrounds) as outlined in IAN 170/12v3. Highways England has provided a gap analysis tool (LTTE6v1.1) to assist with the calculation.

6.2.82 There is evidence showing that emissions from vehicles, particularly diesels, do not perform to their prescribed European standards (up to Euro 5/V) on the road. There is limited evidence on Euro 6/VI performance in the real world. The use of the approach advocated by IAN 170/12v3 in undertaking the air quality assessment for the proposed development ensures that the modelling is not overly optimistic.

6.2.83 Whilst there is an expectation that there will be a substantial improvement in real world emissions from Euro 6/VI vehicles compared to previous Euro Standards, the IAN makes allowance for potential under-estimates in the emissions from the latest Euro 6/VI vehicles currently entering the UK fleet.

Model Verification

6.2.84 The air quality monitoring data collected across the air quality study area, both by local authorities and by Arcadis, has been used within the air quality assessment to ensure the modelling predicted pollution concentrations reasonably across the study area. This is a process called model verification and has been undertaken in accordance with the principles outlined in LAQM.TG (16).

6.2.85 Concentrations of NO_2 are predicted at the monitoring locations for the Base Year (2017) and compared against the concentrations measured in those locations. Where the modelling under/over predicts pollutant concentrations, an adjustment factor is derived which is then applied to the future modelling predictions to correct for any systematic bias. This approach is intended to address any limitations in the ability of the model to predict the dispersion of pollutants away from the roads and limitations in the emission factors used.

6.2.86 The verification has shown that the model tends to under-predict concentrations of road NO_x, a common feature with roads models. Two geographical verification zones were delineated, each with its own factor to adjust the modelled output. The first zone was for those receptors in Ashford BC and the second zone was for receptors. The detailed verification procedure used in this assessment is presented in Appendix 6.2.

Impact Characterisation: Dispersion modelling for Operational Phase Local Air Quality

6.2.87 The impacts of the proposed development have been assessed in accordance with the IAQM (2017) development control guidance. The characterisation of air quality effects during operation is dependent upon the percentage change in concentration and the total concentration, relative to the relevant air quality objective(s) (presented in Table 6-5). The impact descriptors relative to the change metrics and air quality assessment levels are presented in Table 6-8. The table is used by rounding the change in percentage pollutant concentration to a whole number, making it clear which category the impact falls within.

Table 6-8: IAQM Impact Descriptors for Individual Receptors (Table 6.3 of IAQM (2017) Land-Use Planning & Development Control: Planning for Air Quality)

Long Term Average Concentration at Receptor in Assessment Year	% Change in Concentration Relative to annual Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 - 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 - 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 - 109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

6.2.88 The relevant Air Quality Assessment Level (AQAL) is 40 µg/m^3 as an annual mean for both NO_2 and PM_{10} as this reflects the current annual mean AQS objectives for each pollutant.

6.2.89 It is expected that the long term average concentration for most of the receptors in the respective future baseline years would be less than 75% (30 µg/m^3) of the AQAL.

6.2.90 When assessing the suitability of air quality for the introduction of new receptors, the IAQM guidance suggests that impacts are best described in relation to 'whether or not an air quality objective will not be met, or is at risk of not being met.' Therefore those on-site receptors which will occupy the new development will be considered in this context. This assessment considers a potential exceedance of any AQS objective at a future receptor within the application site as 'significant', unless provision is made to reduce exposure.

6.2.91 Impacts at existing receptors alongside the local road network which would be affected by the proposed Development will be described as detailed in Table 6-8.

Assessing significance

6.2.92 The IAQM notes that the impact descriptors in Table 6-8 are for individual receptors only and the overall significance of effect should be determined using professional judgement, taking into the degree of impact and factors such as:

- The existing and future air quality in the absence of the development
- The extent of current and future populations exposure to the impact;
- and the influence and validity of any assumptions adopted when undertaking the prediction of impacts.

6.2.93 The IAQM guidance notes that an individual property exposed to a moderately adverse impact might not be considered a significant effect, but many hundreds of properties exposed to a slight adverse impact could be. This indicates that the IAQM guidance avoids the use of prescriptive approaches and places an emphasis on professional judgement.

Assessing risk of non-compliance with the Air Quality Directive (2008/50/EC) during the Operational Phase

6.2.94 Defra assesses and reports to the European Commission on the status of air quality in the UK, by reference to the Limit Values for each pollutant, in accordance with EU Directive (2008/50/EC). For the purposes of Defra assessment and reporting, the UK is divided in to 43 zones and agglomerations (hereafter referred to as zones). The main pollutant of concern with respect to compliance is NO_2 as there are widespread exceedances of the NO_2 annual mean Limit Value in the UK.

6.2.95 The assessment of compliance with the Directive is undertaken using both monitoring (Defra AURN Network) and modelling from Defra's Pollution Climate Mapping (PCM) model. To determine the study area for the compliance risk assessment, the study area for the local air quality assessment is compared with the PCM model network as modelled by Defra. The Defra PCM modelling is at a much larger scale than the proposed development modelling given that roads are modelled nationally within it. The modelling undertaken for the proposed development is much more locally focused and, as such, is verified at a local level rather than a national level. Consequently, there are differences in the results. However, as the Defra PCM modelling is used to inform compliance, it has to be used in this chapter as the basis to determine whether the proposed development is a risk to compliance.

6.2.96 Defra utilises the PCM model to report for the purposes of compliance with the EU Directive 2008/50/EC. The most recent iteration of the PCM model has been used in this chapter. The current PCM Modelled data provides concentrations for all years between 2017-2030.

6.2.97 The impact of the proposed development (i.e. the change in concentrations at receptors) on compliance is undertaken in accordance with Highways England IAN 175/13, whereby the concentrations in the Defra PCM model for each of the operational phase assessment years (2022, 2029 and 2046 (as 2030)) of the proposed development are used to determine which roads exceed the EU Limit Value.

6.2.98 A zone can only become compliant when locations throughout the zone meet the relevant EU Limit Value. IAN 175/13, however, considers the impact of a scheme on the individual links in the PCM model within the zone. IAN 175/13 guides the user to provide the answers to three key questions:

- Would the development result in a compliant zone becoming non-compliant
- Would it delay Defra's data for achieving compliance

- Would it result in an overall increase in NO_2 concentration on PCM links that exceed?

6.2.99 The answers to these questions provide an indication as to whether the proposed development represents a risk to the UK's compliance with the Directive. If the answer to these questions is no, then it can be concluded that the proposed development represents a low risk to the UK's reported compliance with the Directive.

6.2.100 If a development is assessed as having a high risk of non-compliance (i.e. if the answers to the questions above is yes), the IAN provides guidance on the production of an Scheme Air Quality Action Plan containing actions designed to further mitigate impacts and so reduce the risk of the scheme impacting on compliance.

6.2.101 Defra updated the UK air quality action plans during 2017. The proposed development and air quality study area resides within the South East Agglomeration Zone (UK0031). Defra's assessment for the zone indicates that the annual limit value for NO_2 is likely to be achieved by 2023 through the introduction of measures included in the baseline. However combined with measures detailed in the 2017 UK Plan for tackling roadside nitrogen dioxide concentrations, it is expected that the zone would be compliant by 2022.

6.2.102 The outcome of the assessment of whether the proposed development presents a risk to the South East Agglomeration Zone achieving compliance with the EU Limit Values within the reported timescales has also been used in this chapter to inform the evaluation of whether the proposed development's impacts are considered to be significant.

Methodology for Assessing Impacts: Impact of operational phase on ecologically designated sites

6.2.103 Annual mean NO_x concentrations have been predicted at designated sites within 200m of the modelled road network. These sites have been considered as a series of receptors (spaced at 10m intervals) extending into the site from the closest point between the designated site and the nearest affected road (out to a distance of 200m from the road). These ecological receptor transects are shown in Figure 6.4 (Appendix 6.1).

6.2.104 Additionally, a 500m by 500m grid made up of 400 receptor points (spaced at 30m intervals) has been used to assess concentrations around the A20 tunnel portal running through the Folkestone to Etchinghill SSSI and SAC.

6.2.105 The changes in air quality at ecological sites are also considered in the Biodiversity Chapter.

6.2.106 The assessment of changes in NO_x concentrations in designated sites has included two stages (following DMRB methodology):

- Identification of designated sites within 200 m of the modelled road network, which have designated features sensitive to air pollutants.
- Calculation of annual mean NO_x concentrations at the designated sites with and without the proposed Development.

6.2.107 The advice of Highways England IAN 174/13 (2013) has been followed, which requires that where NO_x concentrations exceed the annual objective, and Project associated changes in NO_x are greater than 0.4µg/m^3, then nutrient nitrogen deposition should also be calculated and used to determine the overall significance of the Project impact.

6.2.108 When assessing the impact of a specific road on local nitrogen deposition, only the road contribution to dry deposition requires consideration as wet deposition occurs over much greater distances. The assessment of nitrogen deposition includes the following key stages (following the DMRB methodology):

- Calculation of annual mean NO_2 concentrations at the designated site receptor with and without the Project;
- Estimating dry deposition of NO_2 at the designated site receptor with and without the Project (1 µg m-3 of NO_2 = 0.1 kg N ha-1 yr-1);
- Obtaining total average nitrogen deposition from the Air Pollution Information System (APIS) for the 5km by 5km grid square(s) corresponding with the designated site receptor;
- Averaging Defra background NO_2 concentrations across the corresponding APIS 5km2 grid square(s);
- Determining the road contribution to NO_2 dry deposition by subtracting the 5km2 average Defra background from the receptor dry deposition result; and
- Adding the road contribution to nitrogen deposition to the APIS average total nitrogen deposition and comparing with the relevant critical load.

6.2.109 It should be noted that in line with the advice of IAQM's (2016) position statement on the *Use of a Criterion for the Determination of an Insignificant Effect of Air Quality Impacts on Sensitive Habitats* (Ref 6.26) where Project related changes in nitrogen deposition are expected to be less than 1% of the critical load, then impacts are expected to be non-significant.

Limitations and Assumptions

Assumptions

6.2.110 A number of notable assumptions have been made in the operational phase assessment. These are summarised below:

- The operational phase assessments assume that all of the assessed on-site future receptor locations are fully built out in each of the with proposed development scenarios. This allows the operational phase traffic impact associated with each of the assessment years to be evaluated across the application site.
- Each Base Case traffic scenario assumes a future baseline environment without the proposed development. For instance in 2046, the 'without Development' scenario assumes that no part of the application site is represented in the traffic data, even though in reality most of the site would be operational. This approach means that the predicted increases in traffic and air pollution will be worst case as the future baseline concentrations will be lower.
- As discussed in paragraphs 6.2.35 and 6.2.36, 2030 emission rates and background concentrations have been used to carry out the 2046 operational phase assessment as current air quality tools issued by Defra have a horizon year of 2030. Therefore the 2046 assessment is considered to be worst case as emissions rates and background concentrations are likely to decrease between 2030 and 2046 due to government policy and the integration of greater numbers of cleaner vehicles (in terms of lower emissions) into the traffic fleet.
- The construction dust assessment assumes that all proposed construction activities may take place on the application site boundary. This is a conservative approach that has been adopted to ensure that potential impacts at receptors within 350m of the application site boundary have been considered. It is assumed that exhaust emissions from plant will be minimised with the application of the mitigation measures detailed in Appendix 6.3.

Limitations

Wastewater Treatment Works

6.2.111 There is currently insufficient detail in terms of design and input parameters to undertake an odour assessment. An odour assessment would need to be undertaken during the reserved matters stage to ensure that there are no unacceptable impacts as a result of odour from the operation of the plant. FHDC's environmental health team were consulted on this decision and had no objections.

Operational Impact of proposed development on Canterbury AQMA No.3

6.2.112 The scoping opinion received from FHDC indicated that they acknowledged CCC's request for the assessment of the impact of the proposed development on the Canterbury No.3 AQMA to be considered as part of the wider air quality assessment.

6.2.113 The traffic microsimulation did not extend out to Canterbury and the only data available within CCC's jurisdiction was for two roads (Nackington Road and Old Dover Road west of Nackington Road) which were included in the Arcadis transport planning team's scope. Without and with proposed development flows were provided for these links in each of 2022, 2029 and 2046.

6.2.114 It was decided that the modelling of the impact of the proposed development on those receptors nearest to Old Dover Road would represent the best available means of estimating the impact of the development on the Canterbury No.3 AQMA as Old Dover Road flows into the AQMA.

6.2.115 Changes in traffic flows on Old Dover Road in 2022 and 2029 were minimal (<100 AADT); these years were therefore not assessed. In 2046, an increase of 260 vehicles per day was predicted. As detailed in the previous paragraph Old Dover Road flows into the Canterbury No.3 AQMA via the Riding Gate roundabout where traffic disperses across the A28 Upper Bridge Street, Watling Street and A28 Rhodaus Town, therefore it would be expected the increase in vehicle flow from the proposed development on these roads would be smaller than on Old Dover Road. Therefore the assessment only considered receptors located along Old Dover Road as the other roads which reside within the AQMA will have a negligible impact.

6.2.116 A note summarising the approach, assessment methodology and results is presented in Appendix 6.7. The findings are also summarised as part of the appraisal of operational phase impacts on local air quality for 2046 in paragraph 6.5.59.

6.3 Baseline

Existing Baseline

Folkestone & Hythe District Council Air Quality

6.3.1 As required by the Environment Act (1995), FHDC has undertaken a Review and Assessment of air quality within its area of jurisdiction. This process has indicated that concentrations of all pollutants considered within the Air Quality Strategy are below the relevant AQS objectives and as such, no AQMAs have been declared within the local authority's area to date.

6.3.2 FHDC undertakes monitoring of nitrogen dioxide (NO_2) concentrations using passive diffusion tubes at 13 locations across its district. A review of the FHDC 2018 Annual Summary Report (ASR) (Ref 6.28) indicated that diffusion tube monitoring was carried out at 13 locations during 2017. The monitored annual mean NO_2 concentrations are shown in Table 6-9.

Table 6-9: Folkestone & Hythe DC Annual Mean NO_2 Concentrations 2013-2017

Monitoring Site	Type	National Grid Reference (X,Y)	Annual Mean NO_2 Concentrations ($\mu g/m^3$)				
			2013	2014	2015	2016	2017
DT1: Cheriton Place, Folkestone	Roadside	622584, 135820	21.4	23.8	20.0	21.5	23.5
DT2: Cheriton Road, Folkestone	Roadside	622400, 136100	26.4	22.5	23.3	28.6	27.9
DT3: Coldharbour House, B2067, Lympne	Background	609964, 135279	17.7	13.3	13.7	14.9	16.5
DT4: Stone Street, Stanford North	Urban Background	612995, 138525	17.5	17.8	17.4	19.6	19.9
DT5: Blackbull Road, Folkestone	Roadside	622734, 136769	31.0	31.0	28.6	30.4	30.2
DT6: Martello Cottages, Hythe	Roadside	614547, 133993	25.8	27.7	24.3	25.1	23.2
DT7: Wear Bay Road, Folkstone	Roadside	622396, 136976	19.3	18.3	18.8	20.7	22.5
DT8: Ashford Road, Newingreen	Roadside	612694, 136190	20.2	21.3	20.2	22.7	21.4
DT9: Cherry Garden Avenue, Folkstone	Roadside	621248, 137352	27.4	29.3	25.8	28.7	29.5
DT10: Martinfield Cottage, Lydd Road, Romney	Roadside	604011, 124948	19.2	16.9	15.3	18.8	16.2
DT11: Swann Way, Hawkinge	Roadside	621437, 139594	20.6	21.7	17.7	17.4	22.5
DT12: Horn Street, Hythe	Kerbside	618860, 135899	20.8	22.0	19.5	20.0	19.2
DT13: Kennett Lane, Stanford	Rural	612481, 137978	NA	NA	NA	14.0	18.5

6.3.3 Table 6-9 shows that the 2017 FHDC NO_2 concentrations range from 16.2 to 30 $\mu g/m^3$, with the majority falling between 19 and 23 $\mu g/m^3$. This shows that the NO_2 concentrations are well below the annual mean AQS objective of 40 $\mu g/m^3$. Between 2013-2017 the monitored results show that there was no real upward or downward trend and that concentrations have remained stable. The largest change was recorded at DT10 where NO_2 concentrations decreased by 3 $\mu g/m^3$ over the five years.

6.3.4 A number of the FHDC sites were used in the model verification process provided they met the criteria stipulated in 6.2.21.

Ashford Borough Council Air Quality

6.3.5 ABC has undertaken a Review and Assessment of air quality within its area of jurisdiction. This process has indicated that concentrations of all pollutants considered within the Air Quality Strategy are below the relevant AQS objectives and as such, no Air Quality Management Areas (AQMAs) have been declared within the local authority's area to date.

6.3.6 A review of the ABC 2018 Annual Summary Report (ASR) (Ref 6.29) indicated that diffusion tube monitoring of nitrogen dioxide (NO_2) concentrations using passive diffusion tubes was carried out at 21 locations across its borough. The monitored annual mean NO_2 concentrations are shown in Table 6-10.

Table 6-10: Ashford BC Annual Mean NO_2 Concentrations 2013-2017

Monitoring Site	Type	National Grid Reference (X,Y)	Annual Mean NO_2 Concentrations ($\mu g/m^3$)				
			2013	2014	2015	2016	2017
AS14	Roadside	601460,143509	27.3	22.8	22.2	23.8	21.8
AS15/16/17	Motorway	603393,142073	32.5	37.1	32.6	32.8	36.4
AS18/19/20	Suburban	601321,143568	31.7	29.3	26.5	27.4	27.9
AS24	Roadside	600778,142910	22.3	21.1	20.5	22.0	21.5

Monitoring Site	Type	National Grid Reference (X,Y)	Annual Mean NO_2 Concentrations ($\mu g/m^3$)				
			2013	2014	2015	2016	2017
AS27	Roadside	600794,142320	33.0	29.4	18.2	20.8	18.6
AS31	Roadside	601828,141461	14.6	-	20.7	22.3	24.3
AS32	Roadside	600973,143027	17.4	-	21.1	25.2	25.0
AS33	Urban	599826,143084	-	-	21.2	21.8	21.7
AS34	Urban Background	599458,142968	-	-	17.2	17.4	17.8
AS35	Urban	599513,142110	-	-	20.1	20.8	22.2
AS36	Urban	600023,141445	-	-	18.3	18.6	19.0
AS37	Urban	600488,141277	-	-	26.8	25.7	26.5
AS38	Urban	600701,143168	-	-	20.5	21.4	21.4
AS39	Urban	601736,145328	-	-	16.4	17.4	17.3
AS40	Urban	603229,142795	-	-	19.7	18.9	19.1
AS41	Suburban	603160,141971	-	-	21.5	21.6	20.7
AS42	Urban	601020,142434	-	-	21.3	21.1	20.6
AS43	Urban	600665,142703	-	-	20.9	22.1	22.1
AS44	Urban Background	603800,141792	-	-	-	21.6	24.1
AS45	Urban Background	604207,141387	-	-	-	-	25.6
AS46	Motorway	603311,142192	-	-	-	-	32.0

6.3.7 Table 6-10 demonstrates that the 2017 ABC NO_2 concentrations range from 17.3 to 36.4 $\mu g/m^3$. The majority of sites are below 30 $\mu g/m^3$. This shows that the NO_2 concentrations are well below the annual mean AQS objective of 40 $\mu g/m^3$. Between 2015 and 2017 the monitored results show that there was a slight increase in NO_2 concentrations at 13 of the 21 sites, with the remainder showing a decrease or remaining relatively stable.

Arcadis Air Quality Monitoring

6.3.8 As discussed in paragraph 6.2.24, a six month air quality monitoring survey was undertaken by Arcadis in the vicinity of the application site in order to better inform baseline air quality. In April 2017, 16 NO_2 diffusion tubes were deployed in the vicinity of the application site.

6.3.9 As per the monitoring recommendations in LAQM TG16, bias adjustment and annualisation were carried out on the monitored data. A locally-derived bias adjustment factor was adopted as there was less than nine months of data. The local bias adjusted factor was derived using three diffusion tubes co-located at the Maidstone Rural automatic monitor. The bias adjustment factor was calculated to be 0.71, suggesting that the diffusion tubes were over-reading NO_2 concentrations. The factor was then applied to the raw monitored results.

6.3.10 The data was then annualised as per best practice detailed in LAQM (TG 16). The final bias adjusted and annualised results are shown in Table 6-11.

Table 6-11: Bias Adjusted and Annualised Results of the Arcadis Diffusion Tube Monitoring (2017)

Site ID	X	Y	Data Capture for Six Months (%)	2017 annualised and bias adjusted annual mean NO_2 concentration ($\mu g/m^3$)
O1	613638	136970	100	24.7
O2	612805	136835	100	14.2
O3	612680	136185	100	24.1
O4	612475	135827	100	15.0
O5	610636	137872	33	22.2
O6	611833	134980	100	14.2
O7	612239	135341	83	19.5
O8	611282	136670	83	25.4
O9	610701	137674	83	29.4
O10	609421	137755	83	11.7
O11	610794	137453	100	24.9
O12	610931	136834	100	16.7
O13	610978	135614	100	17.7
O14	612068	135514	100	11.6
O15	612887	137513	67	28.1
O16	609262	136590	100	10.6

6.3.11 Table 6-11 demonstrates that annual mean NO_2 concentrations were well below the annual mean AQS objective of 40 $\mu g/m^3$ indicating a reasonably good level of existing air quality in the vicinity of the application site.

Defra Background Maps

6.3.12 Predictions of total pollutant concentrations include contributions from local emissions sources (such as roads, chimney-stacks, etc.) and local background concentrations. In many situations, the background contribution may represent a significant or dominant proportion of these concentrations. Background concentrations for regulated pollutants are expected to decline in future years as a result of government and EU policies/legislation to reduce pollution emissions.

6.3.13 In order to establish a prediction of total concentrations of pollutants, road source contributions are combined with a background concentration.

6.3.14 Defra Technical Guidance LAQM.TG(16) recommends the use of empirically-derived national background estimates available from the Defra website, which provide estimated background pollutant concentrations for each 1km x 1km grid square in the UK.

6.3.15 The application site and air quality study area are located across a number of grid squares. Data for the grid squares that cover the application site were downloaded from the Defra website for the purposes of the assessment. The unadjusted background concentration predictions for each grid square during 2017 are presented in Table 6-12.

Table 6-12: Unadjusted Defra Modelled Background Concentrations for 2017

Grid Square (X,Y)	2017 Predicted Background Concentration (µg/m^3)		
	NO_2	PM_{10}	$PM_{2.5}$
611500, 137500	11.7	16.1	10.4
612500, 137500	12.0	15.3	9.98
611500, 136500	8.82	13.3	8.88
612500, 136500	9.25	13.9	9.24

6.3.16 Table 6-12 indicates that background NO_2, PM_{10} and $PM_{2.5}$ concentrations are low across the application site when considered in the context of the respective AQS objectives.

6.3.17 It is acknowledged that Defra background maps of NO_2/NO_x are often overly optimistic as they generally assume a greater decrease in pollutant concentrations over time than is actually the case when compared to monitoring data. To establish whether there was a systematic under-prediction, the 2017 NO_2 results at two rural background monitors (Arcadis site O16 and FHDC site DT13) were compared to Defra background mapped value for the same grid square they reside in. These monitors were chosen as they were located in locations away from road pollution sources and are therefore representative background concentrations within the grid square that they are located.

Table 6-13: Comparison of Monitored Concentrations and Unadjusted Modelled Defra Background Concentration Estimates

Monitor ID & relevant NGR grid square	2017 Predicted NO_2 Concentration (µg/m^3)		
	Monitored	Defra Modelled	Factor
O16 (609500, 136500)	10.6	7.6	1.39
DT13 (612500, 137500)	18.5	12.0	1.54

6.3.18 With reference to Table 6-13, when compared to monitors in rural background locations it was found that the Defra maps appeared to under predict NO_2 concentrations by a factor of 1.47. Therefore the concentrations in the background NO_x/NO_2 maps were uplifted by 1.47.

6.3.19 As the background NO_x, $PM_{2.5}$, and PM_{10} maps provide data for the individual pollutant sectors (e.g. motorway, trunk A-roads, primary A-roads, minor roads and industry), the components relating to in-grid square road traffic were removed for those road types being explicitly modelled. This was done to avoid double counting of road emissions. The NO_x contribution of the in-grid road sectors were removed from the uplifted total NO_x background concentrations. The adjusted total NO_x background concentration was then converted to NO_2 for use in the assessment. This was undertaken using the NO_2 Adjustment for NO_x Sector Removal tool (v6, November 2017). This calculator was used to adjust the 2017, 2022, 2029 and 2030 background concentrations. Defra tools were configured to 2030 for the purposes of the 2046 modelled scenario as the horizon year in the tools is 2030.

Ecological Sites

6.3.20 Elevated NO_x concentrations and nitrogen (N) deposition can adversely affect ecosystems. DMRB guidance recommends that the following designated nature conservation sites are considered: Special Areas of Conservation (SACs); Special Protected Areas (SPAs); Special Sites of Special Scientific Interest (SSSI) and Ramsar sites. Ancient woodland sites (specified in consultation with the project Ecologist) have also been considered in this assessment. Critical loads for the deposition of nitrogen, which represent the exposure below which there should be no significant harmful effects on sensitive elements of the ecosystem (according to current knowledge), have been established for specific habitats. Table 6-14 shows ecological sites within the assessment study area together with their critical loads for nitrogen deposition. Baseline rates of nitrogen deposition have also been obtained from APIS. Existing rates of nitrogen deposition currently exceed minimum critical loads in the majority of the ecological sites. It should be noted that no information on critical loads is available from APIS for ancient woodland sites.

Table 6-14: Summary of Baseline Information at Ecologically Designated Receptors

Ecological Site	Site Designation	Most Nitrogen Sensitive Feature	N Critical Load (kg N ha^{-1} yr^{-1})	Average N Deposition (kg N ha^{-1} yr^{-1}) 2013-2015	Average N Deposition Forecast (kg N ha^{-1} yr^{-1}) 2017
Hatch Park	SSSI	Acid grassland	10-15	17.6	16.6
Seabrook Stream	SSSI	Acid grassland	8-15	14	13.2
Lympne Escarpment	SSSI	Broad-leaved, mixed and yew woodland	15-20	21.3	20.0
Folkestone to Etchinghill Escarpment	SAC	Semi-natural dry grasslands and scrubland facies on calcareous substrates	15-25	16.5	15.5
Folkestone to Etchinghill Escarpment	SSSI	Broad-leaved, mixed and yew woodland	10-20	28.3	26.6

Future Baseline

Defra Background Maps

6.3.21 NO_2/NO_x data for the grid squares that cover the application site were uplifted using the factor as described in paragraphs 6.3.17 and 6.3.18. The uplifted and sector removed on-site background concentrations for each of the future baseline years and each of the assessed pollutants are presented in Table 6-15.

Table 6-15: Adjusted and Sector-Removed Defra Modelled Background Concentrations for 2022, 2029 and 2046 (2030)

Grid Square (X,Y)	Year	Predicted Background Concentration (µg/m³)		
		NO_2	PM_{10}	$PM_{2.5}$
611500, 137500	2022	10.1	15.6	9.94
612500, 137500		10.3	14.8	9.57
611500, 136500		10.0	12.9	8.53
612500, 136500		10.2	13.5	8.88
611500, 137500	2029	8.44	15.4	9.74
612500, 137500		8.67	14.6	9.36
611500, 136500		8.47	12.6	8.32
612500, 136500		8.70	13.3	8.68
611500, 137500	2046 (2030 backgrounds used)	8.30	15.4	9.71
612500, 137500		8.52	14.6	9.34
611500, 136500		8.33	12.6	8.30
612500, 136500		8.56	13.2	8.65

6.3.22 Table 6-15 demonstrates that background pollutant concentrations used in the assessment are low across the site in each of the assessment years.

Ecological Sites

6.3.23 The baseline nitrogen deposition rates from APIS have been forecasted into future years following DMRB guidance, which involves reducing deposition rates by 2% per year. The future baseline nitrogen deposition rates for each of the designated sites are shown in Table 6-16 below. With the exception of Folkestone to Etchinghill Escarpment SSSI, baseline rates of nitrogen deposition are expected to be below the minimum critical load in all ecological sites by the time the proposed development is fully operational (2046).

Table 6-16: Summary of Future Baseline Information at Ecologically Designated Receptors

Ecological Site	Site Designation	N Critical Load (kg N ha^{-1} yr^{-1})	Average N Deposition Forecast (kg N ha^{-1} yr^{-1}) 2022	Average N Deposition Forecast (kg N ha^{-1} yr^{-1}) 2029	Average N Deposition Forecast (kg N ha^{-1} yr^{-1}) 2046
Hatch Park	SSSI	10-15	15.0	13.0	9.2
Seabrook Stream	SSSI	8-15	11.9	10.3	7.3
Lympne Escarpment	SSSI	15-20	18.1	15.7	11.2
Folkestone to Etchinghill Escarpment	SAC	15-25	14.0	12.2	8.6
Folkestone to Etchinghill Escarpment	SSSI	10-20	24.1	20.9	14.8

6.4 Design and Mitigation

Introduction

6.4.1 Construction vehicle exhaust emissions have been considered as part of the 2022 and 2029 operational phase local air quality assessments as construction would be ongoing as the first phases of the proposed development are built out and occupied. Impacts from construction vehicle exhaust emissions are therefore considered as part of the operational phase local air quality assessments for 2022 and 2029.

6.4.2 The proposed construction period associated with the build out of the proposed Development and Framework Masterplan is expected to take place over approximately 26 years (2020-2046), therefore any construction activities need to be adequately controlled and monitored to ensure that fugitive dust emissions are effectively mitigated.

6.4.3 Construction phase impacts are anticipated (if unmitigated) from dust emitted by construction activities and vehicle movements. The potential risk of dust impacts on human health, amenity (dust soiling) and ecological receptors has been assessed in accordance with IAQM's (2014) Construction Dust guidance as per the summary in paras 6.2.61 to 6.2.70 and in full in Appendix 6.3.

6.4.4 The undertaking of activities such as demolition, excavation, ground works, construction and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicle movements both on-site and on the local road network also have the potential to result in the re-suspension of dust from highway surfaces.

6.4.5 The potential for impacts at sensitive locations depends significantly on local meteorology during the undertaking of dust generating activities, with the most significant effects likely to occur during dry and windy conditions.

6.4.6 In accordance with IAQM guidance, the following sections assess the magnitude of potential dust emissions and the sensitivity of area for the likely construction activities (demolition, earthworks, construction and trackout). From this the likely level of risk is then assessed, followed by the recommended mitigation.

Construction Approach and Mitigation of Construction Effects

6.4.7 The desk-study undertaken to inform the baseline identified there are a number of sensitive receptors (e.g. residential properties) within 350m of the application site boundary. It should be noted that the potential for impacts depends significantly on the distance between the dust generating activity and receptor location. Risk was predicted based on a worst-case scenario of works being undertaken at the site boundary closest to each sensitive area. Therefore, actual unmitigated risk is likely to be lower than that predicted during the majority of the construction phase.

6.4.8 The Otterpool Quarry SSSI lies within the site boundary although it is assumed not to be dust sensitive as its citation from Natural England relates to geological features rather than any flora or fauna based features. The Lympne Escarpment SSSI lies approximately 240m south of the Framework Masterplan boundary and has been considered as a relevant ecological receptor. Additionally Folks Wood and Harringe Brooks Wood have been considered as relevant low-sensitivity ecological receptors as they are ancient woodlands that dust deposition could potentially affect but do not have any ecological designation.

Dust Emissions Magnitude

6.4.9 **Demolition:** There are over 80 buildings expected to be demolished within the site boundary as part of the site enabling works. The Waste and Resource Management section of the ES states that the total volume of demolished buildings is likely to be greater than 50,000 m^3. Therefore in accordance with IAQM guidance, the magnitude of potential dust emissions from demolition is classified as large.

6.4.10 **Earthworks:** The total site area is over 10,000m2 therefore in accordance with IAQM guidance the magnitude for potential dust emissions from earthworks is classified as large.

6.4.11 **Construction:** The total building/infrastructure volume to be constructed is over 100,000 m^3 with the potential use of dusty materials. It is also likely that concrete batching may be required on site. Therefore in accordance with IAQM guidance, the magnitude of potential dust emissions from construction is classified as large.

6.4.12 **Trackout:** The maximum number of additional construction Heavy Duty Vehicle (HDV) movements per day is estimated to be over 50 as an AADT. Therefore in accordance with IAQM guidance, the magnitude of potential dust emissions from trackout is classified as large.

Table 6-17: Construction Phase Dust Emissions Magnitude

Activity	Dust Emission magnitude
Demolition	Large
Earthworks	Large
Construction	Large
Trackout	Large

Sensitivity of Area

6.4.13 Based on the criteria outlined in IAQM guidance, the sensitivity of area for dust soiling impacts is expected to be high as there a large number (>100) of existing receptors which fall within the application site boundary (such as those in Newingreen and Barrow Hill, Sellindge).

6.4.14 The sensitivity of area for human health is dependent on the number of existing receptors, the distance of receptors from the site boundary and the existing background concentrations of PM_{10}.
The highest on-site background concentration for PM_{10} was obtained from the Defra website and identified as being 16.1 µg/m^3 for 2017 (as per Table 6-12). Therefore, in accordance with the criteria outlined in the IAQM guidance, the sensitivity of area to human health impacts is medium as there are more than 100 receptors within 20m of the Framework Masterplan site boundary and the background concentration is <24 µg/m^3.

6.4.15 The sensitivity of the existing area to ecological impacts was deemed to be low owing to the distance of relevant ecological receptors.

6.4.16 The sensitivity of the existing environment to the specific construction dust impacts is summarised in Table 6-18.

Table 6-18: Existing Sensitivty of Area to Pontential Construction Dust Impacts

Potential effect	Sensitivity of the surrounding area			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium	High	High	High
Human health	Low	Medium	Medium	Medium
Ecological	Low	Low	Low	Low

Unmitigated Risk of Dust Effects

6.4.17 The risk of effects in the absence of environmental measures was then defined based upon the interaction between the magnitude of emission and the highest level of area sensitivity for each construction activity. The risk of dust effects was determined, as presented in Table 6-19.

Table 6-19: Summary of Risk of Unmitigated Construction Phase Dust Impacts

Potential Effect	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	High Risk	High Risk	High Risk	High Risk
Human health	Medium Risk	Medium Risk	Medium Risk	Medium Risk
Ecological	Medium Risk	Low Risk	Low Risk	Low Risk

6.4.18 As indicated in Table 6-19, the potential risk of dust soiling is high for demolition, earthworks, construction and trackout activities. The potential risk of human health impacts is medium for each activity. The potential risk of dust impacts to ecological sites is medium for demolition and low for earthworks, construction and trackout activities. The assessment has therefore indicated that the maximum risk of dust effects is high.

6.4.19 Therefore those mitigation measures mitigation measures detailed in the IAQM construction dust guidance commensurate with a high risk site should be adopted as part of the outline CoCP..

Mitigation of Construction Phase Effects

6.4.20 The IAQM Guidance on the assessment of dust from demolition and construction provides potential mitigation measures to reduce impacts as a result of fugitive dust emissions during the construction phase. **These have been adapted for the proposed development based on the risk of dust effects in Table 6-19 and are detailed in full in Appendix 6.3**. The proposed mitigation measures are summarised below:

- Site Management (logging of incidents/complaints)
- Monitoring (site inspections, soiling checks, compliance with Dust Management plan, etc)
- Preparing and Maintaining the site (locate dust causing activities away from receptors, barriers, cleaning, enclosed specific operations with high potential for dust production, cover stockpiles, etc)
- Operating vehicle/machinery and sustainable travel (comply with NRMM standards, no idling, use mains electricity, travel plan etc)
- Operations (employ dust suppression, use enclosed chutes, minimise drop heights, etc)
- Demolition measures (damp down, avoid explosive blasting, soft strip interiors before demolition, etc)
- Earthworks measures (revegetate promptly, use hessian mulches and cover with topsoil, etc)
- Construction measures (avoid scabbling, keep aggregates damp, ensure fine powder materials are delivered enclosed and stored in silos, ensure bags are sealed after use)
- Trackout measures (wash access and local roads, avid dry sweeping of large areas, ensure vehicle-borne materials are covered, install hard surface haul routes, wheel washing, etc)

Scheme Design and Mitigation of Operational Effects

6.4.21 The Scheme design incorporates a number of measures that have served to reduce the operational impact of the proposed development to those predicted in section 6.5. These are mainly measures that serve to reduce the number of vehicle trips generated or that encourage the use of low emission vehicles.

- Minimising reliance upon motor vehicle use;
- Promoting alternative transport options;
- Inclusion of integrated cycle paths into surrounding environments;
- Inclusion of pedestrian walkways into surrounding environments;
- Inclusion of electric charging points;
- Implementation of a Travel Plan; and
- Integration of public transport provisions.

6.4.22 It should be noted that additional operational mitigation above and beyond that embedded in the design is not required to offset the effects detailed in section 6.5 owing to the predicted negligible operational impact for all assessment years.

6.5 Assessment of Residual and Cumulative Effects

Residual Effects from Construction

6.5.1 With adoption of the mitigation measures summarised in paragraph 6.4.20 (detailed in full in Appendix 6.3), residual construction phase dust impacts should be no worse than negligible.

Introduction (Residual Effects from Operation on Local Air Quality)

6.5.2 This section summarises the expected impacts from the increase in road traffic associated with the operation of the proposed development in 2022, 2029 and 2046. The rationale for each of these assessment years was presented and discussed in paragraphs 6.2.32 to 6.2.36.

6.5.3 It should be noted that construction vehicle movements have been integrated into the 2022 and 2029 with proposed development traffic outputs that were used to calculate the changes in air pollutant concentrations.

6.5.4 All modelled scenarios without and with the proposed development in 2022, 2029 and 2046 include committed developments and take into account growth from regional housing and job forecasts. Therefore the assessed scenarios are inherently cumulative in nature.

6.5.5 Additionally the 2046 scenario includes the construction of the additional 1,500 residential units and supporting infrastructure associated with the proposed Framework Masterplan. The 2046 assessment therefore represents the completed proposed Development. As discussed in paragraph 6.2.36, the 2046 assessment has been modelled using 2046 proposed Development traffic flows.

6.5.6 Without and with proposed development concentrations were predicted for NO_2, PM_{10} and $PM_{2.5}$. A total of 338 locations across the modelled road network (those detailed in Figure 6.7 (presented in Appendix 6.1)) were assessed. These locations were those receptors closest to roads with the greatest predicted increase in traffic flow and/or where existing pollutant concentrations were highest.

6.5.7 Of the 338 modelled receptors, 128 were ‘future receptors’ i.e. in locations which would eventually comprise of residential, mixed-use or school land use within the application site boundary. As these receptors would not exist until the site is built out, the IAQM guidance suggests that impacts at such locations are best described in relation to ‘whether or not an air quality objective will not be met, or is at risk of not being met.’ when assessing the suitability of air quality for the introduction of new receptors.

6.5.8 The remaining 210 receptors were existing receptors that are either located within the application site and will not be demolished as part of the proposed development, or existing receptors that are located outside of the application site. The change in pollutant concentration and resultant total concentration will determine whether the proposed development impact at a given existing receptor will be negligible, small, moderate or substantially adverse/beneficial.

Residual Effects from Operation on Local Air Quality (2022)

6.5.9 The purpose of the 2022 operational assessment was to ascertain whether pollutant levels at the site were suitable for new exposure whilst taking into account the additional traffic on the local road network due to those parts of the proposed development that are to be built and operational by 2022. The year of

2022 represents the first year that the application site would be occupied and is also the year that per vehicle emissions rates and background concentrations are highest (as compared to 2029 and 2046). Additionally the 2022 operational assessment includes the construction traffic associated with the ongoing build out of the remaining development areas.

6.5.10 As discussed in paragraphs 6.2.79 and 6.2.80 the 2022 modelled outputs were uplifted as per Highways England IAN170/12v3 as a means of adding additional conservatism to the model to correct for the perceived optimistic emissions projections embedded in the Defra tools.

6.5.11 The 2022 without and with proposed development impacts are presented in full at each receptor for each pollutant in ES Appendix 6.5.

Impact on Existing Receptors

6.5.12 Table 6-20 summarises the changes in annual mean NO_2 associated with the 2022 operational phase on existing receptors located on the local road network affected in the context of the IAQM impact descriptors (as per Table 6-8). Figure 6.7 also demonstrates the location and IAQM descriptor ascribed to existing receptors.

Table 6-20: Summary of annual mean NO_2 impacts at existing receptors aggregated by IAQM descriptor (2022)

6.5.13 IAQM Descriptor	Number of Receptors	
	Adverse	Beneficial
Substantial	0	0
Moderate	0	0
Slight	0	4
Negligible	206	

6.5.14 There are four receptors (OTT102-105) (see Figure 6.4, p9 of Appendix 6.1) where the impact is slightly beneficial (i.e. pollutant concentrations decrease). These receptors are all located in Newingreen south west of the cross roads where the A20 Ashford Road meets the A261 Hythe Road and Stone Street. The largest decrease at these receptors is 3.7 µg/m^3 which is attributable to a large reduction in traffic flows (~7,000 fewer vehicles) along the A20 Ashford Road west of the aforementioned crossroads. The reduction in traffic is due to the construction of the new A20 link road as part of the proposed development which cuts across the land between Newingreen to the south and Westenhanger to the north.

6.5.15 The receptors with the largest increases in annual mean concentration are OTT131 and OTT132 which are located south of the application site on Aldington Road and increase by 1µg/m^3. The increase in NO_2 is attributable to an increase of approximately 1,000 vehicles (as an AADT) on Aldington Road in 2022. However the total with proposed development concentrations are less than 15 µg/m^3 which is well below the relevant annual mean AQS objective for NO_2 of 40 µg/m^3. Therefore in the context of the IAQM impact descriptors, the total concentration is sufficiently low that a 1 µg/m^3 is regarded as negligible rather than a substantial, moderate or small adverse impact.

6.5.16 The change in NO_2 and total NO_2 concentrations at all other existing receptors is sufficiently low to be considered as a negligible impact in terms of the IAQM descriptors. The highest with proposed development concentration at any of the existing receptors is at OTT124 which is located 20m north of the M20 at the southern end of Stanford. The concentration is predicted to be 36µg/m^3 in 2022 which is 4 µg/m^3 lower than the annual mean AQS objective for NO_2. The residual impact at OTT124 is negligible.

6.5.17 LAQM TG.16 states that exceedances of the 1-hour AQS objective for NO_2 are unlikely to occur where the annual mean is less than 60 µg/m^3. The total concentration at OTT124 demonstrates that the proposed development would not cause any receptors to exceed the 1-hour AQS objective for NO_2.

6.5.18 Annual mean PM_{10} and $PM_{2.5}$ impacts at existing receptors are negligible as all increases are less than or equal to 0.2 µg/m^3. Annual mean concentrations at all receptors are well below the annual mean AQS objectives for PM_{10} and $PM_{2.5}$.

6.5.19 Following the procedure in paragraph 7.93 of LAQM.TG16, the likelihood of potential exceedances of the 24-hour PM_{10} AQS objective can be inferred from the PM_{10} annual mean concentration. It is concluded that there would be no exceedances due to the universal low nature of the annual mean PM_{10} concentrations as all receptors would be less than 20µg/m^3.

6.5.20 A full list of the without and with proposed development concentrations and IAQM impact descriptors is presented in Appendix 6.5 for NO_2, PM_{10} and $PM_{2.5}$.

Future (on-site) Receptors

6.5.21 A total of 128 future receptors were modelled on site across the various development areas. The highest on-site with proposed development total NO_2 concentration is 18.2 µg/m^3 at FUT124 which is located in the P3A development zone. It is acknowledged that the area that this modelled future receptor is representative of would not be developed and built by 2022. However it demonstrates that the rest of the site is well below the annual mean AQS objective for NO_2 and is therefore suitable for habitation in 2022.

6.5.22 The highest on-site PM_{10} concentration is 16.5 µg/m^3 at a number of the future receptors which is well below the annual mean AQS objective for PM_{10} which is also 40 µg/m^3. Additionally the highest on-site annual mean $PM_{2.5}$ concentration is 10.5 µg/m^3; this is well below the guideline target of 25 µg/m^3. Therefore in terms of particulates (both PM_{10} and $PM_{2.5}$) the site is suitable for human habitation and would not create any new exposure to poor air quality.

6.5.23 A full list of total on-site concentrations for the modelled future receptors for each of NO_2, PM_{10} and $PM_{2.5}$ is presented in Appendix 6.5.

Conclusions

6.5.24 The operation of the partially built proposed development in 2022 is not expected to result in any significant adverse effects on local air quality. Changes in concentrations at existing receptors are negligible for all pollutants and total concentrations across the application site are well below relevant annual mean AQS objectives indicating that the occupants of the site in 2022 would be subject to an acceptable standard of air quality.

Residual Effects from Operation on Local Air Quality (2029)

6.5.25 The purpose of the 2029 assessment was to quantify and appraise impacts associated with the build out of the peak construction year in combination with the impacts of the additional vehicles generated by the operation of the 2975 residences and supporting infrastructure. The year of 2029 represents a year where there is the potential be a large number of additional vehicles on the local road network from both operational phase vehicles and construction vehicles.

6.5.26 The purpose of the 2029 assessment was to quantify the impacts in the year with the highest construction vehicle flows alongside operational phase traffic associated with the partially built proposed development (approximately 33% complete).

6.5.27 The 2029 outputs were uplifted following the methodology detailed in Highways England IAN170/12v3.

6.5.28 The 2029 without and with proposed development impacts are presented in full at each receptor for each pollutant in Appendix 6.5.

Impact on Existing Receptors

6.5.29 Table 6-21 summarises the changes in annual mean NO_2 associated with the 2029 operational phase on existing receptors located on the local road network affected in the context of the IAQM impact descriptors. Figure 6.7 also demonstrates the location and IAQM descriptor ascribed to existing receptors.

Table 6-21: Summary of annual mean NO_2 impacts at existing receptors aggregated by IAQM descriptor (2029)

6.5.30 IAQM Descriptor	Number of receptors	
	Adverse	Beneficial
Substantial	0	0
Moderate	0	0
Slight	2	0
Negligible	208	

6.5.31 The receptors with the largest increases in annual mean concentration are OTT131 and OTT132 which are located south of the application site on Aldington Road and increase by 1.1 µg/m³. The increase in NO_2 is attributable to an increase of approximately 1600 vehicles (as an AADT) on Aldington Road in 2029. However the total with propose development concentrations are ~13 µg/m³ which is well below the relevant annual mean AQS objective for NO_2 of 40 µg/m³. Therefore in the context of the IAQM impact descriptors, the total concentration is sufficiently low that a 1.1 µg/m³ is regarded as negligible rather than a substantial, moderate or small adverse impact.

6.5.32 There are two receptors (OTT040 and OTT178) which would experience a slight adverse impact in local air quality. OTT040 is located approximately 30m south of the M20 in Cheriton, which lies ~6km east of the application site. The concentration at OTT040 increases by 0.6 µg/m³ to a total of 32.0 µg/m³ in the with proposed development 2029 scenario. This is attributable to an increase in AADT of approximately 2050 vehicles per day across the carriageways of the nearby M20.

6.5.33 The second receptor where there is expected to be a slight adverse impact on local air quality is OTT178 which is located at Hatch Lodge immediately north of the A20 between Ashford and the application site. The concentration at OTT178 increases by 0.8 µg/m³ to a total of 32.8 µg/m³ in the with proposed development 2029 scenario. This is attributable to an increase in AADT of approximately 1200 vehicles per day on the A20 and 1400 vehicles per day on the carriageways of the M20 which is located 70m to the south-west.

6.5.34 The highest with proposed development concentration at any of the existing receptors is at OTT124 which is located 20m north of the M20 at the southern end of Stanford. The concentration is predicted to be 33.1 µg/m³ in 2029 which is almost 7 µg/m³ lower than the annual mean AQS objective for NO_2. The residual impact at OTT124 is negligible in 2029.

6.5.35 The change in NO_2 and total NO_2 concentrations at all other existing receptors is sufficiently low to be considered as a negligible impact in terms of the IAQM descriptors.

6.5.36 The total concentration at OTT124 demonstrates that the proposed development would not cause any receptors to exceed the 1-hour AQS objective for NO_2 in 2029 as it is well below the required indicative metric of 60 µg/m³ (refer to paragraph 6.5.16). Additionally there are predicted to be no exceedences of the 24-hour PM_{10} AQs objective as the highest annual mean PM_{10} concentration at an existing receptor in 2029 is 18.5 µg/m³.

6.5.37 Annual mean PM_{10} and $PM_{2.5}$ impacts at existing receptors are negligible as all increases are less than or equal to 0.3 µg/m³. Annual mean concentrations at all receptors are well below the annual mean AQS objectives for PM_{10} and $PM_{2.5}$.

Future (on-site) Receptors

6.5.38 The highest on-site with proposed development total NO_2 concentration is 16.8 µg/m³ at FUT124 which is located in the P3A development zone. This demonstrates that the rest of the site is well below the annual mean AQS objective for NO_2 and is therefore suitable for habitation in 2029.

6.5.39 The highest on-site PM_{10} concentration is 16.3 µg/m³ at a number of the future receptors which is well below the annual mean AQS objective for PM_{10}. Additionally the highest on-site annual mean $PM_{2.5}$ concentration is 10.3 µg/m³; this is well below the guideline target of 25 µg/m³. Therefore in terms of particulates (both PM_{10} and $PM_{2.5}$) the site is suitable for human habitation and the development of the site would not lead any unacceptable exposure to poor air quality.

6.5.40 A full list of total on-site concentrations for the modelled future receptors for each of NO_2, PM_{10} and $PM_{2.5}$ is presented in Appendix 6.5.

Conclusions

6.5.41 The operation of the partially built proposed development in 2029 is not expected to result in any significant adverse impact on local air quality. The slight adverse impacts (associated with two receptors) are not sufficient in magnitude or quantity to suggest that the proposed development would result in a long term significant adverse effect on local air quality.

6.5.42 Changes in concentrations at existing receptors are negligible for the vast majority of receptors for all pollutants. Total concentrations across the application site are well below relevant annual mean AQS objectives indicating that the occupants of the site in 2029 would be subject to an acceptable standard of air quality.

Residual Effects from Operation on Local Air Quality (2046)

6.5.43 The 2046 operational assessment represents a highly conservative appraisal of air quality impacts. The assessment assumes an increase in flows on the local road network associated with the full operation of the proposed development in 2046.

6.5.44 Additionally the emissions rates and background concentrations applied to the 2046 assessment are taken from the furthest year into the future (2030) that the current set of Defra tools and data allow. Per vehicle emission rates and background projects will decline between 2030 and 2046 due to emerging government pollution control policy and increased uptake of less polluting vehicles. Therefore the assessment of 2046 traffic flows as 2030 is highly conservative. It is for these reasons why the 2046 outputs have not been uplifted as per Highways England IAN170v3.

Impact on Existing Receptors

6.5.45 Table 6-22 summarises the changes in annual mean NO_2 associated with the 2046 operational phase on existing receptors located on the local road network affected in the context of the IAQM impact descriptors. Figure 6.7 also demonstrates the location and IAQM descriptor ascribed to existing receptors.

Table 6-22: Summary of annual mean NO_2 impacts at existing receptors aggregated by IAQM descriptor (2046)

6.5.46 IAQM Descriptor	Number of receptors	
	Adverse	Beneficial
Substantial	0	0
Moderate	0	0
Slight	3	0
Negligible	207	

6.5.47 There are three existing receptors where the impact is expected to be slightly adverse, these are OTT131, OTT132 and OTT162.

6.5.48 OTT132 is located south of the application site on Aldington Road and increases by 2.5 µg/m³. The increase in NO_2 is attributable to an increase of approximately 4600 vehicles (as an AADT) on Aldington Road in 2046. However the total with proposed development concentration at OTT132 is 12.4 µg/m³ which is well below the relevant annual mean AQS objective for NO_2 of 40 µg/m³. Therefore in the context of the IAQM impact descriptors, the change at OTT132 is regarded as slightly adverse. OTT131 is also located along Aldington Road and is expected to increase by 2.4 µg/m³ in 2046.

6.5.49 OTT162 also is expected to increase by 2.5µg/m^3 in 2046. This receptor is located on A20 Hythe Road between Ashford and Sellindge. The total concentration at OTT162 in the with proposed development 2046 scenario is 17.9 µg/m^3. Therefore the impact at this receptor is slightly adverse in the context of the IAQM impact descriptors.

6.5.50 The highest with proposed development concentration at any of the existing receptors is at OTT178 which is located at Hatch Lodge immediately north of the A20 between Ashford and the application site. The concentration at OTT178 increases by 2.0 µg/m^3 to a total of 22.4 µg/m^3 in the with proposed development 2046 scenario. This is attributable to an increase in AADT of approximately 5300 vehicles per day on the A20 and 5100 vehicles per day on the carriageways of the M20 which is located 70m to the south-west. The residual impact at OTT178 is categorised as negligible in terms of the IAQM descriptors.

6.5.51 The change in NO_2 and total NO_2 concentrations at all other existing receptors is sufficiently low to be considered as a negligible impact in terms of the IAQM descriptors.

6.5.52 The total concentration at OTT178 demonstrates that the proposed development would not cause any receptors to exceed the 1-hour AQS objective for NO_2 in 2046 as it is well below the required indicative metric of 60 µg/m^3. Additionally there are predicted to be no exceedances of the 24-hour PM_{10} AQs objective as the highest annual mean PM_{10} concentration at an existing receptor in 2046 is 19.1 µg/m^3.

6.5.53 Annual mean PM_{10} and $PM_{2.5}$ impacts at existing receptors are negligible as all increases are less than or equal to 0.7 µg/m^3. Annual mean concentrations at all receptors are well below the annual mean AQS objectives for PM_{10} and $PM_{2.5}$.

Future (on-site) Receptors

6.5.54 The highest on-site with proposed development total NO_2 concentration is 16.8 µg/m^3 at FUT024 which is located in the P1C development area. This demonstrates that the rest of the site is well below the annual mean AQS objective for NO_2 and is therefore suitable for habitation in 2046.

6.5.55 The highest on-site PM_{10} concentration is 16.7 µg/m^3 at a number of the future receptors which is well below the annual mean AQS objective for PM_{10}. Additionally the highest on-site annual mean $PM_{2.5}$ concentration is 10.5 µg/m^3; this is well below the guideline target of 25 µg/m^3. Therefore in terms of particulates (both PM_{10} and $PM_{2.5}$) the site is suitable for human habitation and the development of the site would not lead any unacceptable exposure to poor air quality.

6.5.56 A full list of total 2046 on-site concentrations for the modelled future receptors for each of NO_2, PM_{10} and $PM_{2.5}$ is presented in Appendix 6.5.

Impact on Canterbury AQMA No.3

6.5.57 The results of the sensitivity test presented in Appendix 6.7 demonstrate that the operation of the proposed development will have a negligible impact on air quality in Canterbury near to the AQMA. It is therefore concluded that there will be no significant air quality effects in Canterbury.

Conclusions

6.5.58 The operation of the fully developed proposed development (inclusive of the Framework Masterplan) is not expected to result in any significant residual effect on local air quality. The slight adverse impacts (associated with three receptors) are not sufficient in magnitude or quantity to suggest that the proposed development would result in a long term significant adverse effect on local air quality.

6.5.59 Changes in concentrations at existing receptors are negligible for the vast majority of receptors for all pollutants. Total concentrations across the application site are well below relevant annual mean AQS objectives indicating that the occupants of the site in 2046 would be subject to an acceptable standard of air quality.

6.5.60 The 2046 operational assessment on local air quality demonstrates that with worst case assumptions, no significant effects are anticipated.

Compliance Risk Assessment

6.5.61 Increases in NO_2 associated with the operation of the proposed development were compared to Defra's PCM link concentrations for the baseline projections scenario. This is worst case as concentrations are higher in this scenario (which assumes no additional measures to reduce NO_2 than are embedded in the baseline) than in the CAZ and CAZ plus additional measures scenarios.

6.5.62 It should be noted that the Defra PCM link with the highest concentration in the Agglomeration Zone is part of the M27 near Southampton (approximately 150km to the west of the proposed development) and is projected to have a concentration of 41 µg/m^3 in 2022 but becomes compliant in 2023 when the concentration reduces to 38.8 µg/m^3. This link will not be impacted on by the proposed development.

6.5.63 Analysis of the Defra PCM links that reside within the operational phase local air quality study area indicates that during 2022, the PCM link with the highest concentration is observed on the M20 (census ID 37955) and is expected to be 27.8 µg/m^3.

6.5.64 Therefore, an increase of 12.2 µg/m3 would be required at the modelled receptor nearest to this road to make this link exceed the Limit Value of 40 µg/m^3. The largest increase NO_2 concentration at any existing receptor modelled in 2022 is 1.0 ug/m^3. Therefore it can be concluded that in 2022;

- the proposed development will not result in a compliant zone becoming non-compliant and therefore does not delay compliance as the maximum proposed development-related increase of 1 µg/m^3 would not cause the highest PCM link in the air quality study area to exceed the annual mean Limit Value in 2022;
- Therefore in accordance with IAN 175/13 it is concluded than in 2022, the proposed development represent a low risk to the UK's reported ability to comply with the directive.

6.5.65 In 2029, the M20 PCM link (census ID 37955) is still the highest link in the air quality study area and the concentration is projected to be 20.1 µg/m^3 which is well below the Limit Value. The largest increase in NO_2 at any of the modelled receptors as a result of the proposed development is 1.1 µg/m^3. Therefore in 2029 the proposed development represents a low risk to the UK's ability to comply with the Directive, for the same reasons detailed in 6.5.64.

6.5.66 In 2046, it is unlikely that any Agglomeration Zone in the UK will be at risk of non-compliance with the Directive. Current projections within the Defra PCM model have a horizon year of 2030. Therefore as a worst case, 2046 proposed development (inclusive of Framework Masterplan) increases in NO_2 (also modelled using 2030 emission rates) have been compared against 2030 Defra PCM projections.

6.5.67 In 2030 the M20 PCM link (census ID 37955) is still the highest link in the air quality study area and the concentration is projected to be 19.5 µg/m^3 which is well below the Limit Value. The largest increase associated with the proposed development (inclusive of Framework Masterplan) in 2046 is 2.5 µg/m^3. Therefore in 2030 the proposed development represents a low risk to the UK's ability to comply with the Directive, for the same reasons detailed in 6.5.64, even when 2046 traffic flows are modelled using 2030 emission rates.

Residual Effects from Operation on Ecological Receptors (all assessment years)

6.5.68 As described in the methodology section, annual mean NO_x concentrations were modelled in ecological sites using roadside transects spaced at 10m intervals and using a receptor grid over the A20 tunnel portal for Folkestone to Etchinghill Escarpment SAC/SSSI. The full set of results are shown in Appendix 6.6 and the key results are reported in this section.

6.5.69 Ecological receptors with NO_x concentrations exceeding the 30 µg/m3 annual mean AQS objective, and with a Proposed development associated change in concentration above 0.4 µg/m3 (i.e., perceptible change) are presented in Table 6-23 for the roadside transects and Table 6-25 for the receptor grid. The changes in NO_x have been converted to NO_2 and nitrogen deposition following DMRB methodology, and the corresponding nitrogen deposition rates are presented in Table 6-24 for the roadside transects and Table for the receptor grid. The receptor grid results show the maximum NO_x concentrations and nitrogen deposition rates predicted in each scenario (based on where sensitive features are present, note the most sensitive feature for the SAC is calcareous grassland, and broadleaved deciduous woodland for the SSSI).

6.5.70 There are no transect ecological receptors that are expected to experience a perceptible change in NO_x (and therefore N deposition) in the 2022 scenario. A maximum increase in NO_x of 0.8 µg/m3 is predicted

in the receptor grid, which is a small magnitude of change (i.e. 0.5 to 2 µg/m3, see Table 6-25). However, the corresponding increase in nitrogen deposition predicted is only 0.0 kg N ha^{-1} yr^{-1} (rounded to 1dp).

6.5.71 In 2029, a small increase in NO_x is predicted up to 30m along the Folkestone to Etchinghill Escarpment SAC/SSSI transect and Hatch Park SSSI transect. Table 6-24 shows that a maximum change of 0.1 kg/N/ha/yr is predicted for each transect, which is 1% of the minimum critical load defined for Folkestone to Etchinghill Escarpment and Hatch Park SSSI and less than 1% of the minimum critical load defined for Folkestone to Etchinghill Escarpment SAC (Table 6-14). A maximum increase in NO_x of 1.5 µg/m3 (small magnitude) and 5.3 µg/m3 (large magnitude) is predicted in the receptor grid for the SSSI and SAC, respectively. The corresponding increase in nitrogen deposition predicted is 0.1 kg/N/ha/yr (in the SSSI) and 0.2 kg N ha^{-1} yr^{-1} (in the SAC), which are ~1% of the critical load of the most sensitive features present in each site.

6.5.72 In 2046, a medium increase in NO_x is predicted at the boundary of Folkestone to Etchinghill Escarpment SAC/SSSI and Hatch Park SSSI. This corresponds with a maximum change in nitrogen deposition of 0.1 kg N ha^{-1} yr^{-1} which is 1% of the minimum critical load defined for Folkestone to Etchinghill Escarpment and Hatch Park SSSI and less than 1% of the minimum critical load defined for Folkestone to Etchinghill Escarpment SAC (Table 6-14). A maximum increase in NO_x of 3.2 µg/m3 (medium magnitude) and 9.7 µg/m3 (large magnitude) is predicted in the receptor grid for the SSSI and SAC, respectively. The corresponding increase in nitrogen deposition predicted is 0.1 kg N ha^{-1} yr^{-1} (in the SSSI) and 0.3 kg N ha^{-1} yr^{-1} (in the SAC). The increase in nitrogen deposition in the SAC is ~2% of the minimum critical load identified for calcareous grassland, however it should be noted that the total nitrogen deposition predicted with the Project is 13.2 kg N ha^{-1} yr^{-1}, which is below the minimum critical load of 15 kg N ha^{-1} yr^{-1}, and lower than the existing baseline rate of nitrogen deposition (15.5 kg N ha^{-1} yr^{-1}) in the site, which is currently in a favourable condition. Furthermore, the increase in NO_x and nitrogen deposition predicted in 2046 is likely to be highly pessimistic, since the air quality predictions assume no air quality improvements between 2030 and 2046.

6.5.73 Folks Wood ancient woodland site is predicted to experience and small and medium increase in NO_x concentrations at the woodland boundary with the A261 in the respective 2029 and 2046 scenarios.

Table 6-23: Modelled Annual Mean NO_x (µg/m^3) at selected ecological receptors

Ecological receptor	Site name and designation	Closest point (m)	Base 2017	w/o PD* 2029	w/PD** 2029	Change 2029	w/o PD* 2046	w/PD** 2046	Change 2046
FolkstoneEtchB1	Folkestone to Etchinghill Escarpment SSSI and SAC	0	77.8	54.3	55.4	1.1	38.2	40.5	2.3
FEB2		10	60.6	41.8	42.5	0.7	31.1	32.7	1.6
FEB3		20	52.4	35.9	36.4	0.5	N/A	N/A	N/A
FEB4		30	47.4	32.2	32.7	0.5	N/A	N/A	N/A
HatchPark1	Hatch Park SSSI	0	48.7	40.1	41.2	1.1	28.2	31.0	2.8
HP2		10	44.7	36.1	37.0	0.9	N/A	N/A	N/A
HP3		20	41.7	33.3	34.0	0.8	N/A	N/A	N/A
HP4		30	39.3	31.0	31.7	0.7	N/A	N/A	N/A
FolksWood1	Folks Wood Ancient Woodland	0	54.5	37.7	38.3	0.5	28.0	31.5	3.5

Ecological receptor	Site name and designation	Closest point (m)	Base 2017	w/o PD* 2029	w/PD** 2029	Change 2029	w/o PD* 2046	w/PD** 2046	Change 2046

N/A: NO_x concentration less than 30 µg m^{-3} in without and with proposed development scenario and therefore not presented

Table 6-24: Change in Nitrogen Deposition Rate (kg N ha yr) at selected ecological receptors

Ecological receptor	Site name and designation	Closest point to road centreline (m)	Change 2029	Change 2046
FolkstoneEtchB1	Folkestone to Etchinghill Escarpment SSSI and SAC	0	0.1	0.1
FEB2		10	0.0	0.1
FEB3		20	0.0	N/A
FEB4		30	0.0	N/A
HatchPark1	Hatch Park SSSI	0	0.1	0.1
HP2		10	0.0	N/A
HP3		20	0.0	N/A
HP4		30	0.0	N/A

N/A: DM and DS NO_x concentration less than 30 µg m^{-3} therefore Nitrogen Deposition not assessed

Table 6-25: Maximum Change in NO_x (µg/m^3) and Nitrogen deposition rate (kg N ha^{-1} yr^{-1}) across Folkestone to Etchinghill Escarpment SSSI and SAC receptor grid

	Change 2022		Change 2029		Change 2046	
Site	**NO_x**	**Nitrogen Deposition**	**NO_x**	**Nitrogen Deposition**	**NO_x**	**Nitrogen Deposition**
SSSI	0.2	0.0	1.5	0.1	3.2	0.1
SAC	0.8	0.0	5.3	0.2	9.7	0.3 (13.2*)

*With Project total N deposition

6.5.74 Based on the changes in NO_x and nitrogen deposition predicted at ecological receptors across the 2022, 2029 and 2046 scenarios, air quality effects on ecology are expected to be non-significant, for the following reasons:

- Impacts associated with the operation of the proposed development on nitrogen deposition are 1% of the minimum critical loads defined for the most sensitive features present in the ecological sites and so are imperceptible. The only exception is Folkestone to Etchinghill Escarpment SAC in 2046, where the

increase in nitrogen deposition is predicted to be 2% of the minimum critical load. However, the nitrogen deposition with the Project is expected to be below the critical load by 2046.

- With proposed development NO_x and nitrogen deposition rates are expected to be lower than the current baseline in all future scenarios

- Where perceptible changes in NO_x are predicted they are confined to a small area of the ecological sites, where the sites border roads.

Cumulative Effects

6.5.75 The air quality assessment is inherently cumulative as all committed developments are included in the traffic model. The air quality assessment therefore provides the predicted cumulative impact of the proposed development in combination with other committed developments in the area.

6.6 Assessment Summary

6.6.1 The risk of dust impacts during the construction phase was evaluated by assessing the dust emissions magnitude of the planned construction activities and by taking into account the existing sensitivity of area.

6.6.2 It was concluded that there would be a high risk of dust impacts from the construction phase if left unmitigated. However with the application of the relevant mitigation measures summarised in Appendix 6.3, it is concluded that the residual effect would be no worse than negligible.

6.6.3 The operational impact of the proposed development on local air quality has been assessed by undertaking air quality modelling of the without and with proposed development scenarios in 2022, 2029 and 2046. The study area incorporates approximately 160km of the road network in the vicinity of the application site and covers sections of the M20, A20, A261 and the arterial roads connecting the application site, Hythe, Folkestone and Ashford. This is the assessed road network, with the assessment covering 210 existing receptors and 128 on-site future receptors.

6.6.4 Base year (2017) monitored and modelled concentrations indicated that air quality in the study area generally does not exceed the AQS Objectives. Traffic data for the various assessment years have been modelled in ADMS-Roads. The modelled output has been verified using existing monitoring data.

6.6.5 For NO_2, PM_{10} and $PM_{2.5}$ the implementation of the proposed development is largely predicted to result in negligible effects at existing receptors. On-site concentrations at future receptors indicate that the occupation of the site would not create new exposure to poor air quality. Pollutant concentrations across the site are low in all of the modelled years.

6.6.6 There are no significant operational or construction phase effects on ecologically designated sites in the study area.

6.6.7 The evaluation of the operational phase significance of effects for local air quality in each of the assessment years was informed with the application of professional judgment as per section 7 of the IAQM (2016) development control guidance. It was concluded that the operational proposed development does not have a significant effect on local air quality in any of the assessment years.

6.6.8 Additionally the findings of the sensitivity test in Canterbury (presented in Appendix 6.7) demonstrate that operation of the proposed development does not lead to a significant effect on air quality in Canterbury AQMA No.3.

6.6.9 A compliance risk assessment was undertaken to ensure that the operation of the proposed development did not represent a risk to the UK's ability to comply with Directive 2008/50/EC. The assessment concluded that the proposed development represents a low risk to compliance with 2008/50/EC.

6.6.10 Table 6-26 provides assessment summary with respect to air quality and how they have been addressed and how they have been addressed.

Table 6-26: Summary of air quality impacts

Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
Ecologically Designated Sites	Increased dust deposition from construction activities	C	Site Management (logging of incidents/complaints) Monitoring (site inspections, soiling checks, compliance with Dust Management plan, etc) Preparing and Maintaining the site (locate dust causing activities away from receptors, barriers, cleaning, enclosed specific operations with high potential for dust production, cover stockpiles, etc) Operating vehicle/machinery and sustainable travel (comply with NRMM standards, no idling, use mains electricity, travel plan etc) Operations (employ dust suppression, use enclosed chutes, minimise drop heights, etc) Demolition measures (damp down, avoid explosive blasting, soft strip interiors before demolition, etc) Earthworks measures (revegetate promptly, use hessian mulches and cover with topsoil, etc) Construction measures (avoid scabbling, keep aggregates damp, ensure fine powder materials are delivered enclosed and stored in silos, ensure bags are sealed after use) Trackout measures (wash access and local roads, avid dry sweeping of large areas, ensure vehicle-borne materials are covered, install hard surface haul routes, wheel washing, etc)	Negligible
Human Receptors	Increased dust soiling/increased PM_{10} concentrations from construction activities	C		
Ecologically Designated Sites	Increased Nitrogen Deposition and possible breaching of	O/C		No significant effects

Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
	critical levels and loads from increased traffic flows		None required beyond those embedded in the project design (paragraph 6.4.21)	
Human Receptors	Increased pollutant concentrations in sufficient quantity and magnitude to constitute a significant effect on local air quality. Creation of new exposure (on-site future receptors) in areas of poor air quality. Potentially caused by increased traffic flows associated with the application proposals and Framework Masterplan.	O/C		
Human Receptors	High risk of non-compliance with Directive 2008/50/EC following assessment utilising Highways England IAN 175/13.	O	Low risk – therefore none required	Low risk – therefore concluded that compliance risk is not significant.

6.7 References

Reference	Title
Ref 6.1	Official Journal of the European Communities (1996) The Air Quality Framework Directive (96/62/EC).
Ref 6.2	Official Journal of the European Union (2008) Ambient Air Quality and Cleaner Air for Europe (2008/50/EC).
Ref 6.3	The Stationery Office Ltd. (1995) Part IV of the Environment Act (Air Quality), Chapter 25.
Ref 6.4	The Stationery Office Ltd. (2000) The Air Quality (England) Regulation 2000, Statutory Instruments No. 928.
Ref 6.5	The Stationery Office Ltd. (2002) The Air Quality (England) (Amendment) Regulations 2002, Statutory Instruments No. 3042
Ref 6.6	The Stationery Office Ltd. (2007) The Air Quality Standards Regulations 2007, Statutory Instruments No. 64.
Ref 6.7	The Stationery Office Ltd. (2010) The Air Quality Standards Regulations 2010, Statutory Instruments No. 1001.
Ref 6.8	The Stationery Office Ltd. (1990) Environmental Protection Act, Chapter 43.
Ref 6.9	Department for Environment, Food and Rural Affairs (2017) Air Quality Plan for tackling roadside nitrogen dioxide concentrations in South East (UK0031)
Ref 6.10	Department for Environment, Food and Rural Affairs (2017) UK plan for tackling roadside nitrogen dioxide concentrations
Ref 6.11	Department for Communities and Local Government (2012) National Planning Policy Framework.
Ref 6.12	Folkestone and Hythe District Council (2019) Folkestone and Hythe Council Core Strategy Review 2019
Ref 6.13	Shepway District Council (2013) Shepway Core Strategy 2013.
Ref 6.14	Shepway District Council 2006 Shepway District Local Plan Review (2013)
Ref 6.15	Ministry of Housing, Communities & Local Government (2014) *National Planning Practice Guidance.* Available at: https://www.gov.uk/guidance/air-quality--3 (Accessed 10/12/2018).
Ref 6.16	Holman *et al.* (2014) *IAQM Guidance on the assessment of dust from demolition and construction,* Institute of Air Quality Management, London.
Ref 6.17	Moorcroft and Barrowcliffe *et al.* (2017) *Land-use Planning & Development Control: Planning for Air Quality*. v1.2. Institute of Air Quality Management, London.
Ref 6.18	Highways England (2013) Interim Advice Note (IAN) 170/12 v3, Updated air quality advice on the assessment of future NOx and NO2 projections for users of DMRB Vol. 11 (HA207/07).
Ref 6.19	Highways England (2007) HA207/07 Design Manual for Roads and Bridges (DMRB), Vol. 11, Section 3, Part 1.
Ref 6.20	Highways England (2013) Interim Advice Note (IAN) 174/13, Updated advice for evaluating significant local air quality effects for users of DMRB Vol. 11 (HA207/07).
Ref 6.21	Highways England (2013) Interim Advice Note (IAN) 175/13, Updated air quality advice on risk assessment related to compliance with the EU Directive on ambient air quality and on the production of Scheme Air Quality Action Plans for user of DMRB Volume 11, Section 3, Part 1 'Air Quality
Ref 6.22	Department for Environment, Food and Rural Affairs (2016) Local Air Quality Management Technical Guidance (TG16).
Ref 6.23	Department for Transport (2018) The Road to Zero, Next steps towards cleaner road transport and delivering our Industrial Strategy
Ref 6.24	Committee on the Medical Effects of Air Pollutants (COMEAP) (2018) Associations of long-term average concentrations of nitrogen dioxide with mortality.
Ref 6.25	Committee on the Medical Effects of Air Pollutants (COMEAP) (2018) Statement on the Evidence for Differential Health Effects of Particulate Matter According to Source or Components.
Ref 6.26	Carslaw, D., Beevers, S. Westmoreland, E. Williams, M. Tate, J. Murrells, T. Stedman, J. Li, Y., Grice, S., Kent, A. and I. Tsagatakis (2011). *Trends in NOx and NO2 emissions and ambient measurements in the UK*. v3.
Ref 6.27	Institute of Air Quality Management (IAQM) (2016) Use of a Criterion for the Determination of Insignificant Effect of Air Quality Impacts on Sensitive Habitats.
Ref 6.28	Folkestone and Hythe District Council (2018) Annual Status Report 2018.
Ref 6.29	Ashford Borough Council (2018) 2018 Air Quality Annual Status Report (ASR).

7 Biodiversity

7.1 Introduction

7.1.1 This chapter assesses the likely significant impacts of the proposed development in terms of Biodiversity. This chapter is supported by the reports presented in Appendix 7.1 to 7.22, which present the full baseline information relating to Biodiversity and provide further detail on impact assessment and mitigation, where appropriate. The baseline against which the likely significant effects are to be assessed is the current environmental conditions at and surrounding the study area. This impact assessment addresses the construction phase and the completed development, or operational phase, relating to the Application

7.1.2 This assessment has been carried out in accordance with the guidance set out in the Chartered Institute of Ecology and Environmental Management's (CIEEM) Guidelines for Ecological Impact Assessment (2018) ('the CIEEM Guidelines' (Ref. 7-10) and has been undertaken by a full member of the Chartered Institute of Ecology and Environmental Management employed by Arcadis Consulting (UK) Ltd. It provides the competent authority, Folkestone and Hythe District Council, with clear and concise information about the likely significant ecological effects associated with the project.

7.1.3 The surveys that underpin the ecological impact assessment were undertaken during the period 2016 to 2018; see Appendices 7.1 – 7.22 for more details.

Relevant Aspects of the Proposed Development

7.1.4 The design of the proposed development has taken into account the value of the baseline habitats present throughout its formulation. The proposed design avoids the most valuable areas, both for habitats, species and ecosystem services. In addition, the retained habitats will be enhanced. Further, high quality Green Infrastructure (GI) is proposed across the site, as shown in Figure 7 in Appendix 7.1. The design of this GI has included specifications for a range of species and is designed to maximise the ecosystem services delivered by the scheme. Details on the retention of key areas of the site are presented in the Habitat and hedgerow assessment (ES Appendix 7.3). Measures to avoid and mitigate impacts upon key receptors are presented throughout the ES and Technical Appendices in the mitigation strategies (ES Appendix 7.18) and the quality design of the GI is presented in the Design and Access Statement (DAS).

7.1.5 The outline nature of the application and extended buildout of the development (at least 25 years) has been a key factor in determining the level of survey work appropriate to inform the ES, and the appropriate level of detail required for the mitigation proposals given the outline nature of the application for planning permission.

7.1.6 The scope of the survey work was approved by the Local Planning Authority (LPA) in writing and conducted to inform the masterplan design and this ES. The correspondence agreeing the survey approach is presented in Appendix 7.2. Further surveys will be required following planning determination to support detailed design, planning approvals and the buildout process. These requirements are outlined within the ES and the relevant Technical Appendices.

7.1.7 The masterplan has been developed by reference to survey results and all other relevant baseline evidence. The masterplan demonstrates that the proposed design can appropriately accommodates the mitigation proposed (illustrated in ES Technical Appendices 7.18, 7.21 and the DAS). Additionally, it is considered that there is sufficient flexibility in mitigation parameters to respond appropriately to likely flex in planning policy, potential future baselines, best practice guidance and/or legislation.

7.2 Assessment Methodology

Legislation, Policy and Guidance

Legislation

7.2.1 This impact assessment has been undertaken in accordance with existing legislation, and national, regional and local plans and policies relating to biodiversity and nature conservation in the context of the Development. The table below (Table 7-1) provides an overview of the legislation which is applicable to the project.

Table 7-1 Summary of Consultation

Policy/legislation	Summary of requirements
The Birds Directive 1979 as amended (79/409/EEC)	Bird species listed in Annex I of the Directive regularly occur in Britain but are protected under EU law. The Directive requires member countries to classify as SPAs the most suitable sites for these species and also for all regularly occurring migratory species. It also includes provisions for the maintenance of the favourable conservation status of all wild bird species across their distributional range.
The Habitats Directive 1992 Directive (92/43/EEC)	The Habitats Directive 1992 is European Council legislation. Annex II of the Directive lists the European protected species that are afforded special protection under this Directive. The provisions of the Habitats Directive were transposed into English law by the Conservation of Habitats and Species Regulations 2010
Water Framework Directive 2000 (2000/60/EC)	The Water Framework Directive places an emphasis upon the Government to enhance the status and prevent further degradation of our aquatic ecosystems and associated wetlands and promotes the sustainable use of water; to this end a number of targets need to be reached by 2015. It requires that all designated inland and coastal waters within defined river basin districts must reach at least good status by 2015 and defines how this should be achieved through the establishment of environmental objectives and ecological targets for surface waters. The result will be a healthy water environment achieved by taking due account of environmental, economic and social considerations.
Conservation of Habitats and Species Regulations 2017, as amended ('Habitats Regulations') Ref. 7-34	The Habitats Regulations provide for the designation of both Special Protection Areas (SPAs) (first established under the Birds Directive, 1979) and Special Areas for Conservation (SACs) as part of the Natura 2000 network of protected areas across Europe (first established under the Habitats Directive, 1992). The Habitats Regulations also provide protection for European Protected Species (EPS) from deliberate capture, killing or disturbance. It is also an absolute offence to destroy or damage the resting site or breeding site of an EPS.
Water Environment (Water Framework Directive) (England and Wales) Regulations 2003	This is the implementation of the Water Framework Directive, which was transposed into UK national legislation in 2003, whereby River Basin Management Plans and associated works and monitoring are the key means of achieving these targets.
The Wildlife and Countryside Act 1981, as amended (WCA) Ref. 7-32	The Act provides for the designation of Sites of Special Scientific Interest (SSSI), which are selected as the best national examples of habitat types, sites with notable species and sites of geological importance. Section 1 of the Act provides for the protection of wild birds, their nests and their eggs, with special protection given to those species listed in Schedule 1, which includes black redstart. Full protection is given under Section 9 of the Act to certain animals listed in Schedule 5, including all species of bat. Partial protection under Section 9 is given to certain other species, including all widespread species of reptile. Section 13 of the Act details protection for plants and fungi listed in Schedule 8.
Schedule 9 of the WCA (animals and plants to which Section 14 applies)	Schedule 9 of the WCA provides a list of non-native invasive species. It is an offence, which, under Section 14 of the Act, makes it an offence to allow to plant or otherwise cause to grow in the wild any plant which is included in Part II of Schedule 9.
Environmental Protection Act 1990 (as amended)	The Act makes it an offence to consign or dispose of Japanese Knotweed in a way that contravenes the waste regulations.

Policy/legislation	Summary of requirements
Protection of Badgers Act 1992	The Act consolidates the legislation specific to badgers. The Act makes it an offence to wilfully take, kill, injure or ill-treat a badger; to obstruct, destroy, or damage in any part, a badger's sett; or to disturb badgers within a sett.
Countryside and Rights of Way Act 2000	The Act gives greater protection to SSSIs and strengthens wildlife enforcement legislation by the introduction of the offence of 'recklessness' in the damage/destruction or obstruction of the places of shelter or rest of protected species and the disturbance of these species within such places. The Act also requires Government Departments to have regard to biodiversity and conservation; Section 74 of the Act requires lists of habitats and species of Principal Importance to be produced, for which conservation steps should be taken or promoted. The requirement to prepare such lists of habitats and species was extended by the Natural Environment and Rural Communities (NERC) Act 2006 (see below).
Natural Environment and Rural Communities (NERC) Act 2006 Ref. 7-33	The NERC Act places a duty upon public bodies to consider enhancement of biodiversity within all of their actions. Sections 40 and 41 of the NERC Act superseded Section 74 of the Countryside and Rights of Way Act 2000. Section 41 lists flora, fauna and habitats considered by the Secretary of State to be of Principal Importance for conserving biodiversity in England. Within this report, this is referenced as 'S41'. In addition, the NERC Act provides for those species that were previously identified within the UK Biodiversity Action Plan (BAP) and the relevant Local BAPs as biodiversity conservation priorities. The UK BAP has been superseded by Biodiversity 2020: A strategy for England's Wildlife and Ecosystem Services (see below).
The Hedgerow Regulations (1997) Ref. 7-8	The Hedgerows Regulations (1997) protect countryside hedgerows. Hedgerows are the only habitat which receives dedicated legal protection in England, with the exception of habitats protected by site designations (hedgerows can be protected whether they are within a designated site or not). This protection is conferred by the Hedgerows Regulations SI. 1160 (1997). The Hedgerows Regulations protect countryside hedgerows. It makes it an offence to remove these hedgerows without planning permission or specific approval. The Regulations only apply to hedgerows adjacent to land in agricultural/horticultural use. A hedgerow may be classified as 'Important' for archaeological/historical reasons, or according to Wildlife and Landscape criteria. To be classified as 'important' under the Wildlife and Landscape criteria, the hedgerow must be over 30 years old and should comprise one of the following: *at least 7 woody species/30m; *at least 6 woody species/30m and at least 3 features; *at least 6 woody spp/30m including any one of four-key species (see below); *at least 5 woody species and at least 4 features; or if adjacent to a bridleway/footpath, at least 4 woody species and at least 2 features. *If the hedgerow is situated wholly or partly in one of the counties listed in Criteria 7 sub-paragraph (2) of the Regulations, the number of woody species should be reduced by one. N.B. A hedgerow may also be classified as 'important' due to the presence/recorded presence of particular animal and plant species (if it contains protected species listed in the Wildlife and Countryside Act 1981 or species that are endangered, vulnerable and rare and identified in the British Red Data books); or qualify under archaeological / historical criteria, namely that it:

Policy/legislation	Summary of requirements
	marks all or part of a parish boundary that existed before 1850; contains an archaeological feature such as a scheduled monument; is completely or partly in or next to an archaeological site listed on a Historic Environment Record (HER), (formerly a Sites and Monuments Record); marks the boundary of an estate or manor or looks to be related to any building or other feature that's part of the estate or manor that existed before 1600; and is part of a field system or looks to be related to any building or other feature associated with the field system that existed before the enclosure Acts (that is before 1845).

Policy

7.2.2 This section outlines the policy considered relevant to the project concerning biodiversity. This is presented in Table 7-2 and Table 7-3.

Table 7-2: Adopted Policy Relevant to the Project

Policy	Policy/ Reference	Description in relation to biodiversity	Project Response
Adopted			
National Planning Policy Framework (2018)	Paragraph 170	Planning policies and decisions should contribute to and enhance the natural and local environment by: a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland; c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate; d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.	The design approach to the masterplan follows the mitigation hierarchy. The iterative design approach is to retain, enhance, buffer and connect the key functional green infrastructure within the site and connect to the wider area to maximise the ecosystem services it can deliver. Initially simple 'risk/valuation maps' were input into the masterplan process to ensure that a holistic approach to masterplan design could be undertaken and impacts to notable ecological features could be minimised. Habitats of value and areas which supported notable flora and fauna were identified and prioritised for retention and buffering with the development. These included areas identified as supporting priority habitats. Irreplaceable habitats including Ancient woodland are buffered to ensure that these areas are not adversely impacted by the development. The design has been developed using and demonstrating Biodiversity Net Gain and Natural Capital principles exploring a range of metrics such as the Natural Capital Planning Tool to maximise the retention and enhancement of existing ecosystem services in order to minimise the need for protected species translocations and which uses the existing mature green infrastructure to provide habitat corridors and ecological mitigation. It is demonstrated within the Biodiversity Net Gain Calculations that the development has the potential to achieve a net gain of 20%. Habitats targeted towards protected species will be created for maximum biodiversity benefits such as species rich grassland, selected individual trees, hedgerows and scrub, ponds for great created newts (GCN), hibernacula for reptiles and GCN, bat and bird boxes. Where possible, habitat design and creation will contribute to an increase of habitats of principal importance, particularly ponds. Where possible, the development contributes towards the targets of the Kent Biodiversity Strategy 'Biodiversity Opportunity Area' of the Gault and Greensand Ridge. An SSSI is present in the centre of the site. This is designated for geological interest, and this feature is retained, with public access to study this feature being enhanced. In addition to the additional GI, permeability will be maintained via dark corridors and underpasses to allow species such as badgers and amphibians to continue to utilise the area. Where there are opportunities for building integrated vegetation such as biodiversity roofs and green walls they will be exploited. Integral bird and bat boxes will be included within suitable buildings. Futureproofing of the design not only using quality GI but maximising Sustainable Drainage Systems, integrating GI into the development parcels and ensuring that enhancements are included for otter, anticipating that the site will support *and* maintain otter in the future. Impacts to international designated sites (including SPA, SAC and Ramsar Sites) have been quantified and assessed within an HRA Stage 1 Assessment) (ES Appendix 7.19). No significant effects are foreseen resulting from the project and no further assessment is required.
	Paragraph 171	Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework53; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.	
	Paragraph 172	Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas and should be given great weight in National Parks and the Broads. The scale and extent of development within these designated areas should be limited. Planning permission should be refused for major development other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of: a) the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy; b) the cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and	

Policy	Policy/ Reference	Description in relation to biodiversity	Project Response
Adopted			
		c) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.	
	Paragraph 174	To protect and enhance biodiversity and geodiversity, plans should: a) identify and map components of the local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species and identify and pursue opportunities for securing measurable net gains for biodiversity.	
	Paragraph 175	When determining planning applications, local planning authorities should apply the following principles: a) If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused b) Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments) should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impacts on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest; c) Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and d) Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around development should be encouraged, especially where this can secure measurable net gains for biodiversity.	
	Paragraph 176	The following wildlife sites should be given the same protection as European sites: a) potential Special Protection Areas and possible Special Areas of Conservation; b) listed or proposed Ramsar sites; and c) sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.	

Policy	Policy/ Reference	Description in relation to biodiversity	Project Response
Adopted			

A Green Future: Our 25 Year Plan to Improve the Environment (2018)	Chapter 1: Using and managing land sustainably	• Embedding an 'environmental net gain' principle for development, including housing and infrastructure
		• Focusing on woodland to maximise its many benefits
		  ○ Supporting the development of a new Northern Forest
		  ○ Supporting larger scale woodland creation
		  ○ Appointing a national Tree Champion
			The design has been developed using and demonstrating Biodiversity Net Gain and Natural Capital principles exploring a range of metrics such as the Natural Capital Planning Tool to maximise the retention and enhancement of existing ecosystem services in order to minimise the need for protected species translocations and which uses the existing mature green infrastructure to provide habitat corridors and ecological mitigation. It is demonstrated within the Biodiversity Net Gain Calculations that the development has the potential to achieve a net gain of over 20%.
			Within the development an estimated additional 23ha of woodland are to be planted. Existing woodland areas are retained and enhanced, including off-site ancient woodlands.

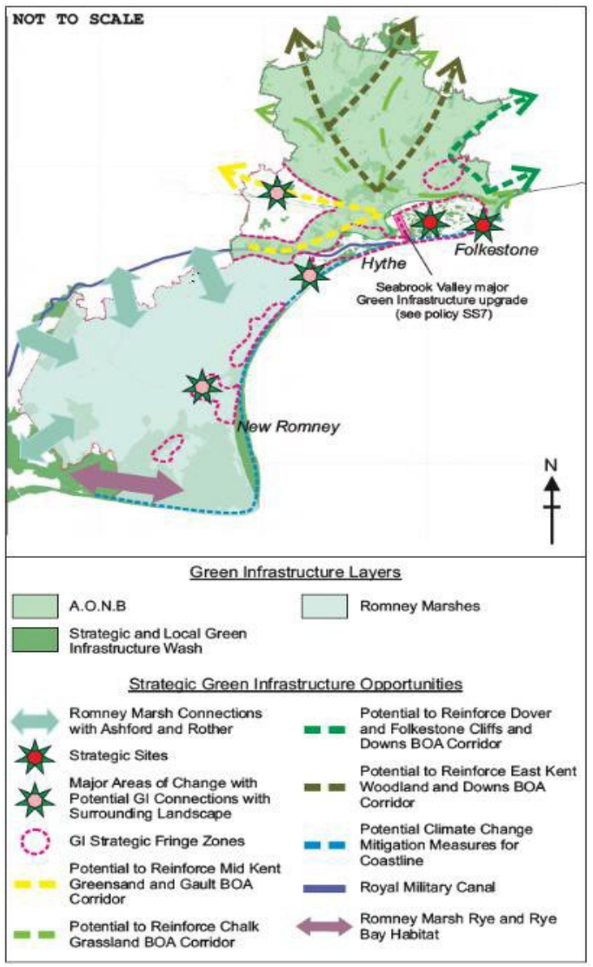
	Chapter 2: Recovering nature and enhancing the beauty of landscapes	• Protecting and recovering nature
		  ○ Publishing a strategy for nature
		  ○ Developing a Nature Recovery Network
		  ○ Providing opportunities for the reintroduction of native species
		  ○ Exploring how to give individuals the chance to deliver lasting conservation
		  ○ Improving biosecurity to protect and conserve nature
		• Conserving and enhancing natural beauty
			As part of the ES a project BAP has been written. This forms a strategy for the nature within the site during and after construction.
			This outlines the target communities for key habitats to be created within the Otterpool Site. This should be used to guide ongoing biodiversity management and mitigation during the operational phase of the development. The selection of the habitats listed in the site BAP is based upon:
			• Habitats and targets listed in the Kent Biodiversity Strategy, especially those which support the aims of the Kent BOA (Biodiversity Opportunity Areas) statements, particularly the Mid Kent Greensand and Gault BOA statement.
			• The habitats of value present and retained on the site within the development (particularly those which meet the criteria of habitats of principal importance in under Section 41 of the NERC Act (Anon 2006).
			• The principal habitats listed on Section 41 of the Wildlife and countryside Act 1981 (as amended) which it is appropriate to create within the site;
			• Habitats known to support protected or notable species which are present / have the potential to be present within the OPA.
			It is envisaged that this will be a live document, which is modified throughout the construction and operation of the Otterpool Site. Further details of the implementation of the Otterpool BAP are presented in ES Appendix 7.20.
			The Code of Construction Practice (CoCP) which will be compiled for the development will outline how biosecurity within the site will be maintained, for example preventing the spread of arboricultural diseases. As a component of the development, Invasive non-native species will be controlled on the site according to a management plan.

	Chapter 3: Connecting people with the environment to improve health and wellbeing	• Helping people improve their health and wellbeing by using green spaces
		  ○ Promoting health and wellbeing through the natural environment
		• Greening our towns and cities
		  ○ Creating more green infrastructure
		  ○ Planting more trees in and around our towns and cities
			Over 50% of the site area is proposed to be Green Infrastructure (GI). This includes extensive areas to ensure the health and wellbeing of individuals including parks, cycleways, footpaths, play areas and areas where individuals can enjoy nature.
			This is fully explored in the DAS which is being compiled in relation to the development.

	Chapter 6: Protecting and improving our global environment	• Providing international leadership and leading by example ○ Protecting and improving international biodiversity	Impacts upon birds (including species whose lifecycles cover multiple countries) have been quantified and appropriate mitigation has been proposed. Impacts to international designated sites (including SPA, SAC and Ramsar Sites) have been quantified and assessed within an HRA Stage 1 Assessment). (ES Appendix 7.19 No significant effects are foreseen resulting from the project. (ES Appendix 7.19) and no further assessment is required.

Policy	Policy/ Reference	Description in relation to biodiversity	Project Response
Adopted			
Shepway District Council Local Plan Review (2006)	Policy CO11 (Nature Conservation)	The District Planning Authority will not give permission for development if it is likely to endanger plant or animal life (or its habitat) protected under law and/or identified as a UK Biodiversity Action Plan priority species or cause the loss of, or damage to, habitats and landscape features of importance for nature conservation, unless: a) there is a need for development which outweighs these nature conservation considerations and b) measures will be taken to minimise impacts and fully compensate for remaining adverse effects.	The development has been informed by a suite of surveys conducted to identify the presence of priority habitats and species. Measures have been implemented to ensure that a measurable biodiversity net gain is likely to be achieved as a result of the development, which includes the provision of additional areas of Priority Habitats, including ponds, woodland and grassland. Measures to mitigate for impacts to specific faunal receptors have been outlined within the ES and in receptor specific Mitigation Strategies (ES Appendix 7.18).
	Policy CO13 (Nature Conservation)	Development proposals likely to have a harmful effect on the freshwater environment, including water courses, natural ponds, canals and sewers and adjoining banks, will only be permitted where harmful impact will be minimal, and where benefit in the form of increased access and / or water-based recreation outweigh the negative effects. In such cases, measures should be taken to minimise impacts and fully compensate for remaining adverse effects.	Ponds, rivers and waterbodies have been retained within the development and buffered. Additional areas of pond creation, including waterbodies for drainage and for wildlife are proposed. The Water Framework Directive Assessment which accompanies this ES demonstrates that there will be no likely significant detrimental impacts to the water environment (ES Appendix 7.22).
	Policy BE17 (Trees)	Development will not be permitted if it would damage or destroy any tree protected by a Tree Preservation Order (TPO) unless the removal of one or more trees would: a) be in the interests of good arboricultural practice; or unless b) the desirability of the proposed development outweighs the amenity value of the protected tree(s). If the removal of one or more trees is permitted as part of a development, a condition will require that at least an equivalent number, or more, of new trees be planted either on or near the site.	Trees with TPO within and around the OPA have been identified. These are being retained within the development. TPO trees are identified within ES Appendix 7.3. Trees are retained within the site where possible.
Shepway Core Strategy (2013)	Policy CSD4 (Green Infrastructure of Natural Networks, Open Spaces and Recreation)	Improvements in Green Infrastructure (GI) assets in the district will be actively encouraged as will an increase in the quantity of GI delivered by Shepway District Council working with partners and developers in and around the sub-region, including through pursuing opportunities to achieve net gains in biodiversity, and positive management of areas of high landscape quality or high coastal/recreational potential. Green infrastructure will be protected and enhanced and the loss of GI uses will not be allowed, other than where demonstrated to be in full accordance with national policy, or a significant quantitative or qualitative net GI benefit is realised or it is clearly demonstrated that the aims of this strategy are furthered and outweigh its impact on GI. Moreover: • Development must avoid a net loss of biodiversity. • The highest level of protection in accordance with statutory requirements will be given to protecting the integrity of sites of international nature conservation importance.	The design has been developed using and demonstrating Biodiversity Net Gain and Natural Capital principles exploring a range of metrics such as the Natural Capital Planning Tool to maximise the retention and enhancement of existing ecosystem services in order to minimise the need for protected species translocations and which uses the existing mature green infrastructure to provide habitat corridors and ecological mitigation. It is demonstrated within the Biodiversity Net Gain Calculations that the development has the potential to achieve a net gain of 20%. This is a significant beneficial effect of the scheme. Initially simple ‘risk/valuation maps’ were input into the masterplan process to ensure that a holistic approach to masterplan design could be undertaken and impacts to notable ecological features could be minimised. Habitats of value and areas which supported notable flora and fauna were identified and prioritised for retention and buffering with the development. This included areas identified as supporting priority habitats. Irreplaceable habitats including Ancient woodland are buffered to ensure that these areas are not adversely impacted by the development Over 50% of the site area is proposed to be GI. This includes extensive areas to ensure the health and wellbeing of individuals including parks, cycleways, footpaths, play areas and areas where individuals can enjoy nature. This is fully explored in the DAS which is being compiled in relation to the development.

Policy	Policy/ Reference	Description in relation to biodiversity	Project Response
Adopted			
		• A high level of protection will be given to nationally designated sites (SSSI and Ancient Woodland) where development will avoid any significant impact. • Appropriate and proportionate protection will be given to habitats that support higher-level designations, and sub-national and locally designated wildlife/geological sites (including Kent BAP habitats, and other sites of nature conservation interest). • Planning decisions will have close regard to the need for conservation and enhancement of natural beauty in the AONB and its setting, which will take priority over other planning considerations. Elsewhere development must not jeopardise the protection and enhancement of the distinctive and diverse local landscapes in Shepway (especially where this support the setting of the AONB) and must reflect the need for attractive and high-quality open spaces throughout the district. Shepway's GI network shown in Figure 5.3, and other strategic open space, will be managed with a focus on: • Protecting and enhancing biodiversity and access to nature, particularly in green corridors and other GI Strategic Opportunities in Figure 5.3, with appropriate management of public access (including a Sustainable Access Strategy for Dungeness and together with a strategic approach to the international sites as detailed above); and also avoiding development which results in significant fragmentation or isolation of natural habitats. • Identifying opportunities to expand the GI functions of greenspaces and their contribution to a positive sense of place (including enhancements to public open spaces and outdoor sports facilities). • Tackling network and qualitative deficiencies in the most accessible, or ecologically or visually important GI elements, including improving the GI strategic fringe zones in Image 7-1 through landscape improvements or developing corridors with the potential to better link greenspaces and settlements.	A SSSI is present in the centre of the site. This is designated for geological interest, and this feature is retained, with public access to study this feature being enhanced. Impacts to international designated sites (including SPA, SAC and Ramsar Sites) have been quantified and assessed within an HRA Stage 1 Assessment) (ES Appendix 7.19). No significant effects are foreseen resulting from the project and no further assessment is required. Ponds, rivers and waterbodies have been retained within the development and buffered. Additional areas of pond creation, including waterbodies for drainage and for wildlife are proposed. The Water Framework Directive Assessment which accompanies this ES demonstrates that there will be no likely significant detrimental impacts to the water environment (ES Appendix 7.22). Connectivity through the site by the public will be enhanced through footpaths and cycleways through GI areas, including a riparian park.

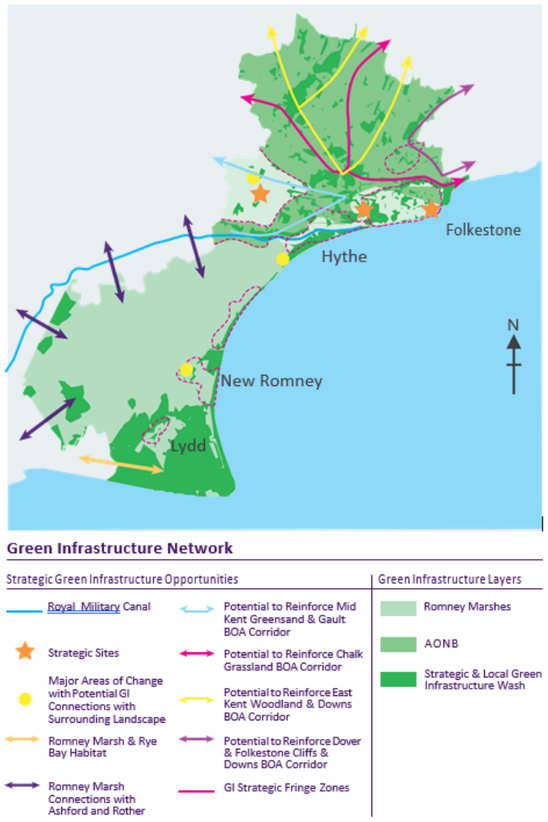
Policy	Policy/ Reference	Description in relation to biodiversity	Project Response
Adopted			
		 *Image 7-1 Green Infrastructure Network map as extracted from Shepway Core Strategy (2013)*	
Kent Biodiversity 2020 and beyond – a strategy for the natural environment 2015-2025	Mid-Kent Greensand and Gault BOA	Biodiversity Opportunity Areas (BOA) maps can be seen as a spatial reflection of the Kent Biodiversity Strategy. They indicate where the delivery of Kent Biodiversity Strategy targets should be focused in order to secure the maximum biodiversity benefits. The BOA maps also show where the greatest gains can be made from habitat enhancement, restoration and recreation, as these areas offer the best opportunities for establishing large habitat areas and/or networks of wildlife habitats. As such, they will be useful to local planning authorities in the development and delivery of Green Infrastructure and resilient ecological networks. The BOA statement documents will provide guidance on the conservation priorities which should be adopted in each area.	A small area of the site (including the East Stour River and an area of farmland in the north-east of the site) falls within the mid-Kent greensand and gault BOA. The Kent Biodiversity Opportunity Areas (BOAs) show where efforts should be targeted to achieve the maximum biodiversity benefits. Each one gives broad guidance on the conservation priorities in a given BOA. In line with this, the BOAs each have targets which guide these conservation actions. For the mid-Kent greensand and gault BOA, there are 8 targets, 6 of which are applicable to the project. The project proposes to contribute towards these targets, where possible. The project contributes towards these targets in a number of ways including: 1 Restore acid grassland and heath N/A, the soil types and habitats are not suitable to achieve this target on the Otterpool site.

Policy	Policy/ Reference	Description in relation to biodiversity	Project Response
Adopted			
		A small area of the site (including the East Stour River and an area of farmland in the north-east of the site) falls within the mid-Kent greensand and gault BOA. The Kent Biodiversity Opportunity Areas (BOAs) show where efforts should be targeted to achieve the maximum biodiversity benefits. Each one gives broad guidance on the conservation priorities in a given BOA. In line with this, the BOAs each have targets which guide these conservation actions. For the mid-Kent greensand and gault BOA, there are 8 targets, 6 of which are applicable to the project. The project has endeavoured to contribute towards these targets, where possible.	2 Enhance 10ha of species rich grassland on acid soils. Again, the soil types are not suitable to contribute towards this target. However, within the green infrastructure of the development, extensive areas of species rich grassland are to be created. This is quantified within ES Technical Appendix 7.21 3 Enhance or reinstate woodland management, including reconnecting fragmented woodlands. Although there are no areas of woodland within the OPA which are on the AWI (Ancient woodland inventory), it is proposed that areas of new tree and woodland panting on the site will increase the connectivity between wooded areas, particularly along the west of the site, between Harringe Brooks Wood and the East Stour River. 4 Achieve a quantifiable improvement in ecological status of all water bodies, as judged by Water Framework Directive indicators. As evidenced in ES Technical Appendix 7.22, the development will not have a negative impact upon the East Stour River (one of the Rivers within the BOA). Conversely, the increase in buffers around the river, and subsequent reduction in agricultural runoff is likely to increase the value of the river, as assessed according to WFD indicators. 5 Pursue opportunities to restore or recreate wetland habitats along the Stour and its tributaries, particularly where this may: • Provide opportunities for flood risk management and for recreation; • Contribute to the conservation of priority species; or • Extend and buffer Local Wildlife Sites. • Enhance at least 20ha of species-rich neutral grassland to bring it to UK BAP priority habitat Lowland Meadow quality. Extensive actions on the site are being conducted which will contribute towards this goal. North of the East Stour River, in the north-west of the site, a new wetland area with extensive areas of ditches and pond is being created to provide habitat for a range of species, including water vole and great crested newt. All along the East Stour River corridor, a new riparian park is being created, which will contain SuDS and recreation areas, contributing to both flood alleviation and providing a recreation resource. To the west of the East Stour River, an area of grass land is to be created (to the east of Barrowhill, Sellindge). This will be targeted as BAP quality lowland meadow, with appropriate actions and targets within the Otterpool BAP (Appendix 7.20). 6 Maintain appropriate management of key brownfield sites. There is only one small area of brownfield site within the OPA, Otterpool Quarry south of the A20. This is to be developed, but mitigation actions to preserve the limited habitats of note are proposed. These are outlined in the 'Invertebrates' mitigation section below. 7 Infrastructure and other development should avoid further fragmentation, particularly of wetland habitats and woodlands. The development contains an extensive green grid and a large amount of GI (over 50%). The design of the development retains the vast majority of the notable habitats within the site and retains and enhances connectivity. Action for naturally widely dispersed habitats (ponds, traditional orchards), wildlife associated with arable farmland, and widely dispersed species such as great crested newt will need to focus across the whole of the area and not just within the Biodiversity Opportunity Area boundary. Although one very small orchard is to be lost to the development, extensive new orchard areas are proposed, including one area south of Westenhanger Castle, and one area top the west of Lympne village. Within the development, a large number of new ponds, both wildlife ponds and SuDs features are to be created, which will increase connectivity between on and off-site ponds.

Table 7-3: Emerging Policy Relevant to the Project

Policy	Policy/Reference	Description in Relation to biodiversity	Project response
Emerging			
Shepway District Council Places and Policies Local Plan (Submission Draft, February 2018)	Policy NE2 (Enhancing and Managing Access to the Natural Environment)	**European Sites** Development will safeguard and protect all sites of European and Global importance, designated as Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites. Development must not result in significant adverse effects on these internationally important nature conservation sites, either alone or in combination with other projects and plans. The Council will expect development proposals to demonstrate and contribute to appropriate mitigation and management measures to maintain the ecological integrity of the relevant European site(s). **National Sites** For nationally important sites, including Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR), where developments may have a significant impact, an ecological impact assessment will be required. For proposals where impacts cannot be avoided or adequately mitigated, these will be refused, unless exceptional circumstances can be demonstrated. **Local Sites** Local sites, including Local Nature Reserves (LNR), Key Wildlife Sites (KWS) and Regionally Important Geological and Geomorphological Sites (RIGS) will be safeguarded from development, unless the benefits of the development outweigh the nature conservation or scientific interest of the site. Where development is considered necessary, adequate mitigation measures or, exceptionally, compensatory measures, will be required, with the aim of providing an overall improvement in local biodiversity and/or geodiversity. Opportunities will be sought to access and enhance the value of such sites for educational purposes, particularly in relation to promoting public awareness and appreciation of their historic and aesthetic value. **Protected Sites** Development proposals that would adversely affect European Protected Species (EPS) or Nationally Protected Species will not be supported, unless appropriate safeguarding measures can be provided (which may include brownfield or previously developed land (PDL) that can support priority habitats and/or be of value to protected species). **Development and the Natural Environment** All new development will be required to conserve and enhance the natural environment, including all sites of biodiversity or geodiversity value (whether or not they have statutory protection) and all legally protected or priority habitats and species. The Council will support development that: • Enhances, retains and protects existing sites and features of nature conservation value including wildlife corridors, ancient woodland and geological exposure that contribute to the priorities established through the Biodiversity Action Plan and the Green Infrastructure Plan; • Does not reduce, and where feasible, improves species' ability to move through the environment in response to predicted climate change, and to prevent isolation of significant populations of species; and • Incorporates features that enhance biodiversity as part of good design and sustainable development, including the creation of new pollinator habitat suitable to the scale of development	Impacts to international designated sites (including SPA, SAC and Ramsar Sites) have been quantified and assessed within an HRA Stage 1 Assessment) (ES Appendix 7.19). No significant effects are foreseen resulting from the project and no further assessment is required. A SSSI is present in the centre of the site. This is designated for geological interest, and this feature is retained, with public access to study this feature being enhanced. Other designated sites within the vicinity of the site have been identified and impacts quantified. Where appropriate measures have been incorporated to ensure no significant impacts upon these receptors result from the development. This includes buffers to prevent impacts to Harringe Brooks Wood (LWS and ancient woodland) and drainage designed to ensure no significant impact to Lympne Escarpment (SSSI). Over 50% of the site area is proposed to be Green infrastructure (GI)). This includes extensive areas to ensure the health and wellbeing of individuals including parks, cycleways, footpaths, play areas and areas where individuals can enjoy nature. This is fully explored in the DAS which is being compiled in relation to the development. Initially simple 'risk/valuation maps' were input into the masterplan process to ensure that a holistic approach to masterplan design could be undertaken and impacts to notable ecological features could be minimised. Habitats of value and areas which supported notable flora and fauna were identified and prioritised for retention and buffering with the development. This included area identified as supporting priority habitats. Irreplaceable habitats including Ancient woodland are buffered to ensure that these areas are not adversely impacted by the development The development uses and contributes to the existing mature green infrastructure to provide habitat corridors and ecological mitigation. It provides ecological connectivity through the site and to habitats present beyond the site. Measures to mitigate for impacts to specific faunal receptors, including EPS have been outlined within the ES and in receptor specific Mitigation Strategies (ES Appendix 7.18). A pollinator strategy has been created and is included as a component of the DAS being submitted in support of the application.

Policy	Policy/Reference	Description in Relation to biodiversity	Project response
Emerging			
	Policy NE3 (Protecting the District's Landscapes and Countryside)	The District has a number of undesignated sites, which may nevertheless host rare species or valuable habitats. Where a site is indicated to have such an interest, the applicant should observe the precautionary principle and the Council will seek to ensure that the intrinsic value of the site for biodiversity and any community interest is enhanced or, at least, maintained. Where an impact cannot be avoided or mitigated (including post-development management and monitoring), compensatory measures will be sought. The Council may, in exceptional circumstances, allow for biodiversity offsets, to prevent loss of biodiversity at the district level. Such compensation will be directed to Biodiversity Opportunity Areas (BOAs) within the district or projects identified in the Council's Green Infrastructure Plan.	The development has been informed by a suite of surveys conducted to identify the presence of priority habitats and species. Measures have been implemented to ensure that a measurable biodiversity net gain can be achieved within the development, which includes the provision of additional areas of Priority Habitats, including ponds, woodland and grassland. This is a significant beneficial effect from the project, providing a 20% increase in calculated biodiversity across the OPA boundary. Measures to mitigate for impacts to specific faunal receptors have been outlined within the ES and in receptor specific Mitigation Strategies (ES Appendix 7.18). Habitats targeted towards protected species will be created for maximum biodiversity benefits such as species rich grassland, selected individual trees, hedgerows and scrub, ponds for great created newts (GCN), hibernacula for reptiles and GCN, bat and bird boxes. Where possible, habitat design and creation will contribute to an increase of habitats of principal importance, particularly ponds. Where possible, the development contributes towards the targets of the Kent Biodiversity Strategy 'Biodiversity Opportunity Area' of the Gault and Greensand Ridge. This is explained within this ES Chapter.
Folkstone and Hythe District Council Core Strategy Review (2018)	Policy CSD4 (Green Infrastructure of Natural Networks, Open Spaces and Recreation)	**Green Infrastructure of Natural Networks, Open Spaces and Recreation** Improvements in green infrastructure (GI) assets in the district will be actively encouraged as will an increase in the quantity of GI delivered by the council working with partners and developers in and around the sub-region, including through pursuing opportunities to secure net gains in biodiversity, and positive management of areas of high landscape quality or high coastal/recreational potential. Green infrastructure will be protected and enhanced and the loss of GI uses will not be allowed, other than where demonstrated to be in full accordance with national policy, or a significant quantitative or qualitative net GI benefit is realised or it is clearly demonstrated that the aims of this strategy are furthered and outweigh its impact on GI. Moreover: a) Development must avoid a net loss of biodiversity, achieve net gain over and above residual loss. b) The highest level of protection in accordance with statutory requirements will be given to protecting the integrity of sites of international nature conservation importance. c) A high level of protection will be given to nationally designated sites (Sites of Special Scientific Interest and Ancient Woodland) where development will avoid any significant impact. d) Appropriate and proportionate protection will be given to habitats that support higher-level designations, and sub-national and locally designated wildlife/geological sites (including Kent Biodiversity Action Plan habitats, and other sites of nature conservation interest). e) Planning decisions will have close regard to the need for conservation and enhancement of natural beauty in the Kent Downs Area of Outstanding Natural Beauty (AONB) and its setting, which will take priority over other planning considerations. Elsewhere development must not jeopardise the protection and enhancement of the district's distinctive and diverse local landscapes (especially where these support the setting of the AONB), and must reflect the need for attractive and high-quality open spaces throughout the district. The GI network shown in Figure 5.2 and identified in supporting evidence, and other strategic open space, will be managed with a focus on: - Adapting to and managing climate change effects.	The design has been developed using and demonstrating Biodiversity Net Gain and the Natural Capital principles exploring a range of metrics such as the Natural Capital Planning Tool to maximise the retention and enhancement of existing ecosystem services in order to minimise the need for protected species translocations and which uses the existing mature green infrastructure to provide habitat corridors and ecological mitigation. It is demonstrated within the Biodiversity Net Gain Calculations that the development has the potential to achieve a net gain of 20%. This is a significant beneficial effect. This meets requirement (a). Impacts to international designated sites (including SPA, SAC and Ramsar Sites) have been quantified and assessed within an HRA Stage 1 Assessment) (ES Appendix 7.19). No significant effects are foreseen resulting from the project and no further assessment is required. This meets requirement (b). A SSSI is present in the centre of the site. This is designated for geological interest, and this feature is retained, with public access to study this feature being enhanced. Other designated sites within the vicinity of the site have been identified and impacts quantified. Where appropriate measures have been incorporated to ensure no significant impacts upon these receptors result from the development. This includes buffers to prevent impacts to Harringe Brooks Wood (LWS and ancient woodland) and drainage designed to ensure no significant impact to Lympne Escarpment (SSSI). With regards to the adjacent ancient woodlands, the following approaches are taken to enhance these areas: - For Harringe Brooks Woods, the buffer areas around this woodland will alleviate impacts associated with the intensive farming that currently surrounds this area up to the boundary of the ancient woodland. - Public access to this area will be discouraged to limit trampling, impacts to fauna such as dormouse and disturbance. This woodland is private, has no public rights of way and is not within the boundary of the outline planning application. - For Kiln Wood, the realignment of the A20 will reduce disturbance to the broad-leaved woodland that supports the ancient woodland. - The realignment will also deter access to this woodland by the public. This woodland will also continue to be private. These measures comply within policy (c). A small area of the site (including the East Stour River and an area of farmland in the north-east of the site) falls within the mid-Kent greensand and gault BOA. The Kent Biodiversity Opportunity

Policy	Policy/Reference	Description in Relation to biodiversity	Project response
Emerging			
		- Protecting and enhancing biodiversity and access to nature, particularly in green corridors and other GI strategic opportunities in Figure 5.2, with appropriate management of public access (including the Sustainable Access Strategy for Dungeness and together with a strategic approach to the international sites as detailed above); and also avoiding development which results in significant fragmentation or isolation of natural habitats. - Identifying opportunities to expand the GI functions of greenspaces and their contribution to a positive sense of place (including enhancements to public open spaces and outdoor sports facilities). - Tackling network and qualitative deficiencies in the most accessible, or ecologically or visually important GI elements, including improving the GI strategic fringe zones in Figure 5.2 through landscape improvements or developing corridors with the potential to better link greenspaces and settlements.  *Image 7-1: Extracted Figure 5.1 – Green Infrastructure Network map as extracted from the emerging Shepway Core Strategy review (2018), updated to include Otterpool Park as a 'Strategic Site'*	Areas (BOAs) show where efforts should be targeted to achieve the maximum biodiversity benefits. Each one gives broad guidance on the conservation priorities in a given BOA. In line with this, the BOAs each have targets which guide these conservation actions. For the mid-Kent greensand and gault BOA, there are 8 targets, 6 of which are applicable to the project. The project proposes to contribute towards these targets, where possible (demonstrating compliance with policy (d)). Compliance with policy E is demonstrated in other chapters of the ES (Chapter 12). Over 50% of the site area is proposed to be GI. This includes extensive areas to ensure the health and wellbeing of individuals including parks, cycleways, footpaths, play areas and areas where individuals can enjoy nature. A green grid is included within the site, to provide ecological corridors and spaces into which species can move in response to climate change. This is fully explored in the DAS which is being compiled in relation to the development. Connectivity through the site by the public will be enhanced through footpaths and cycleways through GI areas, including a riparian park. The riparian park is a key green corridor through the site.

Policy	Policy/Reference	Description in Relation to biodiversity	Project response
Emerging			
	Policy SS7 (New Garden Settlement – Place Shaping Principles)	**1. A landscape-led approach** • Proposals shall demonstrate a landscape-led approach that respects topography and views, particularly from the Kent Downs Area of Outstanding Natural Beauty and helps mitigate impact on views from the scarp of the Kent Downs, guided by a Landscape and Visual Impact Assessment; and • A green and blue infrastructure strategy shall be developed that enhances existing green and blue infrastructure assets in accordance with Policy CSD4. Additionally, the strategy shall deliver: • Advanced woodland planting and habitat creation using native species to benefit later phases of development, particularly from prominent locations visible from the Kent Downs Area of Outstanding Natural Beauty, and to avoid as far as possible temporary loss of biodiversity value when construction begins. Advanced woodland planting, habitat creation and community green space shall also be designed to relate to local landscape character and to prevent the coalescence of the new settlement with Lympne and to separate neighbourhoods within the settlement itself. Planting and habitat creation should also be used to provide distance buffers between the M20/High Speed transport corridor for noise and air quality mitigation purposes; • Clear net biodiversity gains over and above residual losses through the planting of native species and the creation of green ecological corridors to improve species' ability to move through the environment in response to predicted climate change, and to prevent isolation of significant populations of species. The strategy shall enhance nearby Harringe Brooks ancient woodlands (including ecological connections, future management and community access), Local Wildlife Sites, Otterpool Quarry Site of Special Scientific Interest and other sensitive ecological features, including the existing pond at the former Folkestone Racecourse, both within and outside the allocation boundary; • A new country park, easily accessible from the town centre and beyond and supported by and linked to other areas of strategic open space, that enhances the historic landscape setting of Westenhanger Castle; • Playing fields and sports provision, play areas, informal open spaces, allotments and woodland located to maximise use and meet the sporting, leisure and recreational needs of the garden settlement as informed by the council's Playing Pitch and Sports Facilities Strategies; • Publicly accessible, well-managed and high quality open spaces, which are linked to the open countryside and adjoining settlements. This shall be informed by an access strategy that seeks to protect and enhance existing public rights of way, and create new public rights of way. The strategy shall balance demands for public access with ecological and landscape protection, taking into account	Biodiversity opportunities and constraints have contributed to the landscape led approach to the development. Initially simple 'risk/valuation maps' were input into the masterplan process to ensure that a holistic approach to masterplan design could be undertaken and impacts to notable ecological features could be minimised. Habitats of value and areas which supported notable flora and fauna were identified and prioritised for retention and buffering with the development. This included area identified as supporting priority habitats. Irreplaceable habitats including Ancient woodland are buffered to ensure that these areas are not adversely impacted by the development. The design has been developed using and demonstrating Biodiversity Net Gain and the Natural Capital principles exploring a range of metrics such as the Natural Capital Planning Tool to maximise the retention and enhancement of existing ecosystem services in order to minimise the need for protected species translocations and which uses the existing mature green infrastructure to provide habitat corridors and ecological mitigation. It is demonstrated within the Biodiversity Net Gain Calculations that the development has the potential to achieve a net gain of 20%. Woodland planting is proposed within the development to screen the development from views from the nearby AONB. This is approximately 23ha of woodland planting. With regards to the adjacent ancient woodlands, the following approaches are taken to enhance these areas: - For Harringe Brooks Woods, the buffer areas around this woodland will remove impacts associated with the intensive farming that currently surrounds this area up to the boundary of the ancient woodland. - Public access to this area will be discouraged to limit trampling, impacts to fauna such as dormouse and disturbance. This woodland is private, has no public rights of way and is not within the boundary of the outline planning application. - For Kiln Wood, the realignment of the A20 will reduce disturbance to the broad-leaved woodland that supports the ancient woodland. - The realignment will also deter access to this woodland by the public. This woodland will also continue to be private. The design has been developed using and demonstrating Biodiversity Net Gain and the Natural Capital principles exploring a range of metrics such as the Natural Capital Planning Tool to maximise the retention and enhancement of existing ecosystem services in order to minimise the need for protected species translocations and which uses the existing mature green infrastructure to provide habitat corridors and ecological mitigation. It is demonstrated within the Biodiversity Net Gain Calculations that the development has the potential to achieve a net gain of 20%. This is a significant beneficial effect. A range of public open spaces are proposed, including a park south of Westenhanger Castle and a park to the south of the A20 incorporating the SSSI area of Otterpool Quarry. Extensive playing fields and sports provision are to be incorporated within the design, totalling 33.4ha. Over 50% of the site area is proposed to be GI. This includes extensive areas to ensure the health and wellbeing of individuals including parks, cycleways, footpaths, play areas and areas where individuals can enjoy nature. This is fully explored in the DAS which is being compiled in relation to the development.

Policy	Policy/Reference	Description in Relation to biodiversity	Project response
Emerging			
		the impacts of increased access on the Kent Downs AONB and Folkestone to Etchinghill Escarpment Special Area of Conservation and other protected areas, which might necessitate the need for mitigation to be secured; • Sustainable drainage systems (SuDS) to maximise landscape and biodiversity value and to prevent downstream flooding of the East Stour River, developed as part of an integrated water management solution; and] • A long-term security and management plan of the Green Infrastructure estate which ensures community involvement and custodianship.	

Guidance

7.2.3 The following guidance has been used to inform the assessments:

- Birds of conservation (BoCC) 4: The Red List for Birds (December 2015) available online at https://www.bto.org/science/monitoring/psob (Ref. 7-5);
- Breeding Bird methodology based on British Trust for Ornithology Breeding Bird Survey (BBS) https://www.bto.org/volunteer-surveys/bbs/research-conservation/methodology (Ref. 7-21) .
- British Standard 5837 (2012) Trees in relation to design, demolition and construction – Recommendations (Ref. 7-35).
- CIEEM, (2018): Guidelines for Ecological Impact Assessment in the UK and Ireland (Ref. 7-10);
- Collins, J. (ed) (2016): Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition), London, The Bat Conservation Trust (Ref. 7-12);
- Defra Biodiversity Offsetting Metric (2012) available online at: https://www.gov.uk/government/collections/biodiversity-offsetting) (Ref. 7-36);
- JNCC, (2004), Common Standards Monitoring Guidance for Birds, Version August 2004, ISSN 1743-8160 (Ref. 7-20);
- JNCC, (2010), Handbook for Phase 1 habitat survey - a technique for environmental audit, ISBN 0 86139 636 7 (Ref. 7-9);

Consultation and Scoping

Consultation Summary

7.2.4 Throughout the masterplanning process, relevant stakeholders have been consulted in order to discuss the details of the proposed development. Through this consultative process, it has been possible to ensure that the concerns and requirements of these stakeholders could be understood, taken into account and addressed in the emerging scheme design. The discussions included approval of survey protocols and scope, discussion of important ecological features and mitigation approaches. The design of the GI, which is key to the landscape led design of the site, was also discussed in detail with stakeholders.

7.2.5 Consultation was conducted with a range of stakeholders throughout 2016, 2017 and 2018. Table 7-4 provides a summary of Consultee issues raised with respect to biodiversity and how they have been addressed. Copies of the consultation responses are presented in ES Appendix 7.2.

Table 7-4 Summary of Consultation at 'Stage 1'

Consultee/Contact/Date	Summary	Actions	Location of consultation / minutes
Environment Agency (EA) **10 October 2016** Consultation between: Steve Smith (EA) Brandon Murray (Arcadis) Telephone conversation	Telephone conversation confirmed that signal crayfish *Pacifastacus leniusculus* were present within the East Stour Catchment which makes the co-habitability by white clawed crayfish unlikely.	This information was added to the scoping assessment for white clawed crayfish.	ES Appendix 7.2
Environment Agency (EA) **14 November 2016** Consultation Between Ghada Mitri (EA) Brandon Murray (Arcadis) Renuka Gunasekara (Arcadis) In person	Key design issues were discussed. Potential impacts to watercourses were identified as key issues of concern for the EA. This included opposition to new culverts and an aspiration that existing culverts are removed.	Culvert design requests are being incorporated within the masterplan.	ES Appendix 7.2
Natural England **7 December 2016** Attendees included: Ben Hilder (Arcadis) Julia Coneybeer (NE) Brandon Murray (Arcadis) In person	An initial meeting was undertaken between Arcadis Landscape and Biodiversity team members on 7 December 2016. During this meeting key issues were discussed, including potential impacts to Natura 2000 and Ramsar sites.	N/A	ES Appendix 7.2
Natural England **10 May 2017** Consultation between: Julia Coneybeer (NE) Brandon Murray (Arcadis) In person	A survey scope proportional to the scale of the site, the stage in the planning process and assumed build-out time frame was proposed by Arcadis. NE was contacted to confirm the appropriate survey scope.	Arcadis implemented a proportional survey scope based on guidance and previous EIA experience.	ES Appendix 7.2
Kent County Council (KCC) **April / May 2017** Consultation between Nathan Coughlan (KCC) Brandon Murray (Arcadis)	KCC indicated that in addition to the surveys initially proposed, bat emergence and re-entry surveys on buildings to be demolished would be required.	The survey scope proposed was expanded to take this into account.	ES Appendix 7.2

- NARRS HSI Guidance based on Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M., 2000: Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155 (Ref. 7-13);
- Natural England (2013) Higher Level Stewardship Environmental Stewardship Handbook, 4th Edition available online at: http://publications.naturalengland.org.uk/publication/2827091(Ref. 7-37)
- Strachan, R., Moorhouse, T., Gelling, M, 2011: The Water Vole Conservation Handbook, Wild Cru (Ref. 7-11).
- Kent Biodiversity Strategy / BAP (Ref. 7-41, Ref. 7-46)
  - The Kent BAP has largely been superseded by priority habitats and Biodiversity Opportunity Areas which have been transposed into Kent Biodiversity Strategy, however these species are still relevant. The Kent BAP reflects the UK BAP and aims to conserve and enhance biological diversity in Kent and to contribute to the conservation of national and global diversity. Species and Habitats on this list are selected as species of national and / or regional importance.
  - The Kent Biodiversity Strategy (Ref. 7-46) supersedes the Kent BAP. This focusses on Kent Biodiversity Opportunity Areas (BOAs). BOAs are a spatial reflection of the Kent Biodiversity Strategy. They indicate where the delivery of Kent Biodiversity Strategy targets should be focused in order to secure the maximum biodiversity benefits. The BOA maps also show where the greatest gains can be made from habitat enhancement, restoration and recreation, as these areas offer the best opportunities for establishing large habitat areas and/or networks of wildlife habitats.

Consultee/Contact/Date	Summary	Actions	Location of consultation / minutes
Brief discussion of key concepts undertaken on 21 April 2017 Informal outline scoping sent to KCC by email on 9 May 2017. Site meeting undertaken to discuss specific details 24 May 2017 In person			
Kent County Council (KCC) **June 2017** Consultation between: Nathan Coughlan (KCC) Brandon Murray (Arcadis) Formal scoping email sent 22 June 2017 Response Received 30 June 2017 In person	KCC was broadly in agreement with the level of baseline data collection scope for the EIA stating that it would provide "a good robust assessment of the potential ecological impacts". Focus points were: Consideration of habitats of principal importance; Consideration of ancient woodlands; Habitat type and quality classifications; Mitigation for farmland breeding birds.	The survey scope proposed was expanded to align with these focus areas.	ES Appendix 7.2
Natural England (NE) **31st July 2017** Consultation Between Julia Coneybeer (NE) Alison Powell (Arcadis) Telephone conversation	The requirement to assess recreational pressure via dedicated surveys were discussed and their scope agreed.	Recreational pressure surveys scope agreed with NE.	ES Appendix 7.2
Environment Agency (EA) **15 September 2017** Consultation between Jennifer Wilson (EA) Brandon Murray (Arcadis) Email outlining proposed surveys for EIA sent to the Environment Agency. A response was received on 6 October 2017. In person	The Environment Agency reviewed the proposed surveys and the following statement was made: "My colleague has reviewed the Otterpool Scoping EIA you sent through on 15th September. We'd like to advise that the only aspect we can see that is missing are surveys for invasive non-native species (INNS). We are concerned that there are a number of INNS in the area and that they might be in the development site. Given that it is an offence to cause the spread of some INNS, for example Japanese Knotweed, it is important for the developer to:	Non-native invasive plant species were scoped into the EIA.	ES Appendix 7.2
	Identify the distribution of these species prior to any development taking place Plan for control and destruction of them Ensure there is appropriate disposal of any waste that might be contaminated by them Ensure operatives working at the site can identify them and have a plan in place to deal with future infestation during development."		
Kent Wildlife Trust (KWT), FHDC **17 November 2017** Attendees: Julia Wallace (FHDC); Brandon Murray (Arcadis); Vanessa Evans (Kent Wildlife Trust); Keith Nicholson (Kent Wildlife Trust) In person	The Otterpool Park masterplan was discussed with KWT. KWT outlined their areas of focus which included: Off-site impacts to ancient woodlands; Impacts to farmland birds; Wildlife corridor / GI corridor design. Potential for KWT to be more involved with the iteration of Otterpool Park design was discussed.	Arcadis proposals were KWT focus.	ES Appendix 7.2
Natural England (NE) **1 December 2017** Attendees: Julia Coneybeer (NE) Daniel Fagan (NE) Sarah Holman (NE) Brandon Murray (Arcadis) In person	Baseline information was provided, design, and mitigation discussed along with the scope of future surveys in support of detailed design. Mitigation discussions included the alignment of the scheme within the roll out of District Level Licensing for Great Crested Newt.	N/A	ES Appendix 7.2
Natural England **25 May 2018** Attendees: Julia Coneybeer (NE) Brandon Murray (Arcadis) Telephone conversation	The conversation was to discuss the HRA scoping letter (May 2018) Arcadis had produced to formally scope the content of the HRA with NE. Approach and initial thoughts outlined in the HRA scoping letter by Arcadis confirmed. Also recommended using the information from the HRA undertaken for the Shepway Core Strategy and the Shepway Places and Policies Plan to be used within our assessment and the need for	The HRA scoping was amended accordingly	ES Appendix 7.2

Consultee/Contact/Date	Summary	Actions	Location of consultation / minutes
	assessment of in combination effects. Julia requested that the consultation between Alison Powell (Arcadis) and herself regarding the recreational pressure surveys be reported within the HRA (particularly dog walking). Suggested that air quality monitoring of the Folkestone to Etchinghill escarpment may be required post scheme.		
KCC (providing biodiversity input on behalf of FHDC as the competent authority) PPA Meeting (Planning Performance Agreement) **21 June 2018** Multiple attendees including Anwen Victory (Arcadis) Brandon Murray (Arcadis) Helen Forster (KCC) In person	Primary focus of meeting was for Arcadis to outline surveys conducted to date and subsequent approaches to mitigation, where appropriate. Multiple issues discussed, including phasing of GI installation, baseline conditions.	Key issues raised by KCC to be incorporated within the EIA, including the phasing of GI provision and detailing an outline of the enhancement provided within the	ES Appendix 7.2
NE DAS (design and Access Statement) Meeting **24 October 2018** Multiple Attendees, including: Julia Coneybeer (NE) Brandon Murray (Arcadis) In person **Minutes received 7 November 2018**	Biodiversity net gain parameters were discussed in addition to the mitigation design for residual impacts to farmland birds.	Approaches on net gain and farmland bird mitigation agreed (including usage of DEFRA metric, leaving flexibility within mitigation approaches for changes in policy etc.). Discussion of figures relevant to DAS discussed). Issues from previous meetings discussed, including LVIA (Landscape and Visual Impact Assessment).	ES Appendix 7.2
Planning query to Steve Oram (PTES) (Peoples Trust for Endangered Species) Orchard Biodiversity Officer **Email received 22 November 2018** Email to Hazel Sargent at FHDC (Folkestone & Hythe District Council)	PTES (Peoples Trust for Endangered Species) provided details of an orchard within the site inaccessible to surveyors due to lack of land owner permission.	Baseline information incorporated into the EIA	ES Appendix 7.2
Via Email			

EIA Scoping Consultation

7.2.6 This section provides a summary of consultee responses provided within the Scoping Opinion process in relation to biodiversity, and the corresponding location in the ES where the matters raised are addressed.

Table 7-5 Summary of Scoping Opinion

N.B. Only responses which are related to Biodiversity are included within this section

Consultee/Contact	Summary Scoping Opinion Response	Arcadis Response and Reply	Location of correspondence
Temple on behalf of Folkestone and Hythe District Council Received via James Farrar	It was stated that the general approach and the methodology proposed for the assessment of biodiversity was considered acceptable. Main comments raised were in relation to: • Grading of the significance of impacts (the CIEEM methodology proposed was not considered appropriate, however this is the accepted methodology for EIA assessment for ecological features); • It was not agreed that impacts to: Invertebrates; White Clawed crayfish, Fish; Water bodies Could be ruled out from the information provided. • That further ecological surveys would be required throughout the planning and buildout process, and for reserved matters applications. • It was requested that the ES evidence why European designated sites (SPA, SAC or Ramsar) more than	• Arcadis requested clarification with regards to these issues. The clarification requested stated that: • Significance of impacts would be binary (significant or not significant) in line with the CIEEM recommendations, however the geographical scale of the impacts will be stated. • KCC responded to state that the CIEEM methodology is not an EIA methodology, but is compliant with the EIA regulations. However, as a response, Arcadis will provide further information for each impact in relation to the geographical scale of the impact, and the Extent, Magnitude, Duration, Frequency and Timing and Reversibility of the impact. • It was requested by Arcadis that further information be provided within the response as to whether the survey effort proposed is considered appropriate. KCC did not confirm that the survey protocol was appropriate as *"they would defer to the statutory bodies on this. If the applicant can provide written confirmation of agreement to their survey scope from Natural England / Environment Agency this would be the best way to close out these comments".* The Environment Agency have agreed with the survey scope, however Natural England were not able to review survey scope. Therefore, the applicant relies upon the agreement from KCC (acting on behalf of the LPA). • With regards to the scoping out of white clawed crayfish, Arcadis consider that that there is sufficiently compelling evidence that this species is not present within the ZoI of the development to rule	ES Appendix 7.2
		20km away have been scoped out of the EIA.	
Environment Agency Jennifer Wilson Planning Specialist	The environment agency response outlined the following points: • SuDS alone would be unlikely to provide all of the amphibian habitat / biodiversity benefit within the proposed development; • The usage of motion sensitive lighting; • Acknowledgement that Otter surveys are required; • A request that the removal of invasive plants is included within the requirements for the development; • That the biodiversity benefits of recreational areas should be maximised and accounted for.	Arcadis incorporated these comments into the development by: • Including a number of waterbodies designed for biodiversity benefit within the GI of the development, including a large area including a mosaic of new ditches in the north west of the site. • Specifying that a lighting strategy that should incorporate features such as motion sensitive lighting will be required for each phase. • Otter surveys have been conducted in relation to the development. • Invasive plant records and survey results are presented in ES Appendix 7.3. Prescriptions for removal and control of these species is presented in the ES. • The biodiversity of recreational areas is captured within the Biodiversity Net Gain report, presented in ES Appendix 7.21.	ES Appendix 7.2
Natural England	With regards to biodiversity, Natural England largely provided standing advice in relation to the EIA scoping.	Arcadis sought clarification that where the standing advice contradicted approaches discussed with NE and or the LPA, the standing advice was superseded by this specific advice.	ES Appendix 7.2
		tis species out. This will be explained within the ES. • With regards to the scoping out of invertebrates, an additional scoping survey was conducted, informing the ES. This species will be scoped in to the assessment, with suitable mitigation applied. • Within the ES and ES Appendices, where further surveys are foreseen, this is stated. • Fish, water bodies and international designated sites between 20 and 30km form the development site will e scoped into the assessment, with appropriate evidence of mitigation demonstrated.	

The Study Area

7.2.7 The Study Area (SA) is the area within which habitat surveys have been undertaken within which the Outline Planning Application is located. The Zone of Influence (ZoI) describes the area over which the activities associated with the proposed Development could influence ecological features. The ZoI varies for different ecological receptors. The Study Area and ZoI has been established on the basis of a desk-based review of ecological features in the general vicinity of the application site boundary, together with the results of field surveys, a review of the likely areas affected by the proposed Development, and the outcomes of the consultation exercise. The Study Area is approximately 700ha. The study area is shown in Figure 1 in Appendix 7.1. In summary, the following areas are referred to in this report:

- The Study Area is an 700ha area within which habitat surveys were conducted.
- The OPA: The 579ha area within which development assessed within this ES is proposed. The OPA is located within the Study Area.
- ZoI: This is the Zone of Influence, the area over which the development has the potential to impact upon ecological receptors. For example, this varies from 30km from the OPA boundary (for example for international designated sites) to within site (for features such as trees). Within the ES appendices detailing surveys, this is referred to as the survey area or the site.
- FM Boundary: This is the Framework Masterplan Boundary. Within this area which includes the OPA, a total of 10,000 homes are proposed. The additional 1500 houses are considered as cumulative development in this chapter of the ES.

Establishing Baseline Conditions

Establishing the Existing Baseline

7.2.8 The baseline conditions have been established in part through a Desk-based Assessment that obtained existing records from Kent and Medway Biological Records Centre (KMBRC) (Raw Data presented in Appendix 7.5) relating to habitats and species of nature conservation concern both within the site and within the 2km search area defined on the basis of the ZoI for the development.

7.2.9 Desk-based ecological information was also analysed for within 2km for non-statutory designated sites. The search area was extended to 5km for nationally designated statutory sites (including Sites of Special Scientific Interest (SSSIs) and Local Nature Reserves) and to 30km for internationally Designated sites: Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites). The following resources were consulted:

- The Multi-Agency Geographic Information for the Countryside (MAGIC) website, publicly available data from “Magic” http://magic.defra.gov.uk/ the Natural England managed database (Ref. 7-23);
- Biological records centre data from Kent and Medway Biological Records Centre obtained March 2018;
- M20 Lorry Area Stanford West Interim Environmental Assessment Report (Ref. 7-25);
- NBN Atlas https://nbnatlas.org/ [accessed Spring 2018] (Ref. 7-31);
- WYG (2016) Folkestone, Kent, Extended Phase 1 Habitat Survey, Shepway District Council (Ref. 7-24).
- Ecology Solutions ltd (2014) Ecology Assessment, Land at Sellindge Kent (Ref. 7-49)
- Planning reporting for the Harringe Brooks Wind Park (Ecotricity) April 2012 (Ref. 7-26);
- Planning reporting for Link Park Phase 2 (Peter Brett) August 2015 (Ref. 7-27); and
- Ecology Report – Lympne, Former Lympne Airfield – Proposed Housing Development (CSa) January 2013 (Ref. 7-28).

7.2.10 In addition, fish and aquatic in data was obtained through a data request from the Environment Agency (EA) this was received on 9 January 2017. The fish data from the EA study was obtained from catch depletion electric fishing in June 2012. Data from the closest survey point, located 1400m west of the site was utilised, from TR 08040 38127.

7.2.11 Suitably qualified ecologists employed by Arcadis undertook field surveys within the Masterplan Site and the surrounding habitats, including habitat and protected species walkovers, initially conducted in October 2016 and updated throughout 2017 and into November 2018 to identify any habitats likely to be of conservation importance, and to investigate the presence (or likely presence) of protected species of plants and/or animals. The results of the 2016 surveys (extended Phase 1 habitat survey, general walkovers and arboricultural scoping) were used to scope dedicated surveys to inform the assessment and the design of the Masterplan. Consequently, further surveys were undertaken for: hedgerows, grasslands, breeding and wintering birds; great crested newt; invertebrates (scoping survey); badger; bats (including emergence surveys of potential roost sites and bat activity / transect surveys); dormouse; water vole; reptiles; and otter. The dedicated surveys were completed between March 2017 and November 2018. An overview of the methodologies of the receptor specific surveys are presented in Technical Appendix 7.1, with the detailed survey methodologies presented in each of the Technical Appendices 7.3 – 7.17. As outlined in the Technical Appendices 7.3 – 7.17, further surveys would be undertaken, at an appropriate time of year, in advance of each phase of detailed design and site clearance to inform the detail of mitigation measures as required. The first phase of construction currently scheduled for 2020. In particular to confirm the location and status of any new badger setts, bat roosts (especially those in trees) and potential locations of reptile habitat.

7.2.12 Where incidental records were recorded during surveys, the location of these was captured using hand help GPS devices / tablets.

Forecasting the Future Baseline

7.2.13 The future baseline considers how the habitats and species on the Site are likely to change in the absence of Development on Site taking account of developments that are listed in Chapter 2.4. It also considers the effects of climate and other environmental change. This takes into account management of the sites, likely future uses / changes to management.

Defining the Importance/Sensitivity of resource

7.2.14 In accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 as amended), and the guidance set out in the CIEEM Guidelines, it is considered inappropriate to attempt to investigate in detail all potential ecological issues in relation to the Site. It is therefore necessary, under the Regulations, to focus on those activities that could potentially generate significant ecological effects; this is determined by considering ‘ecological features’. In accordance with the British Standard BS42020:2013 Biodiversity- Code of Practice for Planning and Biodiversity, this assessment has followed the CIEEM guidelines.

7.2.15 In order to determine the likelihood of a significant ecological effect, it is first necessary to identify whether a receptor is sufficiently important for a significant impact upon it to be material in decision-making. To achieve this, where possible, animal species and their populations have been valued on the basis of a combination of their rarity, status and distribution, using contextual information where it exists. Habitats and plant communities are evaluated against existing selection criteria, wherever possible (such as those developed to aid the designation of SSSIs or non-statutory designated sites). Only those ecological features that it was considered could experience significant impacts (i.e. impacts that could adversely affect the integrity of the habitat or the favourable conservation status of a species’ local population), and which were identified as being of sufficient importance to be material to decision-making (i.e. of Medium (District/Borough) level importance or above), have been classified as being ‘Ecological Features’ and have been considered in the impact assessment. Those which are ‘Ecological Features are listed in Table 7-6, below.

7.2.16 The habitats and features within the ZoI are known as the ‘ecological features’. The nature conservation importance of each of the ‘ecological features’ considers the protected species and species of conservation concern that they may support, to avoid pseudo-replication. For example, the importance for species associated with the hedgerows (breeding birds, reptiles and hedgehogs) has been taken into account as part of categorising the overall importance of the hedgerows.

7.2.17 The following geographic frame of reference has been used to determine the importance of ecological features: International; National; Regional; County; and Local/Site; as set out in the EcIA guidance (Ref. 7-10). The specific criteria have been adapted from the document for the location, scale and duration of the development.

Table 7-6 Geographical context of Ecological Features

Importance of Ecological Features	Description
International and European	**Habitats** An internationally designated site or candidate site (Special Protection Area (SPA), provisional SPA, Special Areas of Conservation (SAC), candidate SAC, Ramsar Site, Biogenetic/Biosphere Reserve, World Heritage Site) or an area that would meet the published selection criteria for designation. A viable area of a habitat type listed in Annex I of the Habitats Directive, or smaller areas of such habitat, which are essential to maintain the viability of a larger whole. **Species** Any regularly occurring population of internationally important species, threatened or rare in the UK (i.e. an International Union for Conservation of Nature red list species that is also a UK Red Data Book or Section 41 species (of the NERC Act 2006). A regularly occurring, nationally significant population/number of an internationally important species.
National (England)	**Habitats** A nationally designated site (Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Marine Nature Reserve (MNR)) or a discrete area, which would meet the published selection criteria for national designation (e.g. SSSI selection guidelines). A viable area of a priority habitat identified as a priority under Section 41, or of smaller areas of such habitat essential to maintain wider viability. **Species** A regularly occurring, regionally or county significant population/number of an internationally/nationally important species. Any regularly occurring population of a nationally important species, threatened or rare in the region or county (see Local Biodiversity Action Plan). A feature identified as of critical importance in the UK under Section 41.
Regional (South East England)	**Habitats** Sites that exceed the County-level designations but fall short of SSSI selection criteria. Viable areas of key habitat identified in the Regional Biodiversity Action Plan (BAP) or smaller areas of habitat essential to maintain wider viability. **Species** Any regularly occurring, locally significant population of a species listed as being nationally scarce, which occurs in 16 of 100 10km^2 squares in the UK or in a Regional BAP. A regularly occurring, locally significant population/number of a regionally important species. Sites maintaining populations of internationally/nationally important species that are not threatened or rare in the region or county.
County (Kent County Council)	**Habitats** Sites recognised by local authorities, e.g. Local Nature Reserves or County Wildlife Sites. A viable area of habitat identified in County BAP. A diverse and/or ecologically valuable hedgerow network. Semi-natural ancient woodland greater than 0.25ha. **Species** Any regularly occurring, locally significant population of a species listed in a County BAP due to regional rarity or localisation. A regularly occurring, locally significant population of a County important species. Sites supporting populations of internationally / nationally / regionally important species that are not threatened or rare in the region or county, and not integral to maintaining those populations. Sites/features scarce in the County or that appreciably enrich the County habitat
Local / Site (Due to the scale of the development the site is considered to be significant at a Local level)	**Habitats** Non-statutory designations attributed by the Local Planning Authority such as Sites of Importance for Nature Conservation (SINCs) and Local Wildlife Sites (LWSs). Areas of habitat that appreciably enrich the local habitat resource (e.g. species-rich hedgerows, ponds etc). Sites that retain other elements that due to their size, quality or the wide distribution within the local area are not considered for the above classifications. **Species** Populations/assemblages of species that appreciably enrich the biodiversity resource within the local context. Sites supporting populations of County important species that are not threatened or rare in the County and are not integral to maintaining those population

Selection of Features for Assessment of Air Quality Impacts

7.2.18 This section outlines the methodology for the selection of ecological receptors with regards to potential air quality the proposed Otterpool development. This is a summary, a full explanation of the selection of all receptors in relation to air quality is presented in Chapter 6.

7.2.19 Some air pollutants (such as NOx) can have an effect on vegetation. Ambient concentrations of pollutants and deposition of particles can damage vegetation directly or affect plant health and productivity. Deposition of pollutants (such as nitrogen) to the ground and vegetation can affect the characteristics of the soil, which in turn can then affect plant health, productivity and species composition.

7.2.20 It is for these reasons why it is important to appraise potential air quality impacts on sensitive ecological receptors in the vicinity of the Proposed Development. These receptors are typically those with the following ecological designations:

- International Designated Sites: Special Area of Conservation (SAC); Special Protection Area (SPA); Ramsar sites.
- National designated sites: Site of Special Scientific Interest (SSSI)

7.2.21 In addition, a number of sensitive sites, including ancient woodland have been identified for assessment. These sites are summarised in Table 7-7.

Table 7-7: Ecological Receptors Identified for air quality impact assessment

Site Name	Location in relation to site	Assessed for construction dust impacts?	Assessed for local air quality impacts in 2022, 2029 and 2046?
Hatch Park SSSI	3.6km to north west	No – outside of construction dust study area	Yes
Seabrook Stream SSSI	3.6km to east	No – outside of construction dust study area	Yes

Site Name	Location in relation to site	Assessed for construction dust impacts?	Assessed for local air quality impacts in 2022, 2029 and 2046?
Folkestone to Etchington SSSI/SAC	3.6km to north east	No – outside of construction dust study area	Yes
Lympne Escarpment SSSI	0.3km to the south	Yes	Yes
Gibbins Brook SSSI	0.6km to the north	Yes	No – site located greater than 200m from affected road network
Otterpool Quarry SSSI	Within red line boundary	Yes	No – site cited for geological features which are not sensitive to nitrogen.
Folks Wood Ancient Woodland / LWS	0.3km to the east	Yes	Yes – due to proximity to site
Harringe Brooks Wood Ancient Woodland / LWS	Within red line boundary	Yes	Yes – due to proximity to site

7.2.22 Potential impacts upon the receptors are assessed as outlined in ES Chapter 6.

Methodology for Assessing Impacts

Impact Characterisation

7.2.23 As stated in the CIEEM guidelines (Ref. 7-10), the impact characterisation process involves identifying and characterising impacts and their effects. This includes:

- incorporating measures to avoid and mitigate negative impacts and effects
- assessing the significance of any residual effects after mitigation
- identifying appropriate compensation measures to offset significant residual effects
- identifying opportunities for ecological enhancement.

7.2.24 Within this chapter of the ES, the following parameters of each potential impact are assessed:

- positive or negative;
- extent;
- magnitude;
- duration;
- frequency and timing; and
- reversibility.

7.2.25 These categories, along with the geographical context of the Ecological feature (as shown in Table 7-6) are utilised to determine the 'character' of the impact and define it as 'significant' or 'not significant'. Details of how this is assessed is shown below.

Evaluation

7.2.26 The factors which will be taken into consideration in evaluating ecological features for both habitats and species following CIEEM guidelines. The frame of reference for the valuation of ecological resources in terms of geographical levels from International to Site level will be used as per Table 7-6. A range of documents will be consulted to assign that criteria, for example: County and Regional Biodiversity Strategies; the Birds of Conservation Concern (BOCC) 4: the Red list of Birds (2015) (Ref. 7-5) for breeding birds, which is a traffic light system of the highlighting species of nature conservation concern will also be considered; and 'A strategy for England's wildlife and ecosystem services, biodiversity 2020 indicators: 2018 assessment (Ref. 7-38).

7.2.27 In addition to the consideration of individual ecological features, the potential effects on ecosystem services will be discussed. These are the flow of benefits that people derive from the natural environment. The natural environment can be considered as a stock of natural capital from which these benefits – social, health-related, cultural or economic – flow. The ecosystem services delivered will also be considered as part of this assessment with reference to the UK National Ecosystem Assessment (UKNEA) (2011) (Ref. 7-3) and the Natural Capital Protocol (NCC 2016) (Ref. 7-4).

7.2.28 Biodiversity Net Gain calculations based on the Defra biodiversity offsetting metric (Ref. 7-36) have been undertaken. The valuation will be based on the condition of the habitats, based on the Higher-Level Stewardship (HLS) Guidance (Ref. 7-37) as directed in the metric guidance where possible. Connectivity will also be added to this metric. Where HLS guidance is not suitable, a bespoke valuation will be made based on the intrinsic value of the habitat, the species it supports and the connectivity it provides. After this, the habitats currently present on site will be mapped, and a valuation of these habitats will be conducted to produce biodiversity units as a baseline. Also, the areas of habitat post construction will be mapped, and valued. A calculation of the overall changed biodiversity value will be provided and utilised to demonstrate the biodiversity value of the development.

7.2.29 In the process of Ecological Impact Assessment (EcIA) it is important to select the appropriate features for inclusion in the assessment. In this case, a threshold of Site level value has been set. Therefore, even habitats and species valued at the Site level are relevant to the proposed Development assessment.

Assessing Significance

7.2.30 A significant effect is defined as one which is considered likely to affect the integrity or conservation status of an Ecological Feature. Where a significant effect is identified, the value of the receptor will be used to help determine the geographical scale at which the effect is significant. Thus, any negative effect which is considered to significantly affect the integrity of a receptor of, for example, national value will be identified as being a nationally significant effect.

7.2.31 Significant impacts can be both positive and negative. For the purpose of this ES, in line with CIEEM guidance ('significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features'). A significant effect is simply an effect that is sufficiently important to require assessment and reporting, to make it clear what the potential environmental consequences of permitting a project are. Significant effects encompass impacts on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including their extent, abundance and distribution).

7.2.32 The significance of the likely effects upon the Ecological Feature will be assessed against the design both before and after consideration of the additional mitigation measures. The latter will represent the assessment of the residual effects of the proposed Development.

7.2.33 The exception to this is the assessment of impacts to International Designated Sites (SPA, SAC and Ramsar Sites), which did not require additional mitigation to avoid impacts. A summary of the results of the HRA Stage 1 Assessment are presented in Table 7-42.

Cumulative Effects

7.2.34 A review of nearby consented schemes has been undertaken in the consideration of cumulative effects assessment. In addition to the proposed development outline planning application, the additional housing within the framework masterplan and the Sellindge extension is also included.

7.2.35 The framework masterplan housing is considered as a 'cumulative' scheme because the proposed development for this area is so far in the future (over 25 years away), that consideration of the potential impacts of this housing is outside of the scope of this ES. In addition, there is little quantitative impact information with regards to the Important Ecological Features in relation to this area and it is not practicable to consider the future baseline of the development. A cumulative assessment will need to be

made to ensure that the mitigation within the Outline Planning Application accommodates the future cumulative impacts of the additional framework masterplan housing.

7.2.36 There are other further consented schemes within 500m of the Study Area. Some of these schemes are of relevance with regards to the HRA and are considered within the separate HRA screening report (Technical Appendix 7.19).

Design

7.2.37 Additional mitigation will be required following the final design of the masterplan to evolve with detailed design. However, during the evolution of the masterplan, avoidance and reduction of impacts is being designed into the masterplan. Large areas around the East Stour River, woodlands and other important areas will be buffered from the built development. This will protect watersheds, enhance biodiversity and deliver recreational benefits. The biodiversity value of the green infrastructure will be maximised, for example, the SuDS treatment areas will also be designed as replacement habitat for amphibian, water vole and bats. Allotments and orchards will also be fully integrated with biodiversity needs. Recreational areas will also incorporate sensitive design such as limited lighting, raised walk boards or natural permeable surfaces and habitat buffers. Key corridors are being retained or created with tunnels and other connective measures indicated where fragmentation is unavoidable.

Residual Effects

7.2.38 After assessing the impacts of the proposal and once measures to avoid and mitigate ecological impacts have been finalised, assessment of the residual impacts will be undertaken. Any residual impacts that would result in significant effects would require additional design and or compensatory measures. The assessment will suggest such measures to be carried forward with the scheme.

Limitations and Assumptions

Limitations

7.2.39 The ecological baseline for this assessment has largely been informed by surveys undertaken in 2016, 2017 and 2018. Surveys undertaken in 2018 revealed that the conditions of the habitats on the Site had not changed significantly, and all of the survey data represented in Appendices 7.1 – 7.22 is considered appropriate to inform the masterplanning and ES.

7.2.40 Within each of the appendices (7.1 – 7.22) the individual limitations to each of the baseline surveys have been listed. As explained within the introduction, the level of survey conducted was robust, providing adequate baseline information for the masterplanning and EIA exercise for the outline application. Limitations which are fully listed in the EIA appendices include:

- Areas where access was not obtained or could not be obtained throughout the survey season;
- Areas and structures that were not accessed due to health and safety concerns;
- Surveys where weather impacted upon the survey protocol;
- Instances where technological equipment malfunctioned.

7.2.41 In each instance where this occurred, survey protocol was modified or data handled in a manner to minimise the impact of this upon the project, and it was determined that the limitations of the surveys did not impact upon the value of the data collected and allowed sufficiently accurate conclusions to be drawn.

7.2.42 It was discussed with consultees that the Development would take place over a large number of years and that pre-construction surveys would be undertaken in advance of each phase to inform licensing, refine any mitigation measures and take account of any changes in legislation or guidance. This approach would ensure that the mitigation employed on the Site during site clearance and construction is up-to-date and follows best practice guidelines.

7.2.43 Some areas of the site were inaccessible due to landowners / residents declining permission to access. The details of the locations where access was not permitted is shown in Figure 5 in appendix 7.1 and detailed in Appendix 7.1. Overall, the areas which were not possible to fully survey were approximately 6ha (or 1% of the OPA area) and this is not considered to have significantly impacted the veracity of the results.

Assumptions

7.2.45 Further surveys will be conducted at a later stage in the planning process to inform detailed design and the evolution of mitigation. The survey results presented in this Chapter are however considered sufficient to inform the masterplan. When conducting assessments, it has been assumed that the development will be conducted within the redline outlined. In addition, the widths of buffers are assumed to be at the minimum widths stated within the DAS.

7.3 Baseline

Existing Baseline Overview

7.3.1 This section of the report outlines a summary of the baseline conditions of the site. Full details of the surveys conducted on the site and the results of these assessments are presented in ES Appendices. A suite of surveys were undertaken within the wider Masterplan Site by Arcadis Consulting, the results of which are presented in Appendices 7.1 to 7.22.These Appendices are:

- Appendix 7.3 Habitat and hedgerow survey report;
- Appendix 7.4 Arboricultural scoping report;
- Appendix 7.5 Desk study and incidental records;
- Appendix 7.6 Reptile survey report;
- Appendix 7.7 Confidential badger survey report;
- Appendix 7.8 Hazel dormouse survey report;
- Appendix 7.9 Great crested newt survey report;
- Appendix 7.10 Otter and water vole survey report;
- Appendix 7.11 Bat survey results summary and impact assessment;
- Appendix 7.12 Bat activity survey (transects);
- Appendix 7.13 Bat building assessment and emergence / re-entry surveys;
- Appendix 7.14 Bat static detector surveys;
- Appendix 7.15 Breeding bird survey report including barn owl assessment;
- Appendix 7.16 Wintering bird survey report;
- Appendix 7.17 Invertebrate Scoping Report;
- Appendix 7.19 Habitats Regulations Assessment (HRA);
- Appendix 7.22 Water Framework Directive Assessment (WFD); and
- Appendix 7.23 Natural Capital Strategy and Ecosystem Service Impact Assessment.

7.3.2 Within the surveys a number of boundaries and site areas are referred to in the reporting. These vary between the surveys conducted, based upon the ZoI of the development for a given receptor. The table below (Table 7-8) outlines the area names referred to in this report and within the Chapter 7 technical appendices.

Table 7-8: Boundaries and areas referred to in this chapter of the ES

Area referred to in the ES / Technical Appendix	Explanation
The application Site boundary/ the Outline Planning Application (OPA) Site boundary	The planning application red line boundary. This is approximately 579ha in area. The 8500 homes within the outline planning application are located within this area.
Study area'	This is a larger area within which initial studies and surveys were conducted, in order to identify constraints and

Area referred to in the ES / Technical Appendix	Explanation
	opportunities for the outline planning application boundary. The OPA boundary is located within this area. This area is approximately 700ha.
'The survey area', 'the site', the ZoI	For certain receptors, the surveys were conducted within an area which extended beyond the OPA boundary (depending upon the ZoI of the development upon the receptor). For example, the survey area for great crested newts extended up to 500m from the site boundary.
The proposed Framework Masterplan/ the Framework Masterplan boundary (FM boundary)	The proposed Framework Masterplan of up to 10,000 homes. The additional proposals within this area over and above the 8500 homes are not specified, therefore, within this chapter the additional areas within the FM boundary are considered as a cumulative scheme.

7.3.3 For clarity, the OPA/study area and FM boundary are presented in Figure 1 in Appendix 7.1.

Site Description

7.3.4 The Site ('the are od search') comprises predominantly arable fields and grazed pasture supporting improved grassland. Some areas of the site supported species poor semi-improved grassland, namely areas within the Folkestone racecourse site, within Lympne airfield and smaller areas around field margins and woodland edges. Most of the field boundaries within the site were hedgerows. These varied, including defunct species poor hedgerows, intact hedgerows and species rich hedgerows with, trees. A subset of these hedgerows would be classified as 'important' under the Wildlife and Landscape Criteria of the Hedgerows Regulations (1997). Several of the hedgerows supported mature trees.

7.3.5 The mainline railway that links Folkestone to London (including the HS1 high speed line) and together with the M20 (which lies beyond the railway line) form the northern boundary to the Site. This railway line is on an embankment covered by trees and scrub.

Existing Baseline – Designated Sites

Designated Sites: 'International' Designated Sites within 30km of the site

7.3.6 Within 30km of the proposed development, 15 international designated sites were identified. The impacts to these sites is fully explored within the HRA Screening Report (ES Appendix 7.19).

7.3.7 The sites within 10km of the site are presented. The closest of these, Dungeness, Romney Marsh and Rye Bay SPA is 2.9km to the south east of the site, however, this only the Marine Component of the SPA. The terrestrial area of this SPA is located 8.75km to the south east (which overlaps with a SAC and Ramsar in the same location). The development has the potential to increase recreational impacts upon these designated sites and have effects through functionally linked land for avian receptors.

7.3.8 Folkestone to Etchinghill Escarpment is located 4.2km to the north-east of the site. This has relevance to the proposed development as the development has the potential to cause air quality changes due to the increase of traffic on the A20 and the M20 adjacent to this site. In addition, recreational pressures could be increased on this site. Beyond these sites, a number of SACs are present.

Protected Site	Approximate distance from proposed Otterpool study area (Km)	Description (adapted from site citation)
Dungeness, Romney Marsh and Rye Bay SPA (Marine Component) Dungeness, Romney Marsh and Rye Bay SPA (Non-marine Component)	2.9km SE (Marine Component only) 8.75km (South) (non-marine component)	The SPA protects intertidal and marine habitats for internationally important breeding and wintering waterbirds, birds of prey, passage warblers and breeding seabirds. The seaward boundary reaches, at its furthest, approximately 9 km out to sea at Rye Harbour. The western most point is Norman's Bay just west of Bexhill; the northern most point lies just south of Hythe. The landward boundary of the SPA follows the SSSI boundary and follows Mean High Water (MHW).
Folkestone to Etchinghill Escarpment SAC	4.2km NE	The SAC is primarily designated for supporting the following Annex I habitat type: Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites). The SAC is one of the largest remaining areas of unimproved chalk downland in Kent which supports a diverse breeding bird and lichen flora assemblage, and rare and scarce species, including Early Spider-orchid (*Ophrys sphegodes*), Late Spider-orchid (*O. fuciflora*) and Burnt Orchid (*Orchis ustulata*). Asholt Wood at the western end of the SAC is regarded as one of the best examples of a coppiced ash woodland in the county. NOTE: The SAC is also designated as a SSSI (see below).
Wye and Crundale Downs SAC	5.8km N	The SAC is primarily designated for supporting the following Annex I habitat type: Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites). The SAC supports an important assemblage of rare, scarce, and uncommon orchids, including Early Spider-orchid, Late Spider-orchid, Burnt Orchid, and Lady Orchid (*Orchis purpurea*). The SAC contains the largest UK colony of Late Spider-orchid, representing about 50% of the national population.

Table 7-9: 'International' designated sites within 10km of the site.

Protected Site	Approximate distance from proposed Otterpool study area (Km)	Description (adapted from site citation)
Parkgate Down SAC	9.1km NE	The SAC is located on the chalk of the North Downs and is centred on unimproved grassland on a west-facing slope of a dry valley. The SAC is primarily designated for supporting the following Annex I habitat type: semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) The SAC supports an outstanding assemblage of orchids, including the nationally rare Monkey Orchid (Orchis simian) and Late Spider-orchid together with the nationally scarce Musk Orchid (Herminium monorchis) and Lady Orchid.
Dungeness SAC	9.9km S	The SAC is designated for supporting the following Annex I habitat types: annual vegetation of drift lines and perennial vegetation of stony banks. The SAC is one of two representatives of Annual vegetation of drift lines on the south coast of England and contains the most diverse and most extensive examples of stable vegetated shingle in Europe, including the best representation of scrub on shingle. A feature of the SAC, thought to be unique in the UK, is the small depressions formed within the shingle structure, which support fen and open-water communities. The SAC is also designated for supporting the following Annex II species: great crested newts. The SAC includes many waterbodies and supports a large great crested newt population in a range of natural and anthropogenic habitats. NOTE: SAC also designated as Dungeness, Romney Marsh and Rye Bay SPA and Ramsar (see below).
Dungeness, Romney Marsh and Rye Bay Ramsar	9.9km S	Dungeness, Romney Marsh and Rye Bay is located on the south coast of England, on the border of East Sussex and Kent between Hastings and New Romney. This is a large area with a diverse coastal landscape comprising a number of habitats, which appear to be unrelated to each other. However, all of them exist today because coastal processes have formed and continue to shape a barrier of extensive shingle beaches and sand dunes across an area of intertidal mud and sand flats. The site includes the largest and most diverse area of shingle beach in Britain, with low-lying hollows in the shingle providing nationally important saline lagoons, natural freshwater pits and basin fens. Rivers draining the Weald to the north were diverted by the barrier beaches, creating a sheltered saltmarsh and mudflat environment, which was gradually in-filled by sedimentation, and then reclaimed on a piecemeal basis by man. Today this area is still fringed by

| Protected Site | Approximate distance from proposed Otterpool study area (Km) | Description (adapted from site citation) |
| | | important intertidal habitats, and contains relict areas of saltmarsh, extensive grazing marshes and reedbeds. Human activities have further modified the site, resulting in the creation of extensive areas of wetland habitat due to gravel extraction. As a whole, Dungeness, Romney Marsh and Rye Bay is important for breeding, wintering and passage waterbirds, wetland plants, bryophytes and invertebrates, and natural or near-natural wetland habitats. In addition to the internationally important wetland habitats and species, the Ramsar site and adjacent areas are also of national and international importance for a variety of non-wetland habitats and species. |

Designated Sites: National statutory Designated sites within 5km of the site (SSSI)

7.3.9 Within 5km of the proposed site, there are seven national statutory designated sites. These sites are listed in Table 7-10 and their locations are presented on Figure 2 in Appendix 7.1. These consist of six SSSI (Sites of Species Scientific Interest) and one Local Nature Reserve (LNR). One of these sites, Otterpool Quarry (SSSI) is within the proposed development site. However, this site is not designated for biodiversity value. The sites considered relevant to the proposed development are SSSI's Lympne Escarpment, Gibbin's Brook, Hatch Park, Seabrook Stream, Folkestone to Etchinghill Escarpment and LNR Poulton Wood, Aldington. The impacts to all of these sites will be considered within the ES.

Table 7-10: SSSI and LNR (within 5km of the site)

Site Name	Designation	Size (Ha)	Distance (m)	Direction	Description
Sites of Special Scientific Interest – SSSI					
Otterpool Quarry	Geological SSSI	10.9	Within study area	N/A	This quarry shows the finest section through the Cretaceous Hythe Beds in East Kent and is of significance in showing the contact between this formation and the Sandgate Beds above. N.B. Only listed within this chapter of the ES for completeness.
Lympne Escarpment	SSSI	143.1	300	S	The grassland and woodland of this SSSI are among the best remaining examples of semi-natural habitats on ragstone in Kent. Wet ash-maple is the predominant woodland type with a small area of calcareous ash-wych elm wood. Many plants usually associated with chalk soils occur in the grassland. The south-facing slope is close to the sea and the resulting mild humid conditions encourages the growth of ferns and mosses.
Gibbin's Brook	SSSI	16.6	650	N	The SSSI is comprised of an area of marshy grassland on peaty soils which has developed from an acidic valley bog and still retains many features characteristic of a bog. The site is also notable for its invertebrates, particularly moths.

Site Name	Designation	Size (Ha)	Distance (m)	Direction	Description
Hatch Park	SSSI	71.8	3,500	NW	The SSSI is designated for supporting unimproved acidic grassland, a scarce habitat in Kent, and ancient pollard woodlands, the latter supporting the richest epiphytic lichen community in the county.
Seabrook Stream	SSSI	23.8	3,800	E	The SSSI is comprised of alder carr and fen communities which support an exceptional number of cranefly species.
Folkestone to Etchinghill Escarpment	SSSI	269.5	3700	NE	NOTE: Part of the SSSI is also designated as Folkestone to Etchinghill Escarpment SAC. See above for description.
Local Nature Reserve – LNR					
Poulton Wood, Aldington	LNR	11.3312	3,400	W	Bluebell woodland with adjoining garden, fields, ponds, hedgerows, and willow plots.

Designated Sites – Non-statutory Designated Sites and Ancient Woodlands

7.3.10 Within 2km of the site, there are nine non-statutory designated sites, all LWS (Local Wildlife Sites). These include one site, Harringe Brooks Wood, which is immediately adjacent to the west of the site. The majority of this site is an Ancient Woodland (also listed below). This site is within the ZoI of the development and will be considered within the ES. Folks wood is an Ancient Woodland 200m to the east of the site. This site, along with the other sites within 2km of the development site will also be considered within the ES.

Table 7-11: Non-statutory designated sites (within 2km of the site)

Site Name	Designation	Distance (m)	Direction
Harringe Brooks Wood, Sellindge	LWS	0m	Immediately adjacent to the west of the site
Folks Wood, Pedlinge	LWS	200m	East
Pasture and Woods Below Court-at-Street, Lympne	LWS	500m	South-west
Royal Military Canal	LWS	850m	South
Chesterfield Wood, Sandling Park	LWS	1150m	East
Postling Wents Woods	LWS	1350m	North-east
Brockhill Country Park, Saltwood	LWS, Country Park	1650m	East
Tolsford and Summerhouse Hills	LWS	1700	North -east
Blackhouse Wood, near Aldington	LWS	1850m	West

7.3.11 Within 2km of the site, 24 ancient woodland blocks were recorded upon the ancient woodland inventory (AWI). The majority of these are small isolated blocks away from the development. The ancient woodlands that are considered to be within the ZoI of the development are: Harringe Brooks Wood; Great Priory Wood; Kiln Wood; Birches Rough; Folks Wood; Aldergate / Hillhurst Wood; Lympne Park Wood; Perry Wood; House Wood; Round wood; House Wood and Butcher Wood. All are located less than 1km from the site and will be discussed within this chapter of the ES.

Table 7-12: Ancient Woodlands within 2km of the site

Name and identification on the AWI (Ancient Woodland Inventory)	Type	Size	Distance from site	Direction from site
Harringe Brooks Wood 1486880	Ancient & Semi-Natural Woodland	22.6	0m	West
Great Priory Wood 1486901	Ancient & Semi-Natural Woodland	3.9	125m	North
Kiln Wood 1486641	Ancient & Semi-Natural Woodland	8.6	200m	East
Birches Rough 1484602	Ancient & Semi-Natural Woodland	13.0	200m	West
Folks Wood 1486890	Ancient & Semi-Natural Woodland	41.0	300m	East
Aldergate / Hillhurst Wood 1486794 1486793 1486792 1486798	Ancient & Semi-Natural Woodland	17.1	450m	South-west
Lympne Park Wood 1486657	Ancient Replanted Woodland	18.8	450m	South
Perry Wood 1486799	Ancient & Semi-Natural Woodland	3.7	500m	North-east
House Wood 1486851	Ancient & Semi-Natural Woodland	7.3	500m	East
Round wood 1484498	Ancient & Semi-Natural Woodland	1.7	550m	West
House Wood 1486929	Ancient Replanted Woodland	3.4	600m	East

Name and identification on the AWI (Ancient Woodland Inventory)	Type	Size	Distance from site	Direction from site
Butcher Wood 1486627	Ancient & Semi-Natural Woodland	1.6	700m	North
Unnamed woodland 1486919	Ancient & Semi-Natural Woodland	0.9	750m	North
Unnamed woodland 0484213	Ancient & Semi-Natural Woodland	1.3	1000m	West
Black Hill 1486887	Ancient & Semi-Natural Woodland	1.7	1100m	East
Bartholomew's Wood 1486724	Ancient & Semi-Natural Woodland	8.6	1100m	North-east
Unnamed woodland 1486739	Ancient & Semi-Natural Woodland	2.6	1250m	East
Cowyte Wood 1486723 1486722	Ancient & Semi-Natural Woodland	23.1 (two parcels)	1300m	North-east
Heane / Willow Woods 1486785	Ancient & Semi-Natural Woodland	3.1	1550m	East
Harp Wood 1486942	Ancient & Semi-Natural Woodland	1.1	1600m	East
Coopers Wood 1484796	Ancient & Semi-Natural Woodland	2.4	1600m	North
Hayton Wood 0486922	Ancient & Semi-Natural Woodland	11.7	1600m	North
Bolden Wood 1484282	Ancient & Semi-Natural Woodland	3.2	1700m	West
Backhouse Wood 1484476	Ancient replanted woodland	25.5 (two parcels)	1900m	West

Designated Sites: Other Designations

7.3.12 The site partially lies within the Biodiversity Opportunity Area - Mid Kent Greensand & Gault. The location of this is shown within the Desk Study Data (Appendix 7.5) as is the citation for this opportunity area., Below, a summary of the key targets for this area are presented below (extracted from Ref. 7-46).

Targets:

- 1 Major opportunities exist to recreate and restore acid grassland and heath. This should include restoration, by 2020, of at least 4ha at Ashford Warren; and creation of at least 10ha of acid grassland and heath in the heathland corridor from Lenham to Brabourne Lees, plus at least 10ha of acid grassland around the northern edge of Maidstone. Habitat blocks should be no smaller than 1 ha if no more than 500m from other existing or new acid grassland, and no smaller than 6ha if more isolated. Additional opportunities should be pursued for creation of acid grassland and heathland where this would contribute to the county-wide target of creating 28ha by 2020.
- 2 Enhance at least 10 ha of species rich grassland on acid soils, including newly created habitats, to bring them to UK BAP priority habitat quality.
- 3 Enhance or reinstate woodland management – including wood pasture management where appropriate – and restore plantations on ancient woodland sites to native woodland; extend and reconnect fragmented woodlands where this would not conflict with grassland conservation and enhancement.
- 4 Achieve a quantifiable improvement in ecological status of all water bodies, as judged by Water Framework Biodiversity Opportunity Area Statement Directive indicators.
- 5 Pursue opportunities to restore or recreate wetland habitats along the Rivers Medway, Stour and Len and their tributaries, particularly where this may • Provide opportunities for flood risk management and for recreation; • Contribute to the conservation of priority species; or • Extend and buffer Local Wildlife Sites. • Enhance at least 20ha of species-rich neutral grassland to bring it to UK BAP priority habitat Lowland Meadow quality.
- 6 Secure and maintain appropriate management of key brownfield sites, particularly where these support UK BAP priority species.
- 7 Infrastructure and other development should avoid further fragmentation, particularly of wetland habitats and woodlands.
- 8 Action for naturally widely dispersed habitats (ponds, traditional orchards), wildlife associated with arable farmland, and widely dispersed species such as great crested newt will need to focus across the whole of the area and not just within the Biodiversity Opportunity Area boundary.

7.3.13 Within the mitigation section of this chapter of the ES, it is outlined how the development meets the targets for the BOA, where applicable.

Existing Baseline - Habitats

Habitats on Site

7.3.14 There are a range of habitats on the site, as presented and described in ES Technical Appendix 7.3. The location and details of these semi-natural habitats are presented within Table 7-13 below.

7.3.15 Full details of the habitats described below are presented in ES Appendix 7.3. An overview of the site habitats is presented in Figure 5 in appendix 7.1.

Table 7-13: Semi-natural habitat receptors present within the site and approximate areas

Habitat	Approximate % of total site area
Arable	46.69
Improved grassland	25.45
Species poor semi-improved neutral grassland	14.14

Habitat	Approximate % of total site area
Semi-improved neutral grassland	2.84
Hardstanding	2.53
Amenity grassland	1.33
Broad-leaved semi-natural woodland	1.20
Riparian Corridor	0.67
Scattered trees	0.61
Mixed plantation woodland	0.58
Tall ruderal	0.53
Dense/continuous scrub	0.50
Scattered scrub	0.47
Standing water	0.45
Building	0.41
Fence	0.41
Bare ground	0.39
Broad-leaved plantation woodland	0.18
Ditch	0.13
ESP (ephemeral short perennial)	0.09
Introduced shrub	0.08
Defunct hedge species poor	0.06
Intact hedge species poor	0.06
Earth Bund	0.05
Hedge with trees native species-rich	0.04
Parkland scattered trees	0.04
Hedge with trees species poor	0.03
Running Water	0.02
Conifer hedge	0.01
Intact hedge native species-rich	0.01
Wall	0.00*

* 0.00 = less than 0.01%

Habitat Evaluations

7.3.16 Table 7-14 summarises the results of the baseline studies conducted along with the value of the habitat receptors. The valuation is based upon the presence and distribution of habitat within the site and their distribution and conservation status (including vulnerability, legal protection and listing on S41 of the NERC Act / Local BAP) of the habitat within Site, Kent, UK and International context. Habitats listed on Section 41 of the NERC Act are considered Habitats of Principal Importance, generally those that are most threatened and/or in greatest decline. Kent BAP is now superseded by the Kent Biodiversity Strategy; however both of the documents contain relevant information, and both are utilised within the assessments. The geographical valuation of each receptor is conducted according to the criteria presented in Table 7-6.

7.3.17 Data upon the distribution of habitats across Kent was utilised, obtained from the Kent Habitat Survey 2012 (Ref. 7-58) and the Kent BAP (Ref. 7-41). The Kent BAP is not currently in use and has been superseded by the Kent Nature Partnership Kent Biodiversity Strategy (Ref. 7-46), however the BAP contains more habitat specific information and is still relevant in this context.

Table 7-14 Valuation table for the habitat receptors

Habitat (and reason for selection as ecological feature)	Notes, locations and location of details in ES.	Age and source of data	Percentage / quantity within site	Evaluation Statement	Value
Ancient Semi-Natural Woodland registered on the Ancient Woodland Inventory	Harringe Brooks Wood, immediately adjacent to the west of the site. Kiln wood to the east of the site.	Data from habitat surveys conducted across the site between October 2016 – June 2018.	N/A adjacent to the site.	Ancient woodland only covers 2% of the UK and is an irreplaceable habitat. There are two Ancient Woodlands listed on the AWI in the vicinity of the site, namely Harringe Brooks Wood to the west and Kiln wood to the east Harringe Brooks Wood is approximately 30ha in area. The topography through the woodland is varied with a range of slopes. The canopy is dominated by Oak, Field Maple, Hornbeam, Ash and Sweet Chestnut, with the relative proportions of these species varying throughout the wood. The understorey is Hazel and Hornbeam coppice with Bramble. Ground flora is rich, and indicative of an ancient woodland, including Bluebell, Wood Avens, Wood Sedge, Dog's Mercury, Wood Spurge and Enchanter's- nightshade. There are a number of 'rides'; through the woodland creating heterogeneity. In addition, there are three ponds within this woodland and a number of small flowing ditches. The woodland supports species including hazel dormouse, bats and great crested newt. Kiln Wood is 200m to the east of the site past the A20. This woodland contains a pond and a small stream that drains to the east. This woodland contains mature Sweet Chestnut, Oak, Hazel, Hornbeam. The understorey is largely bramble, elder and hazel coppice. Considering that both of these woodlands are an irreplaceable habitat, will qualify as a S41 habitat and provide a range of ecosystem services, including landscape screening, drainage, erosion control, biodiversity and provisioning services, it is assessed that these are of National Value.	National
Lowland mixed deciduous woodland (S41 Habitat), broadleaved woodland and plantation woodland	Small woodlands on site including broad-leaved woodland (likely to be partially an ancient woodland, Park Wood), plantation woodlands, for screening. Ecosystems services of this habitat are presented in ES Appendix 7.23.	Data from habitat surveys conducted across the site between October 2016 – June 2018.	c.2% of site c.6.5ha of Broadleaved woodland and 3.5ha of plantation woodland within OPA	The woodlands on site vary, with some woodland on site having large mature trees, and varied species composition, such as Park Wood in the east of the site, and some woodlands with a younger age profile and more limited species composition, such as the small woodlands south of the A20. Park Wood, the areas around the River Stour and around the Racecourse and Westenhanger Castle have been there prior to 1877 (Old Maps). They comprise mature Oak and Ash (currently under threat from ash die back) with areas of Hazel coppice. Park Wood has ground flora indicative of ancient woodland. According to the Kent BAP (Ref. 7-41) (no longer active but still relevant), in 2008 there were approximately 44,072ha of woodland in Kent, with 37,247ha of this being Broadleaved woodland. The total woodland cover had declined by approximately 3000ha between 1961 and 2008, however an increase in woodland had occurred (Ref. 7-58). Kent is one of the more densely wooded counties in England but there is a scarcity of woodlands to the south of the site beyond Lympne Escarpment. The blocks of woodland are an important feature on site, supporting woodland plants that are uncommon in Kent and providing a range of ecosystem services including carbon sequestration, flood attenuation, erosion protection. They are a landscape feature which are visible in the wider area. They are also an important habitat for protected species including bats, dormouse (adjacent to the site) breeding birds and	County

Habitat (and reason for selection as ecological feature)	Notes, locations and location of details in ES.	Age and source of data	Percentage / quantity within site	Evaluation Statement	Value
				small mammals. It is considered that a number for the woodlands on site would qualify as priority habitats under Section 41 of the NERC Act.	
Hedgerows (S41 Habitat)	Hedgerows present across the site. Of the 67 hedgerows on site which were surveyed, only 12 are likely to qualify as important under the hedgerow regulations. Details in ES Technical Appendix 7.3. Ecosystems services of this habitat are presented in ES Appendix 7.23.	Data from habitat surveys conducted across the site between October 2016 – June 2018.	c.14km on site, c.12km within OPA	Species rich hedgerows, hedgerows identified as important in the hedgerow assessment, intact hedgerows (ES Appendix 7.3). There are 8,112km. of hedgerows in Kent (Ref. 7-41), however, approximately 62.6% of these are considered defunct, and only 14% are species rich. These provide important refuges for woodland plants and wind erosion and pollution butters as well as carbon sequestration. They are wildlife corridors for a number of protected species. They form part of the farmland habitat complex that supports farmland birds.	County
				Other hedgerows, defunct and species poor hedgerows, These Hedgerows provide many of the services above to a lesser quality and are much more numerous and widespread within Kent than the other hedgerow types.	Local / Site
Arable field margins (S41 Habitat)	Field margins are largely species-poor semi improved grassland. These vary in width from 0 – 20m but are largely 3 – 6m where present. The wider field margins are largely in areas of the site under HLS stewardship. Details in ES Technical Appendix 7.3. Ecosystems services of this habitat are presented in ES Appendix 7.23.	Data from habitat surveys conducted across the site between October 2016 – June 2018.	N/A not possible to quantify.	Arable field margins within areas of the site managed under the HLS Scheme / S41 on the NERC Act quality field margins The areas managed under the HLS scheme are presented in ES Appendix 7.21. The arable field margins that are likely to qualify as S41 quality are largely contiguous with these areas and are more species rich than the other margins across the site. They have the potential to support annual arable weeds and perennial plants. These margins are unlikely to qualify under faunal criteria, i.e. due to the presence of nesting birds or rare invertebrates but will qualify due to having >18 plant species per 100m square. Although these margins are currently impacted by the intensive arable farming on the site, these margins are wider and more floral species rich than those elsewhere on the site and are likely to be being managed to maximise ecological value (i.e. with regards to cutting regime). These areas have the potential to be a valuable environmental resource. Therefore, considering the future baseline of the habitat an assessment of county importance is made.	County
				Other field margins These are largely species poor, narrow and intensively managed for agriculture. However, they do still have value as a wildlife corridor and as a foraging resource for a range of species including invertebrates and birds.	Local / Site
Semi-improved and species-poor semi-improved neutral grasslands (important for a range of faunal and floral features)	The semi-improved and species-poor semi improved neutral grassland are across the site, and despite having low intrinsic value are important for invertebrates and reptiles and other notable fauna. Details in ES Technical Appendix 7.3. Ecosystems services of this habitat are presented in ES Appendix 7.23.	Data from habitat surveys conducted across the site between October 2016 – June 2018.	14.14% of site is Species poor semi-improved neutral grassland and 2.84% of Semi-improved neutral grassland	**Semi-improved neutral grassland** There are approximately 81,496 ha of grassland within Kent (Ref. 7-58). The grassland on site is not particularly notable, i.e. none of the grassland is considered to qualify as a S41 habitat. In addition, only a very small area of the site (2.84%) of the site is this habitat. In the areas surrounding the site, there are extensive areas of much higher quality grasslands. Particularly across the AONB to the north of the site and the Lympne Escarpment to the south. However, these habitats provide a range of ecosystem services including carbon sequestration, flood attenuation and erosion protection. They are a landscape feature	Local/ Site

Habitat (and reason for selection as ecological feature)	Notes, locations and location of details in ES.	Age and source of data	Percentage / quantity within site	Evaluation Statement	Value
				which are visible in the wider area. They are also an important habitat for protected species including bats, birds and small mammals. Considering all of this information, where this habitat does not qualify as a county value field margin as stated above, the areas of semi-improved neutral grassland on the site are considered to be of local/site value.	
				Species poor semi-improved neutral grassland Where this habitat does not qualify as a county value field margin as stated above, in line with the description for semi-improved neutral grassland, this is a relatively low value habitat when considered in the context of the vicinity of the site and across Kent. However, these habitats provide a range of ecosystem services including carbon sequestration, flood attenuation and erosion protection. They are a landscape feature which are visible in the wider area. They are also an important habitat for protected species including bats, birds and small mammals. Considering all of this information, the areas of species poor semi-improved neutral grassland on the site are considered to be of local/site value.	Local/ Site
Open mosaic habitats on previously developed land (S41 Habitat)	Only one area of this 'habitat' type is present within the site, within a disused quarry / lorry park south of the A20. Details in ES Technical Appendix 7.3. Ecosystems services of this habitat are presented in ES Appendix 7.23.	Data from habitat surveys conducted across the site between October 2016 – June 2018.	c.0.5% of site	Only one area of the site supported this type of habitat, a small disused lorry park in the centre of the site south of the A20. This habitat is largely compacted aggregate of hardstanding, within only small areas of tipped aggregate and sand/soil offering more interesting habitats. These habitats are easily translocated and / or replicated.	Local / Site
Standing water Ponds (S41 Habitat)	Within the ZoI of the site, 39 ponds were identified, of which of which 17 are within the development redline, 10 of which are considered to be of S41 standard. Details in ES Technical Appendix 7.3 and 7.9. Ecosystems services of this habitat are presented in ES Appendix 7.23.	Data from habitat surveys conducted across the site between October 2016 – June 2018 and GCN surveys conducted in 2017.	c.0.5% of site	Most of the S41 qualifications are based upon their support of Great Crested Newts and other notable species. The ponds that are likely to qualify as S41 ponds within the site are those that meet one or more of the following criteria: • Qualify under Annexe 1 of the Habitats Directive; • Supporting species of high conservation importance. • Supporting exceptional assemblages of key biotic groups. • Ponds of high ecological quality. These include the following ponds which are on or around the site: • Pond 5; • Pond 9; • Pond 11; • Pond 12; • Pond 15; • Pond 17; • Pond 27. • Ponds likely to qualify based on habitat and floral composition are: • Pond 8 (off site) in Harringe Wood despite being recently reprofiled the surrounding vegetation was indicative of a diverse habitat that will rapidly recolonise;	County (10 ponds)

Habitat (and reason for selection as ecological feature)	Notes, locations and location of details in ES.	Age and source of data	Percentage / quantity within site	Evaluation Statement	Value
				• Pond 6 (off site) in Harringe Wood; • Pond 16; • Pond 19 (Folkestone Racecourse Lake); • This is due to their: • Size (greater than 0.3ha); • Reasonable water quality; • Diversity of emergent and marginal plants of less common of species; • Heterogenous banks with varied bankside vegetation. Details on the locations of the ponds referred to and their habitats are presented in ES Appendix 7.9. Due to their classification as S41 habitats these are of County importance. However, ponds are widespread in Kent, therefore these features are not considered to be of greater than County value.	
				All other ponds on the site are of variable quality but are largely devoid of especially notable species (although they are, for example, a resource and foraging habitat for bats and birds). There are Schedule 9 species present such as New Zealand pigmyweed and parrot's-feather present in some of these ponds reducing their overall nature conservation value.	Local / Site
Running Water including the East Stour River, tributaries to the East Stour River and ditches.	The East Stour River runs through the site, from Westenhanger Castle in the east to Harringe Lane in the west. In addition, two tributaries to the East Stour River (south of the A20 and from Harringe Brooks Wood) are within the site. Ditches area also present within the site of which some contain running water. Details in ES Technical Appendix 7.3 and 7.10. Ecosystems services of this habitat are presented in ES Appendix 7.23.	Data from habitat surveys conducted across the site between October 2016 – June 2018 and otter and water vole surveys from 2017 and 2018.	c.0.02% of site c.9.5km on site	There are five main river catchments in Kent, covering c.6,000 ha (Ref. 7-41). Within the site, there is approximately 0.15ha of running water. The most significant riverine habitat within the site is the East Stour River. As of 2016, this river was classified under the WFD parameters as having moderate ecological status, moderate biological quality elements, good fish and invertebrate status and moderate macrophytes and phytobenthos status. In addition, this feature provides a range of ecosystem services, including drainage, water cycling, pollution control, landscape and recreational services and provisioning services, such as irrigation. In addition, this feature is known to support an assemblage of notable receptors, including fish, foraging bats and birds and aquatic invertebrates. Downstream of the site, the East Stour River is a tributary to the Great Stour, sections of which are the rare habitat 'chalk stream'. Due to the rarity and sensitivity of these chalk streams (there are only six which occur within Kent), the East Stour is assessed as being of Regional importance.	Regional (East Stour River)
				The two significant tributaries on the site drain to the East Stour River corridor. These run from the south of the A20 joining the East Stour to the west of Folkestone Racecourse and from Harringe Brooks Wood in the south-west to the East Stour River in the north-west of the site. These features provide a range of ecosystem service, including drainage, a landscape feature and a provisioning resource (for irrigation etc.). In addition, these features support an assemblage of notable receptors, including fish, foraging bats and birds and aquatic invertebrates. However, these features would not qualify as S41 habitats of principal importance. Considering these factors, these habitats are assessed as having County value.	County (tributaries of the East Stour River)

Habitat (and reason for selection as ecological feature)	Notes, locations and location of details in ES.	Age and source of data	Percentage / quantity within site	Evaluation Statement	Value
				There are over 40 ditches on the site, these are described in ES Appendix 7.10. Many of the ditches on site are of limited value. The majority of the diches are heavily managed (through cutting and dredging), impacted by farming activities with a denuded flora and fauna. However, these features do provide a drainage resource and are commuting and foraging resource and habitat for a range of flora and fauna, including invertebrates and water voles (in a subset of the ditches). Considering these factors, ditches on the site are considered to be of local/site value.	Local / Site (ditches)
Traditional orchard (S41 Habitat)	One very small orchard is present south of the A20. This area was not accessed for survey. Ecosystems services of this habitat are presented in ES Appendix 7.23.	Data from habitat surveys conducted across the site between October 2016 – June 2018 (access not permitted).	c.0.1% of site	Only one orchard is present on the site, a small area (c.0.9ha) south of the A20. Within the surveys conducted, as outlined in ES Appendix 7.3, access to this area was not permitted. A high level of assessment was made from the roadside. In addition, information was obtained from PTES (Peoples Trust for Endangered Species) in relation to the orchard area. No specific survey information was obtained but general information on concerns regarding the status of the habitats (as S41) the age of the tree stock present and the presence of noble chafer/other saproxylic species. The full response provided is presented in ES Appendix 7.2.	County (precautionary assessment)
'Riparian Corridor' (habitat for a range of faunal receptors and an ecological corridor)	This corridor is either site of the East Stour, and is largely uniform throughout its length, with trees and scrub vegetation, dominated by Alder, Willow, Oak, Ash and Bramble. Ecosystems services of this habitat are presented in ES Appendix 7.23.	Data from habitat surveys conducted across the site between October 2016 – June 2018.	c.0.7% of site	The riparian corridor represents a relatively homogenous habitat either side of the East Stour River with mature trees such as Alder and scrub. This vegetated area is largely between 1 and 5m wide on each side of the river, being wider (up to approximately 20m) in a small subset of areas. This habitat buffers the river from the intensively managed and farmed surrounding areas. It is also likely to provide bank stabilisation, shading and leaf litter and wood will provide in water heterogeneity. This vegetation provides landscape screening and is a feature visible from the surrounding areas. This is also an important wildlife corridor in an otherwise agricultural landscape supporting foraging bats and birds and terrestrial invertebrates (particularly within standing deadwood habitats) . The ecosystem services that this habitat provides are described in full in the Natural Capitol Strategy (ES Appendix 7.23). Considering all of these aspects, overall this habitat is considered to be of County value.	County
Individual scattered trees, parkland scattered trees	Across the site, scattered trees are present. These vary from small self-sown trees to significant field trees including Oaks, some of which have TPO's. A small area of parkland trees is present located between the Westenhanger Castle and Folkestone Racecourse. Details in ES Technical Appendix 7.3 and 7.4. The natural capitol value of this habitat is presented in ES Appendix 7.23.	Data from arboricultural and habitat surveys conducted across the site between October 2016 – June 2018.	c.0.65% of site	**Parkland trees, veteran trees and trees with TPOs** Within the site, there are in excess of 500 trees. A subset of these are within parkland (around Westenhanger Castle), they have been present since prior to 1877 (Old Maps) some of these may qualify as veteran trees (including large Oaks present within fields across the site) and / or have TPOs. These trees are an important landscape feature, providing historical context, screening and aesthetic services. In addition, trees provide water and drainage control, ground stabilisation, air quality remediation and urban cooling. In addition, these trees provide valuable resources for a range of fauna including birds and bats. Considering each of these aspects, it is considered that these tree types are of County value. Further details of trees on the site are presented in ES Appendix 7.4.	County

Habitat (and reason for selection as ecological feature)	Notes, locations and location of details in ES.	Age and source of data	Percentage / quantity within site	Evaluation Statement	Value
				Other trees on site As stated above there are over 500 trees within the site. In addition to the tree types listed above, there are a number of other trees within the site. These comprise scattered trees including a large number of mature Horse Chestnut, Ash, Willow and Hawthorn and in the south of the site, Sycamore. These trees are an important landscape feature, providing historical context, screening and aesthetic services. In addition, trees provide water and drainage control, ground stabilisation, air quality remediation and urban cooling. Also these trees are a habitat for a range of fauna such as birds, bats and invertebrates. Within the wider area surrounding the site, there are a much greater number of scattered trees, particularly within the area to Sandling Park in the east and associated with Port Lympne in the south. Considering these factors, overall the other trees across the site are considered to be of Further details of trees on the site are presented in ES Appendix 7.4.	Local / Site only
Arable / improved grassland	These are the most prevalent habitats on site by area and are distributed across the site. They are of minimal intrinsic value, but support farmland birds. Details in ES Technical Appendix 7.3. The natural capitol value of this habitat is presented in ES Appendix 7.23.	Data from habitat surveys conducted across the site between October 2016 – June 2018.	c.72% of site	Within Kent, these habitats are common and widespread, with over 127,272ha of arable land across the county. These habitats are not rare but have been under management for a long period of time, the soil quality is high in terms of agricultural value in the areas which were tested (largely being 'Grade 2') and they provide a habitat for annual and permanent plants typical of arable environments. These habitats provide flood attenuation and carbon sequestration in the permanent pasture. These are also part of the farmland complex with the hedgerows that support a range of protected species particularly farmland birds. Details of soil status is present in ES Chapter 5.	Local / Site only

Existing Baseline - Species

Notable Species Overview

7.3.18 Data on the presence of notable species recorded within the ZoI of the proposed development was collected between 2016 and 2018, through desk studies and surveys. The majority of the results are presented in ES Appendices: namely:

- Appendix 7.3 Habitat and hedgerow survey report;
- Appendix 7.4 Arboricultural scoping report;
- Appendix 7.5 Desk study and incidental records;
- Appendix 7.6 Reptile survey report;
- Appendix 7.7 Confidential badger survey report;
- Appendix 7.8 Hazel dormouse survey report;
- Appendix 7.9 Great crested newt survey report;
- Appendix 7.10 Otter and water vole survey report;
- Appendix 7.11 Bat survey results summary and impact assessment;
- Appendix 7.12 Bat activity survey (transects);
- Appendix 7.13 Bat building assessment and emergence / re-entry surveys;
- Appendix 7.14 Bat static detector surveys;
- Appendix 7.15 Breeding bird survey report including barn owl assessment;
- Appendix 7.16 Wintering bird survey report;
- Appendix 7.17 Invertebrate scoping report;
- Appendix 7.19 Habitats Regulations Assessment (HRA);
- Appendix 7.22 Water Framework Directive Assessment (WFD); and
- Appendix 7.23 Natural Capital Strategy and Ecosystem Service Impact Assessment

7.3.19 Desk study and incidental results that are relevant to the current site but are not presented in any of the appendices listed above are presented in the sections immediately below.

Additional Notable Species: Small Mammals

7.3.20 Full details of the mammal records returned from the desk study (excluding those records explored in detail elsewhere within the ES Appendices) are presented in Table 7-15.

7.3.21 A number of notable mammal records were recorded within the desk study, namely, brown hare (*Lepus europaeus*) (observed once on site on 12.06.2018 at OSGR TR 09648 37241 in the west of the site.); Eurasian water shrew (*Neomys fodiens*); harvest mouse (*Micromys minutus*) and west European hedgehog (*Erinaceus europaeus*). Considering the habitats present on the site, it is considered likely that all of these species are present on the site.

Table 7-15: Notable small mammals from records centre data from within the last 20 years

Species Common Name	Species (Binomial)	Date of most recent record	Distance (direction) from site	Conservation Status	
				NERC S41*	Kent RDBK**
Brown hare	*Lepus europaeus*	10/02/2014	Within site	Y	
Eurasian Water Shrew	*Neomys fodiens*	11/06/2009	1500m (north west)		Y
Harvest Mouse	*Micromys minutus*	01/01/2007	Within site	Y	Y
West European Hedgehog	*Erinaceus europaeus*	23/06/2012	Within site	Y	

* Species listed on S41 of the NERC Act (Ref. 7-33) i.e. Species of Principal Importance (these are species that are a material consideration within the planning process and are usually declining or of conservation concern).

** Kent Red Data Book – Species of county importance

Additional Notable Species: White Clawed Crayfish

7.3.22 While white-clawed crayfish *Austropotamobius pallipes*), have been recorded from the River Darent, the River Stour and the River Medway Catchments in Kent (Environment Agency data) populations are now largely limited to their headwaters with only four locations reported. One of which is a record from the Seabrook Stream near Hythe (>3km to the east of the site) in 2017.

7.3.23 Their habitat requirements are for relatively hard, mineral-rich unpolluted water with plenty of refuges, gravel beds being ideal. The East Stour River within the site does not support habitat typical of the requirements for this species.

7.3.24 The data search did not return any other records of the presence of white clawed crayfish, however a record of the non-native invasive signal crayfish was returned from within the site. These are the key competitor for resources of the native crayfish and also predate them. Most significantly they carry a crayfish plague (*Aphanomyces astaci*), a fungal disease that can wipe out populations of white-clawed crayfish.

7.3.25 A formal Environment Agency (EA) data request did not return any records of white-clawed crayfish within the Study Area. The EA are the holders of white clawed crayfish data and were contacted via telephone and the EA confirmed that white-clawed crayfish are considered absent from the East Stour (pers. comm. Steve Smith, 10 October 2016).

7.3.26 As a result, it is considered that in all probability white clawed crayfish are absent from the site. In addition, the East Stour River, the only waterbody which is likely to offer habitat to this species (if they are present) is being retained and buffered within the development, and this species is not considered further within the ES.

Additional Notable Species: Fish

7.3.27 Environmental data was obtained from the Environment Agency through their information service within regards to fish within the East Stour. The results have been extracted verbatim from EA data. "*Minnows were most abundant numerically whereas eel, brown trout and gudgeon dominated the standing crop. Eight species were present which is slightly higher than the national average of seven. They included brook lamprey, brown trout, bullhead and eel which are of conservation interest Standing crop in 2012 was dominated by eel and then salmonids (brown trout). Values recorded in 2012 were similar to those recorded in 2001-2 but less than those in 2003-6. The proportion of salmonids in the catch has decreased since 2006 whereas the standing crop of eels has remained stable since 2003".*

7.3.28 In addition, the WFD baseline conditions for East Stour River (GB107040019640) from Cycle 2 of the WFD assessment recorded the status of fish within the EIA to be 'good' (Environment Agency 2016). Overall, it is considered that the River East Stour is likely to support an assemblage of fish, including eel (*Anguilla anguilla*).

7.3.29 During the other surveys conducted on the site, fish were incidentally recorded in some of the water bodies. Table 7-16 below outlines the details of the incidental records of fish on site.

Table 7-16: Other fish species recorded across the site

Location (water body reference numbers ES Appendix 7.9)	Species recorded	Source of data
16	Stickleback (*Gasterosteus* sp.), carp (*Cyprinus* sp.). Managed as a fishing pond.	Recorded during great crested newt surveys. Presence of sturgeon confirmed through liaison with pond manager (Pers. Comm. Spring 2017).
19	Stickleback, carp.	Recorded during great crested newt surveys.

7.3.30 Although the presence of carp, stickleback and sturgeon within the standing water bodies on the site is not particularly ecologically notable, this does contribute to an understanding of the distribution of the species across the site, including great created newts (who are negatively impacted by the presence of fish).

7.3.31 The desk study data returned by KMBRC also returned records of Bullhead (*Cottus gobio*) within the East Stour River which runs through the site.

Additional Notable Species: Non-Native Invasive Animal Species (listed on schedule 9 of the WCA)

7.3.32 Across the site, non-native fauna (listed on Schedule 9 of the WCA) were recorded during the desk study and surveys (Table 7-17).

Table 7-17: Schedule 9 listed animal species recorded during the surveys conducted across the site.

Common Name	Scientific Name	Records of presence	Notes in relation to conservation objectives on the site
Signal Crayfish	*Pacifastacus leniusculus*	Records returned by NBN from within the site and presence within the East Stour River was confirmed by the Environment Agency. One trap for signal crayfish was found within the Stour River at OSGR TR09431 37713.	Signal crayfish are known to be vectors of crayfish plague, which can have a major impact upon native white clawed crayfish (***Austropotamobius pallipes***) within a catchment.

Common Name	Scientific Name	Records of presence	Notes in relation to conservation objectives on the site
American Mink	*Neovison vison*	Records returned from records search from KMBRC. NBN also returned records of this species from within 2km of the site. Evidence of this species including footprints and scats recorded during otter and water vole surveys conducted in 2017 and 2018. Locations presented in ES Appendix 7.10	Mink are voracious predators and are known to prey upon native fauna, including water voles.
Marsh Frog	*Rana Ridibunda*	Found on site during habitat and amphibian surveys (amphibian surveys).in ponds including pond 9, pond 16, and pond 19 (OSGR TR 10352 36663, TR 11816 36270 and TR 12364 36893 respectively).	Marsh frog impacts upon native amphibian species, through predation and by carrying disease.

Additional Notable Species: Non-native Invasive Plant Species (listed on schedule 9 of the WCA)

7.3.33 During the surveys, a number of invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act (1981, as amended) were recorded. It was noted in liaison with the Environment Agency that American Skunk Cabbage is known to be present in the East Stour River catchment, but none was observed within the surveys.

Table 7-18: Non-native invasive plants listed on Schedule 9 of the WCA observed within the site.

Common name	Scientific name	Location recorded within site
Parrot's Feather	*Myriophyllum aquaticum*	Pond within Hilhurst Farm, Lake within racecourse.
Canadian Pondweed	*Elodea canadensis*	Ornamental pond within racecourse
Japanese Knotweed	*Fallopia japonica*	Area adjacent to Barrowhill
Montbretia	*Crocosmia x crocosmifolia*	In the garden of the Willows
Cotoneaster (Wall)	*Cotoneaster horizontalis*	In the garden of Upper Otterpool In the front garden of 'White House' north of the A20.
Virginia Creeper	*Parthenocissus quinquefolia*	Upper Otterpool adjacent to Westenhanger Castle
Giant Rhubarb	*Gunnera manicata*	On island in the centre of pond
New Zealand Stonecrop	*Crassula helmsii*	Pond adjacent to Hilhurst Farm
Variegated Yellow Archangel	*Lamiastrum galeobdolon subsp. argentatum*	In front of Twin Chimneys, Stone Street

Notable Species Evaluation

7.3.34 Table 7-19 summarises the results of the baseline studies conducted along with the value of the receptors. The valuation is based upon the presence and distribution of the species / receptor within the site and their distribution and conservation status (including vulnerability, legal protection, listing on S41 or local BAP etc) of the species / receptor within Site, Kent, UK and International context. Habitats listed on Section 41 of the NERC Act are considered Habitats of Principal Importance, generally those that are most threatened and/or in greatest decline. Kent BAP is now superseded by the Kent Biodiversity Strategy; however, both of the documents contain relevant information, and both are utilised within the assessments. The valuation criteria are presented in Table 7-6. For some species and groups, a formal evaluation process is possible, utilising survey data. For bats, a valuation methodology based on published reports was utilised to value this species group, utilising the same geographical criteria. Full details of this valuation is presented in ES Appendix 7.11. A qualitative evaluation process was also conducted for birds, the following data was reviewed in order to inform the assessment of each species, and the overall assemblage:

- The survey data from the 2016 - 2017 surveys, including the peak counts of birds recorded;
- The notable status of the species;
- The data from the desk study regarding the number of species and distribution of species recorded;
- Data on population sizes recorded from the most recent 2014 Kent Bird Report (Ref. 7-39) (NB: It must be noted that this largely reports amateur and incidental sightings of birds and data not collected in a systematic fashion. The data that provided the most context for the site was utilised, whether that be the Kent wide cited distribution or data from a specific site survey);
- Information on the availability and quality of habitat for a given species within the site.

7.3.35 All of this data has been considered to calculate a 'geographical value' for each bird species and subsequently a valuation for the assemblage, of both wintering birds and breeding birds. Where the peak count of birds on the site exceeded 50% of the countywide reported peak counts and the habitat on site is likely to support or maintain the species, an evaluation of importance at "County" level was ascribed. These evaluations are presented in ES Appendices 7.15 and 7.16.

Table 7-19 Summary of species recorded within the site

Species	Details of presence within the site, location of details in ES	Age and source of key data	Evaluation Statement	Value
Wintering birds assemblage	The site supports a varied assemblage of wintering birds typical of a farmland setting, with a total of 69 species being recorded during the wintering bird surveys. Of these, 30 were considered notable. On average, around 2500 birds were recorded on each of the eight surveys. Details located within ES Technical Appendix 7.16.	Wintering bird surveys, conducted 2017 – 2017.	Overall, the majority of species are of local value, with the exception of: • Song thrush • Starling • Yellowhammer • Mistle Thrush • Common gull • Redwing • Fieldfare which were of County value. Full details on evaluation within ES Appendix 7.16.	Local to County Key receptors are wintering farmland birds and wintering thrushes and gull species (common gull) N.B. This valuation should be considered alongside the valuation of 'Farmland Birds'.
Breeding birds assemblage	Activity levels varied dependent upon the habitats as follows: • A high density of birds were recorded in the north-east of the site: the surrounds of Folkestone Racecourse Lake. This is likely due to the variety of habitats present in this area, including grassland, hedgerows, urban areas, ponds and scrub/trees; • The woodlands to the west of the site, namely Harringe Brooks Wood (immediately adjacent to the site) and Park Wood (in the west of the site), had a high number of records, both within the woods and foraging adjacent to the woods; • Along the East Stour River corridor, a significant number of birds were recorded, including some more notable species such as kingfisher. This area is likely to be of value because of the variety of feeding resources available, and the nesting opportunities offered by the dese habitats along the river corridor; • The records returned from within the arable and pastureland within the site were variable, with significant groups of farmland birds being recorded on some occasions, and low number being recorded within other surveys. In total 85 bird species were recorded during the field surveys (of which 79 are considered to be breeding birds, the remaining 6 were from an outlying early March survey and are discussed in the wintering bird report). Of these 79, 39 are considered 'notable'. The assemblage was typical of the habitats present within the site, with a few exceptions. One black redstart was unusual, this species is usually associated with urban areas, particularly large developments adjacent to water within the UK. It was considered that this species was a non-breeder in relation to the site and is unlikely to be supported or maintained by the site. Details located within ES Technical Appendix 7.15.	Breeding bird surveys, conducted 2017	The valuation of each of the notable species recorded on the site is presented within ES Appendix 7.15. Overall, the majority of species are of local value, with the exception of: • Dunnock • Linnet • Skylark • Starling • Stock dove • Turtle dove • Yellow wagtail • Yellowhammer which were of County value.	County Key receptors wintering farmland birds and wintering thrushes and gull species (common gull)

Species	Details of presence within the site, location of details in ES	Age and source of key data	Evaluation Statement	Value
Farmland bird assemblage (wintering and breeding) (A list of 'farmland' species was selected based upon the 19 species listed on the UK Farmland Bird Indicator List 1970 – 2007 (Ref. 7-59); and more generalist species which were observed to be reliant on the farmland within the site.)	In the wintering surveys, c.7000 'farmland birds' were recorded. There were significant numbers of some of the farmland bird species overwintering on the site. Starling were regularly recorded on the site (in fairly stable numbers) with a peak count of 450 birds, and there were significant numbers of other farmland species recorded within the site, including goldfinch (peak count 106), meadow pipit (peak count 96) and rook (peak count 183 animals). Although none of the numbers are particularly high, the results suggest that the site has value for wintering farmland birds. This value of the site for this bird group is likely to be reduced due to the current management of the site. The arable land on site is largely winter sown, which reduces the overwintering value of the land for farmland birds as winter feeding resources are ploughed into the ground. Across the majority of the site, arable field margins are largely narrow although they vary from negligible to c.10m in width. Of the 'farmland bird assemblage' species list species identified, all were confirmed, probably or possibly breeding species within the site. In total during the breeding surveys, 4106 'farmland birds' were recorded, with an average number of records of 513 birds per survey recorded. This is a recorded average of less than 1 bird per hectare of survey area, per survey. In addition, it was noted that the number of each farmland bird species recorded during the surveys differed greatly between surveys. This suggests that the species recorded utilise a larger area which includes the site. For example, goldfinch numbers recorded varied between 8 and 49, linnet between 1 and 47, starling between 11 and 412 and yellowhammer between 13 and 95. Details located within ES Technical Appendix 7.15.	Breeding and wintering bird surveys, conducted 2016 - 2017	Considering the number of species from the farmland bird indicator list recorded both wintering and breeding on the site (a number of which are also of value in their own right), an assessment of County value is made.	County
Schedule 1 bird - barn owl	Barn Owl Nesting Ninety-four buildings/building groups were assessed for their potential to support nesting barn owls. Of these, only eleven buildings / groups had the potential to support nesting barn owls, and only one building had definitive evidence of barn owl usage. Anecdotal evidence provided by conversation with the owner of Westenhanger Castle (pers. comm. 2017) suggested that a barn owl was known to roost and had been seen resting in a window of the castle's barn (building 2a) on multiple occasions. The only two barn owl observations on site were during bat surveys: one flew from north-east to south-west on 25/07/2017 at OSGR TR 11868 36984 and one flew from west to east on 16/08/2017 at OSGR TR 12342 37196; both observations suggested that the barn owl might be flying away from the castle's barn though this cannot be confirmed (see limitations section). Additional land owner communications suggest that barn owl had historically utilised the structures in Upper Otterpool and Otterpool Manor. Details of this are presented alongside the relevant building descriptions in ES Appendix 7.15. Of the eleven buildings with the potential to be roosts, only three are proposed to be removed, and only one of these is considered to have significant barn owl nesting potential (having barn owl pellets present). Barn Owl Foraging Within the Otterpool Park proposed development area, there were observations during the surveys of barn owls, and this species is likely to be foraging within the site. The habitat assessment recorded that only 18% of the site offers Type 1 or Type 2 habitats (optimal or sub-	Data from KMBRC Spring 2018, Wintering birds 2016 – 2017 and Breeding bird surveys 2017	Across the UK barn owl population appear to have increased between 1995 and 2008 (Ref. 7-60). Within Kent, barn owls are widespread but scarce, with 185 individuals being recorded in 2014 (Ref. 7-39). Barn owls were observed on the site and anecdotal evidence suggests that they may be breeding on the site. Only 18% of the site offers foraging habitat for this species. There are extensive areas of barn owl foraging habitats in the areas surrounding the site, and the value of the site is likely to be further reduced due to the presence of a motorway to the immediate north – it is known that major roads have a detrimental impact upon barn owls up to 1km from the road (Ref. 7-61). Considering all of these factors, a value of local/site is considered appropriate.	Local / Site

Species	Details of presence within the site, location of details in ES	Age and source of key data	Evaluation Statement	Value
	optimal habitats), and the remaining 82% is very poor or has little or no value for foraging barn owls. Details located within ES Technical Appendix 7.15, 7.16.			
Schedule 1 bird - Kingfisher	Two records (one visit three individuals were recorded and one more in June, a juvenile breeding birds visits 2 & 6) plus incidental records of nest-burrow and behaviour indicative of breeding recorded during surveys. A kingfisher nest-burrow was observed by Brandon Murray during a water vole survey on 25/05/2017. The location (is consistent with observations made by Ewan Gibson on 17/05/2017 during a reptile survey, when a kingfisher called every few seconds for approximately one minute near this location – such behaviour being suggestive of breeding activity Details located within ES Technical Appendix 7.15.	Data from KMBRC from March 2018, breeding bird surveys from 2017.	Four individuals recorded, breeding confirmed on site. Stable breeding population of 75 – 100 pairs in Kent, reports from 38 sites throughout Kent but only a handful of breeding activities reported. (Ref. 7-39).	County
Bats (foraging and commuting)	Nine species were recorded and identified to species level. The vast majority of bats recorded were common or soprano pipistrelles. Some rarer and / or less recorded bats were identified, areas of the site important for these species were identified. The most valuable areas appeared to be the following: • The corridor along the East Stour tributary in the south east of the site; • The area around the Folkestone Racecourse Lake; • An area around the racecourse buildings, although the activity here was almost all pipistrelles; • An area around Park Wood in the west of the site. Four locations had a notably higher proportion of not common or soprano pipistrelle calls. These locations were: • An area adjacent to Folkestone Racecourse Lake; • Within the bunker area to the west of the site; • Adjacent to Harringe Brooks woodland in the west of the site; • Adjacent to Park Wood in the west of the site. Full details in Appendices 7.12, 7.13 and 7.14.	Bat surveys conducted in 2017 and 2018. Full details in Appendices 7.11, 7.12, 7.13 and 7.14.	The assemblage of bats recorded on the site supported a reasonable number of species (with nine species being recorded and identified to species level) but the vast majority of bats recorded were common or soprano pipistrelles. Some rarer and / or less recorded bats were identified, the important areas of the site for these species were identified. Rarer and less recorded species were largely confined to discreet areas. When compared to similar sites (using Ecobat) the activity recorded on the site would put it in top 40% of activity levels for comparative sites, meaning the activity level was medium to high however, this is likely to be an overestimation (due to survey bias) and the site is considered to have medium activity levels when compared to similar sites. Full details of the evaluation of this Ecological Feature represented in ES appendix 7.11.	Local / Site With the exception of: Below foraging areas County • An area above and adjacent to Folkestone Racecourse Lake; • Adjacent to Harringe Brooks woodland in the west of the site; • Adjacent to Park Wood in the west of the site. • Along the tributaries to the East Stour River, • Areas along the East Stour River. Below commuting routes (within the following development Zones as shown on Figure 8 in Appendix 7.1) County • Z2A; • Z3B; • Z3C; and • Z4.
Bats (roosting and breeding	A total of 125 buildings were assessed for bat roosting potential, of which 33 were assessed as having negligible roosting potential, 47 were assessed as having low potential,36 as having moderate potential and 9 as having high roost potential. Of these structures assessed, a subset consisting of those structures with moderate or high roosting potential was selected for emergence and re-entry surveys and backtracking to identify any roosts present. Where individual structures were to be surveyed, a standard emergence / re-entry survey approach was undertaken, where multiple structures were to be surveyed together a backtracking approach was undertaken. During these surveys a total of 13 confirmed / probable roosts and three possible roosts were identified. All but one of these roosts was a small roost of common or soprano pipistrelles, with one roost being a likely maternity roost of brown long eared bats (within building 7j).	Bat survey conducted in 2017 and 2018. Full details in Appendices 7.11, 7.12, 7.13 and 7.14.	A full explanation in the surveys conducted is presented in ES Appendix 7.12 and an explanation of the valuation methodology is presented in ES Appendix 7.11. Bat roosts are valued based upon the species utilising these features and the type of roost. Within the OPA (outline planning application boundary) the bat roosts identified are predominantly of local value, with one maternity roost of brown long-eared bats being of county value.	County Likely maternity roost of brown long eared bats (within building 7j). Local / Site All other roosts

Species	Details of presence within the site, location of details in ES	Age and source of key data	Evaluation Statement	Value
	In addition, the desk study revealed a number of roosts on and around the site which had been recorded previously and within surveys conducted for previous planning applications. These included a maternity roost of pipistrelle bats within Lympne Village. Full details in Appendices 7.12, 7.13 and 7.14.			
Water vole	Of the 44 water bodies surveyed (on site and in the ZoI of the development) for water vole during the 2017 and 2018 surveys, two water bodies had high water vole populations, three water bodies had medium water vole populations and 19 water bodies had low water vole populations (once all of the survey results were combined). Details located within ES Technical Appendix 7.10.	Data from KMBRC and Otter and Water Vole surveys conducted in 2017 and 2018.	The south east of England has the highest percentage of occupied water vole sites and shows the slowest rate of decline. As such it represents the stronghold of the species. The Kent population is in the highest 1/3 of counties in mainland Britain (Ref. 7-41). The site has a number of areas which support a population of water vole including areas with medium and high population densities.	County
Badger	Across the survey area 103 badger setts were recorded, in addition to multiple latrines, hairs, pathways and mammal runs. Of the 103 setts, 18 were classified as active Main setts with the number of entrances ranging from 10 – 35. Eight setts were classified as Annexe, and six Subsidiary setts were classified as active and two as partially used. The remaining 66 setts were all classified as outlier setts. These consisted of three disused setts, 26 partially used setts and 37 active setts. The setts were widely distributed across the survey area, however they were largely associated with woodland, hedgerows or embankments. Details located within ES Technical Appendix 7.7.	Badger surveys conducted in 2017 and 2018	This species is widespread in Kent and is not currently of nature conservation concern at any geographical level.	Local / Site
Common Reptiles	Across the site, three common reptile species were recorded, common lizard, grass snake and slow worm. In total, over 500 individual records of reptiles were recorded across the site during the surveys. Common lizard was widely distributed across the site, with most survey areas supporting this species, but also a few key areas where populations were higher and a 'good' population was supported. The results of the survey suggested that no area of the site supported a particularly high population of grass snake, with peak counts in all areas not exceeding two adults. Distribution across the site was widespread but at low density. The distribution of slow worm across the site was much more variable, with the majority of the survey areas not supporting this species, and good populations being present in a number of areas where this species was present. During the Arcadis surveys in 2017, no adder were observed within the survey area. However, it is known that this species has been recorded within the vicinity of the site (from desk study data) and anecdotal evidence from local residents suggests that this species has been noted within the site area. Details located within ES Technical Appendix 7.6	Reptile surveys conducted in 2017	Largely low numbers of 'common' species of reptiles recorded. Higher populations were recorded in discreet areas. Within Kent, these species are relatively abundant and widely recorded (KMBRC data).	Local / Site
Great Crested Newts	Thirty-nine ponds were identified within the ZoI of the development. Of these 21 were surveyed for GCN, eight ponds had confirmed GCN presence. One pond, 15 had a medium population, while the rest were low. The highest peak adult count on any one night of survey was 11 found on the 15 April 2017 at Barrow Hill Farm in pond 15. Details located within ES Technical Appendix 7.9.	GCN surveys conducted in 2017, eDNA surveys conducted in 2018.	Great crested newts are relatively common and widespread in Kent (Ref. 7-41). The site supports largely low populations across a large area.	Local / Site

Species	Details of presence within the site, location of details in ES	Age and source of key data	Evaluation Statement	Value
Otter	Two probable otter signs were identified on the 28 September 2017. These included one otter spraint and one 'anal jelly', located approximately 185m apart, in the north-west corner of the site, along the East Stour River between Harringe Lane and Somerville Court Farm. These results are the first evidence of otter found within the local area (i.e. within 2km of the site) in over 40 years. No other otter signs were observed within the surveys, although anecdotal evidence from local residents suggests that otter have been observed. Details located within ES Technical Appendix 7.10.	Conducted in 2017 and 2018	For the 5th National Otter Survey of England in 2010 (Ref. 7-63) reports of otter in the southern region (in which most of Kent is based) were extremely low. For Kent including the area surrounding Otterpool Otter were absent, that is the Kentish Stour, East Rother North Kent. The report concluded the apparent demise of the otter population(s) in Kent and East Sussex. In 2011 two otter were spotted, with holts on the Medway and Eden rivers (Alastair Driver, the national conservation manager for the Environment Agency) which was the first return of otter to the county. Otter are still however very rare in Kent. The East Stour River has the potential to support rather than maintain a low number of individual otter.	County
Hazel Dormouse	No evidence of dormouse being present within the site or within the woodland to the east of the site (Sandling Park and Kiln Wood). There are dormouse present within the ancient woodland off-site to the west of the site (Harringe Brooks Wood), with one nest being found and records showing that a nest has been found previously. Details located within ES Technical Appendix 7.8.	Desk study data from KMBRC in March 2018 and surveys conducted from precious projects. Updated with comprehensive surveys in 2017 and 2018.	Not on site. Adjacent habitats support what is likely to be a low density population of dormouse, this species is not widespread in the UK and is in decline. Kent is one of the main strongholds for the species (Ref. 7-**1**). Not many records of this species have been recorded within the vicinity of the site.	County
Invertebrates (terrestrial)	A walkover of the site was conducted on the 8 of August 2018 of the areas most likely to have potential to support invertebrates of note. Most of the site has been intensively farmed for many decades (arable/grazing) and is of limited value to invertebrates. The field margins and hedgerows in the intensively farmed areas are species poor and would support impoverished invertebrate communities. Indeed, very few species of conservation concern have been recorded from the site. The habitats with most potential within the site include species rich hedgerows, semi-improved neutral grassland, ancient woodland, water bodies and riparian habitats. With the exception of the riparian corridor, these habitats are poorly connected at the landscape scale. The invertebrate surveys conducted on the former Lympne Airfield Housing Development recorded two nationally scarce species, both of which are flea beetles (*Longitarsus parvulus* Na and *Longitarsus dorsalis* Nb). In addition, eight locally scarce species were recorded: a flea beetle (*Aphthona euphorbiae*), a seed weevil (*Aspidapion aenuem*); a seed weevil (*Ceratapion carduorum*); a flower beetle (*Oedemera lurida*); a weevil (*Phyllobius maculicornis*); a weevil (*Sitona humeralis*); short-winged cone-head (*Conocephalus dorsalis*) and Roesel's bush-cricket (*Metrioptera roeselli*). The two latter species have both undergone dramatic range expansions in recent years and their conservation status requires revising. The KMBRC search of a 2km radius around the centre of the site returned a list of 120 species of conservation concern. The data was collated and analysed to present only the most recent record for each species. All pre-1998 records were also deleted. Most of the records were for Lepidoptera, which is likely to be an effect of survey bias, as these are the most conspicuous and commonly recorded group of insects. Most of the Lepidoptera on the list are UK BAP research only species. Notable exceptions to this include the Sussex emerald moth (*Thalera fimbrialis*) and the four-spotted moth (*Tyta luctuosa*).	Scoping survey conducted in 2018. Desk study data obtained from KMRC in March 2018 and from surveys conducted for previous planning applications.	There is limited suitable habitat on site, and few species of conservation concern in the biodiversity records.	Local / Site

Species	Details of presence within the site, location of details in ES	Age and source of key data	Evaluation Statement	Value
	The list also included a number of nationally scarce and locally scarce Coleoptera and a small number of nationally scarce Hymenoptera, Diptera and Hemiptera. Some of the species on the list, such as the beewolf (*Philanthus triangulum*) can no longer be considered as of conservation concern because of recent, rapid range expansions. The majority of these records are from Gibbin's Brook, Brockhill Country Park and Lympne Park Wood. Cinnabar moth (*Tyria jacobaeae*) was observed once on site on 13.06.2018 at OSGR TR 12242 37353 in the north east of the site. Details located within ES Technical Appendix 7.17.			
Fish	Habitats for fish located within the East Stour River corridor and other water bodies, including the Folkestone Racecourse Lake and a pond south of the A20 (referred to as pond 16 in Technical Appendices of the ES). Details located within ES Chapter	Data from EA obtained in January 2017.	Fish within the East Stour include eel (which receive legal protection) The other water bodies on site are either devoid of fish (as confirmed within the GCN surveys (ES Appendix 7.9) or stocked with fish for recreational fishing. Therefore, these receptors are of minimal ecological value.	Fish (particularly eel) within the East Stour County Fish within the other water bodies on the site Local / Site
Invertebrates (Aquatic)	Habitats for aquatic invertebrates located within the East Stour River corridor, tributaries and ditches across the site and other water bodies, including the Folkestone Racecourse Lake and a pond south of the A20 (referred to as pond 16 in Technical Appendices of the ES). Details located within ES Technical Appendix 7.22.	Data from EA obtained in January 2017.	The EA data defined the assemblage of aquatic invertebrates within the East Stour as being 'good' no species of particular note were reported. However, the aquatic features on the site are limited in distribution, all of the quality aquatic habitats are retained within the development (Ref. 7-43).	Local / Site
Brown Hare	Records returned from KMBRC. Observed once on site on 12.06.2018 at OSGR TR 09648 37241 in the west of the site. Details located within ES Chapter.	Incidental results from surveys in 2018. Desk study data from KMBRC, March 2018	Incidental recording on one occasion in the surveys. In Kent, numbers have declined dramatically and the distribution in the county is now limited; they are recorded most commonly from the north Kent and Romney marshes (Ref. 7-42).	County
Common Toad	Records returned from KMBRC. Recorded during the GCN surveys conducted in Spring 2017. Toads were found associated with ponds 15 and 19, the Folkestone Racecourse Lake (OSGR TR 12364 36893 and TR 11138 37095). Details located within ES Chapter and Technical Appendix 7.9	Desk study data from KMBRC, March 2018 and recorded during GCN survey conducted in 2017.	Toad were present in two ponds and in very low numbers.	Local / Site
Hedgehog	Records of this species returned from within the site in the desk study. This species was not observed on site but no specific surveys were conducted. Details located within ES Chapter.	Desk study data from KMBRC, March 2018	Recorded on site, but there is relatively limited availability of suboptimal habitat, (i.e. intensively farmed arable land). Likely to be present in discreet areas.	Local / Site
Harvest Mouse	Records of this species returned from within the site by KMBRC. No incidental reports during surveys. Details located within ES Chapter.	Desk study data from KMBRC, March 2018	Recorded on site, but there is relatively limited availability of suboptimal habitat, (i.e. intensively farmed arable land).	Local / Site
Non-native Invasive Plants (Schedule 9 of the WCA)	• The following species were recorded within the site. • Parrot's Feather Myriophyllum aquaticum • Canadian Pondweed *Elodea canadensis* • Japanese Knotweed *Fallopia japonica* • Montbretia Crocosmia x crocosmifolia • Cotoneaster (Wall) Cotoneaster horizontalis	Desk study data from KMBRC, March 2018 Habitat surveys conducted 2016 / 2018	These species have a negative impact on the semi-natural habitats on site.	Local / Site (adverse)

Species	Details of presence within the site, location of details in ES	Age and source of key data	Evaluation Statement	Value
	• Virginia Creeper Parthenocissus quinquefolia • Giant Rhubarb Gunnera manicata • New Zealand Stonecrop *Crassula helmsii* • Variegated Yellow Archangel *Lamiastrum galeobdolon* subsp. Argentatum • Full details are located in ES Appendix 7.3.			
Non-native Invasive Animals (listed on schedule 9 of the WCA)	Signal Crayfish (*Pacifastacus leniusculus*) records returned by NBN from within the site and presence within the East Stour River was confirmed by the Environment Agency. One trap for signal crayfish was found within the Stour River at OSGR TR09431 37713. Signal crayfish are known to be vectors of crayfish plague, which can have a major impact upon native white clawed crayfish (*Austropotamobius pallipes*) within a catchment. American Mink (*Neovison vison*) records returned from KMBRC. NBN also returned records of this species from within 2km of the site. Evidence of this species including footprints and scats recorded during otter and water vole surveys conducted in 2017 and 2018. Mink are voracious predators and are known to prey upon native fauna, including water voles. Details of signs observed in ES Appendix 7.10. Marsh Frog (*Rana Ridibunda*) found on site during habitat and amphibian surveys (GCN surveys) in ponds including pond 9, pond 16, and pond 19 (OSGR TR 10352 36663, TR 11816 36270 and TR 12364 36893 respectively). Marsh frog impacts upon native amphibian species, through predation and by carrying disease. Full details in ES Appendix 7.9.	Desk study data from KMBRC, March 2018 Incidental records from surveys conducted 2016 / 2018.	Mink are widespread and abundant on site, they are likely to be the limiting factor for the water vole population on site which have been evaluated at a County level. White clawed crayfish are rare within Kent and the habitat on site is not suitable therefore the signal crayfish are unlikely to be having an effect on any receptor on site or surrounds, however they are a widespread issue throughout the UK. Marsh frog while having an adverse effect on native amphibian species are not likely to be the limiting factor for GCN on site.	American Mink, County (adverse) Signal Crayfish and Marsh Frog, Local / Site (adverse)

Existing baseline – Ecosystem services

7.3.36 This section of the report considers the baseline of the Otterpool Park development site with regards to the ecosystem services provided by the site, such as the services provided by farmland, woodland and other habitats within the site. It therefore provides an assessment of how the functioning of the landscape within which the Scheme would lie.

7.3.37 Ecosystem Services are the flows of benefits which people depend upon from ecosystems which are communities of living organisms in conjunction with the non-living components of their environment (things like air, water and soil), interacting as a system. They are separated into provisioning, regulating and cultural services, supporting services were amalgamated into regulating by Common Classification of Ecosystem Services (CICES) version 5.1 (Ref. 7-65) but are separated here as appropriate to the site. Provisioning services are things like timber, food and drinking water; regulating services are those such as the soil cycle, pollination and disease control, cultural services include recreation and wellbeing which can also have a spiritual component. How biodiversity fits into this structure is still being debated and in the UK is often viewed as an indicator of ecosystem condition (Ref. 7-64).

7.3.38 The majority of the site is farmland, a mixture of arable and permanent pasture with woodland, hedgerows and scattered trees and a riparian corridor of trees along the East Stour River, with its tributaries, ditches and scattered ponds providing the only wetland features.

7.3.39 The baseline habitats within the site are described within section 0, in this section these have been considered as broad ecosystem types:

- arable farmland;
- permanent grassland;
- woodland scrub, hedgerows and trees; and
- wetland.

7.3.40 Two other broad typologies are not discussed in detail:

- bare ground (due to the very limited area on site)
- developed areas (no ecosystem service provision)

7.3.41 A baseline status of the site's ecosystem services is presented in Table 7-20 and Table 7-21. Appendix 7.23 presents these features and ecosystem service benefits in greater detail.

Table 7-20: Ecosystem services typologies before approximate areas

Habitat	Area (ha)	Approx. % of total site before development
Arable	270.3	46.69
Grassland habitat types (inc. tall ruderal vegetation)	256.7	44.34
Woodland scrub, hedgerows and trees	26.3	4.54
Wetland (rivers and ponds)	3.5	0.6
Bare ground	2.8	0.48
Building, fence, wall, hardstanding	19.4	3.35
TOTAL	579	100

Table 7-21: Qualitative description of the ecosystem services provided by the site.

Category	Ecosystem services	Potential ecosystem services benefits	Type of benefit	Description of the ecosystem services provided by the site
Provisioning	**Food**	Grasslands in the UK are the result of the human expansion to provide grazing and fodder for animal production— meat, dairy products, wool, etc. (Ref. 7-52). Arable land and orchards are similarly the result of a need to provide food for people.	Food for pollinators	All of the areas of grassland within the site and the hedgerows and trees will provide food for pollinators all though the majority of this is low quality. The most valuable areas of the site for pollinators are likely to be the semi-improved grassland areas and the species rich hedgerows.
			Grazing pasture for cattle and sheep	The majority of the grassland is managed as pasture, some of which is left ungrazed to provide a hay / silage crop. Grazing is mostly by sheep, although some fields have cows or horses. The grassland therefore provides valuable provisioning services for livestock (and thus people).
			Crop	The better-quality agricultural land is located at the north and eastern area of the Scheme. Approximately 292ha of the site are currently arable land, providing food resources for people.
			Fish	No commercial (or recreational) fishing on site.
	Water	Provision of water depends on how land is used and managed.	Water provision	Ponds and water-filled ditches are scattered throughout the site. They will provide a water resource for cattle and sheep for farmers and maintain native species. No potable water extraction is currently undertaken. No commercial fishery is known to be present within the site OPA.
Regulating	**Carbon and climate regulation**	The soil and vegetation type will attenuate carbon to varying degrees. UK grasslands sequester carbon at a higher rate than forests and arable land, which is a source of carbon emissions. However, overall attenuation values depend on the management of the land (Ref. 7-52). Grazing can result in the consumption of a large proportion of the annual above-ground net primary production. As grazing by livestock is the most common grassland management on the Scheme, there are also carbon emissions resulting from the animals' biology (ruminants or not) and the way they are managed (intensive or extensive farms). Taking all factors into account (Ref. 7-53) concluded that grasslands remaining as such were net emitters of 0.2-0.3 Mt C yr^{-1}, whereas Janssen et al. (Ref. 7-54) suggested that UK grasslands (they did not differentiate between improved and unimproved types) sequestered 242±1990 kg C ha-1 yr^{-1}. Overall grazed grasslands are thought to sequester -2.20 tCO2-e ha^{-1} yr^{-1} (Ref. 7-55). Recent research by Devon Wildlife Trust (Ref. 7-56) has demonstrated that unimproved Culm grasslands store up to twice as much carbon compared to intensively managed grassland soils. One of the most important regulating services that woodlands provide. The total carbon stock in UK forests (including their soils) is around 800 megatonnes of carbon (approximately 2,900 Mt of carbon dioxide equivalent). Woodland creation is judged to be a highly cost-effective and achievable form of net emission-reduction, and because forests are less limited in where they can be grown, they have a greater potential to generate income as a land use (through timber, etc.), and have potentially high value for other services (Ref. 7-55).	Carbon sequestration and climate regulation	Owing to the predominance of improved grassland within these farmland areas, the carbon storage function is likely to be poorer-performing than would be the case if there were extensive areas of unimproved or semi-improved grassland. The woodland, hedgerows and scrub would provide a greater degree of sequestration.

Category	Ecosystem services	Potential ecosystem services benefits	Type of benefit	Description of the ecosystem services provided by the site
		The sequestration ability depends on management, and estimates calculate that unmanaged woodlands sequester at a rate of 6 tCO2-eq ha-1 yr^{-1} (Ref. 7-66).		
		Green areas provide a source of passive cooling by reducing temperature of surrounding areas (Ref. 7-56).	Heat attenuation	While it is likely that the areas of farmland, greenspace and trees are providing passive cooling to some degree, it is not possible to quantify this capacity in this report.
	Water flow and flood regulation	Semi-natural grassland stores less water than more woody vegetation, such as trees or bracken. Intensive grazing and the resulting compaction of the soil causes decreased infiltration and increased runoff, which both increases the risk of flooding and reduces the recharging of aquifers ((Ref. 7-52). Furthermore, soil compaction in grasslands is caused by high stocking rates, winter grazing and the use of heavy machinery which can decrease water infiltration and increase runoff (Ref. 7-52). Recent research by Devon Wildlife Trust (Ref. 7-56) has demonstrated that unimproved Culm grasslands store and release water up to five times more slowly than improved grassland, reducing the risk of downstream flooding and maintaining a sustainable water supply. Woody debris creates dams in watercourses that increases storage and slows the water flow (contributing to flood hazard reduction, a regulating service). In addition, by interception of rainfall, woodlands moderate flooding by delaying and attenuating peak river flows (Ref. 7-67).	Water flow regulation	Field ditches drain the agricultural land and the East Stour River and tributaries provide flood capacity. The areas of permanent grassland and to a greater extent the small areas of woodland will slow the flow of water to these water bodies.
	Water quality regulation	Water pollution is a result of a number of processes including soil erosion, fertiliser inputs and contamination from manure and slurry. The lower intensity management of semi-natural grassland is critical in maintaining water quality and quantity. Semi-natural grassland soils are able to store significant amounts of deposited nitrogen, which would reduce the pollution of groundwater (Ref. 7-52). In contrast, areas of arable and other crop production will increase soil erosion and fertiliser inputs. Woodland cover of catchments can minimise the need for water treatment by excluding livestock from watercourses and their immediate catchments, thus reducing the risk of potential water contamination. The presence of trees can also contribute to water quality by maintaining cool temperatures for fish, intercepting pollution from point sources and capturing diffuse pollution (Ref. 7-55).	Water quality	It should be noted that, owing to the predominance of improved grassland and arable land within the farmland areas, the water quality regulation function is likely to be poorer-performing than would be the case if there were extensive areas of unimproved or semi-improved grassland. Furthermore, while it is likely that the areas of semi-improved grassland might be providing some water quality attenuation to some degree, the areas of improved grassland, arable and other crop production will be having the opposite effect, owing to the fertiliser and pesticide inputs involved. However, it is not possible to quantify this capacity in this report. While the existing woodlands in the area are likely to contribute towards water quality, particularly the riparian areas. There is a relatively small amount of woodland cover in the wider site.
	Improvement in air quality	Plants are involved in the uptake, transport and assimilation (or, in some cases, decomposition) of many gaseous or particulate pollutants and can play an important role in influencing urban air quality, and in mediating some of the negative effects of pollutants.	Air quality	The areas of trees, and farmland will likely provide regulation with regards to the existing road traffic.
	Human health regulation	Open farmland and woodland, if accessible, can increase well-being and quality of life if visually attractive and supportive of physical recreation.	Health and well-being	Pedestrians, cyclists and equestrians currently have access to a relatively limited network of public rights of way across the area, which enables local people to access the area for recreational purposes, thus contributing to increased well-being and better health. However, the degree of access in the site overall is very low.
Cultural	**Science and education**	Grasslands have been the testing ground for key ecological concepts, such as: ecological stability, the productivity-diversity relationship, the	Science	With the exception of the Otterpool Quarry SSSI, overall, the site is realistically, likely to provide negligible opportunities for science and education.

Category	Ecosystem services	Potential ecosystem services benefits	Type of benefit	Description of the ecosystem services provided by the site
		regeneration niche, plant strategy theory, population biology (Ref. 7-55). The types of benefit derived from woodlands range from formal learning through Forest Schools to personal development gained through volunteering and apprenticeships. Studies show the long-term educational importance of connecting children and young people with nature (Ref. 7-67).		
	Tourism and recreation	Landscape features and habitats can form important elements in the appeal of an area for tourism and recreation such as petting farms, woodland walks, rambling etc, (Ref. 7-55).	Tourism and recreation	The Racecourse is no longer operational and Westenhanger Castle is currently used for private events and is not open to the public. Access to the site is minimal, there are no known attractions for tourists, there is a motocross site to the west of the site. Adjacent to the site there is a Safari Park, Port Lympne. It is not considered that a significant proportion of the visitors to this site come from within the Otterpool OPA site.
	Sense of place and history	Farmland and open grasslands can also be a source of important archaeological finds. Trees and woods are highly valued by people for their historic and cultural values. Ancient woodland and veteran trees are historic features in their own right and provide a link to past society and culture. Ancient woodland is also increasingly appreciated for its archaeological content because the woodland soil surface has often been less disturbed than surrounding land.	Cultural heritage and aesthetic amenity	The Cultural Heritage features present on the site which give a sense of place and history are fully described and evaluated in Chapter 9 of this ES but include: • Westenhanger Castle and its surrounds and associated features; • Barrows across the site; • A Roman villa identified south of the A20. • In addition, there are trees in the landscape that have been present for over 200 years and the site itself buffers the Kent Downs Area of Outstanding Natural Beauty.
Supporting	**Biodiversity**	The site supports a range of biodiversity features, as outlined within this report. Semi-improved grasslands provide habitats for species of conservation interest, such as UK BAP priority species. Arable land has very limited benefit for biodiversity.	Biodiversity	Areas of the site have notable biodiversity interest, including the hedgerows, ponds, riverine areas, ditches and trees. Generally, though, these large areas of open farmland are relatively poor with regard to biodiversity, as much of the grassland is improved or species-poor semi-improved, and the remaining areas comprise arable fields. Details of the biodiversity on the site are presented above.
	Non-Native Invasive Species	Non-native invasive species can spread to semi-natural areas and de-value them in terms of biodiversity and function. These can spread to urban areas where some species such as Japanese knotweed and Buddleia may cause structural damage. Remediation of such species can be costly and time consuming. Certain species are on Schedule 9 of the WCA (Ref. 7-32) for these it is an offence to grow or cause these species to grow in the wild.	This is a disbenefit	Cotoneaster, Montbretia, Virginia Creeper and Variegated Yellow Archangel are all associated with the built development. The ponds on site have a large number of non-native invasive namely Canadian Pondweed, Parrot's Feather, New Zealand Stonecrop and Giant Rhubarb. There is one stand of Japanese Knotweed on the edge of a field adjacent to Barrowhill, Sellindge. The wetland plants and Japanese Knotweed are most likely to cause progressive damage to the semi-natural habitats.
	Soil	Soil formation and functional benefits could be reduced by development. Compaction can decrease water infiltration and increase runoff, increase emissions of nitrous oxide and ammonia, decrease uptake of methane, reduce the abundance of soil fauna, decrease plant growth and yield, and limit food availability for some birds (Ref. 7-52).	Soil formation and function	The quality of this land varies between Grade 2 to Grade 3 in the ALC (Agricultural Land Classification). Soils on the site include: • Freely draining slightly acid loamy soils; • Loamy soils with naturally high groundwater; • Freely draining slightly acid but base rich soils and slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils. Details of the soils present on the site are presented in Chapter 5 of the ES.

Future Baseline

7.3.42 In the absence of the proposed development, it is anticipated that the majority of the site would continue to be managed as it currently is, as follows:

- The fields would continue to be cultivated or grazed and the hedgerows would continue to be managed. It is considered that the land under Higher Level Stewardship (HLS) could increase in value in the future (discussed in ES Appendix 7.15 and 7.16)
- Folkestone Racecourse would continue to receive a minimal level of maintenance, including some individual tree maintenance and grass / hay cutting, with no significant change of use.
- Residences within the redline would continue to be occupied;
- The areas of semi natural woodland and plantation woodland may receive some management (there is no apparent active management at present) which may enhance the nature conservation importance of these habitats in the future;
- Mature trees present in the hedgerows and stream corridors may be felled or receive tree surgery in response to damage or disease (discussed in ES Appendix 7.3). Some new tree planting may take place.
- The number and species of birds present on the site may change in response to alterations in cropping regimes and in response to changes that occur in the wider countryside.
- It is likely that the buildings at Folkestone Racecourse, warehouses and structures north of Holiday Extras and outbuildings associated with 'Red House Farm' south of the A20 would further deteriorate (they are largely not in use) and that the buildings associated with Hilhurst Farm would continue to be maintained.

7.3.43 The importance of the site for nature conservation could be enhanced through deliberate intervention, but this would only occur if funds were provided by an external source. Similarly, the importance of the site for nature conservation could decline if there was a major change in management; however, this is unlikely to occur in the absence of development. Overall, it is considered that in the absence of development the site would continue to support a similar suite of habitats and species.

7.3.44 As identified in Chapter 2, there are a number of consented and proposed developments in the vicinity of the site including residential developments. The new residents associated with these developments could cause disturbance to flora and fauna within the site. However, the site is intensively managed for agriculture and/or private and not open to the public. There are existing footpaths within the site. Most of these footpaths are on tracks and not through particularly sensitive habitats, and increased use would not physically affect habitats of conservation importance.

7.3.45 Mobile species such as birds could be displaced onto the site by adjacent development. It is not anticipated that such displacement would significantly increase the importance of the site for these species, since the importance of the site is determined by the carrying capacity of the habitats on the site and this would not change.

7.3.46 It is considered that, in the absence of the proposed development the site would continue to be intensively managed and its importance for flora and fauna would remain largely unchanged. Overall, it is considered that management on the site is relatively stable, that development nearby is unlikely to have any direct or indirect effects on the site, and the future baseline would be similar to the current conditions on the site. Species numbers and distributions may alter, in response to weather conditions and cropping regimes but fundamentally the Site will remain as agricultural fields with hedgerows, a disused racecourse, a watercourse, private residences and structures and woodlands, both semi-natural and planted trees.

7.3.47 Species assemblages and cropping regimes may also alter in response to climate change. In particular, some invertebrate species may not remain on site (moving north in response to temperature increases), but new species would be expected to replace them. Storm events could lead to adverse effects on aquatic flora and fauna as banks are scoured by flash flooding. Nevertheless, these features would continue to be of nature conservation importance.

7.4 Assessment of Potentially Significant Impacts

7.4.1 This section of the report summaries the identified impact pathways which have the potential to have significant effects upon the important ecological features within the ZoI of the development. The full list of the impacts associated with each important ecological feature is presented in Appendix 7.1, the impacts identified for receptors include:

Construction

- Direct mortality from removal of habitat and construction vehicles;
- Loss of areas of habitat from construction,
- Fragmentation due to removal of connectivity, foraging habitats or breeding places;
- Pollution reduction in value of habitats and mortality / reduction of conservation status of receptors due to water / soil pollution / air quality impacts from construction activities;
- Disturbance of species from construction and operational light and noise; and
- Reduction in conservation status of species.

Operation

- Increased mortality due to presence of domestic animals particularly cats;
- Disturbance from recreational usage of areas;
- Trampling effects from recreational use of areas;
- Increases in events such as flooding impacting important ecological receptors;
- Air quality impacts from additional traffic once operational;
- Increased road mortality of species; and
- Reduction in value of habitats due to modified hydrogeology.

7.5 Scheme Design

7.5.1 The scheme was designed to avoid impacts where possible and to enhance biodiversity, natural capital and ecosystem services. Following on from the decision at the Court of Justice of the European Union (CJEU) in the matter of People Over Wind and Sweetman v Coillte Teoranta (C-323/17) (Ref. 7-71) the ES has clarified the position with regards to design versus mitigation. Full details presented in the Otterpool Habitats Regulations Assessment (HRA) ES Appendix 7.19. Design measures are outlined below under the following headings:

- Designated sites and off-site ancient woodlands;
- Kent Biodiversity Opportunity Areas (BOAs);
- Retention;
- Buffering;
- Habitat creation;
- Habitat enhancement;
- Species; and
- Natural Capital and Ecosystem services.

Designated Sites and Ancient Woodlands

7.5.2 Within the design, a range of measures are being implemented to avoid potential impacts, where this is applicable to a particular site, this is identified.

Preventing Recreational Impacts:

7.5.3 Recreational usage of designated sites, including dog walking and other usage has the potential to impact upon a range of designated sites, especially those support an assemblage of fauna which is sensitive to recreational disturbance (Gibbins Brook and ancient woodlands, Harringe Brooks Wood and Kiln Wood).

7.5.4 Within the development, extensive areas of high quality public open space are being created for dog walking and recreation, to control recreational impacts upon adjacent and nearby designated sites. This includes the routing of footpaths away from certain sensitive adjacent areas (such as Harringe Brooks Wood LNR and Ancient Woodland) to prevent recreational impacts. It is foreseen that the two designated sites adjacent to the development (Harringe Brooks Wood and Kiln Wood, both LWS and semi-natural ancient woodlands on the AWI), will remain private and public access to these areas will be discouraged.

7.5.5 To Harringe Brooks Woods, access will be discouraged through a buffer area around the woodland which uses planting a topography to discourage access to the Harringe Brooks Wood. For Kiln Wood, moving the A20 road away from the woodland will reduce disturbance of the broad-leaved woodland that supports the Ancient woodland. The positioning to the A20 realignment between the development and the woodland will discourage access to this woodland.

7.5.6 Details of the assessment of recreational impacts upon designated sites are presented within the HRA screening report (ES Appendix 7.19). In summary, no significant effects are foreseen resulting from the development, and no further assessment (beyond HRA Stage 1) was considered necessary.

Preventing Pollution (Air Quality):

7.5.7 Impacts upon air quality, including impacts from traffic relating to the development are fully quantified within the air quality chapter (ES Chapter 6). In predicted DS (do something) scenarios, Folks Wood LWS and ancient woodland will experience a minor reduction in the predicted future amelioration in air quality as a result of the development immediately adjacent to the road (0m from the road). This is presented in Image 7-3.

7.5.8 At all other designated sites impacts are below impact thresholds or outside of the threshold for assessment. Full details are presented in ES Chapter 6.

- At Folks Wood, in all future baselines, due to the predicted use of electric vehicles the total NOx will actually decrease in real terms. Also, as shown in Image 7-4, in all future scenarios, in the DS and DM scenarios, NOx deposition rates are below the critical load. As a result of his assessment, air quality impacts to Folks Wood are not considered significant.
- In summary, the current design and road layout ensures that there are no significant effects upon designated sites sensitive to air quality impacts resulting from the development.

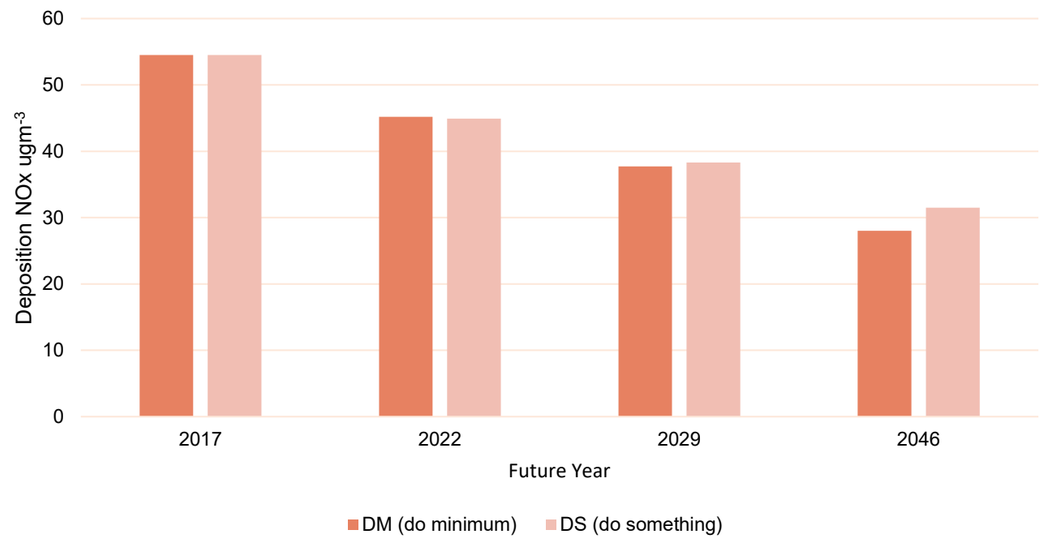


Image 7-2 Baseline and predicted future baseline of NOx deposition at Folks Wood immediately adjacent to the road

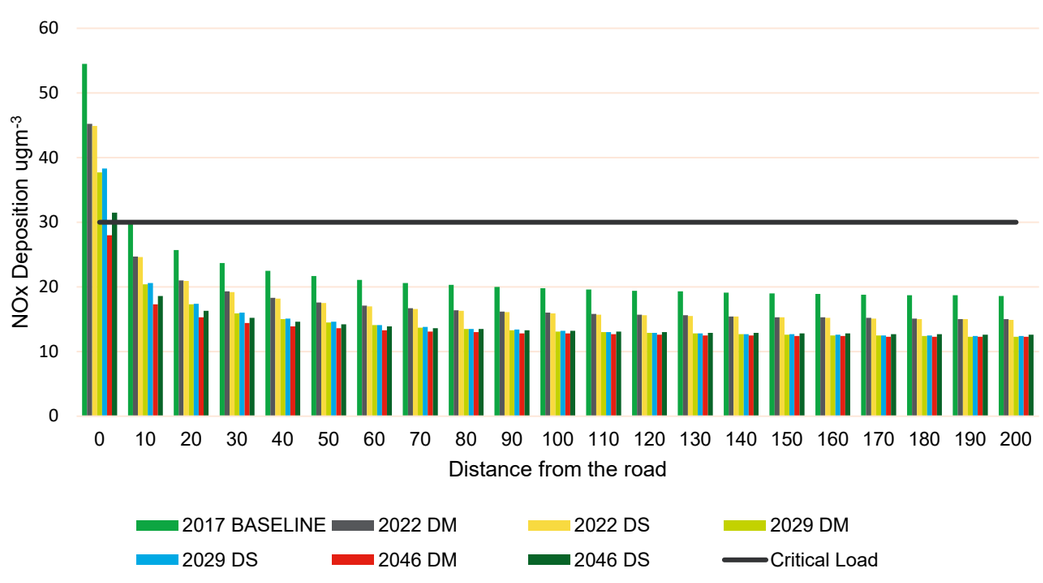


Image 7-3 NOx deposition at locations within Folks Wood modelled in DS and DM scenarios. In all future scenarios, critical loads are below thresholds at all locations >10m from the road.

Overall, no mitigation is considered necessary in relation to air quality and ecological receptors.

Pollution (water quality)

7.5.9 The predominant potential sources of pollution are via water pollution. The design of the site, including SuDS and other features should ensure that this operational risk is controlled. This is outlined in the Surface Water Resources and Flood Risk Chapter of the ES (Chapter 15) and within the Water Framework Directive (WFD) Screening Assessment (ES Appendix 7.22).

Preventing Direct Impacts (Otterpool Quarry SSSI)

7.5.10 There is potential for Otterpool Quarry to be directly affected by the development. The details of how this is being safeguarded are presented in ES Chapter 10 – Geology, Hydrogeology and Land Quality.

Preventing disturbance from development

7.5.11 Direct disturbance has the potential to affect sites through noise, light and visual disturbance. The designated sites which have the potential to be directly impacted are Harringe Brooks Wood (LWS and ancient woodland) and Kiln Wood (LWS and ancient woodland). These impacts are controlled through buffering and retention as a private area.

Preventing Predation and Disturbance from Domestic Animals

7.5.12 Buffers around the key areas for ecological receptors, particularly Harringe Brooks Wood and Kiln Wood (LWS and ancient woodland). The buffer area around Harringe Brooks Wood is a minimum of 50m of semi-natural habitat with a mixture of permanent grassland, trees and water features to deter frequent access by domestic animals. There will be a new road between the site and Kiln Wood, which will deter access by domestic animals.

Preventing Hydrological Disruption

7.5.13 Within the ZoI of the development, three designated sites are within the ZoI, namely Lympne Escarpment SSSI, Harringe Brooks Wood (LWS and ancient woodland) and Folks Wood (LWS and ancient woodland) Impacts to these sites are controlled as:

- Lympne Escarpment lies to the south of the site, and the drainage for the site is to flow to the north west, controlling the potential for impacts.
- Harringe Brooks Wood is off-site to the immediate the south-west of the site, and drainage from this woodland area flows north through the site to the East Stour. This drainage is to be retained and buffered. No significant impacts upon the hydrology of this woodland are considered likely.
- Folks Wood is off-site to the immediate west of the site. The drainage of the site flows to the west away from this development. It is not considered that the development has the potential to impact upon the hydrology of the site.

7.5.14 Full details of the assessment of hydrogeology and impacts upon surface water resources are presented in ES Chapters 10 (Geology, Hydrogeology and Land Quality) and 15 (Surface Water Resources and Flood Risk).

Kent Biodiversity Opportunity Areas (BOA)

7.5.15 The Kent Biodiversity Opportunity Areas (BOAs) show where efforts should be targeted to achieve the maximum biodiversity benefits. Each one gives broad guidance on the conservation priorities in a given BOA.

7.5.16 In line with this, the BOAs each have targets which guide these conservation actions. Of these wider Kent BOAs, a small area of the site (including the East Stour River and an area of farmland in the north-east of the site) falls within the mid-Kent Greensand and Gault BOA for which there are 8 targets. The project has endeavoured to contribute towards these targets, where relevant. Of these 8 targets, no.1 is not applicable and while there are no species rich grasslands currently on site (no.2) the scheme will create these. The other targets (no. 3 to 8) are relevant, scheme design mitigation is presented in the table below (Table 7-22).

Table 7-22: Mid-Kent greensand and gault BOA targets and how the design of the project contributes towards them

Target Number	Description	How the project contributes towards these targets
1	Restore acid grassland and heath	N/A, the soil types and habitats are not suitable to achieve this target on the Otterpool site.
2	Enhance 10ha of species rich grassland on acid soils.	Again, the soil types are not suitable to contribute towards this target. However, within the green infrastructure of the development, extensive areas of species rich grassland are to be created. This is quantified within ES Technical Appendix 7.21
3	Enhance or reinstate woodland management, including reconnecting fragmented woodlands	Although there are no areas of woodland within the OPA which are on the AWI (Ancient woodland inventory), it is proposed that areas of new tree and woodland panting on the site will increase the connectivity between wooded areas, particularly along the west of the site, between Harringe Brooks Wood and the East Stour River.
4	Achieve a quantifiable improvement in ecological status of all water bodies, as judged by Water Framework Directive indicators.	As evidenced in ES Technical Appendix 7.22, the development will not have a negative impact upon the East Stour River (one of the Rivers within the BOA). Conversely, the increase in buffers around the river, and subsequent reduction in agricultural runoff is likely to increase the value of the river, as assessed according to WFD indicators.
5	Pursue opportunities to restore or recreate wetland habitats along the Stour and its tributaries, particularly where this may: Provide opportunities for flood risk management and for recreation; Contribute to the conservation of priority species; or Extend and buffer Local Wildlife Sites. Enhance at least 20ha of species-rich neutral grassland to bring it to UK BAP priority habitat Lowland Meadow quality.	Extensive measures are proposed within the proposed development which will contribute towards this goal. North of the East Stour River, in the north-west of the site, a new wetland area with extensive areas of ditches and pond is being created to provide habitat for a range of species, including water vole and great crested newt. All along the East Stour River corridor, a new riparian park is being created, which will contain SuDS and recreation areas, contributing to both flood alleviation and providing a recreation resource. To the west of the East Stour River, an area of grass land is to be created (to the east of Barrowhill, Sellindge). This will be targeted as BAP quality lowland meadow, with appropriate actions and targets within the Otterpool BAP (Appendix 7.20).
6	Maintain appropriate management of key brownfield sites	There is only one small area of abandoned lorry park which could be termed as brownfield site within the OPA, Otterpool Quarry south of the A20. This is to be developed, but mitigation actions to preserve the limited habitats of note are proposed. These are outlined in the 'Invertebrates' mitigation section below.
7	Infrastructure and other development should avoid further fragmentation, particularly of wetland habitats and woodlands.	The development contains an extensive green grid and a large amount of GI (over 50%). The design of the development retains the vast majority of the

Target Number	Description	How the project contributes towards these targets
		notable habitats within the site and retains and enhances connectivity.
8	Action for naturally widely dispersed habitats (ponds, traditional orchards), wildlife associated with arable farmland, and widely dispersed species such as great crested newt will need to focus across the whole of the area and not just within the Biodiversity Opportunity Area boundary.	Although one very small orchard is to be lost to the development, extensive new orchard areas are proposed, including one area south of Westenhanger Castle, and one area top the west of Lympne village. Within the development, a large number of new ponds, both wildlife ponds and SuDs features are to be created, which will increase connectivity between on and off-site ponds.

Habitat Categorisation for Masterplanning

7.5.17 In line with the mitigation hierarchy, the design of the masterplan has been iterated throughout the design process to limit impacts to important ecological receptors.

7.5.18 In order to inform the masterplan layout, following the initial habitat survey conducted in 2016, habitats and areas were initially categorised depending on their likely value to determine their requirement for retention. The following categorisations were utilised:

- 'Grade 1': likely to contain S41 or uncommon habitat types that are likely to maintain multiple notable and/or protected species and deliver key ecosystem services and must be retained and buffered;
- 'Grade 2' contain habitats of high value and/or protected species and strongly recommended to retain and buffer;
- 'Grade 3': habitats that provide important connectivity or strategic value throughout the site or have value for notable species and are recommended to be retained;
- 'Grade 4': areas supporting less commonly found habitat across the site, retention desirable; and
- Other habitats: these areas have no intrinsic value for retention, however they may have value for associated notable species.

7.5.19 This valuation was utilised to inform the masterplan and identify areas where development should not occur (detailed in the ES Appendix 7.3). Valuable retained habitats were 'buffered' within the design to reduce potential impacts, with buffers based upon the requirements of these habitats and the species which they support.

Habitat Retention

7.5.20 As outlined above, habitats which are assessed as being of high value are preferentially retained within the development. Table 7-23 outlines the retention of valuable habitats within the design. Overall, more than 50% of the development area is GI, both retained habitats and newly created Green Infrastructure areas.

Table 7-23: Retention of valuable habitats within the OPA.

Habitat	Area / amount	Area / amount lost	Percentage retained
Woodland	c. 10ha of broad-leaved semi-natural woodland, mixed plantation woodland and plantation woodland.	All retained	100%
River corridor	c.8km	All retained and enhanced, with crossings of the corridor utilising clear span bridges.	100%
Hedgerows	c. 12km of hedgerows (includes native species-rich intact hedge, species poor intact hedge, species poor defunct hedge, native species-rich hedge with trees and species poor hedge with trees).	Majority retained. Hedgerows removed to facilitate road crossings and pathways. In order to quantify this, a 'worst case;' scenario where all roads are 21m wide (including associated footways) and all standalone footways and cycle paths are 4m wide has been utilised Using this calculation, a total of 982m of hedgerow would need to be removed.	c. 92% of hedgerows are being retained within the development.
Ditches	c.8.5km of ditch and tributary to the East Stour River	Majority retained. One area of ditches to the east of the Folkestone Race course (Ditch 1 c.700m) and one ditch in the north east of the site (Ditch 16 c.250m) are to be removed to facilitate the development.	c. 89% of ditches and tributaries are retained within the development.
Ponds	Of the 17 ponds • One pond is an ornamental pond with minimal ecological value (pond 24); • Four ponds were found to be permanently dry (or only hold water for very short period during heavy rain) and were found to be of negligible ecological value (ponds 25, 26, 28, 41).	Majority of ecologically valuable ponds retained. Of the remaining ponds with ecological value only one is to be removed to facilitate the development (pond 27).	Eleven of 12 ponds with notable ecological value retained. Eleven of 17 ponds identified from mapping retained in total.
Trees	c. 450m^2 (estimate from aerial mapping)	Majority retained within the development, as presented on Figure 6 in Appendix 7.1. Detailed on parameter plan OPM(P)3100.	N/A – presented on Figure 6 in Appendix 7.1.

Habitat Buffers

7.5.21 Details of buffers are provided within Table 7-24

Table 7-24: Details of buffers of retained habitat

Habitat	Buffer width and design	Notes
Hedgerows (not dark corridors)	The buffer to these habitats is required to include supporting habitat, likely to be rough grassland. Buffer is 5m offset from edge of retained hedge. In the case of hedgerows with significant trees this	Details of locations of hedgerows within Technical Appendix 7.3. Buffer details in the DAS and GI strategy.

Habitat	Buffer width and design	Notes
	should be extended to 10m as a minimum (see comments on trees below). Where it is identified that the hedgerow may be important for the movement of fauna, appropriate crossings are proposed (ES Appendix 7.18). No access to this buffer by motorised vehicle will be permitted. No lighting is permitted within the buffer. Lighting on adjacent land will be directed away from hedgerow, with backspill limited. Pedestrian and cycle routes are permitted within buffer, as detailed in the DAS.	
Hedgerows (dark corridors)	These areas will be buffered with a range of habitats, including, wildflower meadows, and grassland. Buffer is 25m offset from edge of habitat. No lighting permitted within the buffer. Lighting on adjacent land will be directed away from hedgerow, with backspill limited. No access to buffer by motorised vehicles. (Unlit) pedestrian and cycle routes permitted within buffer. Where roads and pathways cross the dark corridor, lighting in these crossing areas will be minimised and measures to ensure that bats can navigate these crossings will be incorporated. Crossings should have sufficient clear span to ensure that fauna (badgers, etc) can navigate beneath them, or tunnels should be installed. Links into riparian corridor, woodlands and other habitats are maintained, these dark corridors form a key part of the green grid around the site.	Location of dark corridors presented in DAS and Technical Appendix 7.11 – 7.14 Buffer details in the DAS and GI strategy.
Trees	These features will be buffered sufficiently to exclude construction/post construction activity that would have a detrimental impact on the tree and root zone, including soil compaction and water supply. Buffers should be determined according to BS 5837:2012 as a minimum, as specified by arboricultural surveys conducted prior to the commencement within each development parcel. Buffers will depend upon the size of the tree but are likely to be a minimum of 15m for woodland a minimum of 10m for trees, with 15m buffers for significant trees.	Information on the presence of trees within Technical Appendix 7.4
Ancient woodlands	These areas will be buffered with a range of habitats, including, wildflower meadows, and grassland. These habitats have a minimum of a 50m offset from edge of habitat. Access by the public will be discouraged to limit the risk of vandalism and damage to these areas, and to allow the retention of mature /over mature trees containing deadwood habitat. Pedestrian and cycle routes NOT permitted within the ancient woodlands. Access to these areas will be discouraged. Some access within the buffer areas for bridleways, pedestrians and cyclists within the buffer areas to limit disturbance to woodland.	The exception to these buffer parameters is the Ancient woodland to the east of the site, Kiln Wood. This already separated from the site by the A20 and experiences extensive disturbance from the A20. As a component of the development, the A20 would be moved to the west, increasing the buffer between the A20 and this woodland, although some activities would occur within this buffer.
Woodlands	Designs buffer the woodlands with suitable natural or semi-natural areas, including tree planting, scrub and grassland. The details are presented in the DAS and GI strategy for details. There would be a minimum of a 25m offset from edge of habitat for ecologically sensitive woodlands. The buffer is reduced around young, plantation woodlands, particularly where baseline disturbance is high. No lighting will be permitted within the buffer. Lighting on adjacent land will be directed away from feature, with backspill limited. Pedestrian and cycle routes are permitted within the buffer and woodlands (but not ancient woodlands).	Buffer details in the DAS and GI strategy.
River (East Stour)	Designs buffer the woodlands with suitable natural or semi-natural areas, including tree planting, scrub and grassland. Pathways will be a minimum of 8m from the edge of the river. The details are presented in the DAS and GI strategy for details. Offset buffer is in excess of 50m (100m total) along its length, with the exception of where the river is crossed by roads or pathways. No lighting is permitted within the buffer Retention of existing vegetation wherever possible will be conducted within the buffer. Some areas will be opened up (removing scrub) to increase visual amenity value and recreation value, and as enhancement for species (as specified in Technical Appendix 7.18). Locate crossings away from sensitive habitats. Where roads and pathways cross the East Stour River corridor, lighting in these crossing areas should be minimised and measures to ensure that bats can navigate these crossings. Crossings should have sufficient clear span to ensure that fauna can navigate beneath them, or tunnels should be installed. Discourage human activity/dog walking in areas of retained/enhanced habitats for e.g. water vole and otter.	Further information in the DAS, GI strategy and Technical Appendix 7.18.

7.5.22 Greater detail of the design mitigation is presented in the Biodiversity Net Gain Report (Technical Appendix 7.19) and the design of buffer habitat is presented in the DAS (Design and Access Statement accompanying the Application).

7.5.23 The planting within the buffers also contributes to the proposed Development being able to achieve quantifiable net gain, as described within Technical Appendix 7.21.

Habitat Creation

7.5.24 Multiple large areas of green space that have been incorporated into the masterplan which would provide habitats of benefit to biodiversity. Overall, over 50% of the development area is identified as GI, both retained habitats and newly created Green Infrastructure areas. The detailed design of these open spaces will evolve with the detailed design for the development. However, within these areas of substantial green space there will be areas that would support Section 41 habitats and species, which is presented in the mitigation strategies for protected species and within the GI (Green Infrastructure) strategy. Habitats proposed to be created include: Orchards; Hedgerows; Ponds and Lowland meadows, tree planting and scrub and additional ditches. These habitats would provide conditions suitable for the Section 41 species that have been recorded on the site and those that may colonise the site in the future, particularly amphibians, including common toad and great crested newt; reptiles, including common lizard, grass snake; mammals including hedgehog, bats (soprano pipistrelle, brown long-eared bat, noctule); and invertebrates.

7.5.25 The key areas within this GI for ecology are listed below:

- A Country Park;
- A Town Park,
- A wildlife area (14ha); A large area in the north-west of the site and a smaller area adjacent to the tributary to the East Stour south of the A20 (by TN186). These will be a species rich aquatic habitat providing a valuable habitat for a range of receptors.
- Lympne resilience area (recreational green open space);
- Barrowhill, Sellindge resilience area (wildlife and SuDS area);
- East Stour Riparian Park and
- A woodland burial area.

7.5.26 Across the site, a range of habitats would be created to maximise the value of the other GI around the site. Where these habitats are to be created as mitigation for impacts to a particular species, these are described in ES Appendix 7.18. Integrated GI and artificial habitat to be included within the development zones are presented in ES Appendix 7.21. An overview of the GI to be created on the site is presented in Figure 7 in Appendix 7.1.

7.5.27 Within the GI, valuable habitats are to be created. The habitats to be created include:

- Ponds created for biodiversity, these will be designed to meet the prescriptions of the relevant ‘habitat of principal importance’ description. Areas where ponds are to be created include the buffer around Harringe Brooks Wood and south of the Folkestone Racecourse Lake.
- Areas of woodland planting, these areas are to be planted to screen the Otterpool park development and to create connectivity. This includes planting linking Harringe Brooks Wood to the river corridor to the north. This tree planting will be to the west of the development.
- SuDS features including ponds, drainage ditches, swales and rain gardens (some of which will be primarily for biodiversity value other primarily for drainage but will have biodiversity value);
- Areas of ditch to be created for water voles;
- Hedgerows will be planted across the development. These will be native species hedges and will be planted to subdivide parcels within the development, but also to provide a permeable barrier for wildlife between properties and GI. These features will provide a notable habitat for a range of species;
- Areas of species rich wildflower grassland will be created across the site. The habitat composition / seed and planting mix should be based upon the soil present but would largely be based upon the descriptions of priority habitat (lowland meadow);
- Scattered trees are to be planted through the GI of the development. The species of these will be designed to safeguard against disease and climate change but will be native where appropriate. Tree planting will greatly exceed the trees to be removed;
- Areas of scrub will be created/allowed to develop, which will have value for invertebrates and provide a heterogeneous habitat for reptiles;
- Microhabitat features will also be created for a range of receptors, including earth banks and deadwood piles for invertebrates; and
- GI and artificial habitats will also be integrated into development zones.

7.5.28 Biodiversity net gain has been calculated using the Defra offsetting metric (Ref. 7-36). It is calculated that there will be biodiversity net gain of around 20% once the development is completed. Full details of this net gain calculation are presented in ES Appendix 7.21. In addition, all hedgerows removed will be translocated with a minimum additional hedgerow planting of 1,876m (Table 7-25 using the multipliers presented in Table 7-26).

Table 7-25: Sections of hedgerows to be removed within the OPA

Hedgerow Valuation	Hedgerow Phase 1 category	Total Length lost
High	Native species-rich intact hedge Native species-rich hedge with trees	160m
Medium	Species poor intact hedge Species poor hedge with trees	574m
Low	Species poor defunct hedge	248m

Table 7-26: Calculation of hedgerow provisioning required

Hedgerow valuation	Amount lost m	Multiplier	Replacement planting required m
High	160	3x	480
Medium	574	2x	1148
Low	248	1x	248
TOTAL	982		1,876

Habitat Enhancements

7.5.29 The locations of all of the enhancement areas referred to in the table above are presented in Figure 7 in Appendix 7.1.

7.5.30 Areas where enhancement will occur includes (but is not limited to):

- Hedgerow enhancements to improve connectivity in the form of gapping up; improved management and restoration of ground flora;
- Pond enhancement to achieve the parameters of the ‘habitats of principal importance’ descriptions;

- Enhancements of the river corridor to increase the heterogeneity and improve the value for notable receptors, including water vole (described in further detail in ES Appendix 7.8).
- Overall, the enhancements combined with the retention of habitats within the site achieves a quantifiable net gain in line with the biodiversity offsetting metrics, as evidenced in ES Appendix 7.21). This has been calculated using the scheme design, represented by GI typologies, each of which has associated habitat parameters detailed within the Biodiversity Net Gain Report. Any evolution of these parameters, through detailed design, must fulfil the required net gain and ecosystem function as discussed within this Biodiversity ES Chapter and associated appendices.

Wintering Birds

7.5.31 Full details of the baseline surveys and design and mitigation proposed in relation to wintering birds is presented in ES Appendix 7.16. In line with the mitigation hierarchy, within the masterplan, the initial approach to limiting impacts would be through avoidance. The most important areas for a number of bird species, specifically farmland birds, wintering waders, wintering ducks, house sparrow and kingfisher are to be retained. These areas are:

- The Folkestone Racecourse Pond, which is to be retained and included within an improved buffer area;
- The area to the west of the Folkestone race course lake where woodcock and snipe were recorded;
- The pond to the south of the A20;
- The East Stour River corridor, which is to be retained and buffered.

7.5.32 In addition, there are areas designed to provide valuable habitats for wintering birds within the masterplan design and GI within the development. These include:

- A large area of varied space to be created to the south east of the site, including orchard, wet areas (for SuDS) and rough grassland;
- A new wetland area to be created in the north west of the site. This is to be approximately 14ha and include predominantly ditches, scrub, grassland and trees;
- New hedgerows to be created across the site;
- A large number of SuDS and water features to be created within the development;
- Sports pitch boundaries and buffers which will be of value for the development.

7.5.33 Nevertheless, it is not possible to fully mitigate for impacts to wintering farmland birds and other groups which require large areas of open farmland within the development. However, the site is set within extensive areas of arable and pasture farmland, and this habitat is extremely common at the local, county and regional scale.

Breeding Birds / Farmland Birds (General), Barn Owl and Kingfisher

7.5.34 Full details of the baseline surveys and design and mitigation proposed in relation to breeding bird, including barn owl and kingfisher is presented in ES Appendix 7.15. In line with the mitigation hierarchy, the masterplan has been designed to minimise impacts to breeding birds. The following approaches have been incorporated within the masterplan to avoid impacts to breeding birds:

- The majority of hedgerows are being retained and buffered within suitable GI (Green Infrastructure) to allow these features to continue to provide a resource for breeding birds, both nesting and feeding, and hedgerow sections which are removed to facilitate road and footpath crossings will be translocated;
- The vast majority of trees are being retained within the development;
- Aquatic features and areas identified as having particular value for notable bird species, including the East Stour River corridor and Folkestone Racecourse lake are to be retained, buffered and enhanced within the development;
- The ancient woodland, off-site to the west (Harringe Brooks Wood) is to be retained and buffered, in a buffer which is a minimum of 50m along its length;
- Multiple small woodlands are to be retained and buffered within the development, including Park Wood, Springfield Wood and a young woodland to the north of Link Park (Centred on TR 112 361).

7.5.35 In addition to this retention, there will be significant area created within the GI of the proposed development that will be of value for breeding birds. This will include:

- A wetland area containing ditches, channels, trees and scrub in the north west of the development, which will provide foraging and nesting habitat for breeding birds, particularly waders, water fowl and kingfisher;
- A large amount of additional hedgerows, which are to be buffered would be planted across the development, these will subdivide development plots and provide a permeable barrier to wildlife;
- A large number of new water features are to be created, including SuDS and specific wildlife ponds, which will provide a foraging resource for breeding birds;
- A large area of orchard, grassland and SuDS features are proposed to be created in the south east of the site, between Lympne and the development, which will be of value for foraging and breeding birds, particularly farmland species, including ground nesting species;
- New parkland areas are to be created, in the centre of the development a woodland park is proposed, which will provide enhanced foraging and breeding habitats for breeding birds. A town park is proposed, adjacent to the Folkestone Racecourse Lake, which will provide a resource for breeding bird species which are associated with urban areas, such as house sparrow, song thrush and starling.
- New areas of woodland and tree planting are proposed, largely as landscape buffers, but these areas will provide significant nesting opportunities for breeding birds.
- Within the design barn owl nest boxes should be erected, however only a small number are likely to be required (five is recommended at this stage, this may increase if nests are found within trees to be removed). These should be located at least 1km from the M20, locations along the southern and western boundaries of the site is recommended as this will enable any pairs utilising these boxes to forage in retained habitats in the south and west of the Otterpool Park development and on off-site habitats.
- Banks for kingfisher nesting will be created along the East Stour River corridor, and within the wildlife area in the north west of the development. Exact details will be informed by pre-commencement surveys.

7.5.36 Native planting, including scrub and trees, will provide habitats and food sources for birds and nesting habitats. In addition, bird nest boxes may be strategically placed to target specific species, and a minimum number of bird boxes per a certain number of built structures should be installed.

7.5.37 Open fronted nest boxes of different sizes within a green wall would be of value for robin, house sparrow and starling, those with apertures could be exploited by tits. The inclusion of artificial house and song thrush nests attached to the structure of any proposed buildings would benefit these species which are declining nationally.

7.5.38 Within the built parcels, there will also be parameters set (dependent upon the proposed density of the parcels buildings) for GI which will be of value for wintering birds. This will include:

- Parameters for amounts of green roofs within built parcels;
- Parameters for the number of trees and street trees within built parcels.

7.5.39 Nevertheless, it is not possible to fully mitigate for impacts to farmland birds, ground nesting birds and other groups which require large areas of open farmland and pasture within the proposed development.

Bat Foraging

7.5.40 Full details of the design and mitigation for bats is presented in ES Appendix 7.18. Bat survey details and impact assessments are presented in ES Appendix 7.11, 7.12, 7.13 and 7.14. In summary, the following approaches are proposed to safeguard bats in areas of high foraging value;

- Retention and buffering of important foraging areas;
- Maintenance of known and likely commuting routes between foraging and roosting areas across the site;
- Creation of new habitats likely to be of high value for foraging bats.

- Creation of new valuable habitats such as ponds and SuDS;
- Enhancement of existing habitats, such as crating heterogeneity in the East Stour River Corridor.

Bat Commuting

7.5.41 This design incorporation into the masterplanning will allow the impact to bats resulting from the proposed development being minimised at the masterplanning stage. The approach for areas of high commuting activity will include:

- Maintenance of known and likely commuting routes between foraging and roosting areas across the site;
- Where roads etc. cross commuting corridors, planting / underpasses / bridges to ensure that bats can continue to traverse these features;
- Masterplanning to limit light spill onto retained habitats and design specifications that all artificial lighting must be directional and low light spill;
- Creation of dark corridors within the development, that are designed to ensure that bats can continue to use the area for commuting and foraging. These will be designed to limit light spill into these areas and maximise continuity of these dark areas;
- Identification of commuting routes and enhancement of these corridors, including landscaping and maintenance of low light levels;
- Creation of new commuting routes between areas known to be of value for bats;

Bat Roosting

7.5.42 This design incorporation into the masterplanning will allow the impact to bats resulting from the proposed development being minimised at the masterplanning stage. This is an overview of the mitigation to be applied. Full details are provided within the mitigation strategy, presented in ES Appendix 7.18.

7.5.43 The approach will include:

- Retention of on-site roosts where possible;
- Masterplanning to limit impacts onto offsite roosts, through pollution, light spill, recreational impacts etc.
- Installation of new roosting opportunities including bat houses/barns and tree/structure mounted boxes;
- Retention and enhancement of connectivity between known / likely roosting sites and foraging habitats.
- Specification for creation of bat roosting features including bat barns and installation of tree roost boxes and roost boxes within newly created structures;
- Prescriptions for the provision of bat boxes within the developed parcels and within retained / created habitats.

Water vole

7.5.44 Full details of the design and mitigation relating to water vole is presented in ES Appendix 7.18. Survey results are presented fully in Appendix 7.10. In line with the mitigation hierarchy, the first step of the proposed mitigation for impacts to water vole has been avoidance. Within the masterplan, many areas of value for water vole have been retained and will be enhanced including the following:

- The East Stour River corridor;
- Tributaries of the East Stour River from South to north, both from the south east of the A20 and extending from Harringe Brooks Woods
- the Racecourse Lake;
- The pond south of the A20; and
- The pond south of the A20.

7.5.45 These areas have been designed to ensure that water vole can utilise areas of the site and move through the site by the:

- Retention and enhancement buffers of rough grassland around retained habitat features; and
- Retention and enhancement of hedgerows between retained areas of habitats.

7.5.46 Upon the successful implementation of the avoidance mitigation described above, there will be some residual effects upon water vole, which additional construction and operational mitigation will largely address.

7.5.47 There is likely to be some impact to some retained watercourses from recreational pressure and domestic animals. In addition, in certain areas, it will not be practicable to retain water bodies with support water vole. The loss of these areas will be accounted for and mitigated in the design of the site (for example the ditches to the east of Folkestone Racecourse Lake will be lost to the development).

7.5.48 In order to mitigate for these impacts, elsewhere within the site, areas designed specifically to provide habitat for water vole will be created, including a large area (approximately 15ha) in the north west of the site, which will be a dedicated wildlife area, and will include multiple water bodies designed for water vole, within a mosaic of species rich grassland and scrub. It is considered that this area will have created within it a mosaic of water bodies with a combined bank length which much exceeds the water body length to be lost to the development. This area has connectivity to water bodies which support water vole, including water body 6A.

7.5.49 This area will include compensatory water courses/ ponds or replacement or installation of wet woodland and other suitable aquatic vegetation, strategically placed so that connectivity is maintained throughout the site, and to offsite habitats known to be populated by water vole. In addition, areas within the site known to support water vole, including sections of the East Stour River, will be enhanced for water vole. This would include creation of habitat heterogeneity, specifically to increase bankside vegetation of emergent plants such as reeds, rushes and sedges.

7.5.50 Sustainable Drainage systems (SuDS) areas, including swales (retention, attenuation and conveyance), ditches and ponds will be created within the development, these will be designed to maximise their biodiversity potential, including creating habitat for water vole.

7.5.51 In total, approximately 950m of water vole ditch will be lost to the development, and approximately 2200m of water vole habitat will be reduced in value for this species, predominantly due to the potential for increased disturbance. However, 3700m of water vole habitat/potential water vole habitat will be enhanced (primarily along the East Stour River corridor), 550m of water vole ditches will be created south of the A20 and in excess of 3km of water vole ditches will be created in a14ha area in the north west of the site. This is a total of:

- Replacement of 3 X the amount of ditch lost:
- Enhancement of 1.5 X the amount of habitat reduced in value.

Badger

7.5.52 Early in the masterplanning design process, main setts were identified and green infrastructure and habitat corridors were designed to retain the majority of these setts and create a buffer around the retained setts.

7.5.53 Of the 18 Main setts identified, initial impact assessments suggest that only two of these setts will likely require closure to facilitate the development. This will need to be re-appraised as the detailed design of each parcel is finalised. If a set needs to be closed, areas have been identified within the site where replacement setts could be created, connected to existing foraging and commuting areas. Exact locations for any replacement setts will likely need to be informed by bait marking surveys at the appropriate time of the planning process. An area of approximated 32ha has been identified where a replacement sett(s) could be positioned in the north-west of the site. The exact location of this is presented in ES Appendix 7.18.

7.5.54 Design includes green infrastructure design to ensure that badgers can continue to utilise the site, for commuting and foraging. Habitat corridors have been created across the site, where it was possible, these corridors follow the main pathways of badgers identified within the surveys. A green grid has been built into the designs to permit wildlife, including badgers to move through and beyond the site.

7.5.55 The design of the green infrastructure within the development will maximise foraging opportunities within the site for badger. Habitats will include, rough grassland, managed grassland, traditional orchards, Sustainable Drainage Systems (SuDS) including swales and woodland and tree planting. There is likely to be a loss of foraging area for badgers within the development, however connectivity between retained and created foraging areas is maintained. As shown in ES Appendix 7.18,

Common Reptiles

7.5.56 Full details of the design and mitigation proposed for reptiles is presented in ES Appendix 7.18 (Mitigation Strategies). In line with the mitigation hierarchy, the first step of the proposed mitigation for impacts to common reptiles will be avoidance. Within the development, many areas of value for reptiles will be retained and enhanced.

7.5.57 In total it is calculated that once developed, the site will need to provide a total of 52ha of high-quality reptile habitat in order to ensure the conservation status of reptiles within the site. As presented in Appendix 7.18, it is estimated that post development, the site will provide in excess of 135ha of habitat area (both existing, created and enhanced reptile habitat areas).

7.5.58 Examples of areas where reptile habitats will be retained and enhanced include:

- Areas around the Folkestone Racecourse Lake;
- Areas along the East Stour river corridor north and south of the A20;
- Throughout the 'Lympne Resilience Area' in the south east of the development.
- Bunds around the Lympne Airfield site (which have previously been utilised as a receptor site for animals translocated from the Link Park sites).

7.5.59 Within the development, there will be embedded mitigation within the design to ensure that reptiles can utilise areas of the site and move through the site. This will include retention and enhancement buffers of rough grassland around retained habitat features including hedgerows and between retained areas of habitats. In addition, SuDS areas, where appropriate, will be designed to provide reptile habitats with the provision of rough grassland and hibernacula.

7.5.60 Elsewhere within the site, areas designed specifically to provide habitat for reptiles will be created, including a large area (approximately 14ha) in the north west of the site, which will be a dedicated wildlife area, and will include dedicated enhancement for reptiles, including a mosaic of species rich grassland and scrub, hibernacula and water bodies.

7.5.61 In total, in excess of the 52ha of retained, created and enhanced habitat for reptiles will be created or enhanced as a component of the development, as evidenced within the reptile mitigation strategy presented in ES Appendix 7.18.

Great Crested Newt

7.5.62 Full details of the design and mitigation for great crested newt is presented in ES Appendix 7.18. In line with the mitigation hierarchy, the first step of the proposed mitigation for impacts to great crested newts will be avoidance. Within the development, many areas of value for great crested newts will be retained and enhanced.

- Pond 5, which supported a small population of GCN is to be retained adjacent to the development. This will be immediately surrounded by excellent woodland habitat associated with Harringe Brooks Woods and the surrounding area. In addition, enhancement for GCN around the north and east of the woodland is proposed.
- Pond 9; which supports a small population of GCN is to be retained. Connectivity between this pond and the woodland to the south (Harringe Brooks Woods), beyond which lies pond 5 is to be retained. Connectivity to pond 11 and 12 to the east is also to be retained. As with pond 5, the conservation status of the population associated will be enhanced through the creation of new ponds and habitats around the north and east of Harringe Brooks Woods.
- Pond 11 and 12, which support a small GCN population, are to be retained adjacent to the site. Connectivity between these ponds and ponds 5 and 9 to the west will be maintained. Connectivity to Terrestrial habitat to the east will also be enhanced, and new terrestrial habitat will be formed within the SSSI to the east.
- Pond 15, which supports a medium GCN population will be retained within the development. Habitat to the east adjacent to the East Stour River will be enhanced to provide terrestrial habitat for these species.
- Pond 17, which supports a low population of GCN is to be retained. Terrestrial habitat to the south east of the site is to be enhanced.
- Pond 23; which supports a small GCN population is to be retained within the development. The country park south of the castle and retained habitats around this pond will provide terrestrial habitat for the species associated with this pond.

7.5.63 Only one pond which supports GCN will be directly lost to the development, which is pond 27 located in the east of the site. It was not possible to preserve this pond with sufficient terrestrial habitat to support a GCN population. This pond supports an isolated, small population of GCN therefore an alternative mitigation approach to retention was deemed more appropriate.

7.5.64 There will however be a loss/modification of terrestrial habitat associated with the ponds and additional mitigation will be required to safeguard GCN populations. Table 7-27 shows the area of habitat within the site that are likely to be impacted due to the development. The total area of habitat within 500m of a GCN pond is 215.6ha, however the majority of this area (>70%) is very poor GCN habitat, consisting of intensively managed arable land or improved grassland.

Table 7-27: Impacts to GCN habitat

Potential impact area	Area (ha)
Core < 50m from a GCN Pond	5.9
Intermediate < 250m from a GCN Pond	111.6
Distant < 500m from a GCN Pond	215.6

7.5.65 A summary of the impacts to GCN populations on and around the site as a result of the proposed development is shown in Table 7-28 below. It is this information that has guided the mitigation proposals.

Table 7-28: Summary of impacts to GCN populations on the site

GCN population	Impacts to ponds and mitigation	Impacts to terrestrial habitats and mtigation
Small population associated with Pond 5	No direct impacts Fragmentation from pond 9	Terrestrial habitat loss >50m from the pond
	Mitigated via tunnel creation and new pond creation around Harringe Brooks Wood.	Mitigation will be in the form of enhanced habitat around Harringe Brooks Wood.
Small population associated with Pond 9	No direct impacts Fragmentation from ponds 11, 12 and 5	Extensive terrestrial habitats loss
	Mitigated via tunnel creation and new pond creation around Harringe Brooks Wood.	Mitigation will be in the form of habitat creation and enhancement including greater connectivity around Harringe Brooks Wood
Small population associated	No direct impacts Fragmentation from ponds 5 and 9	Terrestrial habitat loss >50m from the pond

GCN population	Impacts to ponds and mitigation	Impacts to terrestrial habitats and mtigation
with ponds 11 and 12	Mitigated via tunnel creation and new pond creation around Harringe Brooks Wood.	Mitigation will be in the form of habitat creation and enhancement including greater connectivity around Harringe Brooks Wood and within the SSSI east of the ponds (enhanced connectivity across Otterpool Lane)
Pond 15	No direct impacts	Terrestrial habitat loss >50m from the pond
	Additional ponds will be created around the East Stour River corridor, particularly to the north.	Mitigation will be in the form of habitat creation and enhancement around the East Stour River corridor and particularly to the north of pond 15, associated with a SuDS area.
Pond 17	No direct impacts	Terrestrial habitat loss >50m from the pond
	Additional ponds will be created around the East Stour River corridor	Mitigation will be in the form habitat creation and enhancement to the west of Lympne village
Pond 23	No direct impacts	Some impacts to terrestrial habitats (>50m from the pond).
	Additional ponds will be created around the East Stour River corridor	Mitigation will be in the form habitat creation and enhancement around the East Stour River corridor, and within the park between Westenhanger Castle and the retained racecourse lake.
Pond 27	Pond removed	All terrestrial habitat lost
	Additional ponds will be created around Harringe Brooks Wood and in the north west of the site	Mitigation will be in the form habitat creation and enhancement in the area around Harringe Brooks Wood and in the north west of the site.

7.5.66 Within the development, there will be embedded design to ensure that GCN can utilise areas of the site and move through the site. This will include retention and enhancement buffers of rough grassland around retained habitat features including hedgerows and between retained areas of habitats. In addition, SuDS areas, where appropriate, will be designed to provide GCN habitats with the provision of rough grassland, ponds and ephemeral waterbodies and hibernacula.

7.5.67 Elsewhere within the site, areas designed specifically to provide habitat for GCN will be created, including a large area (approximately 14ha) in the north west of the site, which will be a dedicated wildlife area, and will include dedicated enhancement for GCN, including ponds and hibernacula. This is shown in more detail in the mitigation strategy (EIA Appendix 7.18).

7.5.68 In total 215.6ha of area of value to GCN will be impacted by the development. Of this, an estimated 53ha offers terrestrial habitat for GCN (i.e. 25%), with the remaining area being intensively farmed arable and improved grassland. However, extensive areas of existing habitat area retained, and approximately 85ha of GCN habitat will be enhanced within the development. The table below Table 7-29 describes these areas. Details on the locations of this enhancement are described below and presented within ES appendix 7.18.

Table 7-29: Areas of Habitat for GCN post development

Type of habitat creation / enhancement	Area
Terrestrial habitat creation and new breeding pond creation (i.e. not within the vicinity of existing breeding ponds).	15ha
Terrestrial habitat enhancement within the vicinity of existing GCN ponds	60ha
Terrestrial habitat creation and new pond creation within the vicinity of existing GCN ponds.	10ha
Total	c. 85ha

7.5.69 An area of terrestrial habitat enhancement will also be located adjacent to Harringe Brooks woods, which will contain ponds and terrestrial habitats. Overall, is targeted that there will be a net gain for high quality habitat for GCN within the Otterpool Park development.

7.5.70 In order to enhance the connectivity between new and retained ponds on the site, tunnels for GCN will be created beneath roads where key connectivity is identified.

7.5.71 The parcels of the development will also be designed to safeguard GCN, with permeable garden barriers (hedges) where appropriate and offset gulley pots, where practicable.

7.5.72 It is likely that there will need to be a suite of enhancement conducted to ensure that areas identified for GCN mitigation and compensation is created prior to certain construction milestones within the development phasing. Details of the proposed management of all created and retained habitats is also likely to be required, to be specified within an EMP (Ecological Management Plan). The details of this proposed document are presented in the 'Operational Mitigation' section of this report (section 7.6.10). This document should be formulated and submitted at the appropriate stage of the planning process, for example as the development proceeds through Reserved Matters.

Otter

7.5.73 Full details of the design and mitigation relating to otter are presented in ES Appendix 7.10. The site is unlikely to support or maintain an otter population at this time although it may support an individual otter on occasion and therefore the development is unlikely to impact this species. However, there is potential for this species to return to the area. The masterplan retains the East Stour River corridor which is also buffered and enhanced. The main tributaries to this river, and the significant water bodies, such as Folkestone Racecourse Lake, (water body 2, ES Appendix 7.10) south of the A20 and the off-site water bodies within Harringe Brooks Woods are also retained and buffered. Overall, in many locations, there will be a buffer of increased biodiversity value, changing from agricultural boundaries to species rich grassland and scrub, which will enhance the available habitat for otter. The BAP (ES Technical Appendix 7.20) includes prescriptions for otter, including the creation of holts where appropriate.

Hazel Dormouse

7.5.74 Design has prevented the majority of impacts to dormouse. Although on-site 'mitigation' is not required (as this species is not present within the site), within the masterplan design, measures will be implemented to maximise the value of the site for dormouse and to safeguard dormouse which are present within adjacent and nearby habitats. The following measures are being incorporated within the masterplan design:

- A minimum buffer of 50m around Harringe Brooks Wood from built development;
- Appropriate buffers around retained woodlands within the site;
- Retention of hedgerows where possible;
- Planting of new woodland blocks and creation of new hedgerows.

7.5.75 Overall, across the Otterpool Park site, there will be a net gain in the amount of habitat suitable for dormouse, with approximately 23ha of additional woodland and tree planting proposed within the development.

Invertebrates (Terrestrial)

7.5.76 As proposed, the vast majority of the existing habitats that have some value to invertebrates are being retained and buffered as part of the GI 'green-infrastructure' across the proposed development and enhanced with broad margins and the creation of entirely new habitats, e.g. ponds, ditches, botanically-rich grassland, bare ground, scrub and woodland. Some habitats of potential value to invertebrates, such as the habitats at TN20, 51, 52, 53, 65 and 66 are being lost, but these are of very limited value to invertebrates and the current designs for the site will more than compensate for the loss of these areas.

7.5.77 In addition, the proposed development of the areas around TN165/167, specifically the bare earth mounds, may have an impact upon a range in invertebrate species. It is considered that there is sufficient scope within the masterplan to mitigation for any impact.

7.5.78 Table 7-30 below summarises the key areas for invertebrates, proposed avoidance, mitigation and enhancement. The target note numbers referenced are presented in Figure 5 in Appendix 7.1 and detailed fully in ES Appendix 7.17.

Table 7-30: Summary of habitats, their value to invertebrates, impact of development and appropriate mitigation

Habitat	Value	Impact of development	Mitigation
TN19 – Racecourse lake and margins	High	Retained, but modification planned	Retained and buffered. If modification to the lake margin takes place, detailed surveys would be needed to inform mitigation. Enhancement would include an increase in the structural complexity of the lake margin and creation of bare ground and dead wood micro-habitats.
TN20 – 600m of ditches	Low	To be lost	Create new wetland habitats with long-term management plans. Locations for approximately 1200m of new diches in the vicinity of those to be lost have been proposed. A BAP will specify targets for habitat creation in these features.
TN41 – Ephemeral pools and ditches	High	Retained	Potential to be significantly enhanced with margins and dedicated management. Will also benefit from the creation of new wetland habitats
TN51 – Wet flush	Moderate	Area will be lost in development	Creation of better quality and better-connected wetland habitats throughout the site
TN51 – Dead oak	Moderate	Area will be lost in development	Can be moved to a retained area
TN52 - Ditch	Low	To be lost	Creation of better quality and better-connected wetland habitats throughout the site
TN53 – Semi-improved grassland	Low	To be lost	Creation of similar, better quality and better-connected habitats throughout the site, e.g. margins and buffers
TN65 – Hawthorn hedge	Low	To be lost	Creation of similar, better quality and better-connected habitats throughout the site, e.g. margins and buffers
TN66 – Pond	Moderate	To be lost	Creation of similar, better quality and better-connected habitats throughout the site, e.g. wildlife ponds and ditches, SuDS
TN100 – Riparian corridor	High	Retained	Development buffers would provide significant enhancement
TN110/111 – Woodland edge scrub	High	Retained	Development buffers would provide significant enhancement. Similar habitats to be created throughout the site
TN115 – Species-rich hedge	High	Retained	Could be enhanced with better connectivity to similar habitats
TN118/225/227 – Long hedge and ditch	High	Retained	Three crossings will be made over this ditch and mitigation will need to translocate these hedgerows and restore connectivity. New hedgerows to be planted across the site.
TN165/167 – Mounds of debris in a mosaic of bare ground, grassland and scrub.	High	To be lost	Creation of similar habitats on and around nearby bunds, but detailed surveys recommended for this area prior to development, to be conducted at the appropriate stage of planning.
TN180/182 – Lorry park bare ground and spoil heaps	Moderate	To be lost	Creation of bare ground habitats throughout the site and provision of diverse, native nectar sources
TN193 – Neutral, semi-improved grassland	Moderate	To be lost	Creation of similar, better quality and better-connected habitats throughout the site, e.g. margins and buffers and enhancement of nearby bunds
TN195 – Old runway	Moderate	Retained	Creation of better quality and better-connected habitats throughout the site is proposed, e.g. margins and buffers and enhancement of nearby bunds
TN197/198	Moderate	Retained	Would be enhanced with better management to create a greater range of microhabitats with a mosaic bare-ground, species-rich short sward and scrub

Fish and Aquatic Invertebrates

7.5.79 Within the design, all of the notable aquatic features for fish and aquatic invertebrates are retained and buffered. This includes:

- East Stour River and its tributaries;
- Folkestone Racecourse Lake,
- Ecological notable ponds, including pond 9, pond 15 and pond 16.

7.5.80 To control the risk to these receptors from the construction phase, particularly pollution, the design of the development has incorporated watershed buffers to avoid and minimise impacts to existing water bodies.

7.5.81 The total width of the East Stour River buffer is in excess of 50m (100m total) along its length, except for where the river is crossed by roads or pathways.

7.5.82 The tributaries of the East Stour River (tributary south of the A20 and tributary Harringe Brooks Wood to the East Stour) have a minimum buffer of 15m (30m total).

7.5.83 Where possible existing vegetation will be retained to minimise machinery and excavations and therefore reduce the likelihood of soil or other construction materials entering the water bodies.

7.5.84 To ensure the quality of the water environment does not deteriorate during construction, a Code of Construction Practice (CoCP) will be produced and implemented. This will document best practice construction methodologies and describe procedures for the management of environmental impacts during construction, including a Pollution Control Plan, to safeguard the quality of surface water during the construction phase. Method statements will be prepared, and activities will be managed and monitored, to include the following best practice measures:

- Avoiding the storage of any potentially polluting materials in close proximity to any water bodies, including stockpiles of soil to reduce potential for sedimentation. Where this is not possible works will be undertaken in accordance with approved method statements and in accordance with environmental permitting requirements / restrictions in order to safeguard the water environment;
- Soil stripping managed to ensure the minimum area of exposed soil at any one time;
- Fuels and chemicals will be stored, and refuelling will take place within bunded areas to prevent leakage, and these will be located away from waterbodies. Drainage from these areas will incorporate an isolation facility such that the outlet could be sealed in the event of a spill
- Provision made for water treatment to remove sediment before discharge to a surface water feature
- Concrete will be laid only following the suitable preparation of the ground surface and temporary shuttering used to contain potential leaks
- Designated washing out areas will be set up for concrete lorries with impermeable liners to protect the soil and groundwater below, and
- Waste water generated from the construction compound(s) will be disposed of via appropriate means, for example pumped out and removed from site by tanker.

7.5.85 An emergency spillage response plan will document measures to be implemented to prevent pollutants infiltrating into the soils beneath the site and reaching surface water receptors. Appropriate equipment (e.g. absorption mats) will also be made easily accessible on site to deal with accidental spillages and the plan will also provide a full list of protocols and communication channels with the EA in the event of an accidental pollution incident. Should any pollution incidents occur, the EA incident hotline will be called immediately in tandem with dealing with any spillages.

7.5.86 To promote the sustainable use of water resources, measures will be implemented to promote general water use efficiency and particularly to reduce the use of potable water. Examples include rainwater harvesting to provide water supply for the construction welfare facilities and for use in dust suppression, the collection of greywater for use in wheel washing facilities and leakage prevention.

Brown Hare

7.5.87 No specific design is proposed for this species. It is not possible to avoid all foreseen impacts to brown hare within the OPA boundary. Mitigation, as outlined in the sections below, will mitigate for impacts to this species.

Common Toad

7.5.88 Within the development, there will be design to ensure that GCN can utilise areas of the site and move through the site, which will also benefit toad. This will include retention and enhancement buffers of rough grassland around retained habitat features including hedgerows and between retained areas of habitats. In addition, SuDS areas, where appropriate, will be designed to provide GCN habitats with the provision of rough grassland, ponds and ephemeral waterbodies and hibernacula.

7.5.89 Elsewhere within the site, areas designed specifically to provide habitat for GCN, which will also provide excellent habitat for toad will be created, including a large area (approximately 14ha) in the north west of the site, which will be a dedicated wildlife area. This is shown in more detail in the GCN mitigation strategy (EIA Appendix 7.18).

7.5.90 An area of terrestrial habitat enhancement will also be located adjacent to Harringe Brooks woods, which will contain ponds and terrestrial habitats. In order to enhance the connectivity between new and retained ponds on the site, tunnels for GCN, which toad will be able to utilise, will be created beneath roads where key connectivity is identified.

7.5.91 The parcels of the development will also be designed to safeguard GCN, with permeable garden barriers (hedges) where appropriate and offset gulley pots, where practicable.

7.5.92 It is likely that there will need to be a suite of enhancement conducted to ensure that areas identified for GCN mitigation and compensation is created prior to certain construction milestones within the development phasing. Details of the proposed management of all created and retained habitats is also likely to be required.

Hedgehog

7.5.93 Within the development, woodlands and hedgerows are being retained and buffered, and extensive additional areas of hedgerow and tree planting are to be created, as illustrated in the separately issued DAS and GI strategy.

7.5.94 Within the parameters of the development, there will be prescriptions for integrated GI and hedgehog permeable fencing throughout the development, including:

- Hedging along perimeters of properties, particularly where these are between GI areas;
- ‘Hit and miss’ fencing throughout the development,
- Hedgehog holes throughout the development.

Harvest Mouse

7.5.95 No specific design is proposed for this species, however, there will be significant gain in habitat for this species throughout the site. This will include:

- Areas of rough grassland (for both reptiles and GCN);
- Areas of reeds around newly created water vole habitats;
- Wildflower rich grassland within buffer habitats, especially along retained and newly created hedgerows.

7.5.96 The creation of habitat for this species is evidenced in the net gain for the site as evidenced in ES Appendix 7.21.

Ecosystem Services

7.5.97 This section broadly describes the design and net change in ecosystem typologies and the direction change in ecosystem services. This includes the previously outlined design with further detail presented inf ES Appendix 7.23. Where mitigation is specified elsewhere within this ES or associated documents, it is cross-referenced in the table. Table 7-31, Table 7-32, and Table 7-33 provide a summary of the potential impact of the project upon ecosystem services resulting from the development. Out of 20 benefits considered, nine of these are likely to increase in qualitative terms, five with no change and six a potential negative impact. The largest likely negatives are due to a loss in farmland and tranquillity but likely substantial increases for biodiversity (20%), health and tourism due to the scheme design.

Table 7-31: Ecosystem services typologies areas of the OPA after development

Habitat	Approx. area (ha)	Approx. %
Arable: allotments	10	1.7
Grassland habitat types (inc. tall ruderal vegetation)	197	34.0
Trees, woodland hedge scrub	73	12.6
Water (rivers and ponds)	21	3.6
Development areas*, Building, fence, wall, hardstanding	278	48.0
TOTAL	579	100

Table 7-32: Percentage change after development

Habitat	Approximate Percentage (%) Before	Approximate Percentage (%) After	Approx. % Change
Arable / allotments	46.69	1.7	-44.99
Grassland habitat types inc. tall ruderal vegetation	44.34	34.0	-10.34
Trees, woodland, hedge, scrub	4.54	12.6	+8.06
Development area*, building, fence, wall, hardstanding	3.35	48.0	+44.65
Water (rivers and ponds)	0.6	3.7	+3.1
Bare ground	0.48	0	-0.48
TOTAL	100	100	

* This will contain some GI (gardens, street trees, SuDS biodiversity roofs etc.) but this cannot be quantified at this stage.

Table 7-33: Summary of ecosystem service impacts change associated with the Otterpool Park OPA area.

Category	Ecosystem service	Type of benefits	Assessment of Change	Location of mitigation (if applicable)
Provisioning	**Food**	Food for pollinators	Positive Owing to the extensive creation and/or enhancement of flower-rich habitat as part of the Scheme, in comparison to the relatively species-poor habitats due to be lost, a net gain in habitat for pollinators is expected. A pollinators strategy is provided within the separately provided DAS (Design and Access Statement).	Pollinators Strategy is defined within the DAS (Design and Access Strategy) to be compiled in relation to the development).
		Hay crop, Silage, Grazing pasture (cattle, sheep, horses)	Negative All of the area used for pasture will be lost. There will be an overall net loss of grassland of over 10% the majority of the replacement grassland ecological and recreational.	None Management of farmland to increase biodiversity will be undertaken as an offsetting measure primarily for farmland birds, this may result in more sustainable and long-term increased productivity but productivity is not the primary aim of this mitigation. Details of loss of farmland are presented in ES Chapter 5.
		Crop	Negative There will be a loss of arable land. Allotments are being provided within the masterplan although they will provide a small amount of food they will be more of a recreational and health benefit.	None Management of farmland to increase biodiversity will be undertaken as an offsetting measure primarily for farmland birds, this may result in more sustainable and long-term increased productivity but productivity is not the primary aim of this mitigation. Details of loss of farmland are presented in ES Chapter 5.
		Fish	No Change There is unlikely to be a significant impact on the abundance of fish.	The mitigation for impacts to waterbodies is presented in the WFD (ES Appendix 7.22) and within the Habitats section of this ES chapter (7).
	Water	Water provision	No Change	N/A
Regulating	**Carbon**	Carbon sequestration	Negative Short-Term Slight, Positive Long-Term There is an increase in woodland over the site from 4% to 12% with and double the amount of hedgerows and 21ha of SuDS, aquatic habitats and ponds. There is a reduction in grassland of 10%. Arable land is reduced by over 44%. Construction will result in an initial loss of carbon. However, when the habitat matures the permanent species rich grassland establishes and woodlands and the GI within development parcels is included there may be will provide a small increase in greater carbon sequestration potential. Timelines likely to be 30 years+.	Mitigation presented in Chapter 8 of the ES.
	Climate	Climate regulation	Negative There will an increase in radiating heat due to the built environment. The GI integrated into the development parcels and the additional SuDS, hedgerows and woodlands will provide some mitigation but there is likely to be an overall increase in radiating heat.	Mitigation presented in Chapter 8 of the ES.
	Water flow and flood regulation	Water flow regulation	No Change SuDS and, woodland, hedgerows, species rich grasslands and GI within the built parcels with additional water drainage design will meet no net changed in flow requirements, while the ecosystem services are not delivering 100% of the water purification, they will be delivering a greater degree than they are at the baseline scenario.	Mitigation presented within ES Chapter 15.
	Groundwater recharge	Groundwater recharge and quality	No Change SuDS and water drainage design will meet no net changed in flow requirements	Mitigation presented within ES Chapter 15.

Category	Ecosystem service	Type of benefits	Assessment of Change	Location of mitigation (if applicable)
	Water quality regulation	Water quality	Positive Whilst the Scheme water protection measures are designed to ensure no change in water quality in associated water bodies including SuDS, woodland, hedgerows, species rich grasslands, as detailed within the Water Framework Directive Screening report (ES Appendix 7.22). The water quality of the East Stour river will improve due to a reduction in inputs of agricultural chemicals including fertilisers and pesticides.	Mitigation presented within the WFD (ES Appendix 7.22) and within Chapter 15 of this ES.
	Air quality regulation	Air quality	No Significant Change Whilst there would by some local decreases in air quality directly adjacent to the Scheme, there would be no noticeable change to the functioning of the notable receptors including identified within the Air Quality Chapter 6 of the ES.	Mitigation presented in Chapter 6 of this ES.
	Human health regulation	Health and well-being	Positive A beneficial impact upon human health, through the provision of homes within an environment which encourages interaction with green spaces, sports and activity and healthy travel, including cycling and walking. Sports pitches are also being provided across the site. Allotments will provide recreational opportunities that are likely to contribute towards improved health due to activity and locally grown provisions.	Green space design presented within the associated DAS.
Cultural	**Science and education**	Education	Positive The provision of new educational resources would represent a net benefit with regard to science and education, including the proposed provision of Natural Play areas and increased access to the Otterpool Quarry SSSI. Port Lympne Safari Park is likely to be in greater use for educational purposes by the newly created schools and residential families.	Proposals for natural play areas and access to SSSI presented within the associated DAS.
	Tourism and recreation	Tourism	Positive The development proposes to enhance the setting of Westenhanger Castle and it has the potential to become a tourist destination. Remains of a Roman Villa that are likely to be of high regional importance has been discovered during the cultural heritage surveys and may become a future tourist destination.	N/A
		Recreation	Positive A significant increase in the recreation value of the site is foreseen. Currently, there is minimal access to the site by the public. There will be a large increase in the availability of accessible greenspace, including a river park, town park, country park, green rotes and play areas. Sports pitches are also being provided across the site.	Proposals for recreational areas presented within the associated DAS.
	Sense of place and history	Cultural heritage and aesthetic amenity	Positive The development proposes to enhance the setting of Westenhanger Castle which has the potential to enhance its heritage value. Remains of a Roman Villa that are likely to be of high regional importance has been discovered during the cultural heritage surveys and may become a future tourist destination	Mitigation presented in Chapter 9 of the ES.
		Historical archaeological sites		
		Tranquillity	Negative Although the tranquil setting was not enjoyed by a large number of people this sense of place and tranquillity will certainly be negatively impacted	Proposals for natural play and recreational areas are presented in the associated DAS.

Category	Ecosystem service	Type of benefits	Assessment of Change	Location of mitigation (if applicable)
Supporting	**Biodiversity**	Increased diversity of habitats, increased provision of habitats of valuable habitats for notable species.	Positive 20% net gain using the Defra Biodiversity Metrics. This scheme design has been represented by GI typologies, each of which has associated habitat parameters detailed within the Biodiversity Net Gain Report. Any evolution of these parameters, through detailed design, must fulfil the required net gain and ecosystem function as discussed within this Biodiversity ES Chapter and associated appendices.	Mitigation outlined in this Chapter, Biodiversity Net gain Report (ES Appendix 7.21) and the BAP (ES Appendix 7.20)
	Non-Native Invasive Species	These will be eradicated from site, a dedicated Non-Native Invasive Species Management Plan	Positive	Mitigation outlined in this Chapter
	Soils	Soil quality	Negative There will be a loss of agricultural land as a result of the development. The quality of this land varies between Grade 2 to Grade 3 in the ALC (Agricultural Land Classification). Soils on the site include: • Freely draining slightly acid loamy soils; • Loamy soils with naturally high groundwater; • Freely draining slightly acid but base rich soils and slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils.	Completion of a Soil Resources Survey and incorporate results into a Soil Management Plan (SMP) which would be aligned to a Site Waste Management Plan. The SMP will ensure that soil is stripped, stored and generally managed to conserve its condition and will be reused onsite. Mitigation presented in ES Chapter 5.

7.6 Mitigation Overview

7.6.1 This section of the report outlines the mitigation incorporated within the development. The structure of this section is as follows:

General Construction Mitigation

- This section includes an outline of the prescriptions which should be included within a Code of Construction Practice (CoCP).

Additional Construction Mitigation

- Additional mitigation for habitats:
  - Further surveys;
  - Bespoke Method Statements.
- Additional mitigation for species:
  - Further surveys;
  - Requirements for licensing;
  - Noise Mitigation and Management;
  - Bespoke Method Statements.
  - Translocations.
- Otterpool BAP

Operational Mitigation

- BAP evolution and monitoring
- Ecological Management Plans
- Detailed Design
- Lighting Strategy

Offsetting

- Farmland birds and barn owls
- Brown hare

General Construction Mitigation

7.6.2 This section outlines the details of the general construction mitigation to be applied throughout the development. Where additional mitigation to ensure specific impacts to habitats and species are controlled, this is presented in the subsequent sections.

Code of Construction Practice (CoCP)

7.6.3 A CoCP or similar document would be in place in advance of site clearance to ensure that measures are put in place to protect the environment, including biodiversity. The CoCP would adhere to relevant legislation for the protection of the environment and implement best practice guidelines for works within or near water. Relevant guidance including Pollution Prevention Guidelines prepared by the Environment Agency and literature produced by CIRIA would form the basis for pollution control measures. Mitigation timings are presented in Image 7-5. Generally, the CoCP would ensure that:

- Appropriate measures are put in place to protect water quality in the East Stour watercourse and its tributaries. This would also protect downstream habitats.
- Appropriate measures are put in place to control dust and other emissions that could affect air quality.
- Site compounds, storage facilities and staff facilities are suitably bunded and located in places that would not have an adverse effect on the environment; in particular, the CoCP would ensure that retained are protected.
- In advance of site clearance, protective fencing is installed to protect retained and/or ecologically sensitive habitats (the watercourse, mature trees and hedgerows) and their associated buffer zones to ensure that they are not subject to accidental damage (to be determined on a phase by phase basis).
- Haul routes, storage compounds and staff facilities would be located away from retained habitats to minimise disturbance to the species they support.
- Pre-construction surveys are carried out by an ecologist to confirm the nature and extent of any ecological constraints in advance of site clearance, to ensure that appropriate mitigation measures including licences are in place in advance of site clearance, and to confirm that no new constraints have arisen since the publication of the Environmental Statement.
- An ecological clerk of works is in place to oversee site clearance, in particular any works that have the potential to disturb notable ecological features. They would also ensure that the mitigation measures proposed adhere to best practice guidelines and take account of any changes in legislation that may have occurred.
- To avoid impacts on breeding birds, works close to retained habitats would commence outside of the bird breeding season (i.e. they would commence in the period between the months of September and February, inclusive). Where this is not possible, specialist ecological supervision would be provided to confirm the absence of nesting birds prior to vegetation removal and ensure the protection of any confirmed nesting sites. Should the presence of nesting birds be established, buffer zones would be fenced to ensure the birds are not disturbed and works would cease in the locality until the young birds have fledged. Note: the area of buffer zones for ground nesting species such as skylark may exceed a 50m radius.
- In advance of construction, bird nesting boxes would be installed in the hedgerows and on retained trees, in suitable locations away from the construction. This would ensure alternative nesting opportunities are provided to mitigate for any disturbance effects.
- Prior to any removal of hedgerows, pre-construction checks for any species of conservation concern, such as reptiles and hedgehogs, would be undertaken. Any features of value to hibernating reptiles would not be disturbed during the reptile hibernation period (October through to March). Should hedgehog(s) be found at this time, they would be moved to a safe location.
- The construction site drainage solutions would incorporate measures to ensure that all surface water runoff is balanced and treated and returned to the watercourse at greenfield runoff rates.
- Care is taken with the design of site drainage to prevent unbalance of and untreated silt laden surface water runoff from entering retained habitats.
- If night-time construction lighting is required, it would be kept away from the watercourses and the hedgerows, during the period April to November when bats are active.
- The CoCP will ensure that schedule 9 plants are not allowed or caused to spread within or outside of the development area:
- An ecological clerk of works would be employed to ensure that the ecological protection measures outlined in the CoCP are adhered to. They would also undertake regular monitoring to ensure that the protection measures remain in place for the time that they are required.
- The Ecological Clerk of Works would report to the Site Manager and Environmental Clerk of Works to ensure that remedial actions are undertaken in a timely manner.

Additional Mitigation

7.6.4 This section outlines the additional construction mitigation required to control the impacts to ecological features identified within the ZoI of the Otterpool Development. This ‘Additional’ mitigation includes all measures which are:

- Not part of the design; and
- Will not be within the standard CoCP.

Habitats

Bespoke Method Statements and Translocations

7.6.5 In advance of site clearance, protective fencing is installed to protect retained/ translocated and/or ecologically sensitive habitats (the watercourse, mature trees and hedgerows, prevention of spread /eradication of non-native invasive species) and their associated buffer zones to ensure that they are not subject to accidental damage (to be determined on a zone by zone basis). For trees, where appropriate, this should be as specified within the appropriate AIA (Arboricultural Impact Assessment). An ecological clerk of works would supervise the works to ensure that the method statements were adhered to.

Further surveys

7.6.6 Additional habitat surveys are required to inform mitigation and detailed design, detailed in (Table 7-34). Recommended survey timings are presented in Image 7-5.

Table 7-34: Details of future habitat surveys required

Species	Further surveys required
Habitats general	It may be necessary to update the surveys should site conditions change, and to update the habitat information throughout the extended buildout process.
Invasive non-native plants	Update surveys may be required to determine the distribution of invasive non-native species within the site and to inform eradication / mitigation plans.
Trees and arboriculture	At the reserved matters application stage of the planning process, it will be necessary to fully evaluate the quality of the tree stock and tree numbers by carrying out a detailed Arboricultural survey in line with BS 5837: 2012. This would be a pre-requisite of any detailed planning application and complying with the FHDC Local Plan. Given the scale of development and uncertainty over specific development plots at outline planning application stage, more detailed information would be provided at the reserved matters application stage, as agreed with FHDC / KCC. An Arboricultural Impact Assessment (AIA) will also be required once detailed design footprints are available to assess the impacts and any required tree removal, protection required for protection for the trees to be retained, and a tree replacement strategy. A full topographical survey would be required to accurately complete the AIA report. Within the area supporting the traditional orchard, there may be a need for further surveys prior to development occurring in this area. These may include surveys for veteran trees and surveys for saproxylic species. There may also be a requirement to take scionwood for propagation of the cultivars to preserve cultural heritage. This would need to be determined in liaison with appropriate stakeholders, once access to this area is permitted at the appropriate juncture in the planning process (likely when reserved matters for development in this area are being addressed)

Species

Further surveys

7.6.7 In order to inform the planning process and mitigation, a range of further surveys are considered to be required. The surveys which are foreseen are presented in Table 7-35 below. Recommended survey timings are presented in Image 7-4.

Table 7-35: Further surveys required throughout the planning and construction process.

Species	Further surveys required
Invertebrates	The vast majority of the habitats that have potential for invertebrates are being retained further detailed surveys are not deemed necessary to inform the masterplan design or ES. There are a small number of areas which would benefit from further survey to inform the detailed design for the subsequent detailed planning applications and to provide a baseline. Due to the extended timeframe for build out of the development (at least 25 years in duration), the timing of the surveys would be appropriate to be aligned with the phasing of the detailed design. While the Folkestone Racecourse Lake is being retained, there will be landscaping around the northern and southern margin. This work would need to be proceeded by detailed surveys, which should be conducted at an appropriate time in the planning process. If any modification works are required within this area, detailed invertebrate surveys may be required to inform the detailed planning, design and mitigation. There was a limited resource of bare ground habitat, largely isolated areas within the site's grassland and scrub habitat. There are some large, predominantly bare mounds and areas of bare ground in the grassland surrounding these mounds north of the Link Park area (TN165 and 167 in ES Appendix 7.5). Ground nesting solitary bees (probably *Lasioglossum* spp.) were observed to be active in this area. It may be necessary to conduct invertebrate surveys to inform detailed design and mitigation prior to development within this area. There were also significant areas of bare ground in the disused lorry park (TN180 and 182 in ES Appendix 7.5), but minimal aculeate (barbed invertebrates such as bee and wasps) activity was observed in this area. Surveys, where required should be conducted at an appropriate stage of the planning process. Standardised pond netting and sweeping/beating of marginal vegetation based surveys should be undertaken in May, June and July.
Badger	Considering the extended timescales for buildout of the project and phased approach to planning, it is foreseen that further survey and input will be required to inform mitigation proposals. Further surveys are likely to be required where significant sett disturbance/destruction is deemed necessary. Bait marking surveys may be required to inform the detailed planning of the development. Bait marking is a technique that relies upon badgers marking their territorial boundaries with latrines. Bait is placed outside the main sett, with indigestible coloured markers within it. Then when the badger later defecates, coloured markers allow the surveyor to trace which main sett the badger belongs to and therefore map clan distribution. Bait marking surveys may also be conducted to help further determine the boundaries of different clan territories. Considering the high density of main setts within the site recorded during the 2016 – 2018 surveys, it is considered that the development could affect the behaviour and territories of social groups. It is likely that this will need to be understood within the detailed planning of mitigation for each development parcel. Bait marking is also likely to be required to establish if there are alternative neighbouring setts that badgers could colonise if destruction of the current sett they occupy is deemed necessary and could also help to determine the most suitable locations for mitigations e.g. replacement artificial setts, if required. Camera trapping to assist the surveys may also be required, camera traps may be used to monitor the use setts and determine the significance of the sett to a clan.
Bats	Bat surveys referred to within this document are considered sufficient to inform the EIA, masterplan design, and outline planning. However, due to the evolution of the detailed design and the requirement for an extended build out, subsequent surveys are likely to be required to inform each phase of the development. These surveys will inform detailed planning and construction mitigation and avoidance. This section of the report outlines the survey work likely to be required as the development progresses. The following surveys are likely to be required during the buildout: • As the masterplan evolves into a detailed design, additional areas may require scoping for potential impacts to bats. • Further 'preliminary roost assessment' surveys of structures (PRA), as access to previously inaccessible areas is obtained; • Once detailed design is finalised, hibernation surveys may be required on buildings to be removed which have been identified as having hibernation potential during the building assessments (where safe to do so) ES Appendix 7.12.

Species	Further surveys required
	• Further, and more detailed PRA and subsequent emergence / re-entry surveys to identify roosts to safeguard individual roosts (of structures to be removed, once this is known). These should be phased to be conducted as each phase proceeds to planning and be designed to ensure that sufficient data can be collected to allow a licence from Natural England to be obtained (determined by the current best practice and licence guidelines at the time of the development); • No tree roosting potential has been considered to date. Assessment of the roosting potential of trees, especially those identified within these surveys as likely to support bat roosts; once the details of tree impacts and removal is known. Followed requirement for emergence / re-entry surveys where required. These should be phased as each parcel proceeds to planning. • Monitoring of the bat usage of the site may need to be conducted, to inform detailed design and the success of avoidance mitigation for existing roosts and communing corridors.
GCN	The requirement for further survey at later stages of the planning process will be determined by the details of the phasing of the development, and the mitigation approach determined for each phase. If an individual licence approach (or site wide licence) is determined to be the most appropriate mitigation strategy for a given parcel, updated population surveys may be required but should be considered in line with NE's relatively new planning policy implementation approach which allows more holistic decisions to be undertaken.
Water vole	Updated water vole surveys are likely to be required to inform the licencing to facilitate water vole mitigation and for detailed design iteration. The need for further survey would be monitored throughout the build out process.
Birds (wintering and breeding), reptiles	Due to the extended build out of the project, surveys to update the baseline information on the site may be required throughout the buildout of the site, in relation to changing site habitats.

Image 7-4 :Recommended survey timings

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Comments and caveats
Woodland													May need to be modified depending on the flowering times of any particular target plant species.
Grassland													May need to be modified depending on the flowering times of any particular target plant species.
Heathland													May need to be modified depending on the flowering times of any particular target plant species.
River corridors													Surveys generally appropriate during summer months but vegetation in lowland rivers can be too dense later in the summer.
Terrestrial invertebrates													Surveys on 3 separate occasions required (1 each in early, mid- and late summer) to take account of seasonal variations in emergence. Species-specific surveys will need to be carried out at the optimum time for the particular taxa (e.g. surveys for marsh fritillary larval food webs are carried out in Sept./Oct.).
Aquatic invertebrates													Surveys on at least two separate occasions required, one in spring, the other in autumn. An extra survey in summer may also be required to assess the conservation status of potentially valuable ponds/lakes.
White-clawed crayfish													Surveys inappropriate during early summer for welfare reasons when females carrying/releasing offspring.
Fish													A general guide, but depends on life cycle/migration of species.
Great crested newts													Surveys outside the period mid-March to mid-June can detect presence but cannot determine absence. 4 surveys for presence/absence, 6 surveys for population estimates. eDNA window is mid-April to late-June.
Reptiles													Depends on weather conditions and time of day. 7 visits for presence/absence for common species.
Birds *(breeding)*													Several surveys required throughout optimum period specified (a minimum of 3). Survey period may need to be amended for some species e.g. crossbill.
(over-wintering)													Monthly surveys required as minimum throughout peak period specified. Surveys into Oct. and March needed for passage-migrants.
Water voles													Avoid periods of high river flow. 2 visits required 2 months apart, between mid-April –June and July-Sept.
Dormice *(nut searches)*													Surveys of characteristically-chewed nuts.
(nest boxes / tubes)													Installation of boxes/tubes in March/April at the latest.
Bats *(internal inspection)*													Restrictions may be necessary at certain types of roost e.g. when females are close to giving birth.
(emergence counts)													Remote monitoring of winter roosts can also be undertaken under certain circumstances.
(activity)													Repeat visits required, spread throughout the season, generally between 3 - 7 depending on survey aims.
Badgers *(walkover)*													Surveys also possible in summer, but not ideal due to density of vegetation.
(bait marking)													Surveys generally need to encompass entire spring period.
Otters													River flow rates are more restrictive than seasonal constraints, so avoid periods of high flow.

	= optimum survey season		= survey appropriate		= surveys possible, but may be inconclusive

= surveys not appropriate (not possible or not advised for welfare reasons)

This table has been produced as an indicative guide to when ecological surveys may be carried out. Other features, particularly weather conditions, can have a significant bearing on what can be achieved on a particular visit. A licensed surveyor may be required. For expert advice, please contact: Arcadis, The Mill, Brimscombe Port, Stroud GL5 2QG Email: EcologyUK@arcadis.com

Licensing requirements

7.6.8 As a component of the construction phase of the development, a number of protected species licenses are likely to be required. These will need to be obtained from Natural England. The timing of the application for these licences will depend upon the exact chronology of the buildout. The licences foreseen to be required in relation to the project are presented in Table 7-36 below. Mitigation timings are presented in Image 7-5

Table 7-36: Licences for protected species that may be necessitated during the construction phase of the development

Species	Licence requirement	Licence type	Notes
Great crested newts	Confirmed	Derogation licence	The exact licensing approach will depend upon the regulatory framework in place at the time of application.
Badgers	Confirmed	Licence to interfere with setts for development purposes	Setts will need to be closed to enable the development (although the design has been iterated to avoid impacts).
Bats	Confirmed	Derogation licence	For the removal of structures and / or trees where bat roosts are present. Additional roosts may be identified which will require licensing.
Water voles	Confirmed	Conservation licence	Translocation and displacement will be required from ditch 1 and potentially areas of the East Stour River.
Kingfisher	Potential	Conservation licence	To be avoided. The phasing of works and the Noise Mitigation and Management Plan should avoid the need to this licence.
Barn owl	Potential	Conservation licence	To be avoided. The phasing of works and the Noise Mitigation and Management Plan should avoid the need to this licence.

Bespoke Method Statements and Translocations

7.6.9 Where impacts to legally protected or notable species cannot be fully mitigated through design, a range of approaches to limiting impacts to these species from construction impacts are proposed. These are specified in detail in each of the dedicated species survey reports, presented in ES Appendix 7.3 – 7.17. A summary is provided in below in Table 7-37, only measures which are considered in addition to a standard CoCP are presented.

Table 7-37: Summary of construction specific mitigation for species

Species	Additional construction mitigation
Invertebrates	• Clear demarcation of areas that are to be retained with minimal disturbance to the buffers. Many species of invertebrate overwinter as eggs, larvae or adults in the soil, leaf-litter, under bark, etc. so it is imperative that these habitats are not disturbed in the buffers surrounding the more important retained habitats. • Translocation of microhabitat features into retained GI where possible – including deadwood, bare earth mounds and banks etc. • Creation of invertebrate micro habitats including log piles throughout the clearance of the site.
Badger	• Displacement of badgers from setts to be removed is likely to be required. replacement setts may also be required. This is detailed in ES Appendix 7.18. • Setting appropriate offsets from any badger setts to be retained (with appropriate fencing and demarcation if required) during construction to ensure that disturbance to setts is minimised. • Ensuring that badgers are not attracted to works sites, by ensuring good housekeeping particularly with regards to storage of food and disposal of waste. • Measures should be implemented to prevent badgers becoming trapped in excavations, including covering and ramping open excavations, as necessary.
Bats	During demolition on the site, there may be a need to safeguard roosting bats within structures and trees to be removed. Mitigation for these individuals is likely to require a licence form the statutory Authority (Natural England) and may specify: • Specific timings for works; • Displacement and exclusion of bats from structures; • Supervision by a licensed ecologist of demolition works. • Suitable alternative roosting provision will also be likely to be required, which may include bat barns and houses and / or bat boxes. During the construction phase of the development, a range of measures will need to be implemented to ensure that impacts to bats are minimised. Prescriptions for the provision of tool box talks for on-site contractors and staff, informing them of the legal protection afforded to bats; • Prescriptions for site lighting to minimise the impacts and disturbance to bats; • Pollution control measures; • Buffers and offsets from sensitive areas.
Dormouse	• In advance of site clearance, protective fencing is installed to protect retained and/or ecologically sensitive habitats (woodlands, mature trees and hedgerows) and their associated buffer zones to ensure that they are not subject to accidental damage (to be determined on a phase by phase basis). • An ecological clerk of works is in place to oversee site clearance, in particular any works that have the potential to disturb notable receptors. They would also ensure that the mitigation measures proposed adhere to best practice guidelines and take account of any changes in legislation that may have occurred. • The ecological clerk of works would ensure that hedgerow translocation is undertaken in accordance with an agreed method statement. They would also ensure that the retained and translocated hedgerows are monitored to ensure that they are managed appropriately. • Any contractors involved in the removal or disturbance of potential dormouse habitat should be aware of the legal protection afforded to dormouse. Should a dormouse be incidentally found during works, all work in the area must stop immediately and the advice of a qualified ecologist be sought.

Species	Additional construction mitigation
GCN	During detailed design and construction of the development, it is likely that additional actions may be required to safeguard GCN. These actions may include: • Habitat creation plans to be evolved with the detailed design and phasing of the development (i.e. outlining the habitats within the development parcels) to create and enhance habitats; • Habitat manipulation to displace great crested newts into retained habitats adjacent to habitats to be removed; • Tool box talks to be created and provided to on site staff to inform them of the protected status of Great Crested Newts; • Licensed capture and translocation of GCN from areas to be lost into retained / enhanced habitats may be required, this will need to be determined in liaison with Natural England. There is potential that a small number of GCN may be moved from the pond to be lost to the newly created area in the north west, to 'seed' this area with a population of GCN, which will have connectivity to the metapopulation in the west of the site (around pond 5, 9,11 and 12). • The exact details of the additional construction mitigation for GCN will need to be determined as reserved matters applications for development within the site are progressed. An outline of how mitigation for impacts to GCN are being approached is presented in ES Appendix 7.18.
Water vole	In areas where water bodies which support water vole would be removed to facilitate the development, there is likely to be a requirement for measures to safeguard individual water vole and populations of water vole. These measures may include translocation (where by animals are captured and moved to newly created or enhanced habitats) or displacement (whereby animals are encouraged to move away from the works through habitat manipulation. The preferred method between these two broad options will be outlined in more detail in the water vole mitigation strategy, however, it is likely that the exact methodology will need to be determined on a parcel by parcel basis, as the most appropriate option will need to be determined by: • The water vole population in the affected water bodies at the time of the mitigation implementation; • The status of adjacent water bodies, with regards to habitat, connectivity and population status; • The habitat and population status of translocation receptor areas; and • The current best practice guidelines. The broad approach to mitigation will be outlined in the Water Vole Mitigation Strategy (ES Appendix 7.18), with details applicable to each parcel being finalised at the appropriate time in the planning process. It is likely that an appropriate conservation licence to conduct translocation works would need to be obtained from the relevant statutory body (Natural England). The is a risk of pollution to water bodies due to construction. This could negatively impact the availability of foraging resources, adversely impacting the water vole population. It is therefore important that best practice industry pollution prevention measures are implemented, for example, soil would be prevented from entering the watercourses using soakaways and silt fencing and all chemicals and waste materials would be stored in secure containers with drip trays etc. This mitigation would be specified within a Code of Construction Practice plan (CoCP) and or a bespoke method statement. The CoCP will also detail measures to reduce noise levels, particularly when construction is taking place less than 30m away from a water bodies where water vole are present. Light pollution, especially at night, would be regulated, ensuring that light is focussed on only what is necessary for night working. Construction workers would be made aware of water vole on site before work begins any vegetation clearance within/ in close proximity to the water body should be supervised by a licenced Ecologist.
Birds	All nesting birds are protected by law and the site clearance to enable the development is likely to have impacts to nesting bird habitats. In addition to those measures outlined within a general CoCP, the following mitigation should be included: • Pre-construction nest checks for barn owl and kingfisher in particular should be undertaken where there is appropriate habit with the potential to be disturbed. • In advance of site clearance, protective fencing is installed to protect retained and/or ecologically sensitive habitats (woodlands, mature trees and hedgerows) and their associated buffer zones to ensure that they are not subject to accidental damage (to be determined on a phase by phase basis). • Haul routes, storage compounds and staff facilities would be located away from retained habitats to minimise disturbance to the species they support. • An ecological clerk of works is in place to oversee site clearance, in particular any works that have the potential to disturb notable receptors. They would also ensure that the mitigation measures proposed adhere to best practice guidelines and take account of any changes in legislation that may have occurred. An ecological clerk of works would be employed to ensure that the ecological protection measures outlined in the CoCP are adhered to. They would also undertake regular monitoring to ensure that the protection measures remain in place for the time that they are required. During the phasing of the work there will be a requirement for a Noise Mitigation and Management Plan with regards to breeding birds. This mitigation would be evolved with the phasing of the scheme.
Reptiles	During construction of the development, it is likely that displacement and translocation actions will need to be undertaken to ensure that individual reptiles and populations of reptiles are safeguarded during the works. This is likely to include: • Habitat Enhancement Creation and Management plans to be evolved with the detailed design and phasing of the development • Detailed Reptile Mitigation Strategies will be required to be evolved with the detailed design and phasing of the development. An outline reptile mitigation strategy is presented in ES Appendix 7.18. • Habitat manipulation to displace reptiles into retained habitats adjacent to habitats to be removed; and • Manual capture and translocation of reptiles from areas to be lost into retained / enhanced habitats. It is likely that there will need to be a suite of enhancement conducted to ensure that areas identified for reptiles to be translocated into are prepared for the translocation ahead of the translocation commencing. It is also likely that a suite of monitoring and maintenance works will be required in relation to the proposed project.

Image 7-5 Recommended mitigation timings

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Comments and caveats
Coppiced stool translocation													Optimal in autumn to winter (September to February) when growth is dormant.
Turf translocation													Optimal in autumn (September to November) when growth is dormant. Can be done throughout rest of year.
White-clawed crayfish													Crayfish translocation July to October. Do not carry out work late May to June, when females are carrying eggs or young.
Great crested newts *(breeding ponds works)*													Dry autumn and early winter conditions are best for breeding pond management (September to November). No management to ponds when newts in aquatic phase, and/or approaching/leaving ponds.
(terrestrial habitat works)													Vegetation clearance and destructive searches when newts above ground and active (March to late October), and most appropriate when in breeding ponds (mid-March to mid-June).
(displacement, trapping and translocation)													Trapping in ponds mid-March to mid-June. Drift fencing and pitfall trapping, and hand and destructive searching on land March to October.
Reptiles *(displacement, trapping and translocation)*													Displacement, capture and translocation only when reptiles above ground and active (March to late October); recommended that captures should stop one month before hibernation i.e. in mid-September.
(vegetation and ground clearance)													Vegetation clearance, hand and destructive searches when reptiles above ground and active (March to late October). Above ground scrub clearance only during hibernation period (November to mid-March).
Nesting birds													No disturbance or damage to nesting birds and adjacent habitat during nesting season. N.B. some species (e.g. pigeons) will breed outside of the accepted breeding season.
Water voles *(trapping and translocation)*													Trapping preferably in spring (March to mid-April), or in autumn 1mid-September to end of November (may require over-wintering voles in captivity). No trapping during peak breeding season (mid-April to mid-September) (except in very exceptional circumstances) or during winter (December to February).
(displacement)													Displacement by vegetation clearance on water courses <= 50m long, between mid-February to mid-April.
Dormice *(translocation)*													Capture April to July. Release mid-June to end of July.
(displacement and vegetation clearance)													Clear above ground-level vegetation for areas up to 1.5ha in winter (November to March); also optimal coppicing season. Remove roost and stumps May to August. Small areas of vegetation (<50m²) or hedgerows may be cleared in summer (May and late September) for displacement.
Bats *(summer roosts)*													Work on summer roosts between November to February.
(maternity roosts)													Works on maternity roosts between November to April.
(hibernation roosts)													Work on hibernation roosts between March to October.
Badgers													Exclusion of badgers and sett closure/destruction only between July and end of November. Artificial setts can be constructed at any time of year.
Otters													No seasonal constraints on mitigation but breeding possible at any time of year which may restrict mitigation near breeding holts.

= optimum mitigation time | = mitigation sub-optimal | = mitigation not recommended / permitted

This table has been produced as an indicative guide to when habitat and protected species mitigation may be carried out. For many protected species, mitigation works should only be carried out under an appropriate licence. For expert advice, please contact: Arcadis, The Mill, Brimscombe Port, Stroud GL5 2QG Email: EcologyUK@arcadis.com

Operational Mitigation

7.6.10 As part of the operational mitigation the creation and evolution of the following various strategies will be required:

- BAP evolution and monitoring (ES Appendix 7.20)
- Ecological Management Plan (EMP) creation
- Detailed design evolution
- Lighting Strategy

Otterpool Park BAP

7.6.11 A site BAP has been compiled (ES Appendix 7.20). This outlines the target communities for key habitats to be created within the Otterpool Site. This should be used to guide ongoing biodiversity management and mitigation during the operational phase of the development. The selection of the habitats listed in the site BAP is based upon:

- Habitats and targets listed in the Kent Biodiversity Strategy, especially those which support the aims of the Kent BOA (Biodiversity Opportunity Areas) statements, particularly the Mid Kent Greensand and Gault BOA statement.
- The habitats of value present and retained on the site within the development (particularly those which meet the criteria of habitats of principal importance in under Section 41 of the NERC Act (Ref. 7-33).
- The principal habitats listed on Section 41 of the WCA (Ref. 7-32) which it is appropriate to create within the site;
- Habitats known to support protected or notable species which are present / have the potential to be present within the Otterpool Park development site.

7.6.12 Post construction, during the operation phase, impacts to retained and newly created habitats are largely minimised through detailed GI design to focus recreational impacts in certain areas and to minimise impacts to other areas, utilising topography, habitat and fencing to control recreational pressures.

7.6.13 As each phase of the development progresses, it will be necessary to manage and monitor the habitats created on the site. An overview of the management and mitigation is provided within the Otterpool BAP (ES Technical Appendix 7.20). This is a live document and should be updated throughout the development and operational phase of the Otterpool Park site.

<u>Habitats listed within the Otterpool BAP</u>

- Hedgerows;
- Neutral Grassland;
- Ponds and Ditches;
- Rivers.

<u>Species listed with the Otterpool BAP</u>

- Bats (all species recorded within the surveys);
- Reptiles (common species);
- Water Vole;
- Otter;
- Terrestrial invertebrates;
- Hazel dormouse;
- House sparrow;
- Kingfisher.

7.6.14 Table 7-38 details how operational mitigation is being implemented to mitigate operational risks.

Table 7-38 Operational mitigation

Receptor	Operational Mitigation
Habitats	Habitat design has been outlined in the BAP (ES Appendix 7.20), GI Strategy, Species Mitigation Strategies (ES Appendix 7.18) and DAS, however these will be evolved via detailed design. The habitats created will be managed via an Ecological Management Plan to achieve the target condition as outlined in the BAP. Monitoring will be required on a yearly basis to ensure that management is effective. Progressive updates of the EMP may be required to be reviewed following the monitoring reports. Within the EMP, off-site measures for monitoring and maintenance will be required with regards to Harringe Brooks Wood and Kiln Wood.
Non-native invasive plants	Within the operation phase of the development, it will be necessary to control and eradicate non-native invasive species within the site. The approach to this will need to be specified within a Non-native Invasive Species Management Plan.
Invertebrates	In order to minimise operational impacts to retained and enhanced invertebrate populations. The following approaches would be implemented: • Green infrastructure would be designed in detail at the operational stage to limit human accessibility to the most sensitive areas, GI design will minimise impacts to these areas, utilising topography, habitat and fencing to control recreational pressures. • Buffers will be maintained around retained and created notable invertebrate areas; • In addition, during the operation phase, impacts to retained and newly created habitats would be minimised through It is imperative that the long-term management of the habitats (both retained and created) be agreed before the development. This will need to be specified in a management plan at the appropriate time in the planning process, likely within an EMP (Ecological Management Plan) prior to any parcel of the development being developed. The Otterpool Park BAP (ES Appendix 7.20) will specify broad target for species and groups, including invertebrates. This will drive future management and conservation actions. It is envisioned that this will be alive document, to be updated with input from key stakeholders, including the town's residents.
Badger	During the operational phase of the development, a number of approaches will be employed to limit impacts to badger populations. Where areas which are if key importance for badgers are identified, the design of the development limits human activity in these areas. This includes ensuring that key corridors remain unlit. • In addition, during the detailed planning process for each of the development zones, it will need to be determined what management and monitoring will be required in relation to badgers in these areas. This is likely to include: • Maintenance of mitigation features created, including setts (if applicable); • Maintenance of any tunnels or crossings installed, and associated badger fences (to limit road deaths); Monitoring of any impacted setts, particularly using remote camera and badger bait marking techniques.

Receptor	Operational Mitigation
Bats	In order to minimise the potential for operational impacts to the bat populations within the site, measures will be implemented to minimise these impacts. These are likely to include: • Implementation of a suitable lighting strategy, ensuring that dark corridors and areas important for foraging bats are kept dark; and • Features being installed to limit access by humans in areas where disturbance may adversely impact bats. This could include fences or carefully deployed SuDS features, if required. Maintenance and monitoring will be required of any retained or created habitats, including roosts. An outline of the desired outcomes for the monitoring and maintenance is provided within a site BAP (ES Technical Appendix 7.20). As each zone is brought forward for development, detailed strategies will be required for creation, management and maintenance of the habitats created will be required (this is beyond the remit of this document). A broad outline of the locations of proposed habitat creation is provided within the mitigation strategies (ES Appendix 7.18).
Dormouse	Post construction, certain measures could be taken to encourage dormouse to colonise the available habitat including: • The Otterpool BAP includes dormouse as a priority species. An Ecological Management Plan will be produced to ensure that targets set in the Otterpool BAP can be achieved; • Maintaining high species diversity within woodland areas, a mixture of scrub and trees which are well linked. This could be achieved by appropriate planting, coppicing, thinning and felling; • Maintenance of hedgerows to ensure sufficient connectivity between suitable habitats. This might be achieved by small scale pruning and coppicing. It should be noted that the level of maintenance required often depends on the dominant species present within the hedgerow as different species take different amounts of time to flower/fruit. • The provision and maintenance of nest boxes. This can increase the carrying capacity of the habitat, increasing population density. If not occupied by dormouse, then these boxes can be beneficial to a range of other wildlife. • Where it is proposed within the scheme design that gardens back onto valuable existing hedgerows, it is recommended that they are protected by a fence or new hedge. Further information on these management measures can be found in (Ref. 7-68). These approaches to maximising the value of the site for dormouse and encouraging these areas to be colonised by dormouse will be formalised in the site BAP. In addition, during the operation phase, impacts to retained and newly created habitats would be minimised through GI design to focus recreational impacts in certain areas and to minimise impacts to other areas, utilising topography, habitat and fencing to control recreational pressures.
GCN	In order to minimise operational impacts to retained and enhanced GCN populations, likely to be predominantly through human disturbance and impacts from domestic animals, the following approaches would be implemented: • Green infrastructure would be designed to limit human accessibility to the most sensitive areas; • Buffers will be created and maintained around retained and created GCN areas to limit impacts from humans and domestic animals; • Maintenance and monitoring will be required of any retained or created habitats. An outline of the desired outcomes for the monitoring and maintenance is provided within a site BAP (ES Appendix 7.20). As each phase parcel is brought forward for development, detailed strategies will be required for creation, management and maintenance of the habitats created will be required (this is beyond the remit of this document). A broad outline of the locations of proposed habitat creation is provided within the mitigation strategies (ES Appendix 7.18).
Water vole	In order to minimise impacts to water vole populations, likely to be predominantly through human disturbance and impacts from domestic animals, the following approaches would be implemented: • Green infrastructure will be designed to limit human and pet accessibility to the most sensitive areas; • Buffers will be maintained around water vole areas to limit impacts from humans and pets; • Complexity of existing and new water bodies will be created and enhanced to provide refugia from predation by pets and non-naïve invasive species including strategic bankside vegetation; and • Newly created habitats, particularly in the north west will be positioned away from development where possible to minimise impacts from humans and their pets.
Birds	Operational mitigation is proposed to safeguard and maximise the value of the development for nesting birds. This includes: • Maintaining high species diversity within woodland areas, a mixture of scrub and trees which are well linked. This could be achieved by appropriate planting, coppicing, thinning and felling; • Maintaining species rich grassland to provide optimal foraging habitat; • Maintenance of hedgerows. This could be achieved by small scale pruning and coppicing. It should be noted that the level of maintenance required often depends on the dominant species present within the hedgerow as different species take different amounts of time to flower/fruit; • The provision and maintenance of appropriate nest boxes. This can increase the carrying capacity of the habitat, increasing population density. Within the design barn owl nest boxes should be erected, however only a small number are likely to be required (five is recommended at this stage, this may increase if nests are found within trees to be removed). These should be located at least 1km from the M20, locations along the southern and western boundaries of the site is recommended as this will enable any pairs utilising these boxes to forage in retained habitats in the south and west of the Otterpool Park development and on off-site habitats. Targets for the maintenance and monitoring of actions for birds are specified within the Otterpool site BAP (Appendix 7.20). In addition, during the operation phase, impacts to retained and newly created habitats would be minimised through GI design to focus recreational impacts in certain areas and to minimise impacts to other areas, utilising topography, habitat and fencing to control recreational pressures.
Invertebrates	In order to minimise operational impacts to retained and enhanced invertebrate populations it is imperative that the long-term management of the habitats (both

Receptor	Operational Mitigation
	retained and created) be agreed before the development. This will need to be specified in a management plan at the appropriate time in the planning process, likely within an EMP (Ecological Management Plan) prior to any parcel of the development being developed. The Otterpool Park BAP (ES Appendix 7.20) will specify broad target for species and groups, including invertebrates. This will drive future management and conservation actions. It is envisioned that this will be alive document, to be updated with input from key stakeholders, including the town's residents.
Reptiles	In order to minimise operational impacts to reptile populations, likely to be predominantly through human disturbance and impacts from domestic animals, areas around retained and created reptile areas to limit impacts from humans and domestic animals. Maintenance and monitoring will be required of any retained or created habitats. An outline of the desired outcomes for the monitoring and maintenance is provided within a site BAP (ES 7.20). As each phase parcel is brought forward for development, detailed strategies will be required for creation, management and maintenance of the habitats created will be required (this is beyond the remit of this document). A broad outline of the locations of proposed habitat creation is provided within the mitigation strategies (ES Appendix 7.18).

Offsetting

7.6.15 For species which require large areas of arable land, i.e. wintering and breeding farmland birds, wintering gulls, wintering thrushes, barn owl and brown hare it will not be possible to fully mitigate for impacts to these species within the site. Habitat mitigation and enhancement will be undertaken on site where possible, however, it will not be possible to fully mitigate for impacts to these groups within the site, due to the space and mosaic habitat requirements of these species. Therefore, an off -site mitigation strategy will be required. It is not within the remit of this report to determine the exact location or methodology for off-site mitigation provision, this will need to be determined for each phase as the development progresses and may change due to the following, for example:

- Partnerships with NGOs / other organisations may change, making collaborative offsetting projects more (or less) practicable.
- The management of farmland to be developed may change, i.e. additional areas may be brought into or taken out of HLS management. Therefore, the baseline will need to be updated to ensure that the mitigation provided is appropriate
- Policy, such as HLS enhancement measures are likely to be updated or modified.

7.6.16 This section outlines how a suitable mitigation approach and quantum should be identified prior to development of each parcel and how a suitable financial payment for this can be calculated. It should not be read as a prescriptive document.

7.6.17 It is proposed to mitigate for the adverse effect on wintering and breeding farmland birds, wintering gulls, wintering thrushes and barn owl and brown hare by funding habitat improvements off-site. Funds would be provided to enhance local habitats for farmland birds through appropriate, proven management regimes to increase the carrying capacity of local habitats. It is considered that such enhancement measures would mitigate for the loss of habitat for these species as a result of the proposed development.

7.6.18 Measures developed as part of HLS which could be adopted include; the provision of over-wintering seed food as a crop; the provision of bought seed to provide supplementary feeding in winter; the creation of insect-rich foraging habitat such as unharvested fertiliser-free conservation headland and uncropped, uncultivated margins for rare plants on arable land.

7.6.19 It is not considered necessary to purchase land specifically for the habitat management, since it is not the lack of farmland that is limiting bird numbers, but the lack of appropriate management. It is proposed to contribute funds to body such as a specifically created group or NGO, a wildlife trust or conservation group which would guarantee, through a legal agreement, that the money would be used to deliver the proposed benefits for farmland birds in the local area The detail of this agreement would be set out in a S106 or similar legal agreement which would form part of the permission for each planning application / zone.

7.6.20 A study of the effect of HLS management on breeding bird populations in the UK showed an approximate 30% increase in breeding bird abundance under HLS management after 5 years (Ref. 7-69). The RSPB have found that they were able to more than double the number of farmland birds on their Hope Farm Site in Cambridgeshire in a 10 year period by managing their farmland in a manner beneficial to farmland birds (Ref. 7-70). The habitat on site does not yet show obvious habitat improvements nor farmland bird abundance differentiation (ES Appendix 7.15) but is likely to do so in the future under continued HLS management. Therefore, to account for the future baseline, a calculation has been undertaken based on the area of suitable habitat for farmland birds to be lost, both conventional and HLS managed. Multipliers of 1 and 1.3 respectively have been employed to give an area of new habitat proposed to be established under optimum management for farmland birds as compensation (Table 7-39). This figure in turn has been used to calculate the funds required to provide HLS equivalent funding to farmers to undertake these enhancements. These funds should be sufficient to enhance 527ha of farmland for farmland birds for a period of 25 years (Table 7-40). The sums would be provided as lump sums in advance of each phase of site clearance sufficient to cover management for a 25-year period. It should be noted that management / implementation costs are likely to be in addition to these indicative costs.

Table 7-39: Calculation of area requirement for farmland birds

Habitat Type	Habitat Loss	Future baseline	Multiplier	Rationale	Offsetting 'area' required
Farmland under HLS stewardship	169 (Arable) 66 (grassland) TOTAL 235ha	HLS management is likely to increase the quality of this habitat for farmland birds in the future by 30 to 100% in the next 5 to 10 years	1.3	The additional 0.3 increase is to take into account the increased value and the future baseline of this habitat	235 x 1.3 = 305ha
Farmland not under HLS	107 (Arable) 185 (grassland) Total 292	Currently has limited value for farmland birds, wintering thrushes and feeding gulls. Unlikely to change in future baseline.	1	A 1 for 1 enhancement would potentially result in a 30%*	292 x 1 = 292ha
Total	527ha				

Table 7-40 Proposed payments for off-site mitigation

Item	Unit price*	Suggested minimum (per 100ha as per HLS guidance)	Suggested actual installed per 100ha	Annual instalment per 100ha (minimum)
In field nesting habitat – Skylark plots	£5 per plot	20 plots per 100ha	20 plots	£100
Overwintering seed food - Enhanced wild	£475 per ha	2ha per 100ha	3ha (3%)	£950

Item	Unit price*	Suggested minimum (per 100ha as per HLS guidance)	Suggested actual installed per 100ha	Annual instalment per 100ha (minimum)
bird seed mix plots (assuming a payment for 3ha over a ten-year period)				
Overwintering seed food Supplementary feeding in winter for farmland birds	£822 per tonne	No HLS guide	Suggest 0.2 ton per ha, seed 10 ha total 2 ton per 100ha (based on ELS**)	£1644
Insect-rich foraging habitat - unharvested fertiliser-free conservation headland	£440 per ha	2ha per 100ha	3ha (3%)	£1320
Insect-rich foraging habitat - Uncropped, uncultivated margins for rare plants on arable land	£440 per ha	2ha per 100ha	3ha	£1320
Management Fee				
TOTAL				£5,334 per 100 ha enhancement required.
TOTAL contribution estimated	Without management/implementation costs			= £5,334 x 5.27 = £28,110 per year in total for entire site = £53.34 per developed parcel per year.

* Should be based on current HLS guidance or equivalent scheme.

** Entry Level Stewardship

7.6.21 It is considered that providing sums that would cover enhancements on 527ha of land would more than mitigate for the impacts that would be generated by the development on the site. The provision of grants to local landowners via a grant-giving body would ensure that the monies are provided for appropriate measures, and that the measures would be implemented since the grants would not be awarded if the works were not completed.

7.6.22 As explained above, it is not practicable to determine the exact application of the off-site mitigation requirements outlined within this document at this time. (Image 7-6) outlines the potential options for the implementation of the off-site mitigation

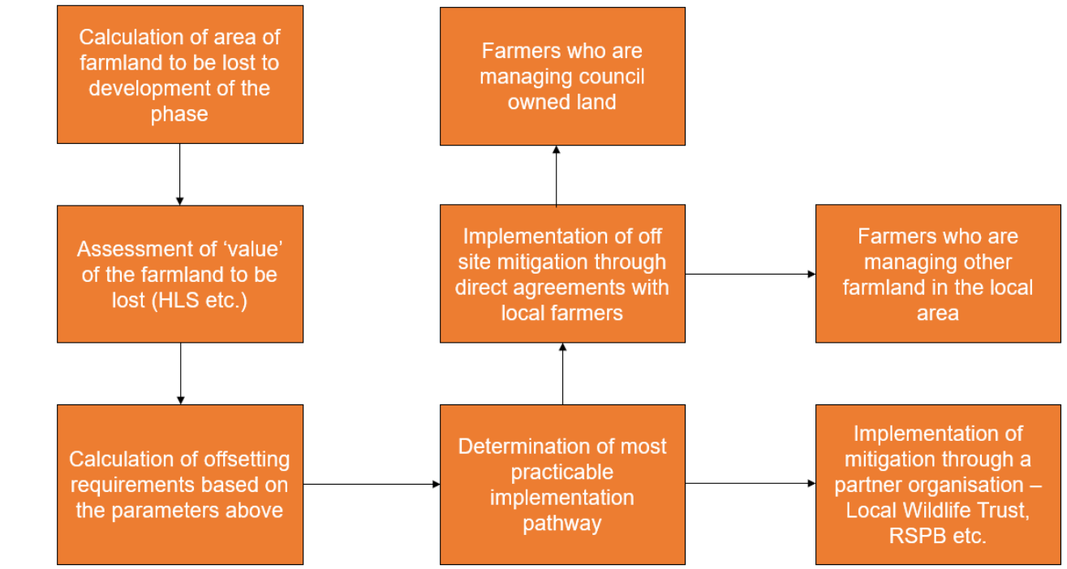


Image 7-6 Options for the selection of implementation of the off-site mitigation

Scheme Design and Mitigation of Operational Effects

7.6.23 The majority of scheme design elements included to safeguard ecological features from operational mitigation impacts are presented in the sections above. In summary, the following approaches are incorporated within the development to minimise operational impacts.

- On-site and off-site areas which are sensitive to human disturbance have been identified and buffered to minimise impacts. This includes Harringe Brooks Wood (off-site to the west, a LWS and ancient woodland) and Folks Wood (Off site to the east, a LNR and ancient woodland). Footpaths in the vicinity of these areas are positioned and designed to deter access by members of the public. It is envisioned that these areas will remain private and access will be discouraged.
- Areas of high quality open space will be proved to minimise recreational impacts upon off-site areas, including designated sites and ancient woodlands.
- Buffers are designed to minimise light spill.
- A lighting design will be created to minimise light disturbance in line with best practice guidance.
- The water strategy outlines how the SuDS design controls operational pollution.

7.6.24 In addition, a development BAP has been compiled (ES Appendix 7.20). This is a live document designed to ensure that operational impacts are identified and addressed throughout the operation of the development. This specifies ongoing targets for mitigation and conservation approaches and outlines a framework for stakeholders (Wildlife Trusts, residents' groups), to assist with the achievement of conservation goals.

7.6.25 Specific receptors which are included within the Otterpool Park BAP submitted within this ES are presented below. However, it should be noted that this envisaged to be a live document and should be updated as the operation phase of the development progresses.

7.7 Cumulative Effects

Introduction

7.7.1 This section of the report outlines the cumulative effects from the development from other consented schemes. The ZoI of other consented schemes in relation to the identified important ecological receptors is relatively small, only those with the likelihood to impact upon these receptors are listed below.

7.7.2 Cumulative schemes are listed and shown on a map in ES Appendix 2.4.

7.7.3 Within this section, the additional housing proposed within the framework masterplan area (but not the Outline Planning Application (OPA) to which this ES applies) is treated as a cumulative development. The rationale for this is presented in the methodology section of this chapter. Within this chapter, this is referred to as the 'additional Framework Masterplan (FM) development'.

Potential Cumulative Impacts

7.7.4 In combination with Sellindge extension development to the north (250 units approved with potential to increase to 600 units) and the additional FM area there is potential for cumulative impacts upon the following receptors:

- Harringe Brooks Wood (LNR and ancient woodland);
- Low value habitats (No S41 habitats are thought to be present within this area);
- Great crested newts;
- Dormouse;
- Bats;
- Badgers;
- Farmland birds, and
- Brown hare.
- These potential cumulative impacts are described within this section of the report and assessed in combination with the impacts of the proposed development, to determine if there is a significant residual impact.

Cumulative Residual Effects

7.7.5 The cumulative effects summary is presented in Table 7-41. Following the minimum required assessment and mitigation the only residual cumulative effects are likely to remain for:

- Harringe Brooks Wood due to recreational depredation and vandalism,
- Farmland birds and brown hare due to further loss of habitat;
- Loss of habitat and increased RTA mortality for badger; and
- Farmland birds and dormouse due to increased predation by domestic animals.

Table 7-41: Qualitative assessment of cumulative effects (schemes which are considered to have a potential cumulative ecological impact)

Scheme	Ecological Feature	Cumulative impact	Baseline information	Assessment	Summary
Additional housing and associated infrastructure within the framework masterplan area but outwith the OPA boundary	International designated sites	Recreational impacts	Applicable international sites (SPA, SAC, Ramsar sites) were identified within the HRA for the OPA development (ES Technical Appendix).	Overall, the additional 1500 homes within the Framework masterplan area are not considered to have the potential to impact upon the International designated sites. This is explored within ES Chapter 14 Socioeconomic Effects and Community and the HRA presented in ES Appendix 7.19.	No likely significant cumulative impacts are foreseen. Not considered further.
		Air quality impacts		The air quality chapter of the ES, the air quality impacts of the Masterplan development were assessed. This concluded that the potential air quality impacts were not considered to have a significant impact upon the designated sites (Full explanation in ES Chapter 6).	No likely significant cumulative impacts are foreseen. Not considered further.
	Harringe Brooks Wood (LNR and ancient woodland)	Impacts from disturbance, recreational impacts, domestic animals, fragmentation.	Information on the site identified within the OPA application (presented above)	This area has the potential to be impacted by the additional 1500 homes, particularly as these are proposed to be located to the south east of this woodland. Within the development, buffers to the woodland will need to be applied (in line with best practice) (Ref. 7-48).	Cumulative impact is considered alongside the proposed OPA development in determining the impact. Assessment presented in section 7.10.
	Habitats	Additional loss of habitats	Although the areas within the framework masterplan area which are not within the OPA (additional FM areas) have not been specifically surveyed, habitat information is available from Kent County Council (online) Ref. 7-47.	The area within the FM but outwith the OPA is largely of low value being intensively farmed arable land or industrial area. As such, it is considered that there will be no significant cumulative impact upon the loss of priority habitats. In addition, the FM area will be subject to an assessment to demonstrate that they do not result in impacts to the favourable conservation of this species (through one of the licensing opportunities available). As a result, no likely significant cumulative effect is considered likely	No likely significant cumulative impacts are foreseen. Not considered further.
	Great crested newts	Additional loss of terrestrial habitats	The GCN surveys conducted included areas within the areas within the FM but outwith the OPA. Within the pond adjacent to the west of the additional proposed FMP housing in the west of the site was found not to support GCN (pond at TN 248 in Figure 5). in Appendix 7.1).	The area within the FM but outwith the FM is not considered to be a core area of GCN terrestrial habitat. The only pond which supports GCN within 500m of these areas is pond 5 (TN137 in Figure 5). in Appendix 7.1). This is over 400m form the additional FM areas, No significant cumulative impact is considered to result from the FM development.	No likely significant cumulative impacts are foreseen. Not considered further.

Scheme	Ecological Feature	Cumulative impact	Baseline information	Assessment	Summary
	Dormouse	Additional impacts from domestic animals	Dormouse are present within Harringe Brooks Wood in the west of the site.	In line with the assessment for the OPA, buffers around the development parcels (in line with ancient woodland policy (Ref. 7-48)) will control impacts to dormouse within Harringe Brooks Wood. These is likely to be some cumulative impact from domestic animals, particularly due to the housing proposed to the south east of Harringe Brooks Wood within the additional FM area.	Cumulative impact is considered alongside the proposed OPA development in determining the impact. Assessment presented in section 7.10.
	Bats	Impacts upon roosts (direct and indirect) loss of for aging habitats and commuting routes.	Assemblage of bats present around the site was assessed within the surveys. The assemblage of bats around Harringe Brooks Wood (the main areas with the likelihood of being of value to bats)/	The areas within the additional FM boundary are considered to offer limited potential for roosting bats. Significant cumulative impacts to roosting bats are considered unlikely. Likewise, the additional impacts from the FM additional area development upon foraging bats are considered unlikely. The additional FM area is largely intensively farmed arable land, which offers poor foraging habitat for bats. The areas immediately around the ancient woodland would need to be buffered in line with policy (Ref. 7-48), which would safeguard this foraging area. Significant cumulative impacts upon foraging bats are considered unlikely. Commuting bats are likely to utilise areas within the additional FM area. There is potential for cumulative impacts upon commuting bats.	Cumulative impact is considered alongside the proposed OPA development in determining the impact. Assessment presented in section 7.10.
	Badgers	Additional loss of foraging habitats, severance of movement routes. Increased disturbance and road mortality.	Badger setts known to be present within the adjacent Harringe Brooks Wood. Limited value foraging habitats (predominantly arable and industrial areas) within the additional FM area. Badgers are likely to move through this area.	There is potential for a cumulative impact upon foraging badgers and badgers moving through these areas. This is likely to be a small cumulative impact.	Cumulative impact is considered alongside the proposed OPA development in determining the impact. Assessment presented in section 7.10.
	Farmland birds, brown hare	Loss of foraging and breeding habitats.	Within the additional FM areas, habitats with value to these species is present (as identified from habitat mapping, Ref. 7-47)	There will be a small cumulative loss of farmland resulting from the FM development. However, the OPA and FM are within a large area of arable land which would benefit from modified management for these species. This is outlined within this chapter of the ES and ES technical Appendices 7.15 and 7.16.	Cumulative impact is considered alongside the proposed OPA development in determining the impact. Assessment presented in section 7.10.

Scheme	Ecological Feature	Cumulative impact	Baseline information	Assessment	Summary
Sellindge Extension (Ref. 7-49) Includes up to 600 units north of the M20 (250 units approved). Includes Application Y14/0873/SH (scheme H in ES Appendix 2.4)	Habitats	Loss of valuable habitats.	Details of the habitats within this development area were obtained from the Ecological assessment provided to inform the development (Ref. 7-49). Most habitats on site were semi improved grassland and arable land, with some priority habitats including ponds.	Some S41 habitats are impacted by the works, however it is understood that the impacts to habitats are being mitigated for as a component of the development. No likely significant cumulative impact is foreseen.	No likely significant cumulative impacts are foreseen. Not considered further.
	Designated Sites (international)	Potential cumulative impacts from recreational impacts and air quality impacts.	Baseline information obtained from the HRA conducted on the Shepway 2018 Core Strategy and Places and Polices Plan (Ref. 7-50, Ref. 7-51).	The HRA assessments conducted in 2018 (Ref. 7-50, Ref. 7-51) found that there were no effects resulting from the developments. No likely significant cumulative impacts are foreseen.	No likely significant cumulative impacts are foreseen. Not considered further.
	Great crested newts	Impacts to GCN metapopulations	The Ecological Assessment (Ref. 7-47). Great crested newt were confirmed in one pond within the application site and five ponds within close proximity of the site boundary.	The M20 creates a barrier between the site and the Sellindge extension development. Therefore, the GCN populations on the two sites) are not considered to be a single metapopulation. In addition, both of the developments will need to demonstrate that they do not result in impacts to the favourable conservation of this species (through one of the licensing opportunities available). As a result, no significant cumulative effect is considered likely.	No likely significant cumulative impacts are foreseen. Not considered further.
	Farmland birds, brown hare	Loss of foraging and breeding habitats.	Baseline surveys conducted in 2013 and 2014 (Ref. 7-49)	Within this area, only a small number of common birds were recorded during surveys conducted in 2013 and 2014 (Ref. 7-49). As a result, no likely significant cumulative impacts will arise.	No likely significant cumulative impacts are foreseen. Not considered further.

7.8 Summary of Potential Effects upon Selected Receptors Prior to Additional Mitigation

7.8.1 In line with the methodology presented in section 7.2, the significant impacts resulting from the development are assessed after the avoidance and enhancement inherent within the design (section 7.5) and the general CoCP mitigation within section 7.6 being applied.

7.8.2 No mitigation was required for the International Designated Sites (SPA, SAC and Ramsar Sites) as the HRA demonstrated no significant affects to the integrity of these sites at Stage 1 (presented in ES Appendix 7.19). A summary of the results of the HRA Stage 1 Assessment are presented in Table 7-42.

Table 7-42: Summary of assessment with regards to International Designated Sites from the development and cumulative schemes

Effect / vulnerability of site	Scoped out	Considered at Stage 1	Result of stage 1 assessment	Rationale
Invasive species;	Yes	N/A	N/A	No pathway for this impact from the proposed project to an Internationally designated site
Inappropriate scrub control;	Yes	N/A	N/A	No pathway for this impact from the proposed project to an Internationally designated site
Undergrazing;	Yes	N/A	N/A	No pathway for this impact from the proposed project to an Internationally designated site
Military pressure;	Yes	N/A	N/A	No pathway for this impact from the proposed project to an Internationally designated site
Illicit vehicle use;	Yes	N/A	N/A	No pathway for this impact from the proposed project to an Internationally designated site
Predation;	Yes	N/A	N/A	No pathway for this impact from the proposed project to an Internationally designated site
Direct impact from 3rd parties;	Yes	N/A	N/A	No pathway for this impact from the proposed project to an Internationally designated site
Inappropriate water levels;	Yes	N/A	N/A	No pathway for this impact from the proposed project to an Internationally designated site
Inappropriate ditch management;	Yes	N/A	N/A	No pathway for this impact from the proposed project to an Internationally designated site
Fisheries: commercial marine and estuarine;	Yes	N/A	N/A	No pathway for this impact from the proposed project to an Internationally designated site
Coastal squeeze; and	Yes	N/A	N/A	No pathway for this impact from the proposed project to an Internationally designated site
Water pollution.	Yes	N/A	N/A	No pathway for this impact from the proposed project to an Internationally designated site
Habitat loss or degradation of functionally linked land;	No	Yes	No likely significant effect on the interest features of the sites alone or in-combination with other plans/projects.	Birds were the only sufficiently mobile receptor to have the potential to use habitat functionally linked to the Project site, however these were screened out as no qualifying bird features were being supported or maintained by the site from the bird survey results, nor does the Project support habitat that would be likely to support the qualifying features in any significant numbers.
Pollution due to a decrease in air quality due to increased traffic; and	No	Yes	No likely significant effect on the interest features of the sites alone or in-combination with other plans/projects.	Only one site was within the threshold for air quality assessment, the Folkestone to Etchinghill Escarpment SAC, although an increase of 2% of the critical load (in the Project prediction against the Do Minimum (DM) prediction) was predicted in a precautionary assessment, it is likely to be lower due to future transport changes (less use of fossil fuelled transport). In addition, in the future scenario, there was no exceedance of the critical load for Nitrogen deposition for the habitats present. Therefore, there is no significant effect predicted for this site.
Recreational pressure resulting in degradation of habitat and/or disturbance of species	No	Yes	No likely significant effect on the interest features of the sites alone or in-combination with other plans/projects.	Six International Designated Sit4es sites were of particular stakeholder concern due to a potential increase in recreational pressure, primary and secondary data was analysed for these sites. These sites were Folkestone to Etchinghill Escarpment SAC, the Wye and Crundale Downs SAC, the Dover to Kingsdown Cliffs SAC and the Dungeness complex (SPA, SAC and Ramsar). While small numbers of additional visitors may be expected, visitor behaviour predicted that the Project's residents were unlikely to travel to these sites in any significant numbers and the primary recreational use was dog walking. Given the large amount of accessible greenspace integral to the design (over 50% of the site) it is anticipated that the vast majority of residents would utilise this space for dog walking and visits to the designated sites would be in small numbers for recreational purposes associated with the appreciation of the designated features. Of the nine remaining sites one is not publicly accessible, Parkgate Down SAC. The remaining eight sites are over 15km away and seven of these are over 20km away. Residents of the Project are unlikely to use these sites in any significant numbers.

7.8.3 In summary, it was concluded from the HRA Stage 1 Assessment that there was no likely significant effect on the interest features of the sites alone or in-combination with other plans/projects. Therefore, no preparation of information for an appropriate assessment is required and no mitigation is proposed.

7.9 Summary of Potential Residual Effects

7.9.1 This section of the report summaries all of the residual effects from the proposed development, subsequent to the application of outlined mitigation. These effects are presented in Table 7-43. All other effects to receptors are considered to be mitigated through the mitigation listed within this ES and associated Appendices. The rationale for this is fully presented within ES Appendix 7.1. Where a significant effect is identified, this is highlighted in red. The order of the receptors is as follows:

- Designated sites (International Designated Sites are discussed separately in section 7.8 above);
- Habitats;
- Species; and
- Ecosystem services.

Table 7-43: Summary table of all potential residual effects.

Receptor / potential significant impact	Phase (Construction / Operation)	Mitigation Measures	Residual Effect(s)
International designated sites impacts from recreational pressure, air quality and impacts from domestic animals.	Construction and Operation	N/A mitigation is intrinsic in design.	Not significant (as evidenced in HRA Stage 1 Assessment, ES Appendix 7.19)
Otterpool Quarry SSSI (on site): loss of feature, deterioration of feature, reduced public access for study.	N/A not an ecological feature	N/A	N/A
SSSI and LNR within 5km of the site: impacts from pollution, altered topography, impacts from recreational pressure, air quality and impacts from domestic animals.	Construction and Operation	CoCP, GI design, buffers within design, surface water and drainage design.	Not significant
LWS and RNR in the vicinity of the site: impacts from pollution, altered topography, impacts from recreational pressure, air quality and impacts from domestic animals.	Construction and Operation	CoCP, GI design, buffers within design, surface water and drainage design.	Not significant
Harringe Brooks Wood - Recreational impacts and vandalism	Operation and Cumulative	Buffers, routing of footpaths, management. Operational mitigation approaches (monitoring and maintenance approaches) may need to be incorporated at a later date to account for impacts (from OPA development and additional within FM Boundary to mitigate for cumulative effects).	Not significant
Folks Wood Kiln Wood and other small parcels of ancient woodland Air Quality impact	Operation	N/A no mitigation required	Not significant
Biodiversity overall (as calculated using Biodiversity Net Gain metrics).	Operation and Cumulative	GI proposed across the site	Significant Positive
Folks Wood and other small parcels of ancient woodland: - Recreational impacts and vandalism	Construction and Operation	GI design to minimise off site recreation.	Not significant
Trees and Arboriculture: Loss of trees, damage to trees, impacts to TPO trees.	Construction and Operation	Avoidance of tree removal, replacement tree planting within GI design.	Not significant
Habitats (General)	Construction and operation	Creation of valuable habitats as evidenced within the Biodiversity Net Gain Report ES Chapter	Not significant
S41 Habitats - Lowland mixed deciduous woodland	Construction and operation	Retention and buffering of the majority of notable habitats. Creation of new habitats in line with the Otterpool Park DAS	Not significant
Farmland birds (breeding and wintering), wintering gulls, wintering thrushes - loss of habitat, disturbance.	Construction	Mitigation within CoCP Habitat creation and retention within the GI. Off-site mitigation as outlined within this ES Chapter.	Not significant
Farmland birds (breeding and wintering), wintering gulls, wintering thrushes – disturbance and predation from domestic animals	Operation and Cumulative	Mitigation within CoCP	Adverse at the Local / Site scale

Receptor / potential significant impact	Phase (Construction / Operation)	Mitigation Measures	Residual Effect(s)
		Habitat creation and retention within the GI. Off-site mitigation as outlined within this ES Chapter.	
Barn Owl: Direct mortality, loss of foraging, loss of roosting features	Construction and Operation	Off-site mitigation as outlined within this ES Chapter (see additional mitigation below).	Not significant
Kingfisher: disturbance, direct mortality, reduction in amount and quality of habitat.	Construction and Operation	Habitat retention and buffering. Pre-works surveys and licences if required. New habitat creation in the north west of the site. Habitat enhancement along the East Stour River.	Not significant
Badger, loss of foraging habitat, loss of commuting routes, Increased road mortality	Construction	Mitigation is proposed however there will be a loss of some foraging habitats utilised by badgers as a result of the development. Fully described in Mitigation Strategy (ES Appendix 7.18	Adverse at the Local / Site scale Not a species of nature conservation concern therefore no additional mitigation is proposed
Bats: loss / degradation of roosts, reduction in habitat availability or quality (for commuting and foraging), loss / severance of commuting routes, disturbance.	Construction and Operation	CoCP Retention and buffering of valuable habitats. Mitigation for roost loss through replacement roosts. Retention and enhancement of commuting routes including dark corridors.	Not significant
		Creation of areas of quality foraging resources. Fully described in Mitigation Strategy (ES Appendix 7.18	
Water vole, direct mortality, loss and deterioration of habitats.	Construction and Operation	CoCP Retention and buffering of habitats, GI design to minimise disturbance, creation of new habitats, enhancement of existing habitats. Fully described in Mitigation Strategy (ES Appendix 7.18)	Not significant
Water vole, disturbance and predation from domestic animals.	Operation and Cumulative	CoCP Retention and buffering of habitats, GI design to minimise disturbance, creation of new habitats, enhancement of existing habitats. Fully described in Mitigation Strategy (ES Appendix 7.18)	Adverse at the Local / Site scale
Great crested newts, direct mortality, loss and deterioration of habitats, disturbance, fragmentation, impacts from domestic animals.	Construction and Operation	CoCP Retention and buffering of habitats, GI design to minimise disturbance, creation of new habitats, enhancement of existing habitats. Fully described in Mitigation Strategy (ES Appendix 7.18)	Not significant
Reptiles and amphibians direct mortality, loss and deterioration of habitats,	Construction and Operation	CoCP	Not significant

Receptor / potential significant impact	Phase (Construction / Operation)	Mitigation Measures	Residual Effect(s)
disturbance, fragmentation, impacts from domestic animals.		Retention and buffering of habitats, GI design to minimise disturbance, creation of new habitats, enhancement of existing habitats. Fully described in Mitigation Strategy (ES Appendix 7.18)	
Hazel dormouse, loss of habitat, increased fragmentation	Construction and Operation	No direct impacts to dormouse habitats Buffers between residential areas and Harringe Brooks Woods	Not significant
Hazel dormouse – increased predation by domestic animals	Operation and cumulative	Buffers between residential areas and Harringe Brooks Woods	Not significant
Otter: pollution impacts up on watercourses, disturbance, loss of movement routes	Construction and Operation	CoCP, Retention and buffering of habitats	Not significant
Invertebrates (terrestrial), loss and degradation of habitats. Reduction in feeding resources. Loss of microhabitats.	Construction and Operation	Retention and buffering of areas of value for invertebrates. Creation of a pollinators strategy. Creation of microhabitats within GI within the site	Not significant
Fish: direct mortality, pollution impacts	Construction and Operation	CoCP Retention and protection of water bodies. Additional information in ES Appendix 7.22	Not significant
Invertebrates (Aquatic)	Construction and Operation	CoCP. Retention and protection of water bodies	Not significant
Hedgehog: direct mortality, loss of foraging area, increase in predation by domestic animals, fragmentation of habitats.	Construction and Operation	Permeable fences within development, retention and buffering of valuable habitats	Not significant
Hedgehog direct mortality due to RTAs	Operation and Cumulative	Crossing proposed but may not be readily used by hedgehog	Adverse at the Local / Site scale
Brown hare - loss of habitat, direct mortality.	Construction	Off-site mitigation as outlined within this ES Chapter.	Not significant
Brown hare - loss of habitat,	Cumulative	Off-site mitigation as outlined within this ES Chapter	Local/Site
Invasive non-native plants	Construction and Operation	CoCP and specific measures to control and prevent the spread of invasive non-native species	Local/Site Beneficial
Ecosystem services – food for pollinators	Construction and Operation	Creation of extensive biodiversity rich areas achieving 20% net gain in biodiversity.	Local / Site Beneficial
Ecosystem services -Food provision – loss of 511ha of agricultural land	Construction and Operation and Cumulative	Edible streets, allotments, new orchards	Local/site adverse
Ecosystem services – carbon and climate regulation	Construction and Operation	GI planting, tree planting, retention and planting of hedges etc. Climate Change mitigation measures in ES Chapter 8	Local/site adverse
Ecosystem services - water quality regulation	Construction and Operation	Water focussed mitigation measures in Chapters 10 and 15	Not significant
Ecosystem services – air quality regulation	Construction and Operation	Mitigation for air quality impacts	Not significant

Receptor / potential significant impact	Phase (Construction / Operation)	Mitigation Measures	Residual Effect(s)
		presented in ES Chapter 6	
Ecosystem services - water flow and flood regulation	Construction and Operation	Water focussed mitigation measures in Chapters 10 and 15. Retention of key areas for biodiversity presented in this ES chapter. Soil management protocols and mitigation presented in ES Chapter 5	Not significant
Ecosystem services - soils – loss of soils of quality, reduction in soil production, reduction in soil quality.	Construction and Operation and Cumulative	Soil Management Strategy Chapter 5 of the ES	Local/site adverse impact on the production and quality retention of soil as outlined in ES Chapter 5.
Ecosystem services – human health regulation, science and education, tourism and recreation	Construction and Operation	Well designed green spaces, improved access and facilities, improved areas for recreation	Positive at the local / site scale
Ecosystem services - Sense of place and history (Cultural heritage and aesthetic amenity, historical archaeological sites	Construction and Operation	Retention of key features, GI screening, improved setting of features. Details in ES Chapter 9	Positive at the local / site scale
Ecosystem services - Tranquillity	Construction and Operation and Cumulative	GI and Landscape Screening as well as additional noise management for traffic	Local/site adverse

7.10 Summary Assessment of Residual Effects

7.10.1 This section of the report outlines the residual significant effects of the scheme design after the general mitigation within the CoCP and additional mitigation (including on-site compensation) has been applied, but before any offsetting / off-site compensation. A full outline of how impacts to individual receptors have been assessed in relation to the identified impacts pathways is presented in ES appendix 7.1. This section is subdivided according to each important ecological feature identified which will experience residual impacts.

Residual Effects from Construction

7.10.2 The mitigation measures outlined in this Chapter and within ES Appendices have been incorporated into the development to address the likely potential ecological impacts. Full impact assessment is presented in ES Appendix 7.1. The residual impacts following the mitigation are described below.

Designated Sites

7.10.3 No significant adverse residual effects from construction upon designated sites is foreseen once the mitigation above is applied. There will be beneficial effects from the removal of non-native invasive species and the 20% biodiversity net gain.

Habitats

7.10.4 No significant residual effects upon habitats identified as ecological receptors are foreseen resulting from the construction phase of the works (subsequent to all mitigation and compensation). This is evidenced by the biodiversity net gain calculations (ES Appendix 7.21).

Species

7.10.5 It is likely that the badger would experience adverse residual effects due to loss of habitat, commuting and increased RTAs. The significant residual impacts mentioned in the table below, Table 7-44

Table 7-44 Residual effects upon species from construction

Species	Significant Residual Effect	Geographical scale of effect	Additional Mitigation
Badger	Loss of foraging habitat Loss of commuting routes Increased road mortality	Negative - Local / site	N/A not currently of conservation concern no additional mitigation required.

Ecosystem Services (Construction and Operation)

7.10.6 The majority of ecosystem service es provided by the baseline of the site are not impacted or enhanced as a result of the proposed development. However, a small number of services are adversely impacted by the development assessed qualitatively. Table 7-45 summarises the residual effects upon the aspects of the ecosystem services provided by the site.

Table 7-45: Summary of residual effects upon ecosystem services from construction and operation additional mitigation proposed

Ecosystem service	Significant Residual Effect	Geographical scale of effect	Additional Mitigation
Food provision – loss of agricultural land	Approximately 511ha lost from primary agricultural production, of which a significant proportion will be BMV (best and most versatile) land	Negative - Local / Site	None proposed
Soils – loss of soils of quality, reduction in soil production, reduction in soil quality.		Negative - Local / Site	None proposed
Climate change	There will an increase in radiating heat due to the build environment. The GI integrated into the development parcels will provide some mitigation but there is likely to be an overall increase in radiating heat	Negative - Local / Site	Potentially increase building integrated GI (i.e. green roofs and walls) in the future
Tranquillity	Although the tranquil setting was not enjoyed by a large number of people this sense of place and tranquillity will certainly be negatively impacted.	Negative – Local / Site	None proposed
Food for pollinators	Positive through an increase in habitat quality (20% net gain in biodiversity)	Positive - Local / Site	N/A
Human health regulation, science and education, tourism and recreation	Creation and increased use of well-designed green spaces, improved access and facilities, improved areas for recreation.	Positive - Local / Site	N/A
Sense of place and history (Cultural heritage and aesthetic amenity, historical archaeological sites	Creation of GI screening, improved setting of features. Details in ES Chapter 9.	Positive - Local / Site	N/A
Biodiversity	Gains of 20% as demonstrated in ES Appendix 7.20.	Positive - Local / Site	N/A
Non-native invasive species	Reduction in the amount of non-native invasive plant on the site.	Positive - Local / Site	N/A

Residual Effects from Operation

Designated Sites and Habitats

7.10.7 There are no operational effects foreseen upon designated sites.

Species

7.10.8 Table 7-46 outlines residual effects identified from the operation phase and the any potential additional mitigation proposed.

Table 7-46: Residual effects to species from operation and additional mitigation proposed

Species	Residual impacts (operation)	Geographical scale of impact	Additional Mitigation
Breeding birds, dormouse, water vole	Increase in disturbance and predation by domestic animals	Negative - Local / Site	Monitoring to determine residual effect significance to inform the need for additional mitigation. increases in habitat provision.
Badger and hedgehog	Increased mortality due to RTAs	Negative - Local / Site	None proposed

Residual Cumulative Effects

7.10.9 The residual effects from cumulative assessment is presented in Table 7-47 with additional potential mitigation.

Table 7-47: Residual impacts from cumulative effects and additional mitigation proposed

Species	Residual Effects (cumulative)	Geographical scale of impact	Additional Mitigation
Farmland birds and brown hare	Further loss of habitat	Negative - Local / Site	Additional offsetting
Breeding birds, dormouse,	Increase in disturbance and predation by domestic animals	Negative - Local / Site	Monitoring to determine residual effect significance to inform the need for additional mitigation. increases in habitat provision.
Badger	Increased mortality due to RTAs and loss of habitats	Negative - Local / Site	None proposed

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8 Climate Change

8.1 Introduction

8.1.1 This Chapter of the ES addresses the potential effects of the proposed Development on the UK climate in two ways. The assessment addresses potential greenhouse gas (GHG) emissions that would arise as a result of the proposed Development, and in terms of the vulnerability of the proposed Development to climate change. A full description of the proposed Development is given in Chapter 4. The assessment incorporates relevant design and other mitigation measures that would be employed during construction of the Development.

8.1.2 A summary of relevant legislation, policy and guidance, and a description of the methodologies used to assess the potential effects of the proposed Development is provided in this Chapter. Baseline conditions are discussed, and potential effects described, followed by details of mitigation measures and assessment of residual effects. A summary of the assessment and conclusion is then provided.

8.1.3 This Chapter should be read in conjunction with the following ES Chapters:

- Chapter 5: Agriculture.
- Chapter 6: Air Quality.
- Chapter 7: Biodiversity.
- Chapter 9: Cultural Heritage.
- Chapter 10: Geology, Hydrogeology and Land Quality.
- Chapter 11: Human Health
- Chapter 12: Landscape and Visual Impact.
- Chapter 14: Socioeconomic Effects and Community
- Chapter 15: Surface Water Resources and Flood Risk.
- Chapter 16: Transport
- Chapter 17: Waste and Resource Management

Relevant Aspects of the Proposed Development

8.1.4 A full description of the proposed Development is given in Chapter 4. This Chapter presents the assessment of climate impacts associated with the construction and operation of the proposed Development. The key aspects of the proposed Development that relate to impacts on climate are two-fold:

- Effects on future climate arising from GHG emissions from construction and operation of the Development. This aspect considers effects of GHG emissions arising from the proposed Development on the climate, and the potential to for GHG emission increases to affect the Government carbon reduction plan targets; and
- Vulnerability of the proposed Development to climate change (and impacts relevant to adaptation)– the resilience of the proposed Development to impacts resulting from a changing climate, including how the proposed Development design would take account of projected effects of climate change.

8.2 Assessment Methodology

Legislation, Policy and Guidance

8.2.1 This impact assessment has been undertaken in accordance with current legislative and policy framework with respect to climate change. An outline of the legislation, policy and guidance relevant to the proposed Development at the national and local levels is provided below.

Legislation

8.2.2 The Climate Change Act 2008 (Ref 8.1) sets the framework for the United Kingdom (UK) to achieve its long-term goals of reducing GHG by 34% (from the 1990 baseline) by 2020 and by 80% by 2050, whilst also ensuring that steps are taken towards adapting to the impact of climate change.

8.2.3 The Climate Change Act 2008 introduces a system of carbon budgeting which constrains the total amount of carbon emissions in a given time period. The Climate Change Act also sets out a procedure for assessing the risks of the impact of climate change for the UK and a requirement on the Government to develop an adaptation programme policy.

Policy

8.2.4 This assessment has had regard to the National Planning Policy Framework (NPPF) (Department for Communities and Local Government, 2018). The NPPF identifies ways in which the challenge of climate change can be met by the planning system. Chapter 14 of the NPPF highlights that planning plays a key role in mitigating against climate change. The NPPF also states that new development should:

- Avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure.
- Help to reduce GHG emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.

8.2.5 The assessment also considers relevant policies of the Kent Environment Strategy (2016), Shepway District Council (now Folkestone & Hythe District Council) Local Plan Review (2006), Core Strategy (2013) and its emerging Core Strategy Review (2018). The scheme response to the various relevant policy requirements have been summarised within Table 15-1.

Table 8-1 Summary of Relevant Adopted Policies

Document	Policy	Summary of Requirements	Scheme Response
National Planning Policy Framework (NPPF) (Ref 8.2)	Chapter 14	The NPPF states that new development should be planned for in ways that: • Avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure. • Can help to reduce GHG emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.	A number of measures have been embedded in the design of the proposed Development to minimise the impacts arising from climate change and reduce GHG emissions during construction and operation. These are considered in detail in Section 8.4. As a result of the measures proposed, the proposed Development would benefit from reduced vulnerability to impacts arising from climate change.
The Carbon Plan: Delivering our Low Carbon Future (2011) (Ref 8.3)	Vision	In 2011, the Government published an updated Carbon Plan setting out how the UK will achieve decarbonisation and make the transition to a low carbon economy. It sets this objective within a framework of mitigating and adapting to climate change and maintaining energy security in a way that minimises costs and maximises benefits to the economy. With regards to development, the Carbon Plan presents the UK Government's approach to promoting the delivery of low carbon, resilient and adaptive buildings and enabling sustainable transportation as positively contributing to these national carbon reduction targets. It also presents the Government's strategy for meeting all four carbon	Paragraphs 8.5.1 and 8.5.11 compare the construction and operational carbon emissions from the proposed Development with the relevant carbon budgets (3rd, 4th and 5th) and demonstrate that the emissions from the proposed Development would not have a significant adverse effect on the

Document	Policy	Summary of Requirements	Scheme Response
		budgets for periods 2008-2012, 2013-2017, 2018-2022 and 2023-2027.	government's ability in achieving the carbon budgets.
Kent Environment Strategy: A Strategy for Environment, Health & Economy 2016 (Ref 8.4)	Our challenges	The Kent Environment Strategy identifies climate change and energy consumption and generation as key challenges for the future. Kent has developed key themes and priorities for the county to achieve by 2030. Priorities include understanding risks and opportunities, energy use and emissions, building resilience to the impacts of environmental change and focusing on low carbon, environmental services and rural sectors. The key climate and carbon indicators and targets developed for the county are: • Reduce emissions across the county by 34% by 2020 from a 2012 baseline. • More than 15% of energy generated in Kent to be from renewable sources by 2020 from a 2012 baseline. • Reduce the number of properties at risk from flooding. • To develop climate action plans by 2018.	A number of measures have been embedded in the design of the proposed Development to reduce GHG emissions during construction and operation. These are considered in Section 8.4.
FHDC Local Plan (2013) (Ref 8.5)	Strategic Need B of the Local Plan. Aim 2 of Strategic Need B.	Strategic Need B of the Local Plan is '*The challenge to enhance the management and maintenance of the rich natural and historic assets in Shepway*'; Aim 2 of Strategic Need B is to '*Minimise local carbon emissions, maintain air quality, control pollutants and promote sustainable waste management*'. The aim states that local carbon emissions should be minimised, (good) air quality should be maintained and pollutants should be controlled.	The impact on carbon emissions is presented in this Chapter. The effects on climate assessment appraises whether the proposed Development is likely to result in an unacceptable impact from GHG emissions. The risk of has been evaluated in Section 8.5. Section 8.4 has prompted the recommended application of a number of construction phase mitigation measures which would be delivered by the Code of Construction Practice (CoCP) to ensure that climate change effects are minimised during construction.
FHDC Local Plan Review (2013) (Ref 8.6)	SS1	A network of homes, jobs, shops and services close to public transport facilities, allied with sustainable construction techniques, will make a significant contribution to cutting carbon emissions	The Transport Strategy for Otterpool Park is founded on the following principle: '*ensure a high level of connectivity to and from Otterpool Park within the sub-region by frequent and high-quality public transport*'. The public transport strategy has been included in Section 16.4 of the Transport Chapter.
	SS3	Proposals should be designed to contribute to local place-shaping and sustainable development through appropriate sustainable construction measures, including water efficiency and a proportion of energy from renewable and low carbon sources on new-build development.	The impact on carbon emissions is presented in this Chapter. The effects on climate assessment appraises whether the proposed Development is likely to result in an unacceptable impact from GHG emissions. The risk of has been evaluated in Section 8.5. Section 8.4 has prompted the recommended application of a number of construction phase mitigation measures which would be delivered by the CoCP to ensure that climate change effects are minimised during construction. The Energy Strategy has assessed a number of low and zero carbon technologies for individual properties based on technological constraints, cost, energy and carbon savings and future-proofing for the development lifetime.
	SS6	Environmentally the settlement will be a beacon of best practice, making best use of new technologies, and will be designed to achieve a low carbon …… development with an aspiration for …… carbon neutrality.	
FHDC Core Strategy Review (Submission Draft, 2019) (Ref 8.7)	Aim 2 of Strategic Need B.	Aim 2 of Strategic Need B '*The challenge to enhance management and maintenance of natural and historic assets*' Minimise local carbon emissions, maintain air quality, control pollutants and promote sustainable waste management - the aim states that local carbon emissions should be minimised, (good) air quality should be maintained and pollutants should be controlled.	
Our Green Future 25 Year Plan (Ref 8.8)	Chapter 6 – Policy 2 – Tackling climate change	The Green Future 25 year plan sets a commitment to continue to set an example, reducing our emissions from 1990 levels by at least 80% by 2050 and publishing the second sustainable and effective National Adaptation Programme in 2018.	The estimated GHG emissions arising from the proposed Development have been compared with UK carbon budgets (and the associated reduction targets, outlined in Table 8.6) and with the Kent GHG emissions presented within Section 8.5.4.

Guidance

8.2.6 A number of standards and non-statutory guidelines, which provide details of assessment methodologies and mitigation techniques, have been used to inform the assessment, including:

- Committee on Climate Change (CCC), 2017. Meeting Carbon Budgets: Closing the Policy Gap (Ref 8.9).
- The UK Climate Change Risk Assessment (Ref 8.10)
- The National Adaptation Programme: Making the Country Resilient to a Changing Climate (Ref 8.11)
- Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance 2017 (Ref 8.12)
- BS EN 15978:2011 Sustainability of Construction Works, Assessment of Environmental Performance of Buildings 2011 (Ref 8.13)
- PAS 2080:2016 Carbon Management in Infrastructure (Ref 8.14).

Consultation and Scoping

Consultation

8.2.7 Table 8-2 provides a summary of Consultee issues raised with respect to climate and how they have been addressed.

Table 8-2 Summary of Consultation

Consultee/Contact	Summary of Consultee Issue	How Addressed?
KCC Katie Stewart, Director of Environment, Planning and Enforcement Carolyn McKenzie, Head of Sustainable Business and Communities	The local area objectives should be considered in the assessment. Area Assessment – GHG emissions baseline data for the County of Kent and the wider South East region. In addition, Kent has been undertaking a Climate Change Risk Assessment based on the Government 2017 CCRA. This has taken into account the emerging Nation Adaptation Plan, and when released the UKCP18 data. Kent is also developing an Energy and Low Emissions Strategy in partnership with all 12 Kent districts and Medway.	The following documents have been reviewed and taken into consideration for the climate assessment: • Kent Environment Strategy: A Strategy for Environment, Health & Economy, 2016 (Ref 8.4). • Draft Kent State of Environment Report (Ref 8.15). • Emissions data for Kent and South East. • Kent Preparing for Climate Change: Review of activity – 2012 (Ref 8.16). • Kent's Adaptation Plan 2011-2013 (Ref 8.17). • Air quality data available from the Kent air website -www.kentair.org.uk

Scoping

8.2.8 Table 8-3 provides a summary of consultee responses contained within the Scoping Opinion in relation to climate change, and the corresponding location in the ES where they are addressed.

Table 8-3 Summary of Scoping Opinion

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
FHDC	The general approach and the methodology proposed, and the assessment of climate change is considered acceptable, and the assessment should be undertaken on that basis.	Chapter 8. Section 8.5 on methodology.

The Study Extent

Effects on Climate (from GHG Emissions)

8.2.9 In relation to effects on climate, the extent of the study considered for the construction phase includes the embodied carbon of the materials and emissions caused by the construction activities and their associated transport.

8.2.10 The study area considers for the operational phase comprises the application boundary, and the roads in the vicinity of the Site that were likely to be affected by changes in traffic movements as a result of the proposed Development. The roads identified and included in the traffic model have been used to assess GHG emissions, and have also informed the appraisal of the traffic, air quality and noise effects of the proposed Development.

Vulnerability of the proposed Development to climate change

8.2.11 In relation to the vulnerability of the proposed Development, the study area has included the south east of England region.

8.2.12 The study extent includes the physical infrastructure assets associated with the proposed Development (for example, earthworks, structures, buildings). In addition, the environmental receptors identified and scoped in within other topic chapters have also been considered where climate change has the potential to impact upon them.

Methodology for Establishing Baseline Conditions

8.2.13 Baseline conditions for effects on climate have been established through desk-top research, including the interrogation of key datasets such as the Department for Business and the Energy and Industrial Strategy UK Greenhouse Gas Emissions (Ref 8.18)

Forecasting the Future Baseline

8.2.14 Future baseline conditions for effects on climate have been established through desk-top research, including and the Energy and Emissions Projections.

8.2.15 UK Climate Projects (UKCP09) (Ref 8.19) is a climate analysis tool, released in 2009, that provides probabilistic projections for the whole of the UK, at regional level and at local level. To identify the future changes to the climate baseline, the following factors have been identified and used in the assessment:

- The lifespan of the Scheme (including timescales for construction and operational life cycle stages).
- Climate trends associated with the UKCP high emissions scenario (50% probability) projection.

8.2.16 The future baseline has included a range of different climate variables from UKCP09 (e.g. UK mean daily temperature for summer and winter, mean daily maximum temperatures for summer and mean daily minimum temperatures for winter).

Defining the Importance/Sensitivity of resource

8.2.17 With regards to GHG emissions there are no recognised resource significance criteria and the information presented shows estimated levels of GHG emissions predicted during construction and operation.

8.2.18 There are no criteria to determine the sensitivity of the resources with respect to the vulnerability of the proposed Development to climate change. However, a risk assessment has been undertaken to understand the proposed Development's vulnerability to climate change and to assess the adaptation measures incorporated within the proposed Development's design, during both construction and operation.

Methodology for Assessing Impacts

8.2.19 This section describes the methodology which has been used for the assessment of climate which may affect, or be affected by, the construction and operation of the proposed Development.

8.2.20 The assessment of climate covers the following elements as required by the EIA Directive:

- Effects on climate (from GHG emissions); and
- Vulnerability of the proposed Development to climate change (and impacts relevant to adaptation).

Effects on Climate (from GHG Emissions)

8.2.21 There are no particular local or specific environmental receptors for GHG emissions in the same way that there are for other topic assessments. However, it has been possible to quantify the GHG emissions due to the proposed Development in absolute terms, for example, tonnes of carbon dioxide equivalent (CO_2e) from material resources.

8.2.22 With regards to GHG emissions there are no recognised likelihood categories in the UK and the information presented has demonstrated the levels of emissions predicted during construction and operation. Therefore, the likelihood categories have not been identified for the effects on climate (from GHG emissions).

8.2.23 The scope of the GHG emissions assessment is summarised in Table 8-4 and is consistent with the principles set out in PAS 2080:2016 (Ref 8.14):

- 'Relevance – data and assessment methodology has been selected and presented in Table 8-4.
- Completeness – the GHG emissions assessment would be based on a life cycle (LC) approach.
- Consistency – consistent methodology and data sources for GHG emissions would be used to allow comparison of emissions over time.
- Accuracy – the quantification of the GHG emissions would neither over- nor under-estimates actual emissions, as far as can be judged. Also, uncertainties are reduced as far as reasonably practicable.
- Transparency – the outputs of the GHG emissions assessment would be available along with data sources and any relevant assumptions.'

8.2.24 As detailed above, the GHG emissions assessment has taken a life cycle assessment. Best practice criteria, based on professional knowledge and the predicted low GHG emissions, has been applied for the exclusion of elements included within Table 8-4 (cut-off rules) from the scope. The scope of the GHG emissions assessment is outlined in Table 8-4 below.

Table 8-4 Scope of the GHG Emissions Assessment for the proposed Development

Life Cycle Stage	Scoped In	Scoped out
Construction	• Construction products. • Transport of construction materials from the factory gate to the construction site. • Transport of waste from the Site to the waste management facilities or landfill sites. • Construction processes.	• Construction products manufacturing. • Preliminary desk-based studies on GHG Assessment. • Transport of construction plant equipment to and from Site. • Workers commute.
Operation	• Energy consumption and increase transport emission arising from the proposed Development.	• Operational water use. • Maintenance, repair, replacement and refurbishment. • Carbon sequestration from tree planting.
Post-operation	• N/A.	• End of life deconstruction, demolishing and decommissioning, transport and waste processing and disposal.

8.2.25 Both construction and operational phases of the proposed Development have been considered for the GHG assessment. The GHG emissions assessment has taken a LC approach consistent with the principles set out in PAS 2080:2016. The GHG emissions associated with the construction and operation of the proposed Development have been reported in the form of the 'carbon footprint', which is reported in tonnes of CO_2e. This has allowed for the emissions of the six key GHG: carbon dioxide (CO_2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6); to be expressed in terms of their equivalent global warming potential in mass of CO_2e.

8.2.26 The assessment has reported the carbon footprint from the construction phase and for the operational design life of the proposed Development. In addition, the assessment has been carried out for the following time periods:

- Completion of the first 325 dwellings – 2022.
- Approximate mid-way through the construction programme at year 13 (delivery of 3,850 dwellings and 75,196 m^2 of retail and commercial space, schools, sports facilities and community space) – 2032.
- Construction completion year (delivery of remaining 4,325 dwellings and 78,196 m^2 of retail and commercial space, schools, sports facilities and community space) – 2044.

8.2.27 Potential impacts on the environment arising from GHG emissions would include construction emissions and operational emissions from the proposed Development including building energy use and traffic movements.

8.2.28 In addition, the estimated GHG emissions arising from the proposed Development have been compared with UK carbon budgets (and the associated reduction targets, outlined in Table 8.6) and with the Kent GHG emissions presented within Section8.5.4.

Table 8-5 UK Carbon Budgets

Carbon Budget	Carbon Budget Level	Reduction Below 1990 Levels
3rd carbon budget (2018 - 2022)	2,544 $MtCO_2e$	37% by 2020
4th carbon budget (2023 - 2027)	1,950 $MtCO_2e$	51% by 2020
5th carbon budget (2028 - 2032)	1,725 $MtCO_2e$	57% by 2020

Vulnerability of the proposed Development to climate change

8.2.29 The assessment of the vulnerability of the proposed Development to climate change has focused on the potential direct impact of severe weather events (presented within paragraphs 8.3.7 and 8.3.8) occurring during the lifetime of the proposed Development within the application boundary, using the criteria provided in Table 8.7 below.

Table 8-6 Likelihood categories

Likelihood Category	Description (probability and frequency of occurrence)
Very High	The event occurs multiple times during the lifetime of the proposed Development (60 years) - e.g. approximately annually, typically 60 events.
High	The event occurs several times during the lifetime of the proposed Development (60 years) - e.g. approximately once every 5 years, typically 12 events.
Medium	The event occurs limited times during the lifetime of the proposed Development (60 years) - e.g. approximately once every 15 years, typically 4 events.
Low	The event occurs during the lifetime of the proposed Development (60 years) - e.g. once in 60 years.
Very Low	The event may occur once during the lifetime of the proposed Development (60 years).

8.2.30 Appropriate adaptation measures have been incorporated into the proposed Development's design, during both construction and operation, to reduce the vulnerability of the proposed Development to

climate change. These measures have then been assessed, as required, in other relevant environmental topic chapters and relevant effects to receptors have been incorporated in this assessment.

8.2.31 In addition, a 4-stage framework as explained below has been adopted for the assessment, which looks at the likelihood and consequence of the impact occurring to each receptor, leading to evaluation of the significance of the effect.

8.2.32 Stage 1 has involved the assessment of climate effects on the proposed Development using the lifespan of the proposed Development (taken as 60 years as this represents the longest individual asset lifespan) and the long-term lifecycle stage (2080s) over which the baseline projections have been presented within Section 8.4.

8.2.33 Stage 2 has involved the identification of on-site receptors which are vulnerable to climate change.

8.2.34 Stage 3 involves the identification of the impacts (hazards and opportunities) for each receptor using the UKCP09 data, including the vulnerability of the proposed Development to both normal weather and extreme weather-related disaster scenarios.

8.2.35 The 4th stage of the framework includes an assessment of the identified impacts on receptors. The assessment has been undertaken using the likelihood and consequence categories in Table 8.7 and Table 8.8. Details of the significance of effects are reported using Table 8.9.

Table 8-7 Measure of consequence

Consequence of impact	Description
Very large adverse	• Regional level (or greater) disruption to infrastructure route(s) lasting more than 1 week; or • Disruption to the proposed Development lasting more than 1 week.
Large adverse	• Regional level (or greater) disruption to infrastructure route(s) lasting more than 1 day but less than 1 week; or • Disruption to the proposed Development lasting more than 1 day but less than 1 week.
Moderate adverse	• Local level (or greater) disruption to infrastructure route(s) lasting more than 1 day but less than 1 week; or • Disruption to a section of the proposed Development lasting more than 1 day but less than 1 week.
Minor adverse	• Local level (or greater) disruption to infrastructure route(s) lasting less than 1 day; or • Disruption to a section of the proposed Development lasting less than 1 day.
Negligible	• Disruption to an isolated section of the proposed Development lasting less than 1 day.

8.2.36 The risk assessment undertaken to understand the vulnerability of the proposed Development to climate change has been reported in Table 8-25 and Table 8-26.

8.2.37 The vulnerability of the proposed Development to climate change and incorporation of appropriate adaptation measures into the project's design has been part of the design process. A risk assessment has been undertaken in conjunction with the design team and the details of this risk assessment has been reflected in the proposed Development's design that has been subsequently assessed in other environmental topic chapters.

8.2.38 Using the definitions presented in Table 8-6 and Table 8-7, a combined assessment of likelihood category and measure of consequence, the significance of effect has been determined using Table 12.6 below.

Table 8-8 Effect Significance Matrix

Measure of Consequence	Measure of Likelihood				
	Very low	Low	Medium	High	Very High
Negligible	Not significant	Not significant	Not significant	Not significant	Not significant
Minor	Not significant	Not significant	Not significant	**Significant**	**Significant**
Moderate	Not significant	Not significant	**Significant**	**Significant**	**Significant**
Large	Not significant	**Significant**	**Significant**	**Significant**	**Significant**
Very Large	Not significant	**Significant**	**Significant**	**Significant**	**Significant**

Limitations and Assumptions

Limitations

8.2.39 There are no published or formalised significance criteria relating to the assessment of climate impacts. However, professional judgement has been used to assess the significance effects of the proposed Development based upon bespoke significance criteria developed.

8.2.40 The climate assessment is inherently uncertain in relation to climate change projections and the variation of information available in relation to different climate hazards.

8.2.41 Climate projections are not predictions or forecasts but simulations of potential scenarios of future climate, under a range of hypothetical emissions scenarios and assumptions. Therefore, the UKCP09 presented within Section 8.3 cannot be treated as exact or factual, but projection options. They represent internally consistent representations of how the climate may evolve in response to a range of potential scenarios, and their reliability varies between climate variables.

8.2.42 UKCP18 data has not been presented as the data was not available at the time of writing the chapter. This will provide the latest information on the future climate and will build upon the current set of projections provided through the UKCP09 data set.

8.2.43 In the absence of suitable detailed information for workers' commuting patterns, the GHG emissions from workers commute during the construction phase has not been included within the assessment.

Assumptions

8.2.44 The carbon assessment was undertaken on the basis of the information available at the time of the assessment.

8.2.45 The assessment of embodied carbon in materials was undertaken based on broad estimates of material quantities using the Waste and Resources Action Programme (WRAP) wastage rates. It provides bulk estimates of materials; however, does not provide specific information relating to their use in individual structures.

8.2.46 Emissions factors for materials and fuel for plant were based on the closest emissions factor available for the material type. UK typical values were used where more specific information was not available.

8.2.47 Transport distances for material resources and waste are based on professional judgement due to the lack of information at the time of the assessment.

8.2.48 Land transport for material resources and waste is assumed to be in a rigid truck.

8.2.49 HGV movements included within this chapter have been based on the October 2018 building schedule using dwelling numbers and non-dwelling gross internal area (GIA) figures. HGV movements included within the transport assessment have been based on the June 2018 building schedule as modelling requirements have not allowed the use of the October schedule. However, this would not have a significant impact on the transport assessment results as the HGV movements estimated in June were slightly higher than the HVG movements estimated in October.

8.3 Baseline

Existing Baseline

Effects on climate (from GHG emissions)

8.3.1 This section provides evidence of the existing GHG emissions within the study area and describes GHG emissions from the industry and commercial, domestic and transport sectors in the south east and Kent.

8.3.2 Across the UK, the total GHG emissions from industry, commercial and domestic buildings and transport are presented as carbon dioxide equivalents (CO_2e). CO_2e is a quantity that describes, for a given amount of GHG emissions, the amount of CO_2 that would have the same global warming potential (GWP), when measured over a timescale of 100 years.

8.3.3 The UK GHG emissions have decreased in 2016 by 41% from 1990. In 2016, UK net CO_2 emissions were estimated at 468 million tonnes of CO_2e, a decrease of 5% in comparison to 2015 levels. In 2016, 26% of UK GHG emissions - or 125 million tonnes of CO_2e - were from the transport sector.

8.3.4 GHG emissions from buildings accounted for 34% of total UK emission in 2014. Direct emissions, resulting from use of fossil fuels (primarily gas) for heating, make up almost half of buildings GHG emissions. The other half is electricity related from lighting, heating cooling and other appliances. Residential GHG emissions account for 64% of buildings emissions which relates to some 332.8 million tonnes CO_2e in 2014.

8.3.5 Data, obtained from the Department for Business, Energy and Industrial Strategy (Ref 8.20), show the emissions produced across the south east region and Kent for 2010-2016. These are presented within Table 8-11 and Table 8-12. They do not include the emissions created in the production of the fuels used.

Table 8-9 Total GHG emissions from the south east by source

Year	Estimated Quantities of Carbon (tonnes CO_2e per year)			
	Industry and Commercial Total	Domestic Total	Transport Total	Grand Total
2010	20,838,005,039	19,851,496,122	19,525,371,581	58,285,872,370
2011	18,608,697,801	17,380,575,722	19,293,255,068	53,309,093,640
2012	19,474,156,685	18,760,323,502	19,107,493,156	55,371,944,424
2013	18,364,931,604	18,288,728,639	18,838,603,802	53,490,534,218
2014	15,402,530,808	15,380,181,723	19,089,060,053	47,825,054,567
2015	14,538,083,731	15,016,270,993	19,699,835,135	47,143,519,956
2016	12,931,448,936	14,145,475,671	20,139,649,640	45,106,264,564

Table 8-10 Total GHG emissions from Kent by source

Year	Estimated Quantities of Carbon (tonnes CO_2e per year)			
	Industry and Commercial Total	Domestic Total	Transport Total	Grand Total
2010	4,590,285,735	3,312,076,346	3,360,835,094	10,922,184,894
2011	4,111,234,712	2,899,137,584	3,356,984,750	10,018,890,513
2012	3,882,403,885	3,118,273,475	3,341,656,030	9,989,705,254
2013	3,692,666,461	3,036,178,450	3,264,347,040	9,640,857,305
2014	3,160,197,265	2,549,229,611	3,309,589,061	8,657,875,143
2015	2,871,529,108	2,505,127,011	3,441,326,600	8,447,068,972
2016	2,658,399,175	2,347,185,380	3,516,290,419	8,150,019,242

8.3.6 Embodied carbon accounts for the carbon footprint of a material from extraction, manufacture, transportation, assembly, maintenance, replacement, deconstruction, disposal and end of life aspects of the material. The UK construction industry is the largest consumer of natural resources with an average of over 400 million tonnes of raw materials consumed every year. This accounts for approximately 10% of the total UK carbon emissions. Therefore, approximately 40.38 million tonnes of CO_2 are attributed to the embodied carbon of construction materials.

Vulnerability of the proposed Development to climate change

8.3.7 A Local Climate Impact Profile (LCLIP) has been developed to assess the vulnerability of council services to severe weather events for Kent County Council (Ref 8.21). The LCLIP for Kent was developed through a review of media stories in the local press over a 14-year period between 1996 and 2010. The LCLIP review found that Kent is already experiencing major weather events and that 52 highly significant events occurred over the 14-year LCLIP period. The most frequent impacts of these events were heavy rain and resultant flood events, heatwaves, droughts, freezing temperatures and snow as well as multiple storms.

8.3.8 Through the LCLIP, KCC has learnt that adequate data and information had not been collected to record the likely impacts. Consequently, and since 2012, KCC is utilising the Severe Weather Impacts Monitoring System (SWIMS) (Ref 8.22). This is a decision-support tool enabling partners across Kent to record how they have been impacted by, and are responding to, severe weather events, as and when they occur.

8.3.9 A summary of the key findings from the LCLIP for Kent is provided in Table 5-6.

Table 8-11 Key findings from KCC LCLIP

Weather Event	KCC Findings
Heavy rainfall and flooding	A total of 22 heavy rain and flooding events were reported over the 14-year study period.
Storms (increase in wind speed for worst gales)	Kent experienced 10 severe storms. Impacts due to storms included, loss of power for thousands of homes.
Extreme winter temperatures and precipitation	A total of 12 freezing events were noted. Impacts included 583 closures of roads over three events, full rail service suspensions and shortages in county grit levels.

Weather Event	KCC Findings
Extreme summer temperatures and precipitation	Over 7 heatwave events were reported over the study period. Impacts reported included a 20- year low in the East Stour River's levels and road surfaces melting.

8.3.10 There has been a significant human influence on the observed warming in England's annual temperature since 1950. Statistical results from extreme value analysis suggest that the UK daily maximum and minimum temperature extremes have increased by just over 1°C since the 1950s, and that heavy seasonal and annual rainfall events have also increased. Across England, land temperature in the decade 2005 - 2014 was 1°C warmer than 1961-1990.

8.3.11 There has been a small observed increase in mean annual rainfall in recent decades. Between 1961-1990 and 1991-2010 mean annual rainfall increased by 3.2%. However, this change is not statistically significant in the context of rainfall totals over the last century

8.3.12 UK climate projection data is published by Defra via the UKCP09 data tool kit. The UKCP09 tool provides projections for a number of parameters from the 1990 baseline values. The 1990 baseline values for the key climate change adaptation parameters are presented in Table 8-12. As a result of the format of the data obtained from the UKCP09 tool.

Table 8-12 Average climate change adaptation parameters in 1990 for KCC

Parameters	KCC Outputs
Mean air temperature at 1.5m (°C)	9.938
Mean maximum air temperature at 1.5m (°C)	13.848
Mean minimum air temperature at 1.5m (°C)	6.027
Temperature of the coolest day (°C)	-4.496
Temperature of the warmest day (°C)	30.701
Precipitation rate (mm/day)	1.664

Future Baseline

Effects on climate (from GHG emissions)

8.3.13 The total GHG emissions without the proposed Development have been assessed within the traffic model and presented in Table 8-13 below.

Table 8-13 Total GHG emissions without the proposed Development within the traffic model study area by year

Year	Estimated Quantities of Carbon per year	
	Tonnes of CO_2	Tonnes of CO_2e
2022	202,072	24,947,160
2029	209,303	25,839,877
2046	229,619	28,348,025

Vulnerability of the proposed Development to climate change

8.3.14 It is predicted that climate change will increase the frequency and severity of some types of extreme weather events in England. UKCP09 Projections generally show that warmer, drier summers are more likely along with warmer, wetter winters. UKCP09 also shows data for 3 possible emissions scenarios: low, medium and high. These are the Intergovernmental Panel on Climate Change (IPCC) scenarios B1, A1B and A1FI respectively. The projections for the South East of England in the 2020s (2010-2039) under a **high emissions** scenario suggest a central estimate of:

- An increase in winter mean temperature of 1.4ºC.
- An increase in summer mean temperature is 1.5ºC.
- An increase in summer mean daily maximum temperature is 2.0ºC.
- An increase in summer mean daily minimum temperature is 1.7ºC.
- No change in annual mean precipitation.
- A +7% change in winter mean precipitation.
- A -4% change in summer mean precipitation.

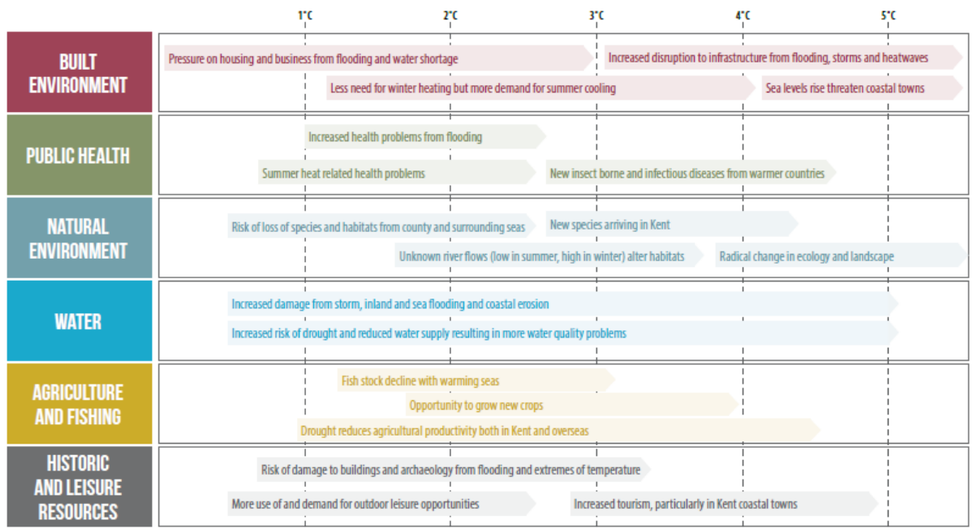
8.3.15 By the 2050s (2040-2069), the high emission central estimate (50% probability) provides the following projection:

- An increase in winter mean temperature of 2.5ºC.
- An increase in summer mean temperature is 3.1ºC.
- An increase in summer mean daily maximum temperature is 4.3ºC.
- An increase in summer mean daily minimum temperature is 3.4ºC.
- No change in annual mean precipitation.
- A 19% increase in winter mean precipitation.
- A 19% decrease in summer mean precipitation.

8.3.16 Climate change is anticipated to increase peak rainstorm intensities resulting in potential for an increased frequency of flash flood events. However, there is also potential for more frequent periods of drought, reducing the availability or reliability of surface and groundwater resources.

8.3.17 Figure 8-1 below illustrates the possible effects of temperature changes across sectors. Using the UKCP by 2050 Kent and Medway are likely to see winter temperatures to be warmer by 2.0ºC, summers by 2.8ºC; winter rainfall is likely to increase by 14% and summer rainfall likely to decrease by 24%.

Figure 8-1 Possible effects of temperature changes across sectors



8.4 Design and Mitigation

8.4.1 Details of the design and mitigation measures that act to minimise significant environmental effects to the identified receptors are summarised below.

Construction Approach and Mitigation of Construction Effects

Effects on Climate (from GHG emissions)

8.4.2 For the construction phase, the material resources and waste assessments assume activities between 2020 and 2044. For the construction phase, with reference to the GHG emissions from materials resources and the transport of material resources and waste, the following years have been assessed:

- Completion of first phase (delivery of 325 dwellings) – 2022.
- Mid way of construction completion at year 13 (delivery of 3,850 dwellings and retail and commercial space, schools, sports facilities and community space) – 2032.
- Construction completion year (delivery of remaining 4,325 dwellings and retail and commercial space, schools, sports facilities and community space) – 2046.

8.4.3 A summary of the likely floorspace area for each land use type of the proposed Development is shown in Table 8-14.

Table 8-14 Summary of land use and planned floorspace

Land Use	Class / Description	Floorspace – gross internal area (m^2)
Hotel	1 (approximately 120 rooms)	7,001
Retail space	A1 – Shops and Retail Outlets	16,175
	A2 – Professional Services A3 – Food and Drink	10,075
Commercial Space	B1 – Business	66,660
	B2 – General Industrial Use	8,265
Schools	5 Primary schools	15,230
	1 Secondary School	14,351
Sport	Indoor Sports Hall	6,750
	Sports Pavilion	750
Health	1 main site and 3 'surgeries'	11,800
Community	12 Nurseries	4,200
	Community Centre(s)	7,200
Total		**168,457**

8.4.4 The estimated quantities of construction materials resources and waste arising during the construction activities would be affected by the types and methods of construction. At the time of writing, the types and methods of construction had not been decided and so it has not been possible to accurately estimate the quantity of material resources and waste arising from the construction.

8.4.5 However, using the previous floorspaces, waste benchmarking data from the BRE SmartWaste and the WRAP wastage rates quantities of construction and demolition waste arising from the proposed Development and material resources required have been estimated in Table 8-15 below. A full description of the methodology is given in Chapter 17: Waste and Resource Management.

Table 8-15 Estimated waste arisings the proposed Development

Waste Stream	Estimated Quantities of Waste (tonnes)				Wastage Rate (%)
	2022 - 2031	2032 - 2043	2044 - 2045	2046 (Masterplan)	
Bricks	332	4,654	5,215	1,492	10
Tiles and ceramics	24	323	342	106	5
Concrete	470	7,067	8,777	2,110	2.5
Inert	1274	18,064	19,084	5,725	5
Insulation materials (non-hazardous)	20	309	346	88	5
Metals	59	952	985	264	5
Packaging materials	115	1,613	1,740	517	100
Plasterboard / gypsum	136	1,942	2,189	609	2.5
Binders	5	67	72	22	2.5
Plastic (excluding packaging waste)	79	1,054	1,176	356	2
Timber	363	5,033	5,687	1,632	5
Floor coverings (soft)	2	58	58	10	10
Electrical and electronic equipment (non-hazardous)	2	26	27	8	Not known
Furniture	0	9	16	2	Not known
Canteen / office / ad-hoc waste	37	604	586	166	100
Liquids	2	44	64	10	2.5
Oils	0	4	5	1	2.5
Bituminous mixtures (Non-hazardous (e.g. asphalt))	26	636	509	116	2.5
Hazardous waste	29	527	531	130	7.3
Other waste	111	1,722	1,820	500	7.3
Mixed construction and/or demolition waste	1176	17,259	19,178	5,283	7.3
TOTAL	**4,260**	**61,967**	**68,408**	**19,148**	

Table 8-16 Estimated demolition waste arisings the proposed Development

Material Type	Estimated quantities (tonnes)
Bricks	2,709.53
Tiles and Ceramics	175.69
Concrete	4,502.11
Inert	10,071.32
Insulation materials (non-hazardous)	171.96
Metals	491.87
Packaging materials	902.64
Plasterboard / Gypsum	1,128.94
Binders	38.69
Plastic (excluding packaging waste)	612.19
Timber	2,998.24
Floor coverings (soft)	41.37
Electrical and electronic equipment (non-hazardous)	14.67
Furniture	7.89
Canteen/Office/Ad hoc waste	287.09
Liquids	32.89
Oils	2.48
Bituminous mixtures (non-hazardous e.g. asphalt)	247.84
Hazardous waste	212.50
Other waste	998.55
Mixed construction and/or demolition waste	10,290.04
TOTAL	**35,938.50**

8.4.6 The wastage rates and the average carbon conversion factors for electrical and electronic equipment, furniture, liquids and canteen / office / ad-hoc waste have not been defined due to lack of information at this stage. Therefore, Table 8-17 has not included the embodied carbon of these material resources. The estimated embodied carbon from hazardous material resources, other material resources and mixed construction material resources have been calculated using the average carbon conversion factor for the key construction material resources (Ref 8.23).

Table 8-17 Estimated material resources required for the proposed Development and embodied carbon emissions

Material Resources	Estimated Quantities of Material Resources (tonnes)				Estimated Embodied Carbon (tonnes CO_2e)				
	2022 - 2031	2032 - 2043	2044 - 2045	2046 (Masterplan)	Average Conversion Carbon Factor	2022 - 2031	2032 - 2043	2044 - 2045	2046 (Masterplan)
Bricks	3,320	46,540	52,150	14,920	0.24	797	11,170	12,516	3,581
Tiles and ceramics	480	6,460	6,840	2,120	0.7	336	4,522	4,788	1,484
Concrete	18,800	282,680	351,080	84,400	0.107	2,012	30,247	37,566	9,031
Inert	25,480	361,280	381,680	114,500	0.0052	132	1,879	1,985	595
Insulation materials	400	6,180	6,920	1,760	1.86	744	11,495	12,871	3,274
Metals	1,180	19,040	19,700	5,280	2.03	2,395	38,651	39,991	10,718
Packaging materials	115	1,613	1,740	517	2.015	232	3,250	3,506	1,042
Plasterboard / gypsum	5,440	77,680	87,560	24,360	0.39	2,122	30,295	34,148	9,500
Binders	200	2,680	2,880	880	0.74	148	1,983	2,131	651
Plastic	3,950	52,700	58,800	17,800	3.31	13,075	174,437	194,628	58,918
Timber	7,260	100,660	113,740	32,640	0.72	5,227	72,475	81,893	23,501
Floor coverings (soft)	20	580	580	100	3.9	78	2,262	2,262	390
Oils	80	1,760	2,560	400	Not known				
Bituminous mixtures	0	160	200	40	3.478	0	557	696	139
Hazardous material resources	1,040	25,440	20,360	4,640	0.086	89	2,188	1,751	399
Other materials	397	7,219	7,274	1,781	1.33	530	9,636	9,709	2,377
Mixed construction materials	1,521	23,589	24,932	6,849	1.39	2,114	32,789	34,655	9,521
TOTAL	**85,792**	**1,252,686**	**1,401,708**	**385,357**		**52,423**	**756,465**	**840,266**	**235,715**

8.4.7 Based on the estimated quantities of material resources required and forecasted waste arisings from the construction phase, the potential number of traffic movements have been estimated and presented in Table 8-18 below.

8.4.8 The estimated carbon emissions have been calculated using carbon emissions factors of 0.0017 and 0.0011 for a fully loaded HGV and unloaded HGV respectively to account two-way trips of HGVs. Given the current stage of design it is not known where materials will be procured from, it has been assumed for the purposes of the assessment that all material resources transported by road would be approximately 200 miles per trip to the proposed Development and that all waste arisings would be transported around 30 miles per trip from the proposed Development.

Table 8-18 Estimated traffic movements of material resources and waste from the construction and demolition phases of the proposed Development

Year	Estimated Number of HGV Movements			Estimated Carbon Emissions from HGV Movements (CO_2e)		
	Material Resources	Waste	Total	Material Resources	Waste	Total
2022	6,246	1,398	7,644	1,749	59	1,808
2023	8,811	1,972	10,783	2,467	83	2,550
2024	6,246	1,398	7,644	1,749	59	1,808
2025	8,999	2,014	11,013	2,520	85	2,604
2026	12,296	2,752	15,048	3,443	116	3,558
2027	7,685	1,720	9,405	2,152	72	2,224
2028	13,422	3,004	16,426	3,758	126	3,884
2029	12,877	2,882	15,759	3,606	121	3,727
2030	12,082	2,704	14,786	3,383	114	3,497
2031	9,561	2,140	11,701	2,677	90	2,767
2032	10,133	2,268	12,401	2,837	95	2,932
2033	7,685	1,720	9,405	2,152	72	2,224
2034	8,650	1,936	10,586	2,422	81	2,503
2035	13,224	2,960	16,184	3,703	124	3,827
2036	13,502	3,022	16,524	3,781	127	3,907
2037	9,168	2,052	11,220	2,567	86	2,653
2038	12,671	2,836	15,507	3,548	119	3,667
2039	13,859	3,102	16,961	3,881	130	4,011
2040	11,464	2,566	14,030	3,210	108	3,318
2041	11,429	2,558	13,987	3,200	107	3,308
2042	8,122	1,818	9,940	2,274	76	2,351
2043	10,169	2,276	12,445	2,847	96	2,943
2044	10,303	2,306	12,609	2,885	97	2,982
2045	11,563	2,588	14,151	3,238	109	3,346
2046	5,764	1,290	7,054	1,614	54	1,668
Total	**255,931**	**57,282**	**313,213**	**71,661**	**2,406**	**74,067**

8.4.9 The carbon output from plant and equipment utilised throughout the construction phase has been calculated in line with the key performance indicator from the UK Industry Performance Report published in 2018 and is estimated to be around 6,466 tonnes of CO_2e from the proposed Development and around 7,458 tonnes of CO_2e from the proposed Development including the Masterplan.

8.4.10 The carbon output from water usage throughout the construction phase has also been calculated in line with the key performance indicator from the UK Industry Performance Report published in 2018 and is estimated to be around 103 tonnes of CO_2e. Table 8-22 summarises the combined construction carbon emissions.

Table 8-19 Summary of construction phase carbon emissions

Material Type	Estimated Carbon Quantities (tonnes CO_2e)				Total Estimated Carbon Quantities (tonnes CO_2e)
	2022-2031	2032-2043	2044-2045	2046 (Masterplan)	
Material resources	52,423	756,465	840,266	235,715	1,884,869
Transport of material resources and waste	2,079	30,977	42,253	7,150	82,460
Plant and equipment	215	3019	3232	992	7,458
Water	3	42	45	14	103
Total	**54,712**	**790,477**	**885,890**	**243,810**	**1,974,889**

8.4.11 In line with the UK Governments carbon reduction plan, the design of the proposed Development aims to reduce GHG emissions as far as practicable in order to contribute to the UK's net reduction in carbon emissions. The following high-level options would be applied and developed when seeking to reduce GHG emissions during construction of the proposed Development:

- Step 1: Avoid and prevent: explore alternative lower carbon options to deliver the proposed Development's objectives.
- Step 2: Reduce: apply low carbon solutions (including technologies, materials and products) to minimise resource consumption during the construction, operation and at end-of-life; and construct efficiently: use techniques (e.g. during construction and operation) that reduce resource consumption over the life cycle of the proposed Development.

- Step 3: Remediate: after addressing steps 1 and 2, the proposed Development would identify, assess and integrate measures to further reduce carbon through onsite mitigation or off-site compensation/offsetting or sequestration.

8.4.12 i. Where fill material would be required, it has been designed as far as is practicable to come from within the same section of works. The remaining import would be sourced locally. Furthermore, the design aims to zone earthworks to avoid double handling, which would be achieved through early engagement with the Contractor. This would reduce the fuel consumption of plant, resulting in lower CO_2e emissions.

8.4.13 Construction works would be carried out in accordance with the best practicable means, as described in Section 79 (9) of the Environmental Protection Act 1990, to reduce fumes or emissions. This would include all vehicle engines and plant motors to be switched off when not in use.

8.4.14 Any further mitigation measures for the construction phase would be detailed in the CoCP, which will serve as a live document for the contractor and new information (such as mitigation measures) would be added as appropriate.

Vulnerability of the proposed Development to climate change

8.4.15 Following identification of the future climate projections, the proposed Development receptors which are vulnerable to climate change during the construction have been identified as the pavements and road surfaces, buildings, drainage, geotechnical conditions, signs, traffic signals and lighting, landscape, workforce, plant and equipment and user facilities.

8.4.16 Mitigation and adaptation measures for the previous receptors to address climate change have been considered and have been embedded within the design. One such example is the incorporation of Sustainable Drainage Systems (SuDS). The proposed Development would utilise SuDs to manage surface water in terms of both water quality and quantity. Further information is provided in Chapter 15: Surface Water Resources and Flood Risk. SuDs would be designed to appropriate standards to safeguard the quality of the underlying groundwater regime. Appropriate green infrastructure spaces throughout the proposed Development would be determined in areas where infiltrations rates and ground conditions are suitable for these features.

8.4.17 The proposals would ensure that greenfield (existing) discharge rates would not be exceeded during rainfall events up to a 1 in 100 (1%) annual probability including an allowance for climate change. Several infiltration areas have also been included in the design where the ground conditions are suitable. Swales, soakaways, permeable paving, rain gardens and green roofs would provide more localised surface water management. The Site would aim to be an exemplar regarding the provision of SuDS and multi-functional green space, promoting Water Sensitive Urban Development (WSUD) principles. This would ensure that flood risk is mitigated during each development phase and cumulatively as the phases progress, whilst also reduce water demand and maximise overall environmental benefits.

8.4.18 In addition, the proposed Development has been designed to be resilient to impacts arising from current weather events and climatic conditions and designed in accordance with current planning, design and engineering practice and codes (e.g. the Environment Agency's (EA) guidance on allowances for rainfall and flood probability due to climate change (Ref 8.24), within the context of flood risk assessments).

8.4.19 National Planning Policy Framework, which sets out the government requirements for the management and reduction of flood risk in the land use planning process, requires the investigation of climate change on the proposed Development. Making an allowance for climate change in a flood risk assessment will help to minimise vulnerability and provide resilience to flooding and coastal change in the future.

8.4.20 The Flood Risk Assessment (FRA) indicated that up to 2115 the climate change allowance should be 20-40%, therefore a 40% climatic change allowance has been used in the calculations and will be included within the detailed flood storage design. Further detail is provided within the FRA (Appendix 15.1).

8.4.21 Making an allowance for climate change in the assessment for the proposed Development will demonstrate the development is safe for its lifetime, without increasing flood risk elsewhere and where possible will provide betterment and reduce flood risk.

8.4.22 In order to provide protection to potential overland flows as a result of climate change, from rainfall run-off, or sewer surcharging, external levels would be arranged to direct overland flows away from buildings and towards positively drained areas to limit the flooding potential to buildings.

8.4.23 In addition, materials that would not deteriorate due to high temperatures would be selected during the detailed design stages. This would avoid the deterioration for example of the pavement such as softening, deformation and cracking.

8.4.24 Hard landscape materials for the proposed Development will be part of a suite of materials that are fitting with the locality, hard wearing, durable and of a high quality in accordance with BREEAM classifications including the use of recycled material where appropriate. Hardscape materials that coordinate with SuDS options will be considered as part of the overall SuDS strategy.

8.4.25 A key feature of any 'Garden Town' development (for which the Otterpool Park application comprises a major component) is its inclusion of a rich Green Infrastructure (GI) and ability to maximise use of the natural environment for landscaping, biodiversity and recreational uses. The proposed Development has been planned as a holistic 'Green' development providing accessible routes between the residential setting, informal and formal sport, play spaces, food production areas, community space, work place and the wider surroundings.

8.4.26 Allowances for climate change e.g. effects on planting have been identified and incorporated into the design. Longer vegetation growing seasons leading to a reduction in soil moisture and/or increased tree leaf coverage with an increased magnitude and frequency of storms events which could result in tree fall and increased maintenance and management requirements.

8.4.27 Parameter Plan OPM(P) 1008G, refines the hierarchy, structure and distribution of green infrastructure and open space across the site, including public realm and open space for leisure, sport and play. Existing GI typologies including high value hedgerows / trees and woodlands have guided the placement of proposed built Development parcels with a presumption towards vegetation retention where feasible.

Scheme Design and Mitigation of Operational Effects

Effects on Climate (from GHG emissions)

8.4.28 The energy and carbon assessment included within the Energy Strategy indicates that the proposed Development would result in emissions of between 31,869,894 and 38,447,464 tonnes of CO_2 per year. To quantify the energy and CO_2 reductions expected at the proposed Development, the following measures considered:

- Passive design including orientation and minimising solar gain.
- Improved building fabric and insulation beyond building regulations.
- Improved performance of glazing.
- Improved air tightness.
- Specification of water recycling, low-flow taps and showers.
- Provision of 100% low energy lighting.

8.4.29 Table 8-20 below details the CO_2 emissions by end use.

Table 8-20 Energy consumption and carbon emissions from the proposed Development

End Use	Gas boiler		Electric heating	
	Energy (kWh/year)	CO_2 Emissions (tonnes CO_2/year)	Energy (kWh/year)	CO_2 Emissions (tonnes CO_2/year)
Space heating	44,670,257	9,648,776	22,910,743	11,890,676
Hot water	16,500,927	3,563,200	15,219,828	7,899,091
Electricity (lighting, pumps and fans)	9,283,292	4,818,029	9,284,795	4,818,809

End Use	Gas boiler		Electric heating	
	Energy (kWh/year)	CO_2 Emissions (tonnes CO_2/year)	Energy (kWh/year)	CO_2 Emissions (tonnes CO_2/year)
Plant and Equipment	26,664,526	13,838,889	26,664,526	13,838,889
Total	**97,119,002**	**31,869,894**	**74,079,892**	**38,447,464**

8.4.30 National Statistics data estimates that CO_2 emissions represent around 81% of UK total GHG emissions. Therefore, it has been estimated that the 31,869,894 and 38,447,464 tonnes CO_2 would be equivalent to 39,344,314 and 47,466,005 tonnes of CO_2e respectively.

8.4.31 The current Building Regulations already require stringent levels of building fabric and services efficiency. However, by implementing additional passive and energy efficiency mitigation measures on natural gas boilers or electric heating (e.g. the use of high efficiency condensing gas boilers), carbon reductions between 5% and 6% could potentially be achieved as shown in Table 8-21 and Table 8-22. A full description of carbon reduction measures is given in the Energy Strategy.

Table 8-21 Savings from gas heating mitigation measures

End Use	Energy (kWh/yr)	CO_2 Emissions (tonnes CO_2/yr)	Carbon reduction (%)
Space heating	39,663,842	8,567,390	11%
Hot water	16,338,739	3,529,168	1%
Electricity (lighting, pumps and fans)	8,614,411	4,470,879	7%
Plant and Equipment	26,664,526	13,838,889	0%
Total	**91,281,518**	**30,406,326**	**5%**

Table 8-22 Savings from electric heating mitigation measures

End Use	Energy (kWh/yr)	CO_2 Emissions (tonnes CO_2/yr)	Carbon reduction (%)
Space heating	19,479,360	10,109,788	15%
Hot water	15,219,828	7,899,091	0%
Electricity (lighting, pumps and fans)	8,615,845	4,471,623	7%
Plant and Equipment	26,664,526	13,838,889	0%
Total	69,979,559	36,319,391	6%

8.4.32 Natural gas heated properties are likely to be specified for first phases of homes. This will be used while the electricity grid factor still supports the use of gas and provide some resilience in energy supply.

8.4.33 The Energy Strategy has also considered a range of energy supply options including CHP, biomass heating, ground and water source heating for a site wide scheme alongside options that could be limited to a smaller cluster of dwellings such as sewer heat recovery and energy from food waste. However, none of the district heating options indicate a positive return on investment.

8.4.34 More innovative small-scale district energy option for sewage heat recovery or recovery of energy from a waste water treatment plant (assuming that a waste water treatment option is on-Site) could provide heat to selected customers to the west of the site. Due to the maturity of the technology its costs and performance are still uncertain, and any scheme would need more detailed assessment, to maximise the reduction of GHG emissions, before progressing further.

8.4.35 The Energy Strategy of the proposed Development has assessed a number of technologies based on technological constraints, cost, energy and carbon savings and future-proofing for the proposed Development lifetime. The preferred option would be to include solar photovoltaic cells within all suitable properties (for both the gas heated properties for the initial homes constructed and electrically heated properties for the remaining development) and also specify air source heat pump electric heating for the electrically heated properties as the grid decarbonises.

8.4.36 Battery Storage, smart controls, electric vehicles will all be likely to be part of the Development in the future. Pilot studies with monitoring and evaluation will be undertaken in the initial phase of the proposed Development in order to identify solutions that benefit most from these technologies and exploit the evolution of grid services and community involvement. The pilot studies will be mandated through the developer agreements to build a proportion (5-10%) of the initial properties with defined technologies, ventilation and heating strategies to enable different solutions to be tested and optimised for the following phases. The objective is to develop an integrated smart grid maximising the Development's generation and supply profiles to benefit the community. Information technology and controls will enable citizens to engage and participate with energy services.

8.4.37 Taking account of the measures to reduce energy demand and generate energy from low and zero energy sources the proposed Development has set a commitment to reduce carbon emissions by at least 20% of the Building Regulations (2013) on a site-wide basis and an aspiration towards zero carbon (regulated energy).

8.4.38 In addition, carbon emissions arising from increase car use have been calculated based on the traffic model developed for the proposed Development, in combination with UK Government GHG conversion factor. The assessment results presented in Table 8-24 shows that peak emissions arising from increased car use would be from 2032. Due to lack of projections data, GHG emissions for 2032, 2044 and 2046 have been based on GHG emissions from 2030.

Table 8-23 Estimated Carbon Emissions from increased vehicles use per year

Year	Estimated Carbon Emissions (tonnes CO_2e per year)	
	Without proposed Development	With proposed Development
2017	187,257	187,257
2022	202,072	202,081
2029	209,303	213,502
2032	229,619	247,866
2044	229,619	247,866
2046	229,619	247,866

Table 8-24 Total Estimated Carbon Emissions from increased vehicles use per period

Year	Estimated Carbon Emissions (tonnes CO_2e per period)	
	Without proposed Development	With proposed Development
2017 - 2021	936,285	936,285

Year	Estimated Carbon Emissions (tonnes CO_2e per period)	
	Without proposed Development	With proposed Development
2022 - 2031	2,042,413	2,055,073
2032 -2043	2,755,428	2,974,392
Proposed Development Total	**5,734,126**	**5,965,750**
2044 - 2046	459,238	495,732
Total	**6,193,364**	**6,461,482**

16.1.1 A comprehensive range of measures are suggested for the proposed Development to promote sustainable travel and vehicle choices, in addition to the provision of infrastructure in the form of walking and cycling routes and bus services and cycle storage. The suggested measures are set out in the draft Framework Travel Plan (Document reference 10011914-ARC-00-XX-RP-TP-0001-P1.1), which is also submitted for information with the Application.

16.1.2 The proposed Development will need to provide for the future requirements for electric vehicles and give the flexibility to adapt to innovative transport solutions such as autonomous vehicles. Suggested measures include:

- Seek to develop an electric vehicle car club in conjunction with an operator.
- Seek to develop a rental bike scheme, including electric bikes.
- Provide passive provision for electric vehicle charging at all homes with allocated spaces as well as to on-street parking areas.
- Develop electric vehicle charging point strategy with provision in local centres, employment locations and the rail station.

Vulnerability of the proposed Development to climate change

8.4.39 The environmental impacts that can be controlled would be addressed prior to the operational phase. No mitigation measures are therefore considered necessary for the proposed Development in operation.

8.5 Assessment of Residual and Cumulative Effects

Residual Effects from Construction

Effects on Climate (from GHG emissions)

8.5.1 The carbon assessment has indicated that the proposed Development would result in emissions of approximately 54,441 tonnes and 789,051 tonnes of CO_2e from the construction phase of the proposed Development in 2022 and 2032 respectively (Table 8-22). This makes up 0.0021% of the 3rd budget (2,544 million tonnes of CO_2e) and 0.021% of the 4th and 5th carbon budget (3,675 million tonnes of CO_2e). Therefore, it is concluded that the construction phase of the proposed Development would not have a significant adverse effect on the government's ability in achieving the carbon budgets.

8.5.2 In addition, the carbon output from materials is estimated to be 1,884,869 tonnes of CO_2e. When compared to the 10% contribution from construction material resources to the annual UK emissions, this only contributes 0.19%.

8.5.3 Mitigation measures for effects on climate consist of strategic approaches that drive reduction across all lifecycle stages and encouraging carbon reduction behaviours with those specific to the separate lifecycle stages.

8.5.4 In the absence of established assessment criteria for the effects on climate, it is considered that the construction phase effects of the proposed Development will be **Not Significant** on climate, due to the relatively low quantity of emissions in comparison to overall emissions for construction as presented above.

Vulnerability of the proposed Development to climate change

8.5.5 The proposed Development has the potential to be vulnerable to a range of climate changes, including an increased frequency and severity of prolonged and/or heavy precipitation events, prolonged droughts and heatwaves, a greater frequency of very hot days, and an increased risk of storms. Warmer temperatures may also mean that the risks associated with ice and snow would decrease over time. Retaining the ability to respond to these events would remain important.

8.5.6 The vulnerability of the proposed Development to climate during the operational phase has been outlined in Table 8-25 below.

Table 8-25 Vulnerability of the proposed Development to climate during the construction phase

Receptor	Aspect	Potential effect to proposed Development (Impact)	Likelihood Category	Consequence of Impact	Significance
Pavements and road surfaces	Design of foundations	An increase in winter precipitation or a decrease in summer precipitation would result in a change in ground water level and soil moisture. In addition, it has the potential to generate larger ground movement.	Very High	Negligible	Not significant
	Materials specification and construction details	An increase in extreme temperatures has the potential to put the proposed Development at risk from a greater degree of surface failure or deterioration. For example, for concrete pavements, thermal gradients have the potential to create uneven internal stresses which can then give rise to curling or warping, sometimes called hogging, of the slabs. These can be compounded by loading from passing traffic.	Very High	Negligible	Not significant
		Large changes in temperature have the potential to generate thermal contraction and expansion of the slabs which, if not taken into consideration at the design stage, can generate unacceptably large longitudinal internal stresses and excessive movements at joints.	Very High	Negligible	Not significant
	Construction – laying surface dressing, micro-surfacing and other temperature susceptible materials	During extended periods of hot, sunny conditions, asphalt can remain workable for a considerable time, making it difficult to maintain profile during compaction.	Very High	Negligible	Not significant

Receptor	Aspect	Potential effect to proposed Development (Impact)	Likelihood Category	Consequence of Impact	Significance
Buildings	Thermal actions (loads)	An increase in extreme temperatures may require the use of more expensive components like joints, bearings, paint systems etc. Also, greater care would be required to set the gaps, to ensure that movement does not cause a problem. This may require rescheduling works to night hours or at specific times of the year.	Very High	Negligible	Not significant
	Wind actions (loads)	An increase in wind speed has the potential to increase risk of disruption to construction work (unable to operate in high winds).	Very High	Negligible	Not significant
	Increased thermal range giving rise to increased earth pressures for buildings	An increase in mean temperatures and extreme temperatures has the potential to lead to the requirement of stronger fill material and therefore increasing the quantities of excavated material becoming waste.	Very High	Negligible	Not significant
	Earth pressures used in design affected by change in ground water level	An increase in winter precipitation and a decrease in summer precipitation has the potential to change the ground water level.	Very High	Negligible	Not significant
	Foundation settlement affected by change in ground water level	Increase in winter precipitation and decrease in summer precipitation has the potential to change the ground water level. This could potentially lead to the requirement of more robust foundations for increased settlement.	Very High	Negligible	Not significant
	Design for increased scour risk for foundations	An increase in extreme precipitation has the potential to lead to flooding.	Very High	Negligible	Not significant
	Design of buildings drainage	An increase in extreme precipitation has the potential to lead to the requirement of additional drainage, larger components and more extensive works.	Very High	Negligible	Not significant
Drainage	Surface water drainage systems, cross-culvert, road-edge drainage, attenuation outfalls and drainage ditches	An increase in winter precipitation and a decrease in summer precipitation has the potential to change the ground water level. This could potentially lead to larger ground movement and heave. In addition, this could mean that additional drainage and stronger materials would be required.	Very High	Negligible	Not significant
Geotechnical conditions	Stability of earthworks	Increased precipitation could increase risk to the earthworks stability resulting in the requirement of fill materials that are less susceptible to moisture such as Pulverised Fuel Ash and aggregate.	Very High	Negligible	Not significant
	Earthworks compaction	An increase in extreme temperature and a decrease in summer precipitation has the potential to lead to reduction in soil moisture. Risks to compaction relate to the need for greater compaction effort being required with potential increased costs, delays etc.	Very High	Negligible	Not significant
Signs, traffic signals, lighting	Stability	An increase in extreme precipitation and wind speed has the potential to create wind loading risks for the signs, traffic signals (temporary and fixed) and lighting.	Very High	Negligible	Not significant
	Road markings design and specification	An increase in winter precipitation and extreme precipitation has the potential to alter the performance of the road markings.	Very High	Negligible	Not significant
Landscape	Planting	An increase in mean temperature and a decrease in summer precipitation has the potential to lead to longer growing season and a reduction in soil moisture.	Very High	Negligible	Not significant
User facilities	Workforce	An increase in projected mean daily rainfall, especially in winter months could result increase safety risk of slips, trips and falls to construction workers.	Very High	Negligible	Not significant
	Construction site	An increase in projected mean daily rainfall, especially in winter months could potentially result in the construction site flooding, excavations flooding during construction phase. Site roads may also become impassable through flooding.	Very High	Negligible	Not significant

Receptor	Aspect	Potential effect to proposed Development (Impact)	Likelihood Category	Consequence of Impact	Significance
	Construction activities	Under extreme temperatures, certain construction activities may be required to be undertaken at night to keep project build to schedule. This will incur higher programme costs (e.g. labour and illumination).	Very High	Negligible	Not significant
	Plant and equipment	Water ingress to critical equipment, including traction power distribution sites, leading to signalling or other electronic equipment failures, requiring switch off or, possibly causing damage.	Very High	Negligible	Not significant

8.5.7 With the mitigation detailed in Section 8.4, the residual effects for construction are expected to be **Not Significant**.

Residual Effects from Operation

Effects on Climate (from GHG emissions)

8.5.8 The Energy Strategy indicates that the proposed Development would result in emissions between approximately 30,406,326 and 36,319,391 tonnes CO_2 per year using gas or electric heating respectively. National Statistics data estimates that CO_2 emissions represent around 81% of UK total GHG emissions. Therefore, the previous emissions are equivalent to 37,538,674 and 44,838,754 CO_2e per year respectively.

8.5.9 When compared to the total estimated carbon from the domestic sector in the south east (14,145,475,671 tonnes CO_2e in 2016) and in Kent (2,347,185,380 tonnes CO_2e in 2016), these only contribute 0.27% and 0.32% respectively to the south east domestic emissions and 1.6% and 1.91% respectively to the Kent County domestic emissions.

8.5.10 In addition, an increase of emissions would be caused primarily by an increase in traffic volume and flows along the local highway network. Maintenance work undertaken as part of the proposed Development would also increase carbon emissions, but to a much lesser extent compared to the projected road transport emissions.

8.5.11 The transport model has indicated that the proposed Development would result in emissions of approximately 231,624 tonnes of CO_2e from the increase in traffic volume due to the proposed Development from 2022 until 2044. This makes up 0.00% of the 3rd budget (2,544 million tonnes of CO_2e) and 0.031% of the 4th and 5th carbon budget (3,675 million tonnes of CO_2e). Therefore, it is concluded that the construction phase of the proposed Development would not have a significant adverse effect on the government's ability in achieving the carbon budgets.

8.5.12 Due to the lack of information at this stage, it has not been possible to compare the carbon emissions stated within the Energy Strategy with the carbon budgets. However, in the absence of established assessment criteria for the effects on climate, it is considered that the operational phase effects of the proposed Development will be **Not Significant** on climate, due to the relatively low quantity of emissions in comparison to overall emissions from the south east and Kent as presented in above.

Vulnerability of the proposed Development to climate change

8.5.13 Given the incorporated mitigation outlined above and that the vulnerability of the proposed Development to climate change effects are assessed overall as Not Significant. There are two significant effects identified which cannot be mitigated for. A summary of results id provided in Table 8-29.

Table 8-26 Vulnerability of the proposed Development to climate during the operational phase

Receptor	Aspect	Potential effect to proposed Development (Impact)	Likelihood Category	Consequence of Impact	Significance
Pavements and road surfaces	Roads	Pavement has a typical design life of 40 years and could therefore be affected by changes in climate. An increase in mean daily rainfall rates has the potential to alter the moisture content of soils. This could lead to ground movements, soil settlement as well as expansion and contraction.	Very high	Negligible	Not significant
		An increase in the frequency and intensity of storm events may discourage the use of non-motorised user facilities (e.g cycling paths, etc) to complete journeys. This may lead to more road users than projected.	Very high	Minor adverse	Significant
		For concrete roads, thermal gradients have the potential to create uneven intern stresses which could then give rise to curling or warping, sometimes called hogging, or the slabs. These could be compounded by loading from passing traffic.	Very high	Negligible	Not significant
	Pavement Surface	Large changes in temperature have the potential to generate thermal contraction and expansion of the pavement surfaces which, if not taken into consideration at the design stage, could generate unacceptably large longitudinal internal stresses and excessive movements at joints.	Very high	Negligible	Not significant
		Large changes in temperature have the potential to generate thermal contraction and expansion leading to cracks in the pavement affecting pedestrians.	Very high	Negligible	Not significant
		An increase in heavy rain could potentially lead to flooding and closures and diversions of footpaths.	Very high	Negligible	Not significant
		The newly laid surfacing layers of a pavement may also maintain temperatures after opening to traffic that are high enough to allow excessive rutting and the rapid embedment of any chippings, with the latter again causing a reduction of texture depth.	Very high	Negligible	Not significant
Buildings	Residential	Increases in temperature have the potential risk of thermal actions (loads) applied to buildings (e.g. leading to joint and bearing failure). Some buildings have the potential to fail to operate within original design parameters. This could induce failures meaning	Very high	Negligible	Not significant

Receptor	Aspect	Potential effect to proposed Development (Impact)	Likelihood Category	Consequence of Impact	Significance
		additional works would then be required to strengthen them.			
		Increases in precipitation rates could lead to premature deterioration rates for joints, bearings, surfaces and external fabric of the house.	Very high	Negligible	Not significant
		An increase in the frequency and intensity of storms have the potential to cause increased loads on building structures and lead to collapse.	Very high	Negligible	Not significant
		An increase in in mean temperatures and increased humidity levels has the potential to lead an increased need for maintenances for the building fabric and discomfort for the resident (overheating and reduced ventilation).	Very high	Negligible	Not significant
		Increased precipitation has the potential to lead to isolated flooding (flood damage, damp, mould).	Very high	Negligible	Not significant
		Increased drought could lead to the subsidence in the buildings.	Very high	Negligible	Not significant
	Noise	Changes in humidity and increase in temperature would lead to a greater number of people sleeping with windows open. This may alter propagation characteristics of sound through air increasing disturbance of noise sensitive receptors.	Very high	Negligible	Not significant
	Foundations	Changes in groundwater levels as a result of an increases in precipitation rates could lead to ground movements and soil settlement.	Very high	Negligible	Not significant
Drainage	Drainage	An increase in the frequency and intensity of rainfall and storm events could lead to an increase in particulates (i.e. leaves) entering the drainage system. This may lead to localised flooding events, increase maintenance and increased land take for additional drainage assets.	Very high	Negligible	Not significant
Geotechnics	Earthworks	An increase in frequency and intensity of heavy rainfall and flooding events could cause collapse of embankments, which could affect the foundation of houses.	Very high	Negligible	Not significant
		Changes in mean temperatures and rainfall rates may impact soils rand species that could be grown.	Very high	Negligible	Not significant
Signage, signals, lighting columns and overhead power lines	Signs and signals	An increase in the frequency and intensity of storm events could reduce the design life of a number of key assets such as signage, lighting, road surface and road markings. This could increase maintenance costs over the lifespan of the road.	Very high	Negligible	Not significant
	Signs	An increase in wind speed and in frequency of extreme wind events has the potential to affect the stability of the signs, which have a design life of 25 years.	Very high	Negligible	Not significant
	Lighting columns and overhead power lines	An increase in wind speed and in frequency of extreme wind events has the potential to affect the stability of the lamp posts and overhead power lines.	Very high	Negligible	Not significant
	Road markings	Increase in precipitation and temperature have the potential to weather road markings and change performance.	Very high	Negligible	Not significant
Landscape	Landscape Design	A decrease in mean rain fall may lead to drought tolerant trees could becoming more prevalent. This may cause a change in the landscape character of the area.	Very high	Negligible	Not significant
		An increase in mean temperature and precipitation may alter the growing characteristics such as soil properties and length of growing season. This may impact the species identified as part of the landscape strategy and thus alter the character of the landscape.	Very high	Negligible	Not significant
		An increase in precipitation and flooding has the potential to destroy plants in higher flood risk areas.	Very high	Negligible	Not significant
		An increase in frequency and intensity of heavy rainfall and flooding events could cause temporary flooding of public open spaces and public realm areas.	Very high	Negligible	Not significant
		Increased wind speed could lead to the loss of valued landscape features and green space, also potentially opening up new views of the proposed Development that were previously shielded.	Very high	Negligible	Not significant
Water	Continuity of water supplies	Increased risk of household water supply interruptions during droughts and from burst pipes in cold weather.	Very high	Moderate adverse	Significant

Receptor	Aspect	Potential effect to proposed Development (Impact)	Likelihood Category	Consequence of Impact	Significance
Air Quality	Pollutants	Hotter and drier / drought conditions could increase concentrations and mobility of certain air pollutants such as ozone and PM2.5/10.	Very high	Negligible	Not significant
Ecology	Habitat and wildlife	An increase in mean temperatures may exceed thresholds for certain habitats and species identified for relocation and enhancement as part of the environmental masterplan.	Very high	Negligible	Not significant
Finance	Insurance	As the risk of flooding increases, the flooding of particular sites may become a repeated occurrence rather than an exceptional event. This would lead to a higher premium for all land holders and homeowners nationally and locally as well as potentially lead to the loss of insurance for at risk buildings.	Very high	Negligible	Not significant

Cumulative Effects

8.5.14 The cumulative effects of the proposed Development have been assessed with reference to the those listed in Appendix 2.4 of the ES. The assessment considers those schemes that have been consented within the area that may have a cumulative effect with the proposed Development and that have the potential to have a cumulative impact on climate change. However, it has not been possible to provide a detailed assessment accounting for all committed developments. Nevertheless, the impact on climate change from the proposed Development in combination with that of committed developments in the area are considered to be minimal. Each of the committed schemes will have produced Flood Risk Assessments, Transport Assessments and Energy Strategies to help them adapt to and mitigate climate change. With this in mind, it is considered that the cumulative effect on climate change receptors would be **Not Significant**.

8.6 Assessment Summary

8.6.1 An assessment has been undertaken of the effects of the proposed Development on the effects on climate and the vulnerability of the proposed Development to climate change during the construction and operational phases. The assessment has concluded that the development of the Site could be undertaken without detrimental significant effects to climate change receptors. This would be achieved by implementation of best construction practice and appropriate design.

8.6.2 The carbon assessment has indicated that the proposed Development would make up 0.0021% of the 3rd carbon budget and 0.021% of the 4th and 5th carbon budgets. In addition, the carbon output from the materials is estimated to be 0.19% of the annual UK emissions from construction materials.

8.6.3 The Energy Strategy indicates that the proposed Development would contribute between 0.27% and 0.32% to the south east domestic emissions and between 1.6% and 1.91% to the Kent domestic emissions. In addition, the transport model has indicated that the proposed Development carbon emissions would make up 0.00% of the 3rd budget and 0.00034% of the 4th and 5th carbon budgets.

8.6.4 It is concluded that the construction and operational phases of the proposed Development would not have a significant adverse effect on the government's ability in achieving the carbon budgets and therefore are anticipated to be **Not Significant**.

8.6.5 Table 8-27 provides assessment summary with respect the vulnerability of the proposed Development to climate change and how they have been addressed.

Table 8-27 Assessment Summary

Receptor	Potential Significant Effect	Mitigation Measure	Residual Effect Significance
Construction			
Pavements and road surfaces	Changes in ground water level and soil moisture. Surface failure or deterioration. Making it difficult to maintain profile during compaction.	Where practicable, any surpluses or permanently displaced soils would be used to reinstate soils with profiles thicker than the original. In addition, the following aspects would further reduce the proposed Development's vulnerability to climate change: • Foundation strength would be increased to reduce the risk of failure caused by increased winter precipitation, by evaluating the moisture regime. Foundations would incorporate hydraulically bound materials or the use of reinforcement such as geotextiles; • The Contractor would ensure appropriate measures are implemented and, as appropriate, additional measures to ensure the resilience of the proposed mitigation of impacts during extreme weather events. For example, avoidance of storing construction materials in floodplains and dampening of soils and stockpiles; and • The concrete would be laid in accordance with best practice and relevant standards.	Not Significant
Buildings	More expensive components may be required due to thermal actions. Need to reschedule of works to specific times of the year.		
Drainage	Larger ground movement and heave requiring additional drainage.		
Geotechnical conditions	Risk to the earthwork's stability and compaction.		
Signs, traffic signals and lighting	Wind loading risks for the signs, traffic signals (temporary and fixed) and lighting.		
Landscape	Longer growing season and a reduction in soil moisture		
User facilities	Safety risk of slips, trips and falls to construction workers. Flooding. Higher programme costs. Damage to plant and equipment due to water ingress.		
Operation			
Pavements and road surfaces	Alteration of moisture content of soils, thermal contraction and expansion of the pavement surfaces and flooding.	Mitigation measures would have been embedded at design and construction stages and therefore, no additional mitigation measures are proposed	Not Significant
Buildings	Thermal actions applied to buildings deterioration of joints, bearings, surfaces and external fabric of the houses, collapse, flooding and discomfort to residents.		
Drainage	Flooding		
Geotechnics	Collapse of embankments and changes in species that could be grown in soils.		
Signage, signals, lighting columns and overhead power lines	Reduced design life of assets increasing maintenance costs. Stability of signs, lamp post and overhead power lines.		
Landscape	Change in the landscape character of the area. Alterations in length of growing		

Receptor	Potential Significant Effect	Mitigation Measure	Residual Effect Significance
	season. Flooding and loss of valued landscape features and green space.		
Water	Increased risk of household water supply interruptions during droughts and from burst pipes in cold weather.		
Air Quality	Increase mobility and concentrations of pollutants.		
Ecology	Changes in thresholds for relocation of species.		
Finance	Premiums to land holders and homeowners due to risk of flooding.		

8.7 References

Reference	Title
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Ref 8.3	HM Government. (2011). The Carbon Plan: Delivering our Low Carbon Future. [Online] Available at: https://www.ukgbc.org/sites/default/files/3702-the-carbon-plan-delivering-our-low-carbon-future.pdf. (Accessed 7 Dec. 2018).
Ref 8.4	Kent County Council. (2016). Kent Environment Strategy: A Strategy for Environment, Health & Economy. [Online] Available at: https://www.kent.gov.uk/__data/assets/pdf_file/0020/10676/KES_Final.pdf. (Accessed 7 Dec. 2018).
Ref 8.5	Shepway District Council. (2013). Shepway District Council Core Strategy Local Plan. [Online] Available at: https://www.folkestone-hythe.gov.uk/media/1811/Core-Strategy-Local-Plan-2013/pdf/Core_Strategy_Local_Plan_2013_v2.pdf. (Accessed 7 Dec. 2018).
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Ref 8.7	Folkestone & Hythe District Council Core Strategy Review (Submission Draft, 2019). [Online] Available at: https://www.folkestone-hythe.gov.uk/media/5566/Core-Strategy-Review-Submission-Document/pdf/Core_Strategy_Review_Submission_Draft.pdf. (Accessed 20 Feb. 2019).
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Ref 8.10	HM Government. (2017). The UK Climate Change Risk Assessment. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/584281/uk-climate-change-risk-assess-2017.pdf. (Accessed 7 Dec. 2018).
Ref 8.11	HM Government. (2013). The National Adaptation Programme: Making the Country Resilient to a Changing Climate. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/727259/pb13942-nap-20130701.pdf. (Accessed 7 Dec. 2018).
Ref 8.12	The Institute of Environmental Management and Assessment. (2017). Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance. [online] Available at: https://www.iema.net/assets/newbuild/documents/IEMA%20GHG%20in%20EIA%20Guidance%20Document%20V4.pdf. (Accessed 7 Dec. 2018).
Ref 8.13	British Standards. (2011). BS EN 15978:2011 Sustainability of Construction Works, Assessment of Environmental Performance of Buildings. [Online] Available at: https://shop.bsigroup.com/ProductDetail/?pid=000000000030256638. Accessed 7 Dec. 2018).
Ref 8.14	British Standards. (2016). PAS 2080:2016 Carbon Management in Infrastructure. [Online] Available at: https://shop.bsigroup.com/ProductDetail?pid=000000000030323493. (Accessed 7 Dec. 2018).
Ref 8.15	Kent County Council. (2018) Kent State of Environment Report. [Online] Available at: https://www.kent.gov.uk/__data/assets/pdf_file/0020/63812/Kent-State-of-the-Environment-Report-Evidence-base-supporting-the-strategy.pdf. (Accessed 7 Dec. 2018).
Ref 8.16	Kent County Council. Kent Preparing for Climate Change: Review of activity – 2012. [Online] Available at: https://shareweb.kent.gov.uk/Documents/environment-and-planning/environment-and-climate-change/kent-preparing-climate-change.pdf. (Accessed 7 Dec. 2018).
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Ref 8.19	Met Office. (2018). UK Climate Projections. [Online] Available from: https://www.metoffice.gov.uk/research/collaboration/ukcp. (Accessed 7 Jan. 2018).
Ref 8.20	HM Government. (2018). UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2016. [Online] Available at: https://www.gov.uk/government/collections/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics#2018. (Accessed 7 Dec. 2018).
Ref 8.21	Kent County Council. A Local Climate Impacts Profile for Kent. https://www.kent.gov.uk/__data/assets/pdf_file/0007/24595/LCLIP-summary-report-1996-2010.pdf. (Accessed 7 Dec. 2018).

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Ref 8.24	Environment Agency. (2017). Guidance on allowances for rainfall and flood probability due to climate change. [Online] Available from: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances. (Accessed 7 Dec. 2018).

9 Cultural Heritage

9.1 Introduction

9.1.1 This chapter identifies the likely impact of the construction and operation of the Proposed Development on cultural heritage. For the purposes of this assessment cultural heritage encompasses archaeology, built heritage and historic landscapes.

9.1.2 This chapter presents the regulatory and policy framework for the assessment and describes the methodologies used to assess the potential significant effects of the Development. Details of scoping and post-scoping consultations undertaken are also provided. Baseline conditions are then described, and the potential effects of the Development are discussed in terms of the potential for direct physical disturbance and changes within the settings of the receptors. This is accompanied by details of the proposed mitigation measures and an assessment of residual and cumulative effects with mitigation. The assessment incorporates relevant design and other mitigation measures that would be employed during construction of the Development.

9.1.3 This chapter is informed by baseline data gathered during the production of a Desk-Based Assessment (Appendix 9 - 2) and several in-depth appraisal reports (Appendices 9.3 - 9.9), all prepared by Arcadis. The baseline is also informed by five geophysical surveys (Appendices 9.10 – 9.15) undertaken by Headland Archaeology, SUMO Services and Magnitude Surveys; a geoarchaeological DBA (Appendix 9.16) written by Oxford Archaeology and Matt Pope; a watching brief on Ground Investigations (Appendix 9.17) carried out by Wessex Archaeology, and a trial trenching evaluation (Appendix 9.18) carried out by Oxford Archaeology.

9.1.4 This chapter should be read in conjunction with Figures in ES Appendix 9.1.

9.1.5 Impacts on cultural heritage are interrelated with visual impacts on the historic landscape character and therefore, where appropriate, reference has been made to the Landscape and Visual Impact chapter of this ES (chapter 12) and the work undertaken which supports that chapter. In addition, changes in noise and traffic levels during construction and operation have the potential to impact on the significance of heritage receptors through changes to their setting. Where relevant, reference has been made to the Noise and Vibration chapter (chapter 13) and the Transport chapter (chapter 16) and the work undertaken to support those chapters.

9.1.6 A heritage strategy for the Site is being prepared and will be submitted in the determination period. The scope for the strategy has been agreed with the consultees and will include the strategy for the next phase of evaluation work as well as more detail of mitigation measures. This will be reviewed during the life cycle of the development. The scope for the Heritage Strategy is included in Section 9.6 – The Assessment Summary.

Relevant Aspects of the Proposed Development

9.1.7 A description of the Proposed Development is given in Chapter 4. Specific aspects of the proposed Development that relate to cultural heritage are threefold. Those aspects that involve ground disturbance will necessarily involve removal or disturbance of any surviving archaeological remains. Those aspects that involve demolition of buildings or structures may include buildings or structures of historic interest. There will also be changes to the setting and views of archaeological remains, historic landscapes and historic buildings and changes to how these assets are experienced.

9.2 Assessment Methodology

Legislation, Policy and Guidance

9.2.1 This assessment has been undertaken in accordance with current legislation, along with national, regional and local plans and policies (current and emerging) relating to the historic environment in the context of the proposed Development.

Legislation

9.2.2 There are a number relevant statutes including the Town and Country Planning Act 1990 (Reference 9.1), the Planning (Listed Buildings and Conservation Areas) Act 1990 (Reference 9.2) and the Ancient Monuments and Archaeological Areas Act 1979 (Reference 9.3).

Planning (Listed Buildings and Conservation Areas) Act 1990

9.2.3 The Planning (Listed Buildings and Conservation Areas) Act 1990 contains certain statutory duties which a decision make must have regard to.

9.2.4 Section 66 (1) of the Act states that “In considering whether to grant planning permission for development which affects a Listed Building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses”.

9.2.5 Section 72 (1) of the Act states “with respect to any buildings or other land in a conservation area, of any functions under or by virtue of] any of the provisions mentioned in subsection (2), special attention shall be paid to the desirability of preserving or enhancing the character or appearance of that area”.

Ancient Monuments and Archaeological Areas Act 1979

9.2.6 The Ancient Monuments and Archaeological Areas Act 1979 gives statutory protection to any structure, building or work which is considered to be of particular historic or archaeological interest and regulates any activities which may affect such areas. Under the Act any work that is carried out on a Scheduled Ancient Monument must first obtain Scheduled Monument consent.

National and Local Policy

9.2.7 National policy relating to the archaeological resource is outlined in the National Planning Policy Framework (NPPF 2012) (Reference 9.4), the updated version of which was published on July 24th 2018 (Reference 9.16). The assessment has considered the National Planning Policy Framework (2018).

- The assessment also considers those relevant policies of:
- The FHDC Local Plan Review 2006 (Ref 9.6);
- The FHDC Places and Policies Local Plan (submission draft, February 2018, Reference 9.8). This is awaiting adoption and will replace the Local Plan and the Core Strategy;
- The FHDC Core Strategy Review 2019 (Submission Draft Regulation 19) (Reference 9.9): This is awaiting adoption and will replace the Core Strategy;
- The FHDC Core Strategy Local Plan 2013 (Reference 9.23). Currently the primary adopted planning policy for the district;
- The Folkestone & Hythe District Draft Heritage Strategy 2018 (Reference 9.18).

9.2.8 These have been summarised within Table 9-1 as well as NPPF relevant policy paragraphs.

Table 9-1 Summary of relevant policies and the scheme response

Document	Policy	Summary of Requirements	Scheme Response
National Planning Policy Framework, as amended (2018) (Ref 9.16)	Section 16	Section 16 of the NPPF 2018 contains the government’s policies relating to the historic environment	This is considered in detail as follows in the rows of this table below
	Paragraph 185	Plans should set out a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. This strategy should take into account: the desirability of sustaining and enhancing the significance of heritage assets, and putting them to viable uses consistent with their conservation the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring	The proposals have been designed to meet the strategies set out in the FHDC Local Plan and Core Strategy.

Document	Policy	Summary of Requirements	Scheme Response
		the desirability of new development making a positive contribution to local character and distinctiveness; and opportunities to draw on the contribution made by the historic environment to the character of a place."	
	Paragraph 189	It states that assessment should describe the significance of any heritage assets affected, including any contribution made by their setting, consult the relevant historic environment record, assess heritage asset and submit an appropriate desk-based assessment and where necessary, a field evaluation.	Assessments of significance made in Section 9.3 below and also in more detail in the DBA (Appendix 9.2) and other appraisal reports (Appendices 9.3-9.9) and field evaluation reports (Appendices 9.10-9.18).
	Paragraph 193	It states that "when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance".	The significance of all designated heritage assets has been considered and will be conserved as far as possible. There will be no physical alteration or destruction to any designated heritage assets. The potential for an adverse impact upon significance due to alteration of settings of designated heritage assets is assessed in Sections 9.4 and 9.5.
	Paragraph 194	It states that "any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification." The footnote to this paragraph states that "Non-designated heritage assets of archaeological interest, which are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets"	Certain non-designated assets (some of the prehistoric barrows) have been assessed to be of equivalent value to scheduled monuments (Section 9.3 and Appendix 9.7) and have been treated as such in terms of their physical preservation within the development proposals. The potential impact of the proposed development upon their settings has also been considered.
Folkestone & Hythe District Council Local Plan Review (2006) (Reference 9.6)	Policy BE4	The District Planning Authority will require the height, scale, form and materials of new development, including alterations or extensions to existing buildings, to respect the character of Conservation areas, seek to retain the historic patterns, plot boundaries, building lines, open spaces, footways, footpaths and kerblines which are essential to the character or appearance of Conservation areas and protect trees, verges and hedgerows which enhance both the setting and character of Conservation Areas	Low density housing bordered by green infrastructure along Aldington Road and next to Lympne will not result in any harm to the significance of the Lympne Conservation Area. Its setting an character will thus be preserved.
	Policy BE5	"In order to preserve listed buildings and their settings and any features of special architectural or historic interest which they possess, the District Planning Authority will: refuse Listed Building Consent for demolition, extension, alteration or partial demolition, including internal or external works, if the proposals are considered to be detrimental to the character of the building; refuse applications for development which would adversely affect the setting or character of a listed building	No listed buildings are proposed to be demolished or altered. The potential impact of development within the setting of listed buildings upon the significance of those buildings has been carefully considered and appropriate measures taken to mitigate impacts (Sections 9.4 and 9.5).
	Policy BE6	"In accordance with Central Government advice … dealing with proposals for development which would affect nationally important archaeological remains (whether scheduled as Ancient Monuments or not) and their settings, the District Council will presume in favour of their physical preservation in situ. Where remains are not considered to be of national importance or in situ preservation is not considered to be justified, a programme of excavation, recording and publishing of information gathered may be an alternative. This process of excavation and recording will be achieved either by obligations entered into under Section 106 of the Town and Country Planning Act 1990, or through the use of conditions attached to planning permission in respect of the development proposed.	The proposals would physically preserve all nationally important archaeological remains. The potential impact of the proposed development upon the setting of these assets has also been carefully considered. Remains of high regional importance would also be preserved in situ within the proposals. Impacts upon remains of lesser importance which cannot be preserved in situ will be mitigated through archaeological excavation and recording (see Section 9.4).
	Policy LR5	"The District Planning Authority will permit proposals for the intensification of uses at Folkestone Racecourse involving the development of additional leisure, recreational, tourism and exhibition facilities subject to proposals meeting the following criteria: Proposals protect the nationally important historic buildings, archaeological remains and setting of the Westenhanger Castle complex."	See Section 9.4 and 9.5 for a full assessment of how the proposals will protect the significance of Westenhanger Castle and its setting and will enhance aspects of its landscape.
	Policy LR3	"Applications for the development of formal sport and recreational facilities in the countryside will be	The potential impact of proposed sports and recreational areas of the development are

Document	Policy	Summary of Requirements	Scheme Response
		granted where the development meets the following criteria: • It is compatible with the character of the local landscape, the Area of Outstanding Natural Beauty, sites of historic or archaeological importance, and maintains areas and features of nature conservation significance and provides new opportunities for wildlife where possible …"	assessed is Section 9.4 and mitigation measures proposed in 9.5.
	Policy SD1	"All development proposals should … respect the following environmental criteria: • Preserve and enhance built and cultural heritage including Listed Buildings and their settings, conservation areas, sites and settings of nationally and locally important ancient monuments and archaeological sites, historic parks and gardens and, historic landscapes; "Development proposals that would significantly conflict with one or more of environmental criteria above will only be permitted where it can be shown that: there is an overriding economic or social need; negative impacts are minimised as far as possible and measures will be taken to compensate for the adverse environmental effect. Compensatory measures should, as a minimum, ensure that no net environmental loss occurs."	As stated above, the development proposal will meet these environmental criteria. In particular, the masterplan includes substantial consideration of the significance of Westenhanger Castle including the provision of a new country park and open space to the south of the castle, re-instatement of key aspects of its setting including the southern access track and the formal gardens, along with removal of current features that negatively impact the castle's setting.
Folkestone & Hythe District Council Places and Policies Local Plan (submission draft, February 2018) (Reference 9.8)	Policy HE1	"The Council will grant permission for proposals which promote an appropriate and viable use of heritage assets, consistent with their conservation and their significance, particularly where these bring at risk or under-used heritage asset back into use or improve public accessibility to the asset…Important archaeological sites, together with their settings, will be protected and, where possible, enhanced. Development which would adversely affect them will not be permitted."	See above for important archaeological sites and their settings. Most of the significant built heritage assets will be able to continue their current uses e.g. farms and private residences. Certain on-site built heritage assets are currently not accessible and will be more accessible under the development proposals (e.g. several military structures). A Conservation Management Plan for Westenhanger Castle (Appendix 9.9) outlining viable uses for this nationally important heritage asset consistent with its conservation and

Document	Policy	Summary of Requirements	Scheme Response
			significance has been prepared.
	Policy HE2	"Proposals for new development must include an appropriate description of the significance of any heritage assets that may be affected, including the contribution of their setting. The impact of the development proposals on the significance of the heritage assets should be sufficiently assessed using appropriate expertise where necessary. Desk-based assessment, archaeological field evaluation and/or historic building assessment may be required as appropriate. Where the case for development affecting a heritage asset of archaeological interest is accepted, the archaeological remains should be preserved in situ as the preferred approach. Where this is not possible or justified, appropriate provision for preservation by record may be an acceptable alternative. Any archaeological investigation and recording should be undertaken in accordance with a specification and programme of work (including details of a suitable archaeological body to carry out the work) to be submitted to and approved by the Council in advance of development commencing."	See above.
Folkestone & Hythe District Council Core Strategy Review (2019) (Reference 9.9)	Policy SS7 (New garden settlement and place shaping)	a. A heritage strategy shall be agreed that identifies how the development will conserve and enhance local heritage assets and their setting, including the Grade I listed Scheduled Monument of Westenhanger Castle (and its associated barns, stables and outbuildings), the Grade II listed Otterpool Manor Farm and Upper Otterpool and any other designated or non-designated heritage assets identified. The application shall be supported by a detailed heritage strategy, setting out how the long term, viable use of heritage assets will be established and where necessary providing mechanisms for their integration into the development. The Heritage Strategy shall include a Conservation Management Plan (CMP) setting out the management and re-use of the site in relation to Westenhanger Castle, Manor and Barns. The implementation of the heritage strategy and undertaking of works on site with potential to affect heritage assets will need careful management; consideration should be given to appointing a Historic Environment Clerk of Works to fulfil this role; b. The heritage strategy should include an archaeology strategy, with an initial archaeological assessment guiding archaeological works and to inform discussions about preservation in situ or investigation. The archaeology strategy should be kept under active review;	See Chapter 12 - Landscape and Visual Impact Assessment. Westenhanger Castle and its setting is proposed to become a focal point for the new settlement – see above. A new country park has been designed that will enhance the historic landscape setting of Westenhanger Castle. The Heritage Strategy for Otterpool Park is evolving from various Appraisal Reports (Appendices 9.3,9.4, 9.5. 9.6 and 9.9) as well as the Design and Access Statement. A draft Heritage Strategy will be submitted immediately post-submission and a full version will be submitted at reserved matters. It will be reviewed throughout the life-cycle of the development in the light of ongoing archaeological fieldwork. The Heritage

Document	Policy	Summary of Requirements	Scheme Response
		c. The provision of public art should be an integral part of the heritage strategy d. Westenhanger Castle and its setting shall become a focal point for the new settlement that informs its character. The development shall provide an enhanced setting for the Castle, including generous public open space through the delivery of a new park, and shall protect key views. Proposals shall explore the opportunity to recreate the historic southern approach to the Castle and provide mechanisms for its integration with the development; e. Other archaeological and heritage assets will be evaluated, conserved and, where appropriate, enhanced. Proposals must include an appropriate description of the significance of any heritage assets that may be affected, including the contribution of their setting;: f. Proposals should explore the potential for: i. Renovating the existing buildings and barns to conserve the heritage assets at Westenhanger Castle and improve the setting of the building; ii. Providing space for appropriate sustainable uses for the asset and its setting; and iii. Enhancing and positively contributing to the conservation of all relevant heritage assets both within and outside the allocation boundary, such as the setting of Lympne Castle and the Lympne Conservation Area where appropriate.	Strategy will include, where possible, all the aspects flagged up in this emerging policy including the vision for heritage-inspired public art and also re-use of historic buildings (see scope in Section 9.6) Initial archaeological assessments appropriate to this stage of the project have been undertaken as well as an extensive programme of archaeological fieldwork.
Folkestone & Hythe District Council Core Strategy Local Plan (2013) (Reference 9.23)	Policy SS3 e	Proposals should be designed to contribute to local place-shaping and sustainable development by: (i) respecting and enhancing key historic features of conservation interest	See above.
Folkestone & Hythe District Draft Heritage Strategy, 2018 (Reference 9.18)		Appendix 2: Case Study 3 Folkestone Racecourse – the conclusion states that: Special attention will need to be paid to the relationship between Westenhanger Castle and any new development at the racecourse. Any new development should be informed by a detailed understanding of the significance of Westenhanger Castle and following thorough assessment of the contribution that setting makes to the castle's significance. Focus should be paid in any development scheme to ensuring the long-term sustainable future of Westenhanger Castle and opportunities for enhancement should be sought and delivered… Folkestone Racecourse was created out of a major part of the park surrounding Westenhanger Castle. If major new development is to occur, such as that currently being promoted through the Otterpool Garden Town proposals, then this nationally important heritage asset has significant potential for use	See above. Westenhanger Castle and its setting has been a major influence on the design of the development and has been underpinned by data gathered and assessed in the Statement of Significance (Appendix 9.6). See Consultation and Scoping and tables 9-2 and 9-3. Also, Sections 9.3, 9.4 and 9.5. Also see the Design and Access Statement.

Document	Policy	Summary of Requirements	Scheme Response
		under a place-making strategy, such that new residents might derive an identity from their homes being part of a location that has played such a significant role in the story of the nation. Key development principles are stated as: • Use the historic character of the place to inform future development and create a sense of place • Interpret, promote and celebrate the site's historic environment and encourage people to explore and appreciate the site's heritage assets and historic stories • Work collaboratively, so that development supports the long-term future of Westenhanger Castle • Seek opportunities to sustain and enhance the significance of Westenhanger Castle; minimise harm to the setting of the castle and maximise positive and beneficial enhancements • Develop a place-making strategy for the site.	A Conservation Management Plan for the Castle has been prepared (Appendix 9.9) to explore ways to ensure the long-term future of the Castle.

Consultation and Scoping

Consultation

9.2.9 In accordance with national and local policy, there has been a substantial level of consultation with the heritage consultees throughout the development of the masterplan for Otterpool Park and the undertaking of the assessment since 2016. Table 9-2 provides a summary of consultee issues raised with respect to cultural heritage and how they have been addressed.

Table 9-2 Summary of Consultation

Consultee	Date of Consultation	Summary of Consultee Issue	How Addressed?
Historic England (HE) - Peter Kendall, Principal Inspector of Ancient Monuments for Kent, East and West Sussex and Surrey	**Consultation November 2016 to July 2017** 4th November 2016- telephone 16th November 2016- 1st meeting with all consultees 26th November 2016 – telephone/email 24th of January 2017- telephone/email Site-visit and meeting at Westenhanger Castle 24 February 2017 with Peter Kendall. 17th July 2017- second meeting with all consultees	Welcomed early consideration of potential for heritage to inform proposed Development.	n/a.
		Highlighted the Palaeolithic potential of the site and the fact that too little investigation on the potential of the Hythe Beds and Head deposits has been carried out to date	Geoarchaeological DBA carried out in 2018 incorporating the Site's Palaeolithic potential. Geophysical results used to detect fissures in the Hythe Beds (ES Appendix 9.16).
		Defining a role for Westenhanger Castle and its context. Consideration of the setting and historic views of Westenhanger Castle. Restoring the historic southerly aspect of Westenhanger Castle and sensitively integrating the Castle within the Development (although it lies outside the application boundary); Conservation Management Plan (CMP) and use-strategy required for Westenhanger Castle to inform design; Statement of Significance for Westenhanger Castle required;	Conservation Management Plan (Appendix 9.9) and Statement of Significance for Westenhanger Castle (ES Appendix 9.6) carried out 2017.
		Consideration of the setting and historic views of several designated and non-designated assets in and around the site and how these relationships might inform master-planning and design;	The setting of the Castle has been considered within the masterplan since 2017. Historic Buildings and Structures Appraisal carried out 2017 (Appendix 9.5) and Statements of Significance for the barrows (Appendix 9.7) and Roman villa (Appendix 9.8) in 2018.
		Historic Landscape Characterisation and Farmstead Analysis of Development requested to assist understanding of baseline;	Carried out 2017 (Appendix 9.3).
		Archaeological Appraisal and Fieldwork Strategy to be written to inform archaeological evaluation fieldwork and mitigation;	Carried out 2017 (Appendix 9.4).
		Historic Buildings Appraisal/Screening for designation potential required;	Carried out 2017 (Appendix 9.5).
		Geophysical survey of potential Tudor Garden to the south of Westenhanger Castle required;	Carried out 2017 (Appendix 9.11).
		Pre-determination evaluation of the main scheme by way of geophysical survey and trial trenching requested.	Carried out October 2017 to September 2018 (Appendices 9.10 and 9.12 to 9.15 and 9.18).
		Outreach programme to integrate heritage context into the proposed development	Partially carried out via Otterpool website and press releases and via a presentation on the archaeological finds delivered to Ashford Archaeological and Historical Society on 15th October 2018. The project has committed to ongoing engagement with local stakeholders. Heritage has also been incorporated into the general Otterpool Park public engagement events thus far. A further heritage presentation will be given locally in the determination period. There will also be a heritage presence at the next public engagement event.

Consultee	Date of Consultation	Summary of Consultee Issue	How Addressed?
HE - Peter Kendall, KCC – Lis Dyson FHDC/KCC- Ben Found	**Consultation November to December 2017** 21st November- Skype meeting 1st December 2017 – 3rd meeting with all consultees 7th December 2017 meeting with HE	Statement of Significance for Westenhanger Castle reviewed, and extra information, mainly maps and photos, provided (by Peter Kendall)	Comments and extra information incorporated into update of Statement of Significance for the Castle in October to November 2018 (Appendix 9.6).
		Further discussions on how to incorporate Westenhanger Castle, its related landscape and its deer park into the development proposals	The southern causeway has been incorporated into the masterplan and will re-introduce an important aspect of the Castle's setting.
		Geoarchaeological Desk-Based Assessment required incorporating a review of the geotechnical site data. Likely need for archaeologically-led boreholes or test pits raised	Geoarchaeological DBA carried out (Appendix 9.16). Archaeologically-led boreholes and testpits not yet carried out, however these will form part of the ongoing Heritage Strategy.
		The need for an archaeological watching brief on ground investigations works raised	A watching brief on ground investigations was carried out in Summer 2018 (Appendix 9.17).
		Feedback given on the Archaeological Appraisal and Fieldwork Strategy and used as a means of discussion on how best to conduct the fieldwork	Archaeological Appraisal and Fieldwork Strategy report amended October/November 2018 (Appendix 9.4). Consultee comments informed the Written Scheme of Investigation (WSI) for trial trenching (Appendix 9.18) and the DBA Addendum (Appendix 9.2).
HE - Peter Kendall HE – Jane Corcoran – Regional Science Advisor KCC – Lis Dyson FHDC/KCC- Ben Found	**Consultation 2018** 19th January 2018 - walkover of Westenhanger Castle with Peter Kendall and Alice Brockway of HE 24th January 2018- 4th meeting with all consultees 4th April 2018- Skype meeting April 2018 – various phone calls and site meetings regarding the discovery of the Roman Villa	Further in-depth discussion with HE and design team over Westenhanger Castle and its landscape and how to enhance its setting	In depth proposals and viewpoints drawn up and presented to HE. See Sections 9.3-9.5 and Design and Access Statement.
		Geophysical survey of potential Tudor Garden at Westenhanger Castle- report reviewed and approved	Results of Tudor garden geophysics have been incorporated into Statement of Significance on the Castle (Appendix 9.6) and the DBA Addendum (Appendix 9.2).
		Geophysical survey results of the main scheme reviewed, approved and discussed	Comments on main scheme geophysics results incorporated into methodology of WSI for trial trenching (Appendix 9.18).
		Trial trenching results discussed field by field and used to inform masterplan	See Section 9.3 to 9.5 for trial trenching results.
	17th May 2018 – 5th meeting with all consultees Various on-site discussions have taken place with Lis Dyson and Ben Found during site visits to view the trial trenching, between December 2017 and August 2018 2nd August – walkover of Westenhanger Castle and the Racecourse with HE September 2018 – various consultations by email and phone with Jane Corcoran – Historic England Regional Science Advisor – over the geo-archaeological DBA 20th September 2018 – meeting with KCC and FHDC 19th October 2018 – 6th meeting with all consultees	Statement of Significance on the Bronze Age barrows/ring ditches and their settings required to inform master planning.	Statement of Significance of the Barrows carried out July to December 2018 (Appendix 9.7). A metal detecting survey was organised for summer 2018, however circumstances beyond the control of the project prevented it being carried out.
		Metal detecting survey suggested on area of barrows to check for evidence of Anglo-Saxon re-use	Conducting a metal detecting survey in this location remains a high priority for the project and it is currently programmed for Spring 2019 (see 9.2.56). These will be detailed in the Site Heritage Strategy.
		Discussions on the recently discovered Roman Villa and how to find out its extent for purposes of creating a sufficient amount of open space around it. The need to understand more about its setting and significance and if it will be impacted by biodiversity mitigation proposals next to the water course. Discussion of the possibility of scheduling.	The masterplan was altered (on the 23rd April 2018) to preserve the Roman villa in situ and to provide sufficient open space around it. Meetings were held with consultees on 17th May, 20th September and 19th October 2018. A Statement of Significance on the Villa was carried out July to December 2018 (ES Appendix 9.8).
		Further geophysical survey of the villa site requested including of the field to the north.	Archaeological investigations to determine the extent and significance of the Roman villa were undertaken including further geophysics of Villa field, carried out September 2018 (Appendix 9.15). These investigations have broadly defined the extent of the villa.
		Discussion around Historic Farmsteads. Temporary use for creative business occupations suggested and community uses of assets should be considered as part of short term or long-term strategies e.g. community farms.	These suggestions around Historic Farmsteads were considered as part of design and were not carried forward. They have not been incorporated into Farmsteads Analysis (Appendix 9.3).

Consultee	Date of Consultation	Summary of Consultee Issue	How Addressed?
		Requested assurance that if there are gaps in trial trenching work, e.g. on the airfield, the masterplan should have greater flexibility to accommodate future finds.	As part of the Heritage Strategy, further archaeological investigations are proposed in areas where investigation has not been possible to date for reasons beyond the control of the project (see section 9.2.56). These investigations will seek to further understand the heritage assets in these areas and inform detailed archaeological mitigation.
		Request that the reports and plans from the Oxford Archaeology trial trenching be issued to the consultees as soon as possible in order for them to understand the significance of the finds	These have not been issued to the consultees prior to the ES but are all attached as appendices to the ES.
		Legal protections may be needed for certain heritage assets – Arcadis to consider asking Historic England (HE) to consider this early through the option of an accelerated decision through its advisory service	Arcadis have produced a range of in-depth assessments which identify the significance of the heritage resource (See Appendices 9.5, 9.6, 9.7, 9.8). The process of designating, scheduling or listing assets is a matter for others.
		Jane Corcoran advised that the Geoarchaeological DBA (Appendix 9.16) be developed into a Deposit Model with transects across the Site and that this should be done for submission with the planning application. KCC also requested some changes be made to this report	The Geoarchaeological specialist who prepared the report (Appendix 9.16) advised that there was insufficient borehole data from the ite to be able to create a deposit model with transects at the time of writing this ES chapter (see 9.2.58). Since November 2018, a second round of geotechnical/borehole data for the site has been received. The Geoarchaeological DBA will be updated post-submission with this new information. A deposit model will be created for the site which will be updated and added to as more geo-archaeological fieldwork is done. The geo-archaeological strategy for the site will be discussed in more detail in the Heritage Strategy for the project.
		Overall - further information is necessary for consultees to establish whether the proposals are acceptable. Consultees still need to understand what archaeological features are on site, what the significance of those finds are and then re-evaluate masterplan based on these findings.	All reports for archaeological investigations carried out to date are available as appendices to this ES (see appendices 9.10 to 9.18). Limitations of the data due to not being allowed access to evaluate all areas are explained in Section 9.2.56.
HE - Peter Kendall, KCC – Lis Dyson FHDC/KCC- Ben Found	15th February 2019 – 7th meeting with all consultees	Meeting to discuss the scope of the Heritage Strategy for Otterpool Park.	Scope agreed. A draft Heritage Strategy will be submitted soon after the submission of the outline application. A full version will be prepared for Reserved Matters.

Scoping

9.2.10 Table 9-3 provides a summary of consultee responses contained within the Scoping Opinion in relation to cultural heritage, and the corresponding location in the ES where they are addressed.

Table 9-3 Summary of EIA Scoping Opinion

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
Historic England (HE)	[Scoping Opinion para.] (4.2.3) EIA methodology - HE note the need to agree parameters describing the type and maximum size of new elements in order to understand likely effects and the effectiveness of proposed mitigation. These need to be reproduced in visual representations of the likely appearance of the Proposed Development.	Visualisations of the Development are addressed in Landscape and Visual Impact (Chapter 12).
Historic England and KCC	9.3.4 -Requested that emerging information from trial trenching and other evaluations be reflected as amendments to the emerging master plan.	The information from the fieldwork is discussed in the ES section 9.3 and the masterplan has been designed to take into account significant remains identified. Further Investigations will be carried out as part of the ongoing Heritage Strategy.

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
Historic England and KCC	9.3.3. 9.3.7 9.3.8 and 9.4.32 Info and reports from trial trenching, geoarchaeological DBA and other evaluations (including some appraisal reports) have yet to be shared. Information needed to inform assessment of significance and impacts. There is potential to identify areas where nationally important archaeology may be present and further areas where evaluation is required. There are still areas where nationally important archaeology is expected, not yet been evaluated (e.g. the complex of barrows and other features west of Barrow Hill, Sellindge). It is essential that pre-application work is assessed in the ES	All reports from the archaeological investigations are available as Appendices to this ES.
Historic England and KCC	9.3.7, 9.3.8, 9.4.27 and 9.4.28 and 9.4.32 - Some of the discoveries are very likely to be of national significance and for which physical preservation in situ is likely to be the appropriate outcome. NPPF advises that non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments should be considered using the same NPPF policies as for designated heritage assets. Para 9.4.21 and 9.4.31 identifies buildings from the assessment process which potentially meet the criteria for special interest and hence listing.	See consultation Table 9 -2 for response. Eight non-designated historic buildings have been treated in a precautionary way within the masterplan i.e. they have been treated as if they are listed. An assessment of non-designated historic buildings has been carried out using Historic England's listing screening criteria (Appendix 9.5) as well as assessments of the significance of Westenhanger Castle (Appendix 9.6), the prehistoric barrows (Appendix 9.7) and the Roman villa (Appendix 9. 8). Also see sections 9.3 and 9.4.
Historic England and KCC	9.3.8 and 9.4.2 Other heritage assets identified should be added to the list of key heritage assets and included on figures. These include the barrow cemeteries to the east and west of Barrow Hill, Sellindge and the Roman villa site. KCC's current opinion is that these assets are of equivalent significance to scheduled monuments, and should be considered using the same national policies as for designated archaeological assets. Further evaluation, assessment of the barrows as a group and their setting is required to inform the EIA and should be a priority.	Some assets such as the villa and the barrows are now described as key assets in sections 9.4 -9.5 and have been given more emphasis, as a result of the assessment of Significance based on the archaeological investigations. They have been preserved within the masterplan. See above for Statements of Significance that have been prepared for the barrows and the villa.
Historic England and KCC	9.3.7 Romano-British remains identified by geophysical survey east of Lympne Industrial Estate as an example of potential 'showstoppers' that have not been fully evaluated and therefore might pose a risk to the masterplan. KCC stated the need for evaluation as soon as possible. KCC has asked for an additional geophysical survey (resistivity) so that the layout of the villa complex might be better understood. The results of this additional survey would need to be considered in the EIA and the masterplan potentially amended.	This potentially Romano-British asset is described in Section 9.3 and was also discussed at the meeting on the 17th May. Substantial further archaeological investigation has been carried out since the scoping opinion was issued and the findings are presented in this ES. Further geophysical survey was carried out on this field east of Lympne Industrial Estate to rule out the possibility of another villa being present here. Additional geophysical survey work on the villa has been carried out (Appendix 9.15).
Historic England and FHDC	9.4 and 4.2.6 - Concerned that the red line boundary largely excludes Westenhanger Castle and that the project is not able to deliver benefits against the harm caused by changes within the setting of the castle. District Council's and HE's advice is that Westenhanger Castle should be included within the red line.	The castle is not in the applicant's control. The masterplan includes substantial consideration of the significance of the castle and proposes a new country park and open space to the south of the castle, re-instatement of key aspects of its setting including the southern access track and the formal gardens, along with removal of current features that negatively impact the castle's setting.
Historic England and KCC	Para 9.4.3 and 9.4.4 Some of the historical information relating to Westenhanger Castle is incorrect. Para 9.4.10 There is existing communal value for the site and there is a high potential to increase this by making the castle a key component of the new settlement. 9.4.10 Issues should be explored in the EIA and new or existing uses should be developed at the castle in co-ordination with the Otterpool Park development.	Section 9.3 and also the Statement of Significance for the Castle (Appendix 9.6) have been updated.
Historic England	Under para 9.5.1 the construction phase could have an impact for the current operation of Westenhanger Castle as the means by which its owner generates the funds with which to look after the site and to continue its conservation.	This is addressed in Section 9.4 and 9.5. Options for the Castle's Management have been assessed in a Conservation Management Plan (Appendix 9.9). Construction effects on the Castle have been revisited and will be minimised via COCP mitigation measures. This is also addressed in the Socio-economic Effects and Community Chapter (Chapter 14).
Historic England	There are elements of the historic landscape of the castle that are not scheduled. Enhanced understanding for the Site needs to be included in the Statement of Significance for the castle and its landscape. Archaeological remains of historic features associated with the scheduled castle and its landscape may require treatment as per NPPF (2012) para 139.	The Statement of Significance for the Castle (Appendix 9.6) has been updated with all the newly recorded archaeological and landscape features south of the castle and these are also discussed in Section 9.3. Trial trenching has also been carried in

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
		these areas. The ES has assessed all these features and the most significant to the setting of the castle will be preserved.
Historic England	Para 9.6 Archaeological investigations and building or landscape recording are all probable forms of mitigation and for such a large project to be delivered over a long period such work should be set within an overall research agenda for Otterpool Park. An agreed historic environment framework will help to deliver the intention of the NPPF and the need to advance understanding of the significance of heritage assets that are to be lost or harmed. Such a framework would need to be kept under regular review and be responsive to new issues as these emerge over time. It could also provide the means to agree how public display of new information and objects generated by investigations and the deposition of archaeological archives might each be tackled.	The updated Archaeological Appraisal and Fieldwork Strategy (Appendix 9.4) includes expanded research aims. Post-submission a heritage strategy will be prepared in consultation with the consultees which will outline a) areas that need to be evaluated and b) provide further details on mitigation for areas that have already been evaluated. This will be regularly updated as more areas of the Site are evaluated and will be responsive to new issues as these emerge over time.
Historic England	Agreed the content of para 9.5.3 as to designated heritage assets that are scoped in or out for the EIA process. Para 9.5.4 addresses the important issues for the settings of heritage assets. We agree the five bullet points but at Westenhanger Castle it is not just setting that applies. Parts of the scheduled monument are within the project boundary and may experience change and non-designated historic features associated with the castle are also directly affected. The setting of the newly discovered Roman villa is included but not the setting of the prehistoric barrows.	The non-designated historic features associated with the castle are described in Section 9.3 and how they are impacted is assessed in Sections 9.4 and 9.5. The baseline has been updated Section 9.3) to include which parts of the scheduled monument of the Castle fall within the outline planning application boundary.
Historic England	Para 9.6.2 Too high a level of harm could be caused to the significance of the castle. ... key views out from and towards the castle should be agreed with HE for consideration.	HE mention the built form east and west of the castle and the views from the AONB from the north towards the castle. An additional piece of work by the architect and Arcadis landscape architects (with Arcadis cultural heritage input) has been carried out since this scoping opinion to prepare key views from and to the castle and these have been provided to Historic England. Sections 9.4 and 9.5 assess the impacts. The Landscape and Visual Impact Chapter should also be referred to (Chapter 12). Discussions on a design code for this area (i.e. the High Street) are ongoing.
Historic England (HE)	4.2.3 EIA methodology - HE note the need to agree parameters describing the type and maximum size of new elements in order to understand likely effects and the effectiveness of proposed mitigation. These need to be reproduced in visual representations of the likely appearance of the Proposed Development.	Visualisations of the proposed Development parameters are addressed in the Landscape and Visual Impact (Chapter 12).
KCC	Long term effects on heritage assets such as Bronze Age barrows and historic landscapes should be assessed as well as 'built heritage assets'.	See sections 9.3 and 9.4.
KCC	9..3.1 - Reference should be made to the 2013 Department for Digital, Culture, Media and Sport Policy Paper 'Scheduled Monuments & nationally important but non-scheduled monuments', which sets out current Government policy on the identification, protection, conservation and investigation of nationally important archaeological sites.	Addressed in Section 9.2.
KCC	9.3.2 - Reference should be made to the emerging Folkestone & Hythe District Heritage Strategy, and to the Kent Farmsteads Guidance.	Historic England Good Practice Advice 2 is referred to (see 9.2.39). Kent Farmsteads Guidance is referenced in Appendix 9.3. Emerging Folkestone & Hythe Heritage Strategy is referenced in Appendix 9.6.
KCC	9.3.2 -KCC expressed concern in restricting the study area for non-designated heritage assets to 500m. A wider approach to understanding potential needed. Significant non-designated archaeological sites in the wider area such as the Saltwood Tunnel site, should be considered.	Relevant heritage assets in a wider study area such as barrows, villas, Palaeolithic remains and certain designated assets have been discussed in Appendix 9.4, 9.7, 9.8 and 9.16
KCC	9.3.7 - there may be a need to undertake further trial trenching in areas already evaluated to inform the mitigation strategy.	See Section 9.4.
KCC	9.3.7 and 9.6.1- Apart from the two areas noted above, Figure 9.2 shows further area identified for 'trenching at a later date'. Where there is sufficient flexibility in the masterplan that would allow it to be amended to accommodate unexpected, but nationally important discoveries, KCC is content that evaluation of these areas could generally be deferred to a later date (i.e. post determination of an outline planning application, but before agreement of detailed reserved matters). Where key infrastructure requirements are involved, with locations fixed by the application stage, field evaluation prior to determination would seem appropriate.	See response above for 9.3.4.
KCC	9.4.28 - KCC is currently of the view that the Romano British villa found east of Otterpool Quarry is of schedulable quality and should be treated in the EIA as if it were a scheduled monument in line with paragraph 139 of the NPPF (2012).	The villa has been preserved within the masterplan as open space, in line with its significance and due consideration has been given to its setting – see 9.4.

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
KCC	9.5.4 - Setting of the Bronze Age barrows to the east and west of Barrow Hill, Sellindge should be scoped in, as should any other nationally important archaeology that could yet be revealed by the ongoing trial trenching.	Scoped in - see 9.4
KCC	9.4.10 - The Folkestone Racecourse case study within the Folkestone & Hythe Heritage Strategy should be consulted.	This has been consulted in Section 9.2.
KCC	9.5.1 - The level of visual intrusion at Upper Otterpool and Lower Otterpool needs to be tested through the EIA process.	See chapter 12 - LVIA
KCC	9.6.3 - Commitment on the retention of key historic landscape features and where historic landscape features are not being retained for these to be recorded (including through archaeological investigation). Further assessment will be required as part of the EIA process.	See ES Sections 9.4 and 9.5 on Historic Landscape and see parameter plan OPM(P)1008D
KCC	9.6.5 and 9.6.7 – KCC acknowledges that not all archaeological remains will warrant preservation in situ. Where preservation by record is accepted, appropriate measures should be included to ensure (in line with paragraph 141 of the NPPF (2012)) any information (assets or archives) is stored, managed and publicly accessible. An appropriate research framework needs to be put in place from the outset to guide how the works will be managed for such a large project carried out over a long period of time, extending into the operational phase of the development. The long-term future of the archaeological archives should be considered.	See Section 9.4. A research framework has been prepared which will form part of the Site's Heritage Strategy.
ABC and KCC	Concerns about assets which have been scoped out: Sandling Park Registered Park and Garden; the Romano-British building south of Burch's Rough (which is a Scheduled Monument) and Aldington Church Conservation Area. Requests that the setting effects on these assets need to be scoped in unless robust justification is provided in the ES. 4.12.1 Premature to scope out archaeological resources, as the archaeological resource not yet been assessed, and proposed mitigation measures have not been agreed.	Since the scoping opinion an addendum to the DBA (Appendix 9.2) has been carried out which establishes the anticipated minimal impact to the setting and views of Aldington Church Conservation Area and the rationale for it not being scoped back in. Additionally, the Landscape and Visual impact assessment includes a viewpoint from Aldington Church and this does not conclude that there will be visual impact (see Chapter 12). Sandling Park has been scoped back in. The setting to Burch's Rough Romano-British building has been considered and it will be not be impacted.

The Study Area

9.2.11 At the time of writing the majority of the appraisal reports (Appendices 9.2 to 9.9) a 709ha 'site boundary' was used to assess the cultural heritage resource. A search radius of 1km around the 709 Ha 'site boundary' was used for all designated assets and 0.5km for all non-designated assets. The study areas were set using professional judgement to establish the archaeological baseline for the Site and its immediate vicinity. Additional heritage assets located beyond the study areas have been considered in the assessment process where appropriate.

9.2.12 The OPA boundary was later reduced to a 580ha area in order to avoid and preserve certain environmental receptors.

9.2.13 As set out in Section 4.2 the site area expanded to encompass the Framework Masterplan Boundary which encompasses a wider area of approximately 764ha and allows for the future development of 1,500 further homes and associated uses for the full Otterpool Park Garden Town, but is not part of the current outline planning application.

9.2.14 All three boundaries are depicted on Figure 1.

Methodology for Establishing Baseline Conditions

Establishing the Existing Baseline

9.2.15 A cultural heritage Desk-Based Assessment (DBA) (Appendix 9 - 2) was undertaken between October and December 2016 to establish the baseline conditions for the Study Area and was updated in August 2017. In addition to the DBA, a DBA Addendum (Appendix 9.2) was undertaken in September 2018 to update the baseline in light of emerging cultural heritage data and updated policy. Table 9.4 summarises the main sources and nature of the baseline information obtained in these reports. A full list of sources and historic mapping can be found in the relevant reports.

Table 9-4 Sources Consulted to Gather Baseline Conditions

Source	Baseline Information
National Heritage List of England	Designated asset data including scheduled monuments (SMs), listed buildings (LBs), registered parks and gardens (RPGs), heritage at risk assets, and registered battlefields.
Kent Historic Environment Record (HER)	Non-designated heritage assets and events data including Historic Landscape Characterisation data
Kent County Council and Folkestone & Hythe District Council websites	Planning policy and Conservation Area (CA) data. Aerial photographs (on KCC website)
Landmark Information Group	Historic OS mapping informing historic map regression.
Kent Archives	Historic mapping informing historic map regression
PastScape website (provided by Historic England)	Information on heritage assets within the study area and the wider area. Also includes aerial photographs
British Geological Survey (BGS) website	Information on the prevailing geological conditions within the study area
Archaeological Data Service website	National Mapping Programme, HLC data and archaeological reports
Arcadis Geotechnical information	Geotechnical information including borehole logs from Arcadis Ground Investigations across the site in 2017 and 2018
South Eastern Research Frameworks (SERF)Documents	Published on the KCC website

Source	Baseline Information
Environment Agency	LiDAR data to inform LiDAR analysis
National Monuments Record (online catalogue)	Aerial photographs to inform aerial photograph analysis
Cambridge University Collection of Air Photographs (CUCAP) online catalogue	Aerial photographs
Google Earth Imagery 1940 to present	Aerial photographs
Zetica – Otterpool Park UXO Desk Study & Risk Assessment 2017	Maps, aerial photographs, unexploded ordnance (UXO) information and historic background on RAF Lympne and the rest of the Site
Multiple walkover surveys and site visits	Information and photographs of heritage assets to inform baseline

9.2.16 In addition to this, the following detailed appraisal reports have been produced by Arcadis to inform the baseline conditions and support the ES. These are:

- Historic Landscape Characterisation and Farmstead Analysis (Appendix 9 - 3)
- Archaeological Appraisal and Fieldwork Strategy (Appendix 9 - 4)
- Historic Buildings and Structures Appraisal (Appendix 9 - 5)
- Westenhanger Castle Statement of Significance (Appendix 9 - 6)
- Prehistoric Barrows at Otterpool Statement of Significance (Appendix 9 - 7)
- Roman Villa at Otterpool Statement of Significance (Appendix 9 - 8)
- Westenhanger Castle Conservation Management Plan (Appendix 9 - 9)

9.2.17 Furthermore, a programme of archaeological investigations was undertaken in 2017 to 2018 to enhance the baseline of this report (see 9.1.3). These investigations took the form of geophysical surveys and trial trenching evaluation. The results of these surveys and investigations are reported in the Appendices 9.10 to 9.16 and 9.18. Additionally, baseline information has been gathered from recent borehole and other geotechnical investigations which were monitored by Wessex Archaeology (Appendix 9.17).

Forecasting the Future Baseline

9.2.18 The forecast of the future baseline considers that ongoing activities within the study area has the potential to change the setting of existing heritage assets. It also considers that new heritage assets may be identified over time, and existing heritage assets may be removed by ongoing development or ploughing within the study area. However, the baseline conditions are not anticipated to alter materially in the future.

Defining the Importance/Sensitivity of resource

9.2.19 The value of heritage assets is referred to in NPPF Annex 2 (Reference 9.4) as significance (for heritage) and defined as:

"The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic, or historic. Significance derives not only from a heritage assets physical presence, but also from its setting."

9.2.20 Current national guidance on the assessment of the significance of heritage assets is provided by Historic England in the document *Conservation Principles, Policies, and Guidance for the Sustainable Management of the Historic Environment 2008* (Reference 9.11). In this document significance is weighed by consideration of an asset to demonstrate value criteria. However, this assessment has given due weight to the emerging updated document *Conservation Principles, Policies, and Guidance for the Sustainable Management of the Historic Environment (Draft) (*Reference 9.12) in which significance is weighed by interest criteria. In light of this document, the term interest has been used throughout this Section when describing the significance 'value' of an asset. Consideration has also been given to the Department for Digital, Culture, Media and Sport (2013) Policy Paper *Scheduled Monuments & nationally important but non-scheduled monuments* (Reference 9.17).

Table 9-5 Historic Interest Criteria for Heritage Assets

Value Type	Definition of Interest
Evidential value (Archaeological interest)	Deriving from the potential of a place to yield evidence about past human activity. This is sometimes called evidential or research value. There will be archaeological interest in a heritage asset if it holds, or potentially may hold, evidence of past human activity that could be revealed through investigation at some point. Archaeological interest in this context includes above-ground structures as well as earthworks and buried or submerged remains more commonly associated with the study of archaeology.
Historic value (Historic interest)	Deriving from the ways in which past people, events and aspects of life can be connected through a place to the present. It tends to be illustrative or associative. A heritage asset is most commonly valued for its historic interest – because of the way in which it can illustrate the story of past events, people, and aspects of life (illustrative value, or interest). Historic value also includes communal interest which derives from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory. Communal values are closely bound up with historical (particularly associative) and aesthetic values but tend to have added and specific aspects. Communal value is not the same as Community Value which places value on a heritage asset due to its functional use as a place that can be used by the community.
Aesthetic value (Architectural and artistic interest)	The sensory and intellectual stimulation we derive from a heritage asset dictates its aesthetic value, which can be the result of conscious design, including artistic endeavour or technical innovation, or the seemingly fortuitous outcome of the way in which a place has evolved and been used over time. Architectural interest is an interest in the art or science of the design, construction, artistry and decoration of buildings and structures of all types. Artistic interest is derived from the use of human imagination and skill to convey meaning through all forms of creative expression.

9.2.21 DMRB Volume 11 Section 3 Part 2 Cultural Heritage (Reference 9.13) provides a methodology for assigning a value to cultural heritage assets. An adapted version of this methodology has been used due to lack of other formal assessment guidance on the value of heritage assets.

9.2.22 Through the DMRB methodology, the value of cultural heritage assets (archaeological remains, historic buildings, or historic landscapes), can be assessed. Table 9-6 sets out the criteria for assessing the value of all cultural heritage assets presented in this Section. The values ascribed to heritage assets (from Table 9-6.) are considered alongside their interest criteria (from Table 9-5).

9.2.23 Potential effects from development can include changes to the setting of assets caused by visual intrusion from a development and changes to the fabric of an asset caused by construction. Both forms of change can form a direct impact to heritage assets.

Table 9-6 Asset Value Criteria (Cultural Heritage Assets)

Value	Factors deciding value
Very High/National or International	World Heritage Sites (including nominated site) Assets of recognised international importance Assets that can contribute to acknowledged international research objectives Other buildings of recognised international importance Historic landscapes of international value, whether designated or note

Value	Factors deciding value
High/National	Extremely well preserved historic landscapes with exceptional coherence, time-depth or other critical factors
	Scheduled monuments (including proposed sites)
	Non-designated receptors of schedulable quality and importance
	Grade I and Grade II* Listed Buildings
	Other listed buildings that can be shown to have exceptional qualities in their fabric or historical associations not adequately reflected in the listing grade
	Grade I and Grade II* Registered Parks and Gardens
	Conservation Areas containing very important buildings
	Non-designated assets of clear national importance
	Non-designated historic landscapes of outstanding interest, high quality and importance, and of demonstrable national value.
	Well preserved historic landscapes with exhibiting considerable coherence, time-depth or other critical factors
	Assets that contribute significantly to acknowledged national research agendas
Medium/Regional	Certain Grade II Listed Buildings
	Historic (unlisted) buildings that can be shown to have exceptional qualities in their fabric or historical associations
	Conservation Areas containing buildings that contribute significantly to its historic character
	Designated or non-designated assets that contribute to regional research objectives
	Non-designated historic landscapes that would justify special historic landscape designation, landscapes of regional value.
	Averagely well-preserved historic landscapes with reasonable coherence, time depth or critical factor(s).
Low/Local	Designated and non-designated assets of local importance
	Locally Listed Buildings
	Historic (unlisted) buildings of modest quality in their fabric or historic association
	Assets compromised by poor preservation and/or poor survival of contextual associations
	Assets of limited value, but with potential to contribute to local research objectives
	Robust non-designated historic landscapes.
	Historic landscapes with importance to local interest groups.
	Historic landscapes whose value is limited by poor preservation and/or poor survival of contextual associations.
Negligible/Local	Assets with little or no archaeological/historical interest
	Buildings of no architectural or historical note; buildings of intrusive character
	Historic landscapes with little or no significant historical interest
Unknown	The importance of the asset has not been ascertained from available evidence
	Buildings with some hidden (i.e. inaccessible) potential for historic significance

9.2.24 While the values set out in Table 9-6 and Table 9-5 above give a guide for the assessment of the importance of heritage assets, these may vary based on the outcomes of research, consultation, or based on professional opinion. Variation would be based on assessment of significance, including contributions of setting, for an asset.

9.2.25 This assessment will aid in meeting Principle 5 of the emerging *Conservation Principles* document (Reference 9.12) which states that "decisions about change in the historic environment demand the application of expertise, experience and judgement, in a consistent and transparent process which is as accessible as possible. They need to take account of views of those who have an interest in the assets affected and/or the changes being proposed."

9.2.26 Finally, the above historic interest criteria and values will be used alongside the method set out in Historic Environment Good Practice Advice in Planning 2: Managing significance in decision taking in the historic environment (Reference 9.14) and Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (Reference 9.15 which recommends the following broad approach to assessment:

- Step 1: Identify which heritage receptors and their settings are affected.
- Step 2: Assess whether, how and to what degree these settings contribute to the significance of the heritage asset(s).
- Step 3: Assess the effects of the proposed development, whether beneficial or harmful, on that significance.
- Step 4: Explore the way to maximise enhancement and avoid or minimise harm.
- Step 5: Make and document the decision and monitor outcomes.

Archaeological potential

9.2.27 An assessment of the archaeological potential of the Site has also be undertaken as part of this assessment in line with Paragraph 187 (b) of the NPPF (Reference 9.10).

9.2.28 Archaeological potential is the potential for places, structures, or landscapes to hold information regarding previously unknown archaeological or historic knowledge which would enhance the understanding of a place and its development. This is informed by all the known heritage assets within a chosen study area.

9.2.29 In this document archaeological potential is classified as:

- High for areas where there is a strong likelihood of finding archaeological remains of a given period or type.
- Medium for areas where there is a likelihood of finding archaeological remains of a given period or type.
- Low for areas where there is little likelihood of finding archaeological remains of a given period or type.

Methodology for Assessing Impacts

Impact Characterisation

9.2.30 The criteria for assessing the magnitude of impact and significance of effects to heritage asset are presented in Table 9- and Table 9-.

Table 9-7 Assessment Criteria for Impact Magnitude to Heritage Assets

Magnitude	Description
Major	Change to key elements, such that the resource is totally altered. Comprehensive changes to the setting.
Moderate	Change to many key elements, such that the resource is significantly modified. Changes to the setting, such that it is significantly modified.

Minor	Change to key elements, such that the receptor is slightly different. Change to setting, such that it is noticeably changed.
Negligible	Slight changes to elements or setting that hardly affect it.
No change	No change to fabric or setting.

Assessing Significance of Effect

9.2.31 Table 9- illustrates how information on the value of the heritage receptor and the magnitude of impact is combined to arrive at an assessment of the level of effect arising from the Scheme. The matrix in Table 9- is not intended to 'mechanise' judgement of the significance of effect but to act as a check to ensure that judgements regarding value, magnitude of impact and significance of effect are reasonable and balanced.

Table 9-8 Assessment Matrix for Significance of Effect on Heritage Assets

Value/ Sensitivity	Magnitude of Impact				
	Major	Moderate	Minor	Negligible	No Change
Very High	Very Large	Large/Very Large	Moderate/Large	Slight	Neutral
High	Large/Very Large	Moderate/Large	Moderate/Slight	Slight	Neutral
Medium	Moderate/Large	Moderate	Slight	Neutral/Slight	Neutral
Low	Slight/Moderate	Slight	Neutral/Slight	Neutral/Slight	Neutral
Negligible	Slight	Neutral/Slight	Neutral/Slight	Neutral	Neutral

9.2.32 Based on professional judgement and the guidance set out in Historic Environment Good Practice Advice in Planning 2: Managing significance in decision taking in the historic environment (GPA 2) (Historic England, 2017: Ref 9.14), a 'significant' effect in terms of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (SI No. 572: Ref 9.22) (hereafter referred to as the 'EIA Regulations 2017') is considered to be one of **moderate** significance or above and/or one where (from an adverse perspective) it can be said that a receptor would experience substantial harm.

9.2.33 For the purposes of this assessment, significant adverse effects are defined as an impact which will have a direct or physical impact on the heritage receptor which will result in the removal of all or most of the heritage receptor, or largely alter the historic setting of the receptor. Significant adverse effects therefore include:

- Direct impacts by operations which are not able to be mitigated.
- Alterations to the historic setting of a receptor, through intrusions to the receptor's setting, which alters the understanding of the receptor.
- Any operational impacts which will result in the permanent alteration to a receptor's character.

9.2.34 Generally, non-significant effects are impacts which are temporary or will not result in a long-term change in the character or setting of a heritage receptor. However, for this Scheme there are exceptions to this for specific receptors (refer to Section 7.8 for further detail). Direct physical impacts on the heritage receptor which will be archaeologically mitigated are also considered non-significant. Non-significant effects include:

- Noise and dust pollution associated with the construction phase of the Scheme.
- Changes to a receptor's setting, caused by temporary traffic.
- Direct impacts by operations conducted within the application boundary which are able to be mitigated.

Identifying mitigation and enhancement measures and assessing residual effects

9.2.35 The approach outlined below has been followed to identify mitigation and enhancement measures and assess likely residual effects to heritage receptors:

- Consideration of best practice/guidance;
- Professional judgement;
- Consideration of baseline information obtained, Scheme design details and issues raised through consultation with interested parties as a result of responses to the EIA scoping report;
- Consideration of potential future baseline;
- Identification of appropriate mitigation measures, such as vegetation screening/fencing; and
- Prediction of residual effects based on baseline/future baseline information, Scheme details and Scheme design.

9.2.36 Assessment to determine the residual effects on heritage receptors is made based on best practice and professional guidance for identifying significant or non-significant effects on a heritage receptor.

Limitations and Assumptions

9.2.37 Data from Historic Environment Records (HERs) and other national datasets consists of secondary information derived from varied sources, only some of which were directly examined during the compilation of this assessment. The assumption is made that this data, as well as that derived from other secondary sources, is reasonably correct.

9.2.38 Due to the nature of archaeological remains, their identification and assessment necessarily requires an element of assumption. In particular, the nature, extent, survival, and even the precise location, of buried archaeological remains is often uncertain, as the majority of such sites have never been subject to archaeological investigation to modern standards. As such, assessment of the value of such sites is often heavily reliant on informed extrapolation from limited data, comparison with similar receptors in similar contexts, and on professional judgement.

9.2.39 Certain limitations have been placed on the amount of baseline data that it has been possible to collect. It has not been possible to gain access to all areas of the Site so far to undertake trial trenching due to unexploded ordnance, ecological constraints, landowner/tenant refusal, and cropping regimes. Geophysical survey also was subject to constraints caused by landowner permissions, ground conditions and vegetation or crop cover. The metal detecting survey planned to be carried out prior to the trial trenching in the area of the prehistoric barrows could not be carried out due to unfavourable ground and weather conditions and cropping regimes. All of these factors combined to make conditions unsuitable for survey.

9.2.40 The consultee requirement that the geoarchaeological DBA (Appendix 9.16) be developed into a deposit model was not possible at the time of writing the ES due to lack of ground investigation data of the quality and quantity required to create meaningful transects of the Site. If Site data allows, updates to the geoarchaeological DBA will be undertaken as part of the ongoing Heritage Strategy.

9.2.41 The limitations do not compromise the validity of the assessment.

9.3 Baseline

Existing Baseline

9.3.1 The following section outlines the existing baseline conditions for designated and non-designated cultural heritage assets in the Site (as defined by the 500m and 1km study areas). This section considers archaeological remains, built heritage and the historic landscape. Unique identifiers have been applied to all heritage receptors. For non-designated receptors this is a number although sometimes with the prefix **WS** for walkover survey assets or **BH** for Built Heritage asset. For designated receptors a prefix and

number are used. For listed buildings the prefix of **LB** is used, whilst for conservation areas the prefix of **CA** is employed. Scheduled monuments are prefixed by **SM** and Registered Parks and Gardens by **RPG**.

9.3.2 A full and detailed baseline covering all assets within the study area and baseline data gathered from all desk-based sources is presented in the Desk-based Assessment and Addendum (Appendix 9 - 2). The detailed results of individual assessments, geophysical surveys and trial trench evaluation are presented in Appendices 9.3 to 9.18. Several assets have been scoped out of assessment and this section will focus solely on the key receptors in order to present a focused assessment of the assets that are likely to experience impacts as a result of the development. For a more detailed picture of the baseline resource please refer to the relevant appendix.

9.3.3 The existing baseline begins by describing designated assets. It then moves on to non-designated assets starting with assets that were recorded from the HER, desk-based research and walkover surveys. The assets that have been discovered as a result of the 2017-2018 geophysical surveys and trial trenching evaluations are described next. Non-designated built heritage assets are then discussed. The existing baseline section then ends with a discussion of historic landscape character.

Designated Assets (Figure 1)

9.3.4 Westenhanger Castle (**SM6**) is a Scheduled Monument which dates to the 14th to 18th centuries and comprises the earthwork and structural remains of the inner court, outer court and moat. Within the Scheduled Monument (**SM6**) there is also a Grade I listed manor house (**LB5**) which is also identified as a non-designated farmstead (**BH34**) and two Grade I listed 16th century barns (**LB1**). Part of the scheduled area of the castle (**SM6**) lies within the application boundary, whilst the listed buildings (**LB1**, **LB5**) lie just outside. To the south east, the Tudor garden (**166**) to the castle lies beyond the scheduled area and within the application boundary.

9.3.5 The setting of these assets (**SM6, LB1, LB5**) contributes to their value and, extends into the application boundary. The historic setting would have been linked to the surrounding agricultural area which the castle administered and defended, as well as the designed setting which included the surrounding deer park (**154**), the water management features to the north and south (**147, 148**), the Tudor garden to the south (**166**) and a causewayed entrance approach from the south (**149**). Although the current setting of Westenhanger has been much changed, curtailed to the north by the CTRL line and the M20, important historic views are still available from the west, which add to the understanding and significance of this asset as a defensive feature in the landscape. Its connections to the former deer park and some of its symbolic views across the flood plain of the East Stour have been largely removed. Views to the south are impacted by the racecourse, whilst the listed buildings are largely screened by intervening tree cover and structures. However, the castle (**SM6**) itself retains views to the south beyond this and the adjacent land which forms its immediate setting. Additionally, links to other settlements such as Lympne (**C1**) and manors (**51, 59, LB20, LB38/BH12, LB3**) which are contemporary with Westenhanger Castle (**SM6**) inform the understanding of this asset within the landscape. More detailed discussion of Westenhanger Castle and its setting can be found in Appendix 9.6.

9.3.6 The value of these assets (**SM6, LB1, LB5**) is informed by their **historic** interest as part of the medieval landscape of Kent, their **architectural** interest as surviving structures from the medieval period, and their **evidential** interest for their potential to yield further information about the development and use of the site across its history. These assets (**SM6, LB1, LB5**) are of **high** value and **national** significance.

9.3.7 Upper Otterpool (**LB20**) is a 16th to 17th century Grade II listed farmhouse which lies 25m outside the application boundary. This asset has relationships to Otterpool Manor (**LB38, BH12**) and Westenhanger Castle (**SM6, LB1**, **LB5**) which inform its **historic** interest. Upper Otterpool (**LB20**) also has potential to contain elements of an earlier structure contributing to its **evidential** interest. Its setting extends into the application boundary and forms part of its significance. Its setting is mostly formed of its immediate agricultural surroundings as it is well screened from the wider landscape by its own environs. Upper Otterpool is enclosed by a ragstone perimeter wall and by hedges and trees on three sides and has open aspects along its approach road to the north. The principle aspect of the group at Upper Otterpool faces north to Westenhanger presenting a clear relationship. The reading of the asset in its historic context, in a rural landscape with dispersed farmsteads and manors, forms part of its value. This asset (**LB20**) is of **national** importance and **high** value.

9.3.8 Otterpool Manor (**LB38, BH12**) is a 17th century Grade II listed house which lies 30m outside the application boundary close to Otterpool Lane. The house has historic links to Upper Otterpool (**LB20**) which may have been the original manorial seat before Otterpool Manor was built. The medieval barn and other farm buildings (**WS8**) which lie to the north of the house add to its heritage value and have group interest with this asset as part of its curtilage. This value is contributed to by its **historic** interest in illustrating the social and agricultural history of the area, and its **aesthetic** interest as a good example of the architecture of the period for Kent. The farmstead can still be partially appreciated within its historical context, a predominately agricultural landscape, with which it has a functional and historical connection. The setting of this asset (**LB38, BH12**) extends into the application boundary and forms part of its significance. The principle aspect faces south-east along Otterpool Lane and as a group the farmhouse (**LB38**, **BH12**), barn and farm buildings have a rural, semi-isolated setting, surrounded by farmland and small areas of woodland. They have inter-visibility with Westenhanger Castle and views further to the east, particularly with Upper Otterpool (**LB20**). This asset (**LB38, BH12**) is of **national** importance and **high** value.

9.3.9 Stream Cottage and Grove Bridge Cottage (**LB11**) are two Grade II listed cottages which lie 50m outside the application boundary to the south of the CTRL railway line. The cottages date to the 17th century or earlier and were formerly one dwelling but were split into two cottages at an unknown date. This asset has **aesthetic** interest as a good example of vernacular architecture for the region and **historic** interest as one of the earliest surviving buildings in the settlement of Barrow Hill, Sellindge. The setting of this asset (**LB11**) extends into the application boundary and forms some part of its significance. Although part of the urban fabric of Barrow Hill, Sellindge, its setting is curtailed to the north by the CTRL line. Built form and vegetation, together with a rise in topography, screen the cottages to the west, whilst later 20th Century housing at Grove Bridge and Meadow Grove screen them to the east. The asset has a **high** value and **national** importance.

9.3.10 The Royal Oak Public House (**LB15**) is a 19th century Grade II listed building which lies outside the application boundary by 1m and within the settlement of Newingreen. It has **historic** interest as part of the development of the A20 as an important route through Kent to London and in turn the raising fortunes of the area. The asset also has **aesthetic** interest as an example of the architecture of the area from the 19th century, with later internal alterations. The setting of this asset extends within the application boundary and forms part of its significance. This setting is mostly informed by its position on the cross roads of the A20 Ashford Road and Stone Street (**5**) which it has historically served. Its faces south-east, with limited immediate views to the north and south due to intervening built form. This asset is of **regional** importance and has a **medium** value.

9.3.11 Belle Vue House (**LB21, BH11)** is an 18th century Grade II listed house with outbuildings (**WS6**) which lies 250m outside the application boundary, at the junction of Otterpool Lane and Aldington Road (**8**). There is also a 19th century service wing to the north of the house and some elements were converted to flats in the modern period. It has **historic** interest as part of the social development of the area, **evidential** interest due to its potential to yield evidence of earlier structures within or beneath it, and **aesthetic** interest as an example of the architecture of the period. The setting of this asset is limited to its immediate surroundings and makes little contribution to its significance. The house is enclosed within its grounds and screened by trees on all sides. The farmhouse and outbuildings face onto Otterpool Lane, which is their primary aspect. This asset (**LB21**) is of **regional** importance and of **medium** value.

9.3.12 Berwick House (**LB29**) and Little Berwick (**LB27/BH27**) are two Grade II listed houses which lie 5-10m to the east of the application boundary between the settlements of Lympne and Newingreen. Berwick House (**LB29**) is of unknown date with a 19th century façade. Little Berwick (**LB27, BH27**) is thought to date to the 17th century. Along with Berwick Manor Farm (**BH28**) these assets formed the historic core of a small settlement known as Stone Hill and one or both were likely the manor house for Berwick historically. The value of these assets is based in their **aesthetic** and **historic** interest as part of the development of the area and its architectural styles. The houses are also little investigated and therefore have **evidential** interest for their potential to yield further information about their origins. The setting of these assets includes views into the Site and forms part of their significance. These assets still retain some of their original setting through a small area of fields which surrounds them, however, their immediate surroundings have been altered within the Modern period which has contracted their setting to comprise only the immediate vicinity. These assets (**LB27, LB29, BH28**) are of **regional** importance and **medium** value.

9.3.13 Lympne Conservation Area (**CA1**) lies 5m to the south of the application boundary and includes nine Grade I and II listed buildings. Its location and setting are important in understanding its significance. The settlement is designated for its **historic** interest through connections to key historical figures and also as a key defensive site from the Roman period onwards due to its commanding views across Romney Marsh from its position at the top of the escarpment. Due to these views the conservation area also has **aesthetic** interest. The Conservation Area (**C1**) is also well screened to the north and west by treelines and more recent development. This asset is of **high** value due to its **national** significance.

9.3.14 Sandling Park (**RPG2**) is a Grade II registered park and garden which was laid out by Henry Milner in 1897. The asset is bounded by the Site on its western edge where the park is mostly comprised of arable farm land and deciduous woodland. The park offers **aesthetic** interest as an example of an informal woodland garden. The park also offers **historic** interest through its connections to the earlier estate and Westenhanger Wood which former part of the hunting forest for the manor/Castle of Westenhanger (**SM6**). The views from this park are mostly to the south and east, towards Saltwood and the sea. This asset is of **high** value.

Table 9-9 Asset Value Table: Designated Assets (Figure 1)

Receptor	Value
SM6/BH34, LB1, LB5 (Westenhanger Castle and Barns)	**High**
LB11-Stream Cottage and Grove Bridge Cottage	**High**
LB15-Royal Oak	Medium
LB20/BH20-Upper Otterpool	**High**
LB21/BH11-Belle Vue	Medium
LB27/BH27- Little Berwick	Medium
LB29 – Berwick House	Medium
LB38/BH12-Otterpool Manor	**High**
RPG2-Sandling Park	Medium
CA1-Lympne Conservation Area	Medium

Non-designated Assets

Archaeological Assets – recorded from HER, walkover surveys and desk-based sources (Figure 2)

9.3.15 There are 16 prehistoric assets identified within the application boundary from desk-based sources, and a further 6 within the study area that have settings which extend into the application boundary.

9.3.16 Seven prehistoric barrows (**44, 46, 58, 113, 114, 115, 116**) were identified on the Kent HER. A further 9 prehistoric barrows (**130, 131, 132, 133, 134, 135, 136, 155, 156**) were tentatively identified through LIDAR analysis as part of this project. All of these barrows lie within the application boundary with the exception of 4 barrows (**46, 155, 156, 116**) which are 100m, 262m, 800m and 80m respectively away from the application boundary. 10 of the 16 barrows have been investigated though evaluation trial trenching (Appendix 9.18 - Fields 5, 8, 9 and 10 - **44, 114, 115, 130, 131, 132, 133, 134, 135**, **136**) and, of these, two have been shown to have been completely removed by ploughing activity or to have not actually be barrows at all (**132, 134**). Barrow **58** is the largest of the barrows at 60m diameter. This one and barrow **113** to the south have retained slight mounds and were not subject to trial trenching.

9.3.17 Barrows normally date to the Bronze Age and the trial trenching has confirmed a broadly Late Neolithic to Middle Bronze Age date for barrows **130** and **136.** Barrow **136** is an unusual type in that it does not have a ring ditch. The ring ditch of barrow **133** was found to contain a mixture of prehistoric and post-medieval finds thus rendering its date and interpretation very uncertain; it. **133** could equally be a post-medieval feature (**223**), possibly associated with Barrow Hill Farm**.** Barrows **114, 115, 131** and **135** could not be closely dated but are thought, based on morphology and small amounts of prehistoric pottery and flint in their fills, to be broadly Late Neolithic to Mid Bronze Age. None of these four contained evidence for an internal mound. Barrow **44**'s ring ditch fill contained slag and hammerscale which could indicate use or re-use in the Iron Age or later for iron working. Barrow **44** retains a very low mound. It is also unusual in that it contains a berm and postholes of an internal palisade. Barrow **114** is unusual in that it has a double ring ditch and one of these contained a deposit of cockle shells. The cockle shells could have been deposited in the Late Iron Age or Roman period rather than in the Bronze Age period of use, however.

9.3.18 The barrows would have been built to contain a burial or multiple burials, either cremated or inhumed. Little cremated human bone was found but this is due to the fact that the centre of each of the barrows was deliberately avoided by the trial trenches in an attempt to leave any human remains intact. Barrow **44** is recorded by the HER as having been dug in 1931 and only one piece of red ochre having being found in it. The geophysics shows possible disturbance in the centre of some of the barrows which might equate to holes dug by antiquarian archaeologists to retrieve burials and grave goods. Barrows **58, 113, 114** and **135** are of **high** value and **national** significance due to their group value as a barrow cemetery, archaeological potential, survival and combination of rarer barrow forms and large sizes. Barrow **44** is also of **high** value and **national** significance due to the rarity of its form as a bell barrow with evidence for a palisade revetted mound and its archaeological potential. Additionally, if further fieldwork proves that barrow **44** dates from the Iron Age or later as this would make it very rare. Barrows **46, 115, 116, 130, 131, 136, 155** and **156** are of **medium** value. Barrows **131, 130** and **115** are small examples and are typical of early Bronze Age barrows found locally and regionally. Barrow **136** displays quite good preservation and is representative of early Bronze Age barrows in the region. The two non-barrows (**132, 134**) are of **negligible** value. Ring ditch (**133**) may be of **medium** value if further investigation proves it to be a barrow. If it proves to be post-medieval it would be of **low** value.

9.3.19 The barrows are key heritage assets within the Site. The rural settings of the barrows within the application site inform their significance as it has enabled preservation of archaeological remains and allows views between some of the barrows within the site and towards the locations of other barrows on the edge of the North Downs. However, their setting is not their main significance. The value of these assets is based mainly on their **evidential** interest and **group** value. They form part of a prehistoric funerary landscape which demonstrates the development of human activity within the area and their potential to reveal further information about this past activity. They are connected to other elements of the Bronze Age landscape that have been revealed through fieldwork i.e. Middle Bronze Age field systems (**187, 239**), cremation burials (**184, 203**) which are discussed below and settlement remains (**26, 64, 121**). The relationships between the barrows, particularly between barrows **58, 113, 114** and **135** and between **44** and **136** are important factors in their settings and contribute to their significance. There are no discernible views between the two groups of barrows east and west of Barrow Hill, Sellindge. More information on the significance of the barrows and their settings can be found in Appendix 9.7.

9.3.20 A further 2 prehistoric assets (**26, 121**) within the application boundary were identified on the Kent HER. These assets comprise a Bronze Age settlement (**26**) and associated Prehistoric ditches (**121**) at Lympne Industrial Estate. These assets have **historic** and **evidential** interest as part of a wider prehistoric settled landscape, with potential to reveal more information about prehistoric activity. These assets are of **medium** value.

9.3.21 Two Iron Age assets (**74, 78**) are recorded outside the development boundary on the Kent HER, 100m and 123m away from the application boundary respectively. These two occupation sites are described as an Iron Age rural landscape (**78**) and late Iron Age to Roman pits and ditches (**74**), both located to the north of Westenhanger and north of the CTRL line. They indicate the continuation of occupation across the landscape with particular focus on the slight rises of land around the East Stour River. These assets demonstrate the continued attractiveness of the lands of the East Stour for farming and settlement. Their settings extend into the application boundary and forms part of their significance. These assets are of **medium** value.

9.3.22 One Roman road (**5**) passes through the Site and a further Roman road (**8**) bounds the Site along its southern border. These assets are of **medium** value as they are historic routeways which are still in use

today and are likely to have earlier origins. The value of these assets is based in their **historic** interest as early and continually used routes within the study area.

9.3.23 The HER records a cropmark site of a putative Anglo-Saxon palace (**52**) lying within the grounds of the Folkestone Racecourse (**153**) within the application site which is thought by some to be the site of the precursor to Westenhanger Manor (**SM6**). Further investigation has shown that this interpretation is dubious and that the cropmarks more likely relate to the use of the Racecourse for aviation and WW1 training camps. This asset (**52**) is of **low** value as there is very little evidence that is actually exists. This value is based in the asset's **evidential** interest to yield further information about the nature and extent of this asset and its **historic** interest for its potential links to Westenhanger Manor.

9.3.24 Several features associated with the Medieval or Tudor (early post-medieval) landscape of Westenhanger Castle (**SM6**) are located within the application site or have settings which extend into the application boundary. These are:

- Cropmarks of a trackway and field system north-west of the Castle (42). These show clearly on recent aerial photography. The trackway is formed by two parallel cropmark ditches leading from the north-western part of the scheduled area of the castle in a north-west to south-east direction into the neighbouring field to the west of the castle. It lies partly within the application site. The HER states that it is Medieval. The accompanying Medieval field system appears to be to the east of the trackway within the north-western part of the scheduled area of the castle and outside the application boundary by 33m
- Deserted Medieval sites of Westenhanger (**53**) and Eastenhanger (**54**), which are both north of the Castle and within the scheduled area. They are outside the application site boundary by 30m. The HER gives little detail but presumably this evidence comes from earthwork remains immediately north of the castle
- The site of the Medieval parish church of St Mary (**45**), which, according to historic maps and documentary evidence, is located within outer court of Westenhanger Castle, within the scheduled area. It is outside the application site boundary by 15m. Human remains have been found where the graveyard of this demolished church would have been but nothing else of it has yet been recorded (apart from architectural elements in one of the 16th century Listed Barns (**LB1**) which may have been re-used from the church
- Possible Medieval settlement activity (**76**), in the form of ditches (**75, 77, 79**) and enclosures (**77**), to the north and north-east of Westenhanger Castle, outside the application site boundary by between 150m and 200m away
- Westenhanger Castle deer park as identified by historic mapping and LiDAR (**154**). The deer park would have included areas of woodland, to provide good hunting, with the whole park probably enclosed by some form of fence. As well as providing grounds for the management and hunting of deer it is likely that parts of the park may have included areas of pasture for the keeping of livestock, game bird, boar, hare and pig. Other food for the table may have come from managed rabbit warrens and perhaps ponds for the keeping of freshwater fish. It fulfilled an important role in the social life of the castle, providing royal hunting grounds, but also through the combination of pasture, park, woodland, river and ponds provided a range of foodstuffs and materials to support the functions of the household. The deer park (**154**) is made up of and contains various landscape features:
- The deer park boundary ditch identified by the HER (**43**) fieldwork (**222**) and walkover surveys (**WS17**). **WS17** and **222** sections of ditch are within the application boundary and **43** is outside by 7m
- Causeway to Westenhanger Castle (**149**) which is within the application boundary
- Tudor garden of Westenhanger Castle (**166**) which is within the application boundary
- Possible former orchard of Westenhanger Castle (**161**) which is within the application boundary
- Possible other fields or orchards south of the Castle seen on LiDAR (**160, 165**) which are within the application boundary
- A track from the former Pound House on Stone Street to Westenhanger Castle (**158**) which dates to the late Medieval or early Tudor period and may have been located by trial trenching as a cobbled track with flanking ditches (**229**), both within the application boundary
- A group of water features (**128/137, 138, 139, 147, 148**) identified through LiDAR, walkover and historic mapping analysis lying within the former Westenhanger Castle deerpark, close to or within the current racecourse (**153**). Four of these are former field boundaries (**128/137, 138, 139**) and take the form of drains within the modern landscape. All are within the application boundary.

9.3.25 The evidence for Medieval assets **53** and **54** representing deserted Medieval villages has not been tested and the HER states that these two assets may well have been misinterpreted. A more feasible interpretation for these earthworks could be ponds and channels of Medieval date that are associated with Westenhanger Castle. Although they lie within the scheduled area and would be classed as of **medium** value and **regional** significance. The Medieval features to the north of the CTRL are unremarkable (**76, 75, 77, 79**) although they have **evidential** value for the information they could provide on the land that the castle administered. They are of **low** value and **local** significance. The Medieval trackway (**42**) is largely outside the scheduled area. The date of trackway (**42**) has not been ascertained by fieldwork and it does not show on early maps so may be later than Medieval. It is of **low** value. The Medieval field system showing as cropmarks or parchmarks to the east (**42**) is partly within the scheduled area and is associated with Castle. It is of **medium** value. The site of the Medieval parish church of St Mary (**45**) is within the scheduled area and is of **medium** significance.

9.3.26 The Tudor garden (**166**) is assessed under the fieldwork assets in more detail. It does not survive above ground and the below ground remains are not well preserved. It is therefore of only **medium** value. The causeway (**149**) survives as a field boundary with a raised bank and is of **medium** value due to its **aesthetic** and **historic** interest in marking the southern routeway to the castle. The deer park (**154**) only survives in a fragmentary way and its boundary ditch has been located in three possible places. It is not possible to assign a value to the whole deer park but only to the individual features that make up the deer park. Some of these elements may not survive below ground or are very tentative and are considered to be of **low** value (**160,161, 165**). Others have been identified on the ground (**158, 222**) but are not considered to hold much **evidential** value and are considered to have **local** value. The water features (**128/137, 138, 139, 147, 148**) are considered to have **medium** value. All these assets offer group value with the nationally important Westenhanger Castle (**SM6, LB1**, **LB5**). Their value is mainly in their **historic** interest, and their **evidential** interest as remnants of a mostly lost Medieval and Tudor formal landscape.

9.3.27 Several additional Medieval features are located within the application boundary or have settings which extend into the application boundary. These are features associated with the wider Medieval landscape, contemporary with Westenhanger Castle (**SM6**) but outside of the former Castle Park. These are:

- A hollow way with associated enclosures and buildings (**107**) which presents potential settlement activity associated with a moated site (**51**) and a site of an aisled barn (**66**) to the north at Belle Vue. These are outside the application boundary by between 140m and 150m. They are all of **medium** value
- Two areas of ridge and furrow within the application boundary (**122, 159**), identified through LiDAR analysis, both of **low** value.
- The site of Harringe Court (**59**), a farmhouse described on the Kent HER as a brick and stone house of probable 15th century date. It is outside the application site by 140m. Historic map regression revealed that the farmhouse was demolished in the late 1960s to early 1970s and rebuilt (**BH6**). It stands within the original farmstead and some of the courtyard buildings still survive, however due to its modern construction and loss of historic elements it is of **negligible** value.
- The site of the former Pound House (**157**), a late Medieval building related to the Castle and situated on Stone Street and outside the application site boundary by 7m. It was demolished in the early 20th century and is of **low** value.

9.3.28 For the Post-Medieval period, archaeological remains are limited and represent the continuation of the agricultural use of the landscape from the Medieval period, with little change in the area until the Modern period.

9.3.29 Folkestone Racecourse (**153**) is the primary Post-Medieval asset located within the application boundary. First constructed in 1898 within the former grounds of Westenhanger Castle (**SM6**), the course comprises of a righthand oval with a straight section heading west towards Barrow Hill, Sellindge. Some of the structures on the racecourse date to the original period of activity but most have now been replaced by Modern structures. More detailed discussion of the Racecourse can be found within Appendix 9.6. This asset offers **historic** interest as a major development in the character of the area and its varied use throughout its history. In particular this **historic** interest can be linked to the military use of the landscape within the 500m study area across both of the World Wars. The asset also offers

aesthetic interest due to its influence on the landscape within the Site. Overall this asset is of **medium** value due to its **local** importance and connection to nationally significant events through its activity during the War.

9.3.30 Two Post-Medieval features are recorded on the Kent HER located to the east of the Site close to Stone Street, between Westenhanger village and Newingreen. Features (**22**) were discovered on either side of Stone Street during the CTRL construction work, which were assessed to be of Post-Medieval date. These lie within the application site. Additional Post-Medieval features were found at the site of the Royal Oak Motel (**25**) on Stone Street which are outside the application site by 100m. Both assets are of **low** value due to their limited survival and contextual associations.

9.3.31 Three demolished 19th century farmsteads (**BH19**, **BH23, BH38**) are located within the application boundary. Although no above ground evidence survives, below ground may still remain. These assets are of **low** value.

9.3.32 In the Modern period (post 1900) archaeological remains within the Site are mostly military in nature. Built heritage assets are described in a separate section further on in this assessment and include some military buildings. Military assets that are buried or only partly exist above ground are described here if they are located within the Site, or have settings which extend into the application boundary:

- Lympne Airfield (**27**), a former airfield used for military and civilian purposes. This extends both sides of Otterpool Lane and up to Lympne village and most of its extent lies within the application site. Much of the airfield has now been removed by Lympne Industrial Estate, and to the east only a small portion of the runway (**39**) has survived. Part of the civil airfield runway (**152**), which was used in the 1950s and 1960s was identified from LiDAR.
- The remains of a Pickett Hamilton Fort (**60**) within Link Park Industrial Estate. This are small circular retractable pillboxes that were designed to defend airfield runways. This was recorded by a walkover survey in 2005 and was observed then as is retracted into the ground so that only the top was visible. It was not seen during walkovers for this project as it appears to be located under a large spoil heap. If surviving it would have **regional** importance and **medium** value
- The remains of three aircraft dispersal pens (**29, 40, 162**), all of which lie within the application site. One (**162**) was identified from aerial photographs. None survive above ground, but all may survive below ground as earthwork remains. These are of **low** value.
- Several sites of defensive trenches (**34**) and slit trenches (**33**), both outside the application site by 289m and 70m respectively. These are no longer visible on aerial photographs, presumably they have been filled in or ploughed out and no longer extant. These are of **low** value.
- The remains of a machine gun testing range (**37**) which survives as a concrete track and small area of concrete paving within the application site. There is also some rubble, in woodland close to the Aldington Road, which may represent part of this asset which has now been lost. This is poorly preserved and has lost is original setting. It is of **low** value.
- A concrete base of unknown use (**61**), located 60m outside the application site within Link Park is likely to be related to the Airfield and WWII and is of **low** value.
- A narrow-gauge railway (**127**) which joined Lympne Airfield (**27**) to RAF Westenhanger and Westenhanger Station (**BH3**) in the north. This asset is within the application site. It is now mostly lost but can be seen on LiDAR, geophysics and on an OS map of 1920. This asset (**127**) is **low** value.
- Remains of an array of buildings (**129**) were identified from LiDAR and geophysics lining Aldington Road within the application site, on Lympne Airfield. An aerial photo of the airfield in the 1930s shows hangars in this location. These do not show on maps of the 1920s or 1940 so were short-lived. Below ground remains may survive. This asset is of **low** value.
- The site of an unknown building seen on LiDAR at the airfield (**150**) (within the application site) which may be a remnant of the WWII infrastructure which lay along the southern edge of the airfield. This is of **low** value.
- The site of a possible gun emplacement or other airfield feature (**151**) to the south-west of the former civil airfield runway and within the application site. This feature survives as cropmarks and is visible on LiDAR. It is visible on the ground as a hollowed-out circle with trees now growing inside. This is of **low** to **medium** value depending on survival.
- The sites of six former pillboxes (**BH42-47**) identified from the Kent HER but not visible during walkover survey, presumably no longer extant as not visible on Google Earth. These are located within the application site. These are of **low to medium** value depending on survival
- The concrete foundations of an over-blister aircraft hangar and trackway (**36**) located near **37** and **69**. This asset is located within the application site. This is of unknown condition and is of **low to medium** value depending on survival.
- The remains of an ammunition store (**69**) located close to the machine gun testing range (**37**) on Lympne Airfield (**27**), within the application site. The concrete remains of **69** are in a poor condition and have lost their original setting. **69** is of **low** value due to its poor state of preservation.
- Anti-tank pimples (**7**) 160m west of the application site boundary. It is unknown if these still survive and they are of **low** value.
- The crash site remains of four military aircraft (**MR1, MR2, MR3, MR4**) located around the outskirts of the application site. These are poorly located and therefore there is the possibility that one or more of these planes might have crashed within the application site. Military aircraft crash sites are often classed as war graves and can comprise both surface and buried artefacts, human remains and unexploded ordnance. These sites are covered not only by the Ancient Monuments and Archaeological Areas Act 1979 but also the Protection of Military Remains Act 1986. Crash sites have significance for remembrance, commemoration, their cultural value as historic artefacts and the information they contain about both the circumstances of the loss and of the aircraft itself. If elements of the crashed plans do survive they would be of **medium** value.

9.3.33 More information and discussion of Lympne Airfield can be found in the Zetica UXO Desk Based Study for the Site (Ref 9.19) and also in Appendices 9.2 and 9.5. The airfield (**27**) and associated assets described have **historic** interest and potential **evidential** interest to reveal further information about Lympne Airfield, its past uses and the important role it played in 20th century conflicts. The creation of Lympne Industrial Estate has removed many of the airfield buildings and has negatively affected the setting of this asset (**27**). The poor preservation and lack of survival of original contextual associations has compromised the value of many of these military assets. However, as a group (and combined with the built military assets described in the built heritage section below) they form a key feature of the local landscape (**27**).

9.3.34 Other features which lie within the Site include:

- Undated features (**WS16**) comprising an area of earthworks north of Upper Otterpool (**LB20**) which are within the application site. These earthworks (**WS16**) were recorded on the walkover survey and may relate to Medieval or Post-Medieval activity at Upper Otterpool
- Features seen on LiDAR (**140, 141**) to the south of the RAF Military Huts (**WS14**), west of Otterpool Lane and are outside the application site by 100m. They have not been inspected by walkover survey
- Undated drainage features and ponds to the east of Stone Street seen on LiDAR (**145, 146**). These assets are within the application site
- Three features identified from LiDAR to the south of the CTRL line which may be mounds of modern dumping or may be geological (**123, 124, 125**). These are all within the application site
- One undated cropmark (**48**) was investigated during the excavations at Link Park. This was not accessible during the site visit. This is within the application boundary
- A cropmark to the east of Stone Street (**112**) which marks an enclosure of unknown date. This lies within the application site. This has recently been confirmed by trial trenching to be Middle Bronze Age in date – see fieldwork assets section below
- A further asset (**144**) of unknown purpose or date lies to the southwest of the civil runway (**152**) at Lympne Airfield (**27**). The asset is of unknown date or purpose but on LiDAR it appears to be a small rectangular structure or base of a structure which may be a building associated with the airfield. It lies within the application site.

9.3.35 These assets (**WS16, 140, 141, 145, 146, AP6, 123, 124, 125, 48, 144**) are of **low** value due to their unknown period or function. They offer **evidential** interest for their potential to yield further information about past land use and human activity. The cropmark enclosure (**112**) is assessed in the fieldwork assets section below.

Archaeological assets recorded through 2017-2018 Site evaluation/ fieldwork (Figures 3 and 4)

9.3.36 The fieldwork carried out as part of this project has substantially added to archaeological understanding of the Site. The assets that have been identified by trial trenching and/or geophysics have been assigned a project ID and are also generally referred to by their 'Field Number', as assigned by Oxford Archaeology who undertook the trial trenching. Not all assets are numbered or appear on Figure 4. This is because some are very tentative and require further investigation to verify their existence or date. Additionally, some assets such as individual small pits are too small to represent on a figure. The interest of these assets discovered by the fieldwork lies largely in their **evidential** value to inform our understanding of the past, and their **historic** value. Most of these buried assets have only recently been discovered and therefore are not considered to hold communal value as there is no sense that they figure in the collective experience or memory of a group of people. The exception to this would be buried remains relating to the airfield (**27**) and to Folkestone Racecourse (**153**) as these are heritage assets that hold **communal** value therefore any remains that are found relating to them would enhance the sense of association that certain groups of people have with them.

9.3.37 The trial trenching in Fields 2, 3, 8, 9 and the eastern part of Field 10 discovered a **moderate** to **high** quantity of Mesolithic or early Neolithic flint within later features but no flint scatters. This suggests a transient presence in the Mesolithic (Middle Stone Age) and could be seen as of **local** significance. In Field 5 a buried land surface was found (**220**) preserved underneath a later barrow (**136**). A sizable assemblage of Mesolithic flintwork was found within this buried land surface. The buried land surface (**220**) in Field 5 occupies an area of higher ground and could have been a particular focus of Mesolithic hunter-gatherer activity. Buried land surface **220** is a rare survival due to its preservation and is of **regional** significance. The quantity of flintwork found in Fields 2, 3, 5, 8 and 9 and 10 suggests that these areas were visited by Mesolithic hunter-gatherers. The quantity of Mesolithic flint found in Fields 8 and 10 might suggest a Mesolithic site of **regional** importance in the area as yet to be found and **medium** value.

9.3.38 The trial trenching in Fields 1 and 4 has recovered a substantial amount of Neolithic flintwork and there is also a substantial assemblage of Neolithic pottery from Field 1. There was also a moderate amount Neolithic flint found in Fields 8, 9 and 10 but no Neolithic pottery. The Neolithic material from all five fields is mainly redeposited within later features and therefore not depicted on Figure 4. One Neolithic ditch (**196**) in Field 4 was the only feature definitely dated to the Neolithic in both Fields 1 and 4. The Neolithic finds from Fields 1 and 4 suggests the presence of a Neolithic site possibly **regional** importance and **medium** value within this area and also maybe in the area of Fields 8 (which is not far from the East River Stour) and 10 although no such sites have yet been located.

9.3.39 A large semi-circular enclosure (**175**) with a possible trackway (**176**) leading to it from the south-west was detected by geophysics and sampled by trial trenching in Field 1. It was found to contain Early to Middle Iron Age pottery but also a substantial quantity of Neolithic flint including early Neolithic tools and bladelets and possible Neolithic pottery. The geophysics showed what could be interrupted as ditches on one side but these were not verified by the trial trenching. The dating of this feature is slightly ambiguous but thought to be Early to Middle Iron Age. However, there is the possibility that it could be early Neolithic and was subsequently recut and altered in the later Prehistoric period. Its shape and its interrupted ditches do suggest a Neolithic causewayed enclosure which, if proved by further fieldwork, could be of **high** value and **national** significance due to their rarity. If the Neolithic pottery and flints are residual in an Iron Age feature that may instead derive from an Early Neolithic feature nearby such as a midden this would be of **lesser** (**regional**) importance. The importance of the enclosure and trackway (**175, 176**) as Early to Middle Iron Age features are discussed below.

9.3.40 Small pits of probable Late Neolithic/Early Bronze date have been found in Fields 2-3 (not numbered or represented on Figure 4). Late Neolithic to Late Bronze Age flint has been found spread across Fields 2 and 3 suggesting that further features of this date might be present in this area. Field 4 also yielded significant quantities of flint of Late Neolithic/Early Bronze Age date albeit mostly within later features. There is potential for assets of Late Neolithic to Early Bronze Age date to be present in all three field which could prove to be **locally** or **regionally** significant and of **low** to **medium** value.

9.3.41 The Prehistoric barrows located across the site (mainly known of from the HER, LiDAR and air photos) are discussed in the section above.

9.3.42 To the east of Barrow Hill, Sellindge geophysics revealed a circular geophysical anomaly (**133**) that was thought to be a partially ploughed out barrow. Trial trenching (in Field 8) did not confirm if it was a barrow or not. The dating from the ring ditch was mixed Medieval, Post-Medieval and Late Neolithic/Early Bronze Age and it contained no trace of a mound. It could be a Post-Medieval feature (**223**) connected to Barrow Hill Farm or an Early Bronze Age barrow. Although not well preserved, if **133** is a Bronze Age barrow it would have **regional** significance and **medium** value as an element in a wider Bronze Age barrow landscape. If it proves to be Post-Medieval in date it would have **local** significance and **low** value.

9.3.43 Fields 2, and 10 and probably Field 3 contained Middle Bronze Age ditches (**187, 239, 189**) thought to be part of a field system that was contemporary with the barrows. There are certain other undated ditches and enclosures in Field 2, some of which are on a similar alignment, and could also be contemporary (**186**). Field 2 also contained pits, an L-Shaped ditch and an adjacent ring ditch (**185**), all of Middle Bronze Age date. The latter two assets were clearly visible on the geophysical survey. The ring ditch (**185**) may represent an unusual type of barrow (with no internal mound) but is more likely to have a domestic function or to have enclosed a collection of cremation burials. Taken together with the barrows, the Middle Bronze Age features in Fields 2, 3 and 10 form part of a Middle Bronze Age landscape incorporating domestic, agricultural and funerary features which is of **regional** importance and **medium** value. The northern part of Field 4 also contained a Middle Bronze Age (or Late Bronze Age) pit and ditch (**195**), both of **local** significance and **low** value.

9.3.44 Middle Bronze Age activity is not just confined to the western part of the Site. In Field 6 which is east of Stone Street lies a probable Middle Bronze Age enclosure (**112**) and field system ditches (**200**). The enclosure can be clearly seen on aerial photographs but was not detected by geophysics. The trial trenching evidence indicates a probable Middle Bronze Age date for the enclosure and the ditches. If proved to be of Middle Bronze Age date this enclosure and its related field system is of **regional** significance and **medium** value as only three or four other possible enclosures of this date have been found in Kent and Middle Bronze Age field systems are still few in number regionally.

9.3.45 Late Bronze Age cremation burials in the northern part of Field 2 (**184**) and one nearby in in the south-eastern corner of Field 10 (**203**) indicate that burial did not just take place within barrows and that funerary activity continued from the Middle Bronze Age in this area. These 'flat' cremation burials, i.e. those not contained within barrows, are of **local** significance and **low** value.

9.3.46 A curvilinear ditched enclosure (**175**) and a nearby L-shaped feature (**177**) showed on the geophysical survey in Field 1. Trial trenching suggests an Early to Mid-Iron Age date for both these assets (although the curvilinear enclosure also contained Neolithic finds – see above). These enclosures, as well as two pits and a nearby ditch (**175**) and an Early to Middle Iron Age ditch in the same field (**180**), suggest settlement activity of this date in the area. A hollow to the south of the enclosures also contained Early to Middle Iron Age pottery (**182**). A late Bronze Age or Early Iron Age curvilinear enclosure was also found in the northern part of Field 3 along with three Iron Age pits (**190**) indicating the periphery of an Early to Middle Iron Age settlement. All the enclosures, as well as the ditches, pits and hollows associated with them (**175, 177, 180, 182, 190**) would be of **regional** importance and **medium** value if confirmed to have originated in the Early Iron Age as these are very rare in Kent.

9.3.47 A second hollow (**183**) was also found in Field 1 (to the south of ditches **177/178**). It contained artefacts broadly dated to the prehistoric period but it was not possible within the trial trenching to refine its dating. This would be of **regional** significance and **medium** significance if found to be associated with the regionally significant Early to Mid Iron Age or earlier features in this field.

9.3.48 The southern area of Field 4 contained a sub-rectangular enclosure (no identification number) which showed as a geophysical anomaly. Trial trenching established an Early to Middle Iron Age date for this feature and also revealed internal pits (**192**). Just to the north, a series of parallel ditches (**194**) may be related to the enclosure and it is possible (given the partial coverage of trenching in this field) that further Early to Middle Iron Age evidence may be revealed in Field 4 should further work take place. As with Field 1, the enclosure (**192**) is of **regional** importance and **medium** value.

9.3.49 Geophysical anomalies south of Somerfield Court Farm (west of Barrow Hill, Sellindge) were sampled by trenching in Field 10. They proved to be a settlement starting in the Middle Iron Age and continuing on through the Late Iron Age until the middle Roman period and structured around a major sinuous ditch (**214**). Materials deriving from the multiple interventions into this ditch dated it to between the Middle Iron

Age and Middle Roman period but included the late Iron Age, suggesting that the ditch (**214**) remained a major feature throughout the life of the settlement. To the south of the sinuous ditch were a dense concentration of pits (**217**) including a large 'bell'-shaped pit. Either side of the sinuous ditch was a series of rectilinear enclosures (**212, 213, 215, 238**) and ditches (**216, 218**). These settlement enclosures and pits carried on until the Late Iron Age and Roman period. One enclosure (**213**) contained remains of a Romano-British post-built house. No roundhouses were identified, although the features that were discovered are indicative of at least one settlement. A late Iron Age to Roman quarry pit (**208**) in the south of Field 10 and an enclosure in the north-western part of Field 10 (**210**) are probably part of the same settlement. The Middle Iron Age, and Late Iron Age to Roman settlement features (**208, 210**, **212, 213, 214, 215, 217, 238**) are of **regional** importance and **medium** value.

9.3.50 Geophysical anomalies (**219, 221**) in Field 10 that were not sampled by trial trenching are currently of unknown date. Their morphology and the presence of other Prehistoric and Roman features on this field makes it likely that these features are Prehistoric or Roman. Further work would prove if these anomalies were archaeological (rather than natural or modern features). If they are associated with the barrows or part of the Middle Bronze Age field system, or alternatively, were Middle Iron Age to Roman in date they would be of **regional** importance and **medium** value.

9.3.51 To the south of this settlement, in the middle of Field 10, is another enclosure (**206**) seen on geophysics. This double ditched rectilinear enclosure requires further investigation as only two trenches were dug into this feature but the finds indicate a Late Iron Age Date. It could also be of **regional** significance.

9.3.52 The barrow (**44**) which lies to the east of Barrow Hill, Sellindge, when investigated by trial trenching (Field 9), showed evidence of a phase iron working carried out within and adjacent to it. Iron slag and hammerscale indicate a possible smithy. This activity is not represented on Figure 4 but could represent an Iron Age or later re-use of the barrow which might be of **local** or **regional** importance. As stated in the barrow section above, if this barrow (**44**) is proved by further work to be of Iron date it would be rare and would raise its significance potentially to **high** value and **national** importance.

9.3.53 There are various other geophysical anomalies across the Site that have not yet been subject to archaeological trial trenching and some of these may prove to be Prehistoric. These include: linear (**202, 207, 211**), curvilinear (**204, 202**) and sub-rectangular geophysical anomalies (**202**, **206**) located west of barrows **58, 113** etc., in the same field; linear features **169**, **171**) with pits (**171**) and a curvilinear feature (**170**) north of Upper Otterpool; a sub-rectangular enclosure and linear ditches (**172**) south of Red House; two parallel curvilinear ditches in the south eastern corner of Field 2 (no identification number or represented on Figure 4); and linear ditches in Field 4 (no identification number or represented on Figure 4). These may, upon investigation, prove to be Prehistoric but it is not possible to assign significance to them at them at this stage.

9.3.54 The geophysics showed a system of ditched anomalies and small sub-rectangular enclosures west and north-west of Otterpool Manor (**LB20**). Some of these were investigated by trial trenching in Field 3 and they were also found to continue into the northern part of Field 1 (**178,191**). A Late Iron Age to Early Roman date has been confirmed for those that have been subject to trial trenching and it is assumed that they form part of the same farmstead and associated field system. This settlement seems to have replaced the Early to Middle Iron Age settlement further to the west (**175,177**). A relatively large assemblage of early Roman pottery was found in the enclosure ditches in Field 3 including some complete and semi-complete vessels. This Late Iron Age/ Early Roman farmstead (**178, 191**) is of **regional** significance and **medium** value.

9.3.55 In Field 6, to the east of the Roman road Stone Street (**5**), are two linear geophysical anomalies (**198**) which were excavated within the trial trenches and found to date to the Late Iron Age or early Roman period. These are of **local** significance and **low** value.

9.3.56 Geophysics (magnetometry -Appendix 9.12) and trial trenching has revealed a previously unknown Roman villa (**167**) east of Otterpool Quarry and south of Ashford Road. The trial trenching report (Field 5, Appendix 9.18) and the Statement Significance (Appendix 9.8) give full details on this key heritage asset. The villa survives as limestone foundations as well as associated floor layers of varying preservation. A series of rooms were exposed including a possible bath house. Heated floors are indicated by the survival of a hypocaust with the remains of the bases of tile *pilae*. Window glass, roof tile, flue tile, voussoir tiles, column bases of imported stone as well as a range of other finds including coins and imported pottery indicate a building of high status with access to good trade links. Two structural phases could be recognised on numerous buildings. Some structural features and a large south-west to north-east aligned ditch can be dated to the first century AD, and a small amount of possible conquest period (43AD) pottery was discovered. However, the majority of the features date to the middle Roman period. Little material dates to the 4th century, and no Late Roman structural features were uncovered. The villa included a possible malting oven with a raised floor, a suggestion of a glass furnace and possible milling activity. Roman rubbish pits with waterlogged fills preserving organic finds were revealed next to the former channel of a stream, in the north-eastern part of the Field. Other features include a north-west to south-east aligned road, linear ditches and pits and a possible fishpond. The large boundary ditch extending south-west to north-east from the main villa buildings may form one side of an enclosure with another ditch showing as geophysical anomaly (**168**) to the north. This ditch (**168**) has yet to tested by trial trenching.

9.3.57 Further geophysics (Ground Penetrating Radar) was carried out across the villa field to attempt to define the walls of the building and to establish its extent. Magnetometry was also carried out on the southern part of the field to the north of the A20 to establish if the villa extended north of Ashford Road (Appendix 9.15). The villa does not appear to extend into the field to the north however it is still not certain what its southern and western extent is.

9.3.58 The ground penetrating radar on the villa field detected a suite of other features of undetermined origin, comprising irregular shapes and small rounded discrete anomalies possibly representing ditched enclosures, some walls and general spreads of material (no identification numbers).

9.3.59 From what has been currently excavated, the villa (**167**) does not appear to be particularly well preserved compared to other villas across the UK. It shows signs of extensive robbing. Only one course of walling survives – the rest of the stonework comprising wall foundations. No plaster or mosaic floors were found which suggests truncation by ploughing. Environmental preservation was good however and the pits and former stream channel on the eastern side of the Site were shown to preserve organic remains such as wood and antler as well as charcoal. There is the potential for pollen and plant remains that will inform on the past Roman environment.

9.3.60 Current knowledge of the villa (**167** and including probably related ditch **168**) indicates that it is of **high regional** importance. Clearly it has high archaeological potential and current evidence indicates that this asset is of **medium** value.

9.3.61 There is nothing visible of the villa (**167**) above ground (or from the air). The setting of the Villa is informed by its predominantly rural surroundings which contribute to its significance by allowing an appreciation of its topographic location and situation in relation to the site of contemporary and earlier activity in the area. Villas were usually carefully sited with respect to topography and natural resources and so the ability to appreciate this makes a more major contribution to its significance. While the general surroundings of the villa site are agricultural, as they would have been when the villa was in use, the nature of this has changed greatly and the layout of the landscape does not retain any of this much earlier organisation. Consequently, this aspect of its setting makes a smaller contribution to its significance.

9.3.62 The fieldwork across the Site has revealed an extensive array of other Romano-British features – all previously unknown. A rectangular enclosure (**193**) showing as a geophysical anomaly was investigated as part of the trial trenching in Field 4. This dates to the Middle Roman period and contained postholes and a beam slot signifying the presence of a timber building (also **193**), this indicates that the enclosure contained a Roman farmstead. An early Roman ditch and a Late Iron Age to Early Roman ditch to the north (**193**) may be earlier elements of its field system. Evidence from the archaeological investigations undertaken to date indicates that this field contains more elements of the field system associated with this enclosed Roman farmstead. It is considered to be of **regional** significance and **medium** value.

9.3.63 To the south of the villa (**167**), east of Lympne Industrial Estate, geophysics (magnetometry – see Appendix 9.10) revealed an area of rectilinear ditched enclosures (**225**) which have yet to be sampled by trial trenching but appear (by their highly regular arrangement) to be Romano-British. A double ditch (**225**) to the north indicates a trackway (possibly leading to the villa **167**) and subdivisions with the enclosures (**225**) probably indicate settlement enclosures. The site is within the former Lympne Airfield (**27**) and the geophysical anomalies shows signs of disturbance by airfield features, possibly even bombs. Some pit-like anomalies may therefore have Modern origins. Further geophysics (resistivity) was carried out on part of this site (Appendix 9.14) to find out more information as it was not possible to carry

out trial trenching due to the threat of unexploded ordnance. This resistivity survey established that the asset (**225**) is not a stone-built structure but the survey was otherwise somewhat inconclusive. This asset could be of **high regional** importance and **medium** value if proved to be well preserved and of Romano-British date.

9.3.64 To the south-east of ditched enclosures (**225**) east of Lympne Industrial Estate, a magnetometry survey (Appendix 9.14) detected other ditches (**226**) on a different alignment. These are currently undated. They do not appear to be contemporary with the possible Romano-British enclosures (**225**) and may be part of an earlier field system. Given the Bronze Age activity in the area it seems feasible that these anomalies (**226**) are Bronze Age but a Late Iron Age date is also possible. If Bronze Age, Iron Age or Romano-British they would be **regional** significance and **medium** value.

9.3.65 At the southern edge of the Site, within Lympne Airfield (**27**), geophysics (Appendix 9.13) has revealed another set of enclosure-type anomalies that indicate another field system (**237**). It has not been possible to conduct further investigation of the asset due to a health and safety risk associated with unexploded ordnance on the airfield. The proximity of these features to Aldington Road (**8**) which is a Roman road may indicate a Romano-British date. However, the fact that Bronze Age settlement has been recorded in the vicinity of Lympne Industrial Estate (**26, 212**) makes a Bronze Age date equally feasible. The lack of pits makes it more likely that these enclosures (**237**) are field systems rather than settlements and they are considered to have **local** significance and **low** value.

9.3.66 Other isolated ditches of Romano-British date have been found by trial trenching including one ditch (**230**) in Field 7, south of Westenhanger Castle, indicating a general potential for assets of Roman remains across this part of the Site. This ditch on its own is of **local** significance and **low** value.

9.3.67 Two charcoal-rich pits (**174**) were found in the same trench in Field 1, to the east of Harringe Brooks Wood. These both contained evidence of in situ burning and one of the pits fills was dated, by radiocarbon dating, to the Middle Saxon period. It is assumed that the adjacent pit is of the same date. These might represent settlement evidence or some industrial process such as charcoal burning and could be of **local** importance and **low** value.

9.3.68 The geophysics and trial trenching has also revealed various Medieval enclosures and field systems across the Site showing evidence of the area being farmed and settled from the Norman period. A Medieval ditch (**179**) and a nearby pit (no identification number) and set of ditches (no identification number) including one beam slot (**179**) were found in the north-east part of Field 1. The ditches and pit contained pottery dating AD1075-1300 and have been interpreted as an agricultural enclosure containing a possible timber building. These were revealed not far from Otterpool Manor (**LB20**) and may be possibly be a precursor to the building. These Medieval features (**179**) are of **local** significance and **low** value. A Medieval enclosure (**188**) was revealed in the western side of Field 2 as well as several undated ditches (**186**) that could be contemporary with it. These features (**186, 188**) are of **local** significance and **low** value. In Field 3 there was one Medieval ditch (no identification number) and other as yet undated linear geophysical anomalies (no identification numbers) that could be Medieval. These assets are also of **local** significance and **low** value.

9.3.69 In Field 6, west of Hillhurst Farm, several Medieval boundary ditches (**197**) were recorded which are of **local** significance and **low** value. A Medieval pond or hollow (**201**) was also recorded south-west of Hillhurst Farm in the same field. This pond was either cut into a probable Bronze Age enclosure (**112**) or made use of a hollow formed by its partly filled in ditch. This pond is of **local** significance and **low** value. A single ditch (no identification number) of possibly Medieval date was found in Field 8 which is probably related to an adjacent circular feature (**223**) which could be of Post-Medieval date. Ditch (**223**) is of **local** significance and **low** value. A small amount of Medieval pottery of the 13th or early 14th centuries was discovered in Field 8, mainly from topsoil and subsoil contexts which hints at Medieval settlement focus nearby which, if found could be of **local** significance and **low** value. There are other geophysical linear anomalies (no identification number) in this area that remain to be dated.

9.3.70 North of Upper Otterpool (**LB20**), some geophysical anomalies (**171**) could be Medieval in date, possibly related to earthwork features seen on the walkover survey (**WS16**). There are other undated linear features (169, 170) to the north-east of Upper Otterpool and south of Field 5 that may be Medieval field systems or other features. All these features have **local** significance and are of **low** value.

9.3.71 Evidence of Post-Medieval activity is present across the Site. Post-Medieval ditches that mark recently filled-in field boundaries shown on OS maps have not been described below or given identification numbers, unless of particular interest, as they are of **negligible** significance.

9.3.72 In Field 7 the area south of Westenhanger Castle was targeted to find Medieval and Post-Medieval remains related to the Castle. An area of cobbled surface with a ditch either side (**229**) was exposed in one trench. It seems to correspond with a track (**158**) showing on historic maps and aerial photos leading from the south-eastern corner of the castle to the Pound House (**157**) on Stone Street. This cobbled surface (**229**) is of **local** significance and **low** value.

9.3.73 Within Field 7, four trenches were targeted on the area of the Tudor garden (**166**), which at one point was an integral part of the setting of Westenhanger Castle. Evidence for the wall of the Tudor garden was revealed. This comprised an L-shaped ditch and a robbed-out wall (**227**) on the line of the boundary of the walled garden or orchard as identified from geophysics and historic mapping. The ditches and robbed wall contained 15th-17th century brick and tile (as well as some later brick). Tree throw holes (pits), some containing fragments of 16th to 18th century tile and brick (no identification number) were also found inside the area of the Tudor garden which would be consistent with what would remain from an orchard, or a garden containing trees. This is good evidence for a walled garden or orchard in this location of the right date to be identified with the Tudor walled garden described in documentary sources. What little that was exposed of it appears to be poorly preserved however and therefore has **regional** significance and **medium** value. Of the four trenches excavated, none produced any evidence of garden features such as pathways, ornamental beds, bases of fountains or statues etc.

9.3.74 Other Post-Medieval ditches (**228**) was also exposed to the east of the Tudor garden (**166**) which probably also relate to landscape features of the castle. These assets are of **local** significance and **low** value.

9.3.75 In Field 6, just south of the CTRL line and west of Hillhurst Farm (**BH32**), a 19th century brick clamp (kiln) was exposed by geophysics and confirmed by trial trenching (**199**). The geophysical survey suggests that the brick clamp continued below the railway line. The clamp should therefore pre-date 1843, when the construction of this stretch of South Eastern Railway was completed. The dating indicates that the last use of the clamp is likely to have been in the 1840s, and thus either just before, or during, the construction of the railway. It is plausible to suggest that the brick clamp was established here for the construction of the railway. The brick clamp is an important addition to the history of the local area and the railway, but as there do not appear to be any examples of the products of the kiln, is only of **local** significance and **low** value.

9.3.76 Post-Medieval linear ditches (**222**) were found in Field 8 to the east of Barrow Hill, Sellindge. Among these were a pair of parallel ditches, 4m apart aligned north-east to south-west. These two filled-in ditches follow the line of the western boundary of the deer park to Westenhanger Castle (**154**) as mapped from historic maps and this boundary can be seen on LiDAR as a double ditch. The ditches (**222**) did not contain any Medieval or early post-medieval material, only 19th to 20th century glass, iron and brick/tile. However, this is fairly normal for Post-Medieval field boundary ditches that were in use for several centuries and that would have been routinely cleared out. Either this part of the park boundary was constructed as a double ditched boundary or one ditch is a later redefinition of an earlier park ditch. These assets are of **local** significance and **low** value.

9.3.77 In Field 10 a cobbled track (**209**) aligned east to west was exposed by geophysical survey and trial trenching. This corresponds to a parish boundary. One or two ditches (no identification numbers) at right angles to this track containing Post-Medieval pottery were found and probably represent contemporary sub-divisions of the field. These assets are of **local** significance and **low** value.

9.3.78 Modern military remains found by the fieldwork are:

- A ‘Z-shaped’ geophysical anomaly (**231**) found by the resistivity survey carried out east of Lympne Industrial Estate (Appendix 9.14). This looks recent, and given its location at the northern end of the former airfield is likely to be a filled in military feature. It is of **local** significance and **low** value
- Geophysical anomalies sown up by magnetometry survey carried out on the airfield (Appendix 9.13) (**236**), though to be airfield related
- The former taxiway (**232** and **233**) of the airfield shown by magnetometry survey carried out on the airfield (Appendix 9.13)

- A previously unrecorded probable aircraft dispersal pen (**235**) showing up as an anomaly by magnetometry survey carried out on the airfield (Appendix 9.13)
- A former wind tee (**234**) showing as anomaly on magnetometry survey carried out on the airfield (Appendix 9.13)

9.3.79 Several geophysical anomalies remain undated – parallel ditches at the northern edge of Field 1 (**173**), a north-south ditch at the southern end of Field 10 (**205**). A possible field boundary or path (**224**) south-west of the Racecourse and north of the A20, and a small double ditched feature at the southern boundary of Field 1 (**181**). These assets are currently of **unknown** value.

Non-designated Built Heritage Assets (Figure 2)

9.3.80 This section discusses non-designated buildings and structures within the application Site. Certain built heritage assets just outside the Site are included if their settings are considered to be affected by the proposed development. It starts with a discussion of military buildings and then goes on to assess houses and farms.

9.3.81 There are a number of non-designated military buildings within the Site. They are as follows:

- Auxiliary Unit Operations Base (**4**), an underground structure which still survives and lies just within the application boundary at is western extent
- Battle HQ and Bunker (**28**), two underground structures which still survive. Both lie within an arable field within the application site. They are located at what was the north-western boundary of the airfield and formerly were shielded by a small wood which has now been removed
- Air raid shelters (**31**) which survive below ground in various conditions to the west of Otterpool Lane in the former airfield. They are 60m outside the application site boundary
- Gas Decontamination Building (**30**), survives as a ruined structure above ground. This lies 55m outside the application site and is close to **31, 32, 35** and **WS14.**
- A second Pickett Hamilton fort (**32**) which survives above ground to the west of Otterpool Lane within the former Lympne Airfield. It lies 60m outside the application Site
- Several former barracks huts (**35**) and RAF huts (**WS14**) which survive in a ruinous state west of Otterpool Lane. These are outside the application site by 80m.
- A bulk fuel installation (**38**), condition unknown. This lies 300m outside the application site, west of Otterpool Lane in what was the south-western corner of the airfield
- The wall of the former rifle range (**126**) seen during walkover survey, next to Lympne, at the eastern edge of the airfield. This is within the application site
- The sites of two possible Pillboxes have been tentatively identified on LiDAR but not visited by walkover survey (**142, 143**). These lie around the edge of the huts (**35/WS14**), to the west of Otterpool Lane. These are outside the application site by 200m and are within the former airfield
- An area with several buildings south of Ashford Road which possibly formed part of a munitions store (**WS20**). It was formerly a complex of 4-8 huts, hangers, and Nissen huts. The munitions store has been largely lost and the original layout was no longer extant prior to the 1960s. However, some structures may survive or have been re-used in the vicinity. One of these is a Nissen hut. The munitions store is likely linked to the RAF base at Lympne Airfield (**27**). Though some of the structures are clearly survivals from WWII, they are of common types and have been modified to varying degrees. It is clear that at least one has been relocated for reuse and later introductions have impacted the rest of the group altering their setting. Due to the poor state of repair of these structures, their adaptation and relocation, and the commonality of Nissen huts, there is little evidential or aesthetic value present in these assets. The structures (**WS20**) do provide historic value as remnants of the extent to which the landscape was modified by the military during WWII. They also provide a link for the community to the memories of this period, adding communal value. These asset (**WS20)** is of **low** value as although some structures survive or have been re-used, the overall layout has been lost.
- A munitions store located at Farmead Farm, 100m outside the application site boundary (**BH1**), survives as a ruined building
- A 20th century brick building in Westenhanger village (**WS19**) which is just outside the application site. It was built before 1931 and may have had a military role during WWII as it was marked as a 'depot' on some early mapping. Aside from its possible early date the structure offers **little** value, largely due to the modern loss of its original accompanying structures and warehouses which would have provided a significant group value to the structure and its surroundings. The structure does offer local **historic** significance through its telling of the wide spread military history of the area but this significance is limited due to the lack of related structures or documentary **evidence** relating the structure to the wider area. This structure is not a remarkable survival and offers little **heritage** value above its **local** significance. It also appears that the structure has been adapted several times since its construction making internal survival of features unlikely.

9.3.82 These assets are mostly of local or regional significance and have a **low to medium** value. This value is based on their relationship to the former Lympne Airfield which was an important staging location during WWI and WWII. These assets have **historic** interest due to their links to these **nationally** significant events and the **locally** significant airfield. Several assets are of **low** value (**142, 143**, **WS19**, **WS20**). Other assets are of **medium** value (**4, 31, 28, 30, 32, 32, 60, 35, 38, WS14, 126, BH1**) due to their surviving fabric and contextual associations. Two of the latter (The Battle HQ **28** and the Pickett Hamilton Fort west of Otterpool Lane **32**) could meet the Historic England criteria for listing (likely as Grade II Listed Buildings) and more details on this can be found in Appendix 9.5.

9.3.83 Other non-designated built heritage assets include:

- Harringe Court (**BH6**) and Harringe Cottages (**WS18**) are located outside the western edge of the application boundary by 200m. Harringe Court (**BH6**) is a house which may have 15th century origins but has been extensively renovated in the modern period. Harringe Cottages (**WS18**) are two semi-detached houses dating to the late 19th century. These assets are of **local** significance and **low** value. The value of these assets is formed by their **historic** interest as an early farmstead for the area and associated assets and for Harringe Cottages (**WS18**) their **aesthetic** interest as examples of a regional architectural style.
- Barrow Hill Farm (**BH13**) and the Oast House and barn at Barrow Hill Farm (**WS10**) is a collection of assets which form part of a 19th century dispersed farmstead. These assets lie 30m outside the application boundary close to the southern end of the village of Barrow Hill, Sellindge. The farm house (**BH13**) and barn are of **low** value and **local** importance. The Oast House (**WS10**) is of **medium** value and **regional** significance due to its unconverted state and survival of historic fabric, as well as its rarity and the fact that it is representative of Kentish vernacular tradition. The value of these assets is based in their **historic** interest as part of the agricultural development of the area. In addition, the Oast House offers **evidential** interest as an undeveloped example of the type of potential earlier date. The Oast House (**WS10**) could meet the Historic England criteria for listing (likely as a Grade II Listed Building) and more details on this can be found in Appendix 9.5.
- The Mount (**BH17**) is a 19th century farmhouse which lies 80m outside of the application boundary, within the settlement of Barrow Hill, Sellindge. The setting of this asset contributes to its significance and extends into the development boundary. The farmhouse has key views to the east across the rural, agricultural landscape. Its value is based mostly in its **historic** interest as part of the development of settlement and agricultural within the area. This asset is of **low** value and **local** significance.
- Twin (Tin) Chimney Farm (**BH24**) is a 19th or possible 18th century house which lies to the east of Stone Street 10m outside the application boundary. The asset is of **medium** value and **regional** significance. The value of this asset is based in its **aesthetic** interest as an interesting example of the vernacular for the region. Twin Chimneys could meet the Historic England criteria for listing (likely as a Grade II Listed Building) and more details on this can be found in Appendix 9.5.
- Farmstead south of Newingreen (**BH25**) is a 19th century nucleated farmstead which lies to the south of New Inn Green. It is outside the application site by 40m.The farm is built mostly of red brick with tiles roofs, but the farmhouse is rendered with Tudor style beams. This asset is of **medium** value due to its **historic, aesthetic**, and potential for **evidential** interest. These are based on the survival of the farm as a good surviving example of the development of farmsteads in the area over the 18th and 19th centuries. The complex also survives in appearance as a whole and single farmstead despite modern development of some of the out buildings. This asset (**BH25**) may meet the criteria for listing as set by Historic England likely as a Grade II Listed Building (see Appendix 9.5 for more details).
- Berwick Manor Farm (**BH28**) is a 19th century farmhouse built mostly in brick with tile roof and a stone pediment. It lies outside the application site by 68m. The house reflects the early Georgian style with

later alterations. This asset is of **medium** value and **local** significance. The value of this asset is based in its **historic** interest as part of the manorial farm system of the area and **evidential** interest due to its potential to hold evidence of an earlier structure within the later building. This asset (**BH28**) may meet the criteria for listing as set by Historic England, likely as a Grade II Listed Building (see Appendix 9.5 for more details).

- Hillhurst Farm (**BH32**) is within the application site. It is a good and complete example of a 19th century regular courtyard farmstead which is built mostly in brick in the polite style with slate and tile roofs. This asset is of **low** value and **local** significance. The value of this asset is based on its **historic** and **aesthetic** interest as an example of the characteristic farmstead type for the region.

9.3.84 There are a number of buildings that have value as heritage assets in Barrow Hill, Sellindge, all of which are located outside the application boundary but have settings which extend into the Site. These date from the 19th to 20th centuries and comprise of:

- Humble Bee Hall (**WS11**),
- Humble Bee Cottage (**WS13**),
- Chapel Cottages (**WS28**),
- Several 1840s Victorian cottages (including Ivy Cottages and Oak Cottages) (**WS5**),
- Merlin Cottage (**WS27**),
- Mistletoe and Ottermere Cottages (**WS26**),
- St Johns Cottages (**WS25**),
- Klondyke House (**WS23**),
- Grove Bridge house (**WS22**),
- Gables east and west (**WS29**),
- Bernhurt (**WS21**), and
- A Milestone (**WS4**)

9.3.85 These properties have group value as a collection of buildings which reflect the development of the settlement of Barrow Hill, Sellindge. These assets are of **low** value and **local** significance. The value of these assets is based in their **historic** and **evidential** interest as examples polite architecture expanding into the area through the expansion of the rail network.

9.3.86 There are several buildings of heritage interest along Aldington Road all of which are located outside the application boundary but have settings which extend into the Site. These date from the 19th to 20th centuries and comprise:

- The Lodge (**WS2**),
- Old Mill Cottage (**WS3**),
- Newell Cottage (**WS15**),
- Cliff Cottage (**WS7**), and
- Outbuildings at Belle Vue (**WS6/WS24**).

9.3.87 These properties are of **low** value and **local** significance, with the exception of Newell Cottage (**WS15**) which is of **medium** value. The value of these assets is due to the **historic** interest as examples of settlement development within the study area, and their **aesthetic** interest as containing features relevant to the vernacular of the area.

9.3.88 The three Arts and Crafts Cottages on Stone Street, in Westenhanger village (**WS9**) date to the mid-19th century and are built of brick with decorative features and tile roofs. They lie outside the application area by approximately 10m. These three buildings are of **medium** value and **regional** significance. The value of this asset is based in its **historic** and **aesthetic** interest as an early example of the arts and crafts style in Kent built by local architects of note. These cottages (**WS9**) may meet the criteria for listing as set by Historic England likely as a Grade II Listed Building (see Appendix 9.5 for more details).

9.3.89 Westenhanger Station (**BH3**) lies within the application site is a mid-19th century station house which was built to serve the London to Dover Railway and is constructed in yellow brick with ashlar detailing. The asset is of **medium** value. The value of this asset is based in its **historic** interest due to its connections with the important rail route to the south coast, and its **aesthetic** interest as an unusual example of a national style within the region. This asset (**BH3**) may meet the criteria for listing as set by Historic England, likely as a Grade II Listed Building (see Appendix 9.5 for more details).

9.3.90 The Barn and other buildings at Otterpool Manor (**WS8**) lie 30m outside the application site. They are of mixed date and character reflecting the styles of various periods. The Barn is potentially medieval and may pre-date the construction of Otterpool Manor (**LB38**) and be part of an earlier outfarm belonging to Upper Otterpool (**LB20**). Other structures date from the medieval through to the 19th century and demonstrate the development of the farmstead over time. All are good examples of the vernacular style in a mix of brick and stone. These assets are of **medium** value and have group interest. The Barn and other assets are listed under curtilage to Otterpool Manor (**LB38**).

9.3.91 The Barn at Upper Otterpool (**BH20**) is a small brick building with potential medieval origins. It lies outside the application site by 20m. Also close to Upper Otterpool (**LB20**) is a small L-shaped pigsty which is also of potential **historic** interest. These assets are of **low** value. They offer **historic** and potential **evidential** interest as early farm buildings associated with the manor house. They are protected under curtilage to the grade II listed house (**LB20**).

9.3.92 A further five farms, all situated with the application site of interest are:

- Somerfield farm (**FS1**), a Modern farm built after 1990, of **negligible** value
- Mink Farm (**FS2**), an 18th century farm of **low** value
- Elms farm (**FS5**), an 18th century farm, of **low** value
- Benham Water Farm (**FS4**) a Modern 20th century farm of **low** value, and
- Red house Farm (**FS3**), a Modern farm developed in the 1970s, of **negligible** value.

9.3.93 The value of these assets is based in their **historic** interest as farmsteads of 18th and 19th century date which are characteristic of the region.

Table 9-10 Asset Value Table: non-designated assets (Figure 2)

Receptor	Value
MR1-Crash Site	Medium
MR2-Crash Site	Medium
MR3-Crash Site	Medium
MR4-crash site	Medium
2-London and Dover Railway	Low
4-Auxillary Unit Operational Base	Medium
5-Stone Street (Roman Road)	Medium
7- Pimple	Low
8- Aldington Road (Roman Road)	Medium
20-Medieval features north of Westenhanger Castle	Low
22-features east and west of Stone Street	Low
25-post medieval features found at Royal Oak Motel	Low

Receptor	Value
26-Bronze Age Occupation site	Medium
27-Lympe Airfield	Medium
28-Battle HQ and shelter	Medium
29-aircraft dispersal pen	Low
30-gas decontamination building	Medium
31-air raid shelters	Medium
32-Pickett Hamilton Fort west of Otterpool Lane	Medium
33-slit trenches	Low
34-slit trenches	Low
35-barrack huts	Low
36-overblister hanger and trackway	Low to medium
37-machine gun testing range	Low
38-bulk fuel installation	Medium
39-runway	Low
40-aircraft dispersal pen	Low
42-cropmarks of medieval trackway and field system	Trackway-low Field system-medium
43-post medieval ditch	low
44-Barrow	**high**
45-Site of St Marys Church	medium
46-barrow	medium
48-cropmark of a ring ditch	low
51-moated site at Belle Vue	Medium
52-putative Anglo-Saxon palace site, south of WH Castle	Low
53-putative deserted medieval village site	Low
54-putative deserted medieval village site	Low
58-barrow	**High**
59-Harringe Court	Negligible
60- possible Pickett Hamilton fort in Link Park	Medium

Receptor	Value
61-concrete base, likely military	Low
64-prehistoric and medieval finds at Link park	Medium
66-aisled barn at Belle Vue	Medium
69-ammunitions store	Low
74-Late Iron Age and Roman pits	Medium
75-medieval ditch	Low
76-medieval 11th-12th century settlement remains	Low
77-medieval 14th-15th century ditches and enclosures	Low
78-Late Iron Age rural landscape	Medium
79-?16th century ditches	Low
107-medieval Holloway, enclosure and buildings	Medium
112-cropmark of an enclosure	medium
113-barrow	**high**
114-barrow	Medium
115-barrow	**high**
116-barrow	Medium
121-prehistoric ditch and postholes	Medium
122-ridge and furrow	Low
123-LiDAR feature	Low
124-LiDAR feature	Low
125-LiDAR feature	Low
126-wall of rifle range	Medium
127-former narrow-gauge railway	Low
128-field boundary- possibly part of landscape to WH castle	medium
129-possible aircraft dispersal pen	medium
130-barrow	Medium
131-barrow	Medium
132-Late Iron Age ring ditch	Medium

Receptor	Value
133- ring ditch, probably post-medieval. Possibly a barrow	Medium if prehistoric barrow, low if post-medieval feature
134-LiDAR feature thought to be a barrow but proved by trial trenching to not be present	Negligible
135-barrow	**High**
136-barrow	Medium
137-field boundary- possibly part of water system to WH Castle	medium
138-field boundary - possibly part of water system to WH Castle	Medium
139-field boundary- possibly part of water system to WH Castle	Medium
140-LiDAR feature	Low
141-LiDAR feature	Low
142-possible pillbox location	Medium
143-possible pillbox location	Medium
144-unknown feature, probably military	Low
145-drainage channel and pond	Low
146-site of pond	Low
147-water/drainage feature or pond south of WH Castle. Possibly part of water system to WH Castle	Medium
148-water feature south of WH Castle. Possibly part of water system to WH Castle	medium
149-causeway to WH Castle	medium
150-unknown building, probably military	low
151-possible site of gun emplacement	Low to medium
152-line of civil runway	low
153-Folkestone racecourse and buildings	Medium
154-deerpark boundary	Low to medium
155-barrow	Medium
156-barrow	Medium
157-Former Pound House	Low
158-former track to Pound House	low
159-possible ridge and furrow	Negligible

Receptor	Value
160-LiDAR feature	Low
161-site of former orchard	Low
162- earthwork-possible dispersal pen	Low
165-LiDAR feature	Low
166-site of Tudor Garden	Medium
167-Roman Villa	Medium
168-undated ditches probably part of Roman Villa	medium
169-undated ditch	Unknown
170-undated semi-circular feature	Unknown
171-undated features	Unknown
172-undated enclosures	unknown
173-undated ditches and enclosures	Unknown
174-two burnt pits of middle Saxon date	Low
175-Early to Middle Iron Age circular enclosure and nearby ditch and pit	medium
176-Early Roman linear ditches. Probably a trackway approaching 175	Medium
177-Early to Middle Iron Age enclosure	Medium
178-early Roman field system	Medium
179-ditches	Low
180-Early to Middle Iron Age ditch	Medium
181-undated double ditched enclosure	Unknown
182-Early to Middle Iron Age hollow	Medium
183-hollow containing prehistoric artefacts	Medium
184-Four Late Bronze Age cremations cutting a Middle Bronze Age ditch	Low
185-Middle Bronze Age enclosure and ring ditch	Medium
186-undated ditches and enclosures	Medium
187-middle Bronze Age field system	Medium
188-medieval enclosure	Low
189-Late Bronze Age to Early Roman ditch	Medium
190-Late Bronze Age to Early Iron Age curvilinear enclosure and 3 Iron Age pits	medium

Receptor	Value
191-Early Roman field system, ditches and farmstead	medium
192-Early to Middle Iron Age enclosure	medium
193-Roman settlement enclosure with further building within	medium
194-Early Iron Age to Early Roman ditches	medium
195-Middle Bronze Age ditch and pit	low
196-Neolithic ditch	Medium
197-Medieval field boundary ditches	Low
198-Late Iron Age to Early Roman field boundary ditches	Low
199-Early 19th century brick clamp	Low
200-Midle Bronze Age field system ditches	Medium
201-Medieval pond in the corner of the hollow left by the Middle Bronze Age enclosure	Low
202-Undated ditches, enclosure ditches and linear ditches	Unknown
203-Undated cremation (possibly Late Bronze Age)	Low
204-Undated curvilinear ditch	Unknown
205-undated ditch	unknown
206-Late Iron Age to Early Roman enclosure with ditches and pits	Medium
207-undated ditches	Unknown
208-Late Iron Age to Roman Quarry Pit	Medium
209-Post Medieval cobbled track	Low
210-prehistoric enclosure	Medium
211-Undated ditches, possibly a trackway	Unknown
212-Late Iron Age to Roman enclosure	Medium
213-Late Iron Age - Roman settlement enclosure with post-built Roman building	Medium
214-Roman ditch	Medium
215-Late Iron Age ring ditch	medium
216-Roman enclosure with Roman ditches inside	medium
217-Area of Middle Iron Age to Late Iron Age and Roman pits bordered by lengths of ditch	medium
218-Roman ditches	medium

Receptor	Value
219-undated ditches	medium
220-Buried land surface sealed beneath barrow (Asset 136), a sizeable assemblage of Mesolithic flint	medium
221-undated ditches	medium
222-post-medieval ditches	Low
223-Ring ditch east of Barrow Hill. Mixed dating.	Low
224-undated features	low
225-Rectilinear system of enclosure ditches, probably Romano-British. Includes 2 trackways, pits, postholes and quarry pits	medium
226-Prehistoric or Roman ditches (could be geological features)	medium
227-Post Medieval ditch and robbed out wall of Tudor Garden	medium
228-Post Medieval ditches	Low
229-Ditches either sides of a layer of cobbles forming hardstanding or path, possibly a track (Asset 158)	Low
230-Roman ditch	Low
231-Z-shaped feature. Possible airfield related	Low
232-Airfield activity (part of taxiway?)	Low
233-Airfield activity (part of taxiway?)	Low
234-Airfield wind tee	Low
235-aircraft dispersal pen	Low
236-Enclosures, possibly airfield related	Low
237-Area of Romano British or Prehistoric field system	Low
238-Early to Middle Iron Age ditches of a possible settlement enclosure. Includes at least one Middle Iron Age pit	Medium
239-Middle Bronze Age ditches of a field system	medium
BH1-WWII munitions store	Low to medium
BH3-Westenhnager Station	medium
BH6-Harringe Court	low
BH13-Barrow Hill Farm	low
BH17-Farmstead south east of Railway Cottage	low
BH19-demolished outfarm north west of Berwick House	low

Receptor	Value
BH23- demolished outfarm south east of Westenhanger	low
BH24-Twin Chimney Farm	medium
BH25-Farmstead south west of New Inn Green	medium
BH26-Newingreen Farmhouse and outfarm	medium
BH28-Berwick Manor Farm	Medium
BH32-Hillhurst Farm	low
BH38-Little Sandling Farmstead- demolished	low
BH42-pillbox location	Low to medium
BH43-pillbox location	Low to medium
BH44-pillbox location	Low to medium
BH45-pillbox location	Low to medium
BH46-pillbox location	Low to medium
BH47-pillbox location	Low to medium
FS1-Somerfield Court Farm	Negligible
FS2-Mink Farm	low
FS3-Red House Farm	Negligible
FS4-Benham Water Farm	Negligible
FS5-Elms Farm	low
WS1-Features South of Harringe Court	low
WS10-Oast House and Barn at Barrowhill Farm	medium
WS11-Humble Bee Hall '1763'	low
WS12-Rose Cottage - possible site of early cottage	low
WS13-Humble Bee Cottage	low
WS14-Military Buildings west of Otterpool Lane associated with Lympne Airfield (includes 30,31,32,35)	low
WS15-Newell Cottage	low
WS16-Earthwork features at Upper Otterpool	low
WS17-holloway adjacent to Stone Street. Could be ditch to park boundary	low
WS18-Harringe Cottages	low
WS19-Possible Military Building	low
WS2-The Lodge, Aldington Road	Low
WS20-Munitions Store south of Ashford Road	Low
WS21-Bernhurst, Barrow Hill	low
WS22-Grove Bridge House – Foreman's Cottage, Barrow Hill	low
WS23-Klondyke Villas, Barrow Hill	low
WS24-Otterpool Cottage, Belle Vue	low
WS25-St Johns Cottages	low
WS26-Zulu Cottage and Ottermere	low
WS27-Merlin Cottage	low
WS28-Chapel Cottages	low
WS29-Gables East and West	low
WS3-Old Mill Cottage, Aldington Road	low
WS4-Milestone on A20	low
WS5-Group of 1840s/Victorian Cottages/Railway cottages	low
WS6-Two outbuildings at Belle Vue	low
WS7-Cliff Cottage	low
WS8-Medieval Barn at Otterpool Manor	**High**
WS9-Arts and Crafts Cottages	medium

Historic Landscape (Figure 5)

9.3.94 A range of historical activity can be traced across the Site which predates available historic mapping. Kent HER data and other sources provide details of likely influences from these early assets on Historic Landscape Character (HLC). Detailed analysis of the Historic Landscape Character Types (HLCTs), identified by County HLC within the Site, has been undertaken in the Desk Based Assessment (Appendix 9 - 2) and the Historic Landscape Characterisation and Farmsteads Analysis (Appendix 9.3) which identifies variations in type and elements which make up the individual HLCTs.

9.3.95 The HLC for most of the Site is formed of enclosed fields dating from the late Medieval to post Medieval periods, specifically between the 16th to 19th centuries. The remaining landscape is formed of post 1810 settlements, 20th century industrial activity and the 19th century Racecourse (**153**). Little modern development has occurred in the western half of the Site, and agricultural fields remain dominant character type, with sparse historic woodlands and some historic hedgerows still evident. The western part of the Site is bordered by Harringe Brooks Wood- an ancient woodland. The central and eastern of the Site is more mixed in character, with greater settlement, development and industrial activity. The Site is crossed by the East River Stour and its tributaries which has been a focus for human activity from at least the Bronze Age (although its course in early prehistory was not exactly the same as today).

9.3.96 The presence of several Bronze Age burial mounds/barrows (**44, 46, 58, 113,114,115, 130, 131,135, 136, 155, 156**) indicates the early use of the landscape for funerary activity. The Roman roads of Stone Street and Adlington Road, and Roman settlement and farming evidence found in the Site, indicate the continuation of activity through the Roman period. This activity is thought to continue through to the Early Medieval (Saxon) period. Although evidence of early Saxon settlement is sparse it is indicated by burials of this date found at the edges of the application site. Settlement is unnucleated and scattered – a form of settlement which continues to the post-medieval period.

9.3.97 By the medieval period it is assumed that the landscape was largely unenclosed agricultural land, parkland and woodland. The Medieval/post-medieval deerpark (**154**) of Westenhanger Castle (**SM6**) covers a large area in the north and east part of the Site (Figure 2). Remnants of this formal landscape are mostly lost to arable and pasture agriculture and the Racecourse (**153**) although some elements of the deerpark may survive as earthworks or as below-ground remains. Based on national trends, it is likely that clearance of the landscape for agriculture would have intensified during the medieval period and continued into the post-medieval period. Enclosure of the landscape occurred mostly in the 17th and 18th centuries and is still clearly visible across the Site. The use of the landscape for agriculture remains across large parts of the Site.

9.3.98 The expansion of settlement across the Site advanced in the 19th century with increases in housing along the major roads. Industrial and military activity during the 19th and 20th century had a significant impact on the landscape character of the Site. The disused gravel and clay workings in the centre of the Site date to the late 19th century and have until recently been used for a commercial park. Lympne Airfield, once a military and later civil site, is no longer in use and has limited legibility as an airfield, partly due to part of being adapted into an industrial estate. Whilst the airfield has lost its military use, there remain a number of military buildings across the Site which form part of its 20th century character.

9.3.99 The landscape is fairly fragmented and has several visual detractors such as the M20 transport corridor, Lympne Industrial Estate and modern built form. The latter can overshadow the Ragstone and brick vernacular buildings. In the Sellindge Plateau Farmlands (encompassing the north, north-east, and east half of the Site) the historic landscape patterns are obscured and there are more discordant elements.

9.3.100 Overall the historic landscape has reasonable time depth and coherence, demonstrating clear yet varied historic character. The historic landscape within the Site offers **evidential** interest for its potential to reveal more information about past land use and human occupation due to the good survival of the landscape from the Prehistoric, Medieval and Post-Medieval periods. The landscape also offers **historic** interest for its diverse character and time depth, with evidence of the development of the landscape through almost every period from the Prehistoric to the Modern. The **aesthetic** and **communal** interest of the landscape lies in the agricultural heritage of the area, the past and present activity around Lympne Airfield, and Westenhanger Castle site.

9.3.101 Overall the historic landscape within the Site has a **medium** value.

Future Baseline

9.3.102 If the Otterpool Park scheme did not proceed, the baseline within the Site would remain and is not predicted to change significantly in the future through discovery of new assets or further development.

9.3.103 However, the effects of arable farming on certain assets including the Roman Villa (**167**) and the Barrows (**44, 46, 58, 113, 114, 115**, **130, 131**) would result in a slow and continued degrading of these assets over the long term.

9.3.104 Similarly, military assets around the Site have been noted to be degrading due to lack of curatorship and awareness of them as a group. It is predicted that if the Scheme did not proceed this decline would continue in the long term.

9.3.105 Folkestone Racecourse (**153**) is allocated within the Local Plan for development of housing and as such would still face loss through development in the long term if the Scheme did not proceed.

9.4 Design and Mitigation

Construction Approach and Mitigation of Construction Effects

9.4.1 Mitigation measures are proposed to prevent, reduce, and where possible, offset any potential effects of the Scheme.

9.4.2 The proposed development will involve extensive groundworks at the construction phase in the form of topsoil stripping for compounds, soil storage and haul roads; demolition of buildings; foundations for new buildings; drains; sewers; roads; levelling for sports pitches and creation of channels and shallow basins for SUDs. There will also be areas of ecological mitigation possibly involving creation of ponds, 'ridge and furrow' and water vole ditches. These groundworks will inevitably have a permanent effect on below-ground archaeological remains, where they are known or suspected to exist, and archaeological mitigation will be required.

9.4.3 While it is acknowledged in local and national planning guidance that 'preservation in situ' of archaeological remains is the preferred option, the proposed development presents an opportunity to advance our knowledge of the historic environment through 'preservation by record' e.g. by archaeological excavation or historic building recording before construction.

9.4.4 Construction will also have a direct impact on the settings of several historic buildings, structures and monuments and measures to mitigate this temporary effect are also proposed.

9.4.5 Archaeological assessment and mitigation is a phased successive approach where the results from one phase informs the next. The initial phases of archaeological assessment have taken place. The first stage comprised desk-based studies. This was followed by field evaluation involving geophysical survey and trial trenching over part of the Site, for which this phase is ongoing. The results of the desk-based studies, geophysical surveys and trial trenching evaluation has provided sufficient information to develop an understanding of the heritage resource within the Site and informed how mitigation is approached. However, it is recognised that in parts of the site the evaluation is incomplete (see 9.2). These areas will continue to be evaluated as part of an ongoing programme of assessment and mitigation at the Site. The ongoing evaluation is likely to involve different forms of geophysics, trial trenching plus possible test-pitting and archaeologically-led boreholes. The current results provide a sufficient level of assessment data to identify relevant (further) mitigation.

9.4.6 The geo-archaeological desk-based assessment for the Site (Appendix 9.16) will also feed into the mitigation.

9.4.7 The exact form and scope of construction mitigation to take place will be defined following the completion of the evaluation. The precise siting of the new buildings and the proximity of the works to the sensitive heritage assets is also not set. Of necessity therefore, the mitigation measures proposed below are fairly broad but will likely involve the following:

- Preservation 'by record' of archaeological remains involving a series of open area excavations on parts of the Site where there is dense archaeology or archaeological potential is thought to be high. This would take place pre-construction.
- Preservation 'by record' of a standing building prior to its demolition or adaption by building recording.
- Preservation 'by record' involving discrete areas of the Site being subject to archaeological monitoring ('watching brief') during construction.
- Preservation 'by record' by earthwork survey.
- Archaeologically-led boreholes and test-pits.
- For modern remains such as military features, an element of documentary and air photo research will be required, possibly alongside other mitigation measures such as buildings recording.
- Reducing temporary effects to the settings of heritage receptors from increased construction traffic flow controlled through and around the application site using traffic management i.e. control of vehicle movement through the site, speed limits and defined routes (refer to ES Transport Chapter 16).
- Reducing temporary impacts to the settings of heritage receptors caused by construction activity through increased dust (ES Chapter 6 Air Quality, ES Noise and Vibration Chapter 13 – Noise and Vibration). This would be achieved by fencing, hoarding and bunding, damping down of the construction area as well as limiting the hours in which construction can be carried out.

9.4.8 Physical impacts to non-designated built heritage receptors which would be demolished or changed as part of the Development would be mitigated through historic building recording. Recording would be completed in line with guidance issued by Historic England (Historic England, 2016: Ref 9-21).

9.4.9 The scope and extent of the mitigation measures has been agreed with the local planning authority and forms part of the Heritage Strategy being prepared for the Development which will be reviewed and updated throughout the life cycle of the development.

9.4.10 Mitigation measures will be implemented through planning conditions. As part of these conditions, the archaeological contractors, working on behalf of the Applicant, will be required to submit and agree a written scheme of investigation (WSI) with the local planning archaeological advisor prior to the commencement of this work. Broad mitigation measures will also be written into the Code of Construction Practice (COCP).

Designated Assets (Figure 1)

9.4.11 Temporary impacts to the settings of heritage assets would be caused by construction activity through increased dust, noise and vehicle movement. These impacts would be mitigated through use of fencing, hoarding and bunding, damping down of the construction area. The flow of construction traffic would be controlled through and around the application site using traffic management i.e. control of vehicle movement through site speed limits and defined routes (refer to ES Transport Chapter 16). This mitigation would reduce temporary impacts to the settings of Westenhanger Castle (**SM6/ LB5**) and its barns (**LB1**), Stream Cottage and Grove Bridge Cottage (**LB11**), The Royal Oak Public House (**LB15**), Upper Otterpool (**LB20**), Belle Vue House (**LB21**), Little Berwick (**LB27**) and Berwick House (**LB29**) as well as Lympne Conservation Area (**CA1**) and Sandling Park (**RPG2**).

9.4.12 The above mitigation of temporary effects would also reduce impacts to the setting of the historic landscape and to the settings of non-designated built heritage assets (see below).

9.4.13 Designated assets are discussed further under Scheme Design and Mitigation of Permanent Operational Effects below.

Non-designated assets

Non-designated archaeological assets known from HER, walkover, LiDAR and Desk-based assessment (Figure 2)

9.4.14 A total of 44 of these non-designated archaeological assets (identified from the above sources) will not be physically impacted (**2, 5, 7, 8, 20, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 44, 45, 46, 51, 53, 54, 58, 66, 69, 107, 113, 114, 115, 116, 122, 124, 130, 135, 136, 140, 141, 142, 143, 148, 149, 152, 155, 156, 157, 162, 166**). These are either outside the application boundary or are inside the application boundary but will be preserved in situ under open space. Seven assets lie outside the application boundary but represent archaeological features such as medieval ditches that may extend into the application site (**25, 74, 75, 76, 77, 78, 79**) and may therefore be physically impacted.

9.4.15 However of these 44 assets, certain ones, specifically prehistoric barrows (**44, 58, 113, 114, 115, 130, 135, 136, 155, 156**), the extant airfield features (**28, 30, 31, 32, 35, 36, 37, 38, 69, 152, 162)** and features relating to Westenhanger Castle (**53, 54, 148, 149,166**) will experience change to their settings from the proposals. Design mitigation for the setting of the barrows and the undesignated Westenhanger Castle assets is discussed further under 'Scheme Design and Mitigation of Permanent Operational Effects' below. Design mitigation for the setting of the extant airfield features (**28, 30, 31, 32, 35, 36, 37, 38, 69, 152, 162**) will include preservation in situ, hoarding, measures to limit dust and noise and the flow of traffic during construction.

9.4.16 The other heritage assets lying within the application boundary would experience physical impact during construction. These impacts would be permanent. Permanent impacts would comprise the removal of the whole or part of a receptor. Proposed mitigation for these assets is outlined below.

9.4.17 The area around prehistoric barrow asset **131** will require archaeological mitigation in the form of archaeological excavation and recording. This excavation would be preceded by metal detecting, in order to recover any finds which may be lost during the removal of the overburden within the area of the asset.

9.4.18 There are three assets which date from the Prehistoric period (**26, 64, 121**) which are located within Link Park, north of Lympne Industrial Estate which will be directly impacted by the construction of housing and SUDs. This area will be archaeologically evaluated by trial trenching and the appropriate mitigation strategy (i.e. archaeological excavation) be applied. This area has previously been disturbed by the construction of the industrial estate to the south and from the compound and dump material to the north associated with Link Park. It is therefore reasonable to assume that the assets here have already been impacted. However, the degree of impact is not known, and the archaeological evaluation will seek to understand how well they survive so the correct amount of archaeological excavation can be carried out.

9.4.19 There are two Prehistoric (Iron Age) assets (**74, 78**) which are outside the application boundary, but their full extent is not defined. Therefore, it is possible that they extend onto the northern parts of the application site and may be physically impacted by new housing. Asset **4** lies north of Hillhurst Farm and asset **78** lies north-west of Westenhanger Castle. The area closest to these assets within the application boundary will be archaeologically evaluated to assess if these assets extend into the northern part of the application site. If proved to do so they will be mitigated by archaeological excavation.

9.4.20 The Roman road, Aldington Road (**8**) is located along the southern extent of the application boundary. The asset has the potential to be impacted by the increase in road users during the construction phase and operation of the new development. Any alteration to the road will be subject to archaeological mitigation in the form of archaeological excavation.

9.4.21 As with Westenhanger Castle (**SM6**) itself, its individual archaeological components (**42, 45, 52, 53, 54**) that fall outside the application boundary will be screened from construction activity by appropriately designed hoarding. This will mitigate temporary impacts to setting from construction.

9.4.22 The Tudor Garden (**166/227**) will not be developed. However, further evaluation will be undertaken to inform the details for the re-creation. Mitigation in the form of excavation will be undertaken if the re-creation of the garden requires groundworks or tree planting which might damage the buried archaeological remains.

9.4.23 Elements of the Castle's deer park (**154, WS17**) will be subject to archaeological mitigation in the form of excavation.

9.4.24 The racecourse (**153**) will be largely lost to new housing and to the creation of public open space. The racecourse lake will however be retained. A decision has been taken (guided by Historic England) to design the public park in this area to evoke a sense of Westenhanger Castle's former landscape, hence it is not possible to retain the racecourse within this vision. The impact to the racecourse will be mitigated by archaeological survey and the grandstand buildings will be subject to historic buildings survey prior to demolition.

9.4.25 The area directly to the south of Westenhanger Castle contains an asset (**159**),which will be impacted by SUDS and will therefore be subject to trial trenching followed by mitigation through archaeological excavation.

9.4.26 Several assets (**138, 139, 158, 160, 128/137, 161,165**) to the south of the Castle and north of Ashford Road are potentially connected with the Castle. They will be directly impacted by housing and will be subject to trial trenching followed by archaeological mitigation in the form of excavation. Some of the assets may relate to the former outfarm (**BH23**) which will also be directly impacted and will also be included in this archaeological mitigation.

9.4.27 Archaeological features east and west of Stone Street (**22**) will also be impacted by new housing and will require trial trenching followed by archaeological mitigation in the form of excavation.

9.4.28 An area of Medieval ridge and furrow (**122**) is located to the west of Barrow Hill, Sellindge within an area of dense woodland. This will be impacted by the construction of housing and archaeological mitigation by earthwork survey will be undertaken.

9.4.29 Medieval and post-medieval archaeological assets (**75, 76, 77, 79**) lying outside the application boundary to the north of the CTRL and north of Newingreen (**25**) may extend into the Site. Archaeological evaluation by trial trenching will establish if these features extend into the application site. Archaeological mitigation by excavation will then be undertaken.

9.4.30 To the east of Stone Street at the northern end of Site are a series of Post Medieval ditches (**22**). These will be directly impacted by housing and will be subject to archaeological mitigation.

9.4.31 The demolished 19th Sandling Farm (**BH38**) lies east of Hillhurst Farm in an area associated with the proposed A20 upgrade. Another non-extant 19th century farms north-west of Berwick House (**BH19**) lies within an area planned community orchard. As it is unclear if these assets survive as below ground remains, trial trenching will be undertaken to determine this and then, if needed, the evaluation will be followed by archaeological mitigation in the form of excavation.

9.4.32 At the southern end of site is the former Lympne Airfield (**27**) and associated or contemporary structures (**27**, **29, 39, 40, 127, 129, 150, 151,**) and one unknown asset (**144**). These will be physically impacted by housing and by SUDs infiltration areas. These assets will be archaeologically evaluated and all extant or partially extant remains recorded. Documentary and air photo research will also form part of the mitigation.

9.4.33 WWII pillboxes (**BH42-47**), slit trenches (**33**), an undated crop mark (**48**), a Pickett-Hamilton Fort (**60**) (which is presumed to be still extant below ground) and a concrete base (**61**) are located within the former Lympne Airfield (**27**), and are anticipated to be directly impacted by housing, roads and SUDs infiltration areas. All of these assets will be archaeologically investigated and recorded. Documentary and air photo research will also form part of the mitigation.

9.4.34 The military aircraft crash sites (**MR1, MR2, MR3, MR4**) recorded on the HER all lie outside the application site. However, some may not be accurately provenanced so it is possible that the remains could be within the application Site. It is not known if any of the crash sites preserve any human remains or remains of the crashed aircraft, as this information is not available on the HER. It is, however, likely that the crash sites were cleared at the time or shortly afterwards. Added to this are 30-35 further crash sites recorded by the Zetica UXO desk study for the Site (Ref 9.19) but which are not recorded on the HER. Most of these aircraft crashed within Lympe Airfield between 1940 and 1941 and it is likely that all were cleared at the time. All military aircraft crash sites in the United Kingdom are controlled sites under the Protection of Military Remains Act 1986. If any human remains were found these would be classed as a war grave. A licence must be obtained from the Ministry of Defence (MOD) to authorise any disturbance of these sites and a licence to excavate must be issued from the Joint Casualty and Compassionate Centre (JCCC), part of the Defence Business Services (DBS). Prior to a licence being issued the applicant is required to research and supply the JCCC with the location of the crash site, type of aircraft and the fate of the crew. A licence will not normally be issued if human remains are likely to be found at the site and also if there are significant amounts of unexploded ordnance at the site. Preferred mitigation would be avoidance of these remains. Further evaluation work around these locations would be required pre-construction in order to locate these remains and avoid them. If they are detected on site during construction or archaeological mitigation all work should stop and the remains should be reported.

9.4.35 To the east of Stone Street is a cropmark of a Bronze Age enclosure (**112**) and drainage or pond features (**145, 146**). These assets will be directly impacted by new housing, roads and SUDs. The enclosure (**112**) has been archaeologically evaluated. Drainage features (**145, 146**) will, however, be subject to archaeological evaluation to establish their character. Mitigation in the form of excavation will be undertaken for these assets.

9.4.36 Located immediately south of the railway line, within the centre of site, are three undated and unknown assets (**123, 124, 125**). These are anticipated to be directly impacted by green infrastructure and housing and will be archaeologically evaluated and the appropriate mitigation applied, i.e. excavation.

9.4.37 Earthworks (**WS16**) located close to Upper Otterpool (**LB20**) will be archaeologically evaluated followed by mitigation by earthwork survey and excavation.

9.4.38 The following non-designated built heritage assets are due to be demolished as part of the proposals: most of **BH32** (Hillhurst Farm), **WS12** (Rose Cottage), **WS19** (possible military building in Westenhanger village), **WS20** (Munitions Store south of Ashford Road), **FS1** (Somerfield Court Farm), **FS2** (Mink Farm), **FS3** (Red House Farm), **FS4** (Benham Water Farm), **FS5** (Elms Farm). Of these assets, (**BH32**, **WS12, WS19, WS20**) will be subject to building recording as mitigation.

<u>Non-designated archaeological assets recorded through 2017-2018 Site evaluation/field work (Figure 4)</u>

9.4.39 The geophysical surveys and trial trenching conducted between 2017 and 2018 have revealed the potential for archaeological assets across the application site.

9.4.40 The evidence for the Mesolithic and early Neolithic periods is mainly in the form of residual finds found in later features. Later prehistoric and Roman assets that will require archaeological mitigation in the form of excavation are:

- Neolithic ditch (**196**) in Field 4,
- Late Neolithic/Early Bronze Age possible small pits (no identification numbers) in Fields 2-3
- Probable Late Bronze Age cremations in Fields 3 and 10 (**184, 203**)
- Late Bronze Age to Early Iron age curvilinear enclosure (**190**) Field 3
- Middle to Early Iron Age semi-circular enclosure (**175**) and possible trackway (**176**) in Field 1
- Middle Bronze Age ditches (**239** Field 10; **189** Field 3; **187**, potentially **186, 185** Field 2; pit and ditch (**195**) Field 4; enclosure (**112**) and field system ditches (**200**) Field 6
- Potentially Early to Middle Iron Age L-shaped feature (**177**), ditch (**180**), hollow (**182**) Field 1; enclosure and internal features (**192, 194**) Field 4
- Middle Iron Age settlement with Late Iron Age and Middle Roman period features (238), Field 10
- Middle to Late Iron Age and possibly Early Roman pits (**217**); rectangular enclosure (**212, 213, 215**) Field 10
- Late Iron Age enclosure (**206**) Field 10
- Late Iron Age to Roman settlement activity (**178, 175, 177, 191**) Fields 1 and 3
- Linear anomalies (**198**), likely prehistoric, Field 6
- Hollow (**183**), ditches and enclosure (**173**) Field 1; anomalies (**219, 221**), linear ditches (**207, 211**) curvilinear ditches (**204**) Field 10; linear ditches (**202**) next to Field 10, linear ditches (**172**), next to Field 5, two parallel curvilinear ditches (no identification number) Field 2; linear ditches (no identification number**, 205**) Field 4 and north of Field 2 are all of broadly prehistoric date
- Middle Roman enclosure, post holes and beam slots (**193**) Field 4,
- Romano-British enclosures (**225**), ditches (**226**), ditch (**230**) Field 7
- Roman ditches and enclosure (**216, 218**) Field 10

9.4.41 Within Lympne Airfield (**27**) are a series of enclosure-type geophysical anomalies (**237**) along Aldington Road which are currently undated but have the potential to be Roman in origin. These have not been trial trenched due to the risk of unexploded ordnance. These features (**237**) lie partially within an area of planned housing and will be subject to archaeological mitigation following evaluation.

9.4.42 Only two assets have been dated to the Middle Saxon period – two pits in Field 1 (**174**). These will be subject to archaeological mitigation in the form of excavation.

9.4.43 The following medieval assets are anticipated to be directly impacted by housing, roads and water infrastructure and will be subject to archaeological mitigation: ditch (**179**) Field 1; ditches (**188, 186**) Field 2, boundary ditches (**197**), pond or hollow (**201**) Field 6.

9.4.44 Just to the south of the castle, the trial trenching revealed several post-medieval features (**229, 228**) which may be associated with the castle complex or the non-extant outfarm (**BH23**) and will be physically impacted by groundworks for SUDS. These will be subject to mitigation in the form of excavation.

9.4.45 Other post-medieval features that will be impacted are: kiln (**199**) Field 6; cobbled track (**209**) and ditches Field 10; ditch (**223**), circular feature (**223**) and ditches (**222**) all within Field 8. These will be subject to mitigation in the form of excavation.

9.4.46 Military remains associated with the former Lympne Airfield (**27**) were revealed by the geophysical surveys. Those that will be impacted and subject to archaeological mitigation are: 'Z' shaped anomaly east of Lympne Industrial Estate (**231**), possible aircraft dispersal pen (**235**), anomalies (**234, 235, 236**) and former taxi ways (**232, 233**). These have not yet been evaluated by trial trenching. Following trial trenching, archaeological mitigation will be carried out in the form of documentary and air photo research and either excavation or survey as appropriate.

9.4.47 No mitigation is proposed for the following archaeological heritage assets found during the recent archaeological evaluations (**169, 170, 171, 206, 207, 220, 227**) as this assessment has determined that they are anticipated to experience no impacts as a result of the proposed development.

Non-designated built heritage assets

9.4.48 Temporary impacts to the settings of built heritage assets may be caused by construction activity through increased dust, noise and vehicle movements. These impacts would be mitigated through use of fencing, hoarding and bunding and damping down of the construction area. The flow of construction traffic would be controlled through and around the application site using traffic management i.e. control of vehicle movements through site speed limits and defined routes (refer to Transport Chapter, Chapter 16). This mitigation would reduce temporary impacts to the settings of the following - **BH1, BH6, BH13, BH17, BH25, BH26, BH28, BH32 and WS3, WS2, WS4, WS5, WS6, WS7, WS8, WS9, WS10, WS11, WS12, WS13, WS14, WS15, WS18, WS19, WS20**.

9.4.49 No mitigation is proposed for the following built heritage assets (**BH3, BH6, FS1, FS2, FS3, FS4, FS5**) as this assessment has determined that they will experience no impacts as a result of the proposed development (**BH3**) or they are of negligible heritage value (**FS1, FS2, FS3, FS4, FS5**).

Historic landscape

9.4.50 Any construction activity in the vicinity of hedgerows to be retained would be managed to avoid causing damage to or removing the existing hedgerows as they contribute to the historic character of the field boundaries which are a key element of the historic landscape in this area. Where practicable, exclusion zones should be set up around the hedgerows to avoid accidental damage.

Scheme Design and Mitigation of Permanent Operational Effects

9.4.51 The proposed development will take place in phases according to Zones 1-9 as per the parameter plans and will take place over a period of up to 25 years therefore construction and operational effects will occur concurrently.

9.4.52 Mitigation measures considered for the operational phase are:

- Embedded mitigation such as preservation ‘in situ’ i.e. the heritage assets are left undisturbed e.g. by the creation of open space;
- Embedded mitigation such as screening by trees, hedgerows and bunds and creation of buffers of open space to preserve setting;
- Maintaining traffic management measures implemented at construction phase; and
- Maintaining and monitoring open space in order to preserve heritage assets effectively

9.4.53 Additional measures alongside the mitigation above would also be put in place. These measures would increase public understanding of the historic environment in the vicinity of the site and connect the local community with the heritage resource. These might include:

- Community engagement, for example, involving local groups in researching and recording heritage assets;
- Involving local interest groups in deciding how assets are preserved and interpreted;
- On-site interpretation boards containing information on heritage assets (as derived from the archaeological investigations);
- Open days for the public during excavations;
- Temporary displays of artefacts found from the application site;
- Re-creation of elements of the historic environment;
- Dissemination of data derived on the historic environment on the application site to the local population, general public and academia;
- Improvement to public access and enjoyment of heritage assets; and
- Creation of a Heritage Trail

9.4.54 The following enhancements may bring beneficial effects:

- Benefits involving protecting certain vulnerable assets from gradual erosion through ploughing and protecting them under open space;
- Benefits of active management of certain built heritage assets that are currently decaying through neglect; and
- Possible repair and curatorship of some off-site built heritage assets (such as the barrack huts, gas decontamination building and Pickett Hamilton Fort west of Otterpool Lane) to offset loss of military assets on-site.

Designated Assets

9.4.55 The Otterpool Park masterplan has been designed to enhance the setting of and views from and to the scheduled monument of Westenhanger Castle (**SM6**) and its Grade I listed buildings (**LB1, LB15**) which lie on the northern boundary of the application site. Although the Castle is outside the application boundary, its setting and its landscape features are within the application area. The current usage of the land to the south as a racecourse, lake, rough grassland and agricultural land, while preserving open space to the south, does not engender understanding of the former deer park or help to place the Castle in its historic setting. The Castle is currently cut off from what was its deer park and gardens and its setting is therefore compromised. Its historic southern approach has been dislocated by the imposition of the racecourse in the late 19th century and a new eastern access has been created which was not the route by which the castle was designed to be approached. Furthermore, the Castle, although well maintained and managed, is hidden away behind trees and racecourse buildings and is not readily understood or appreciated from outside the castle complex.

9.4.56 During operation, Westenhanger Castle/Manor (**SM6/LB5/BH34**) and the Barns at Westenhanger Castle (**LB1**) will experience changes to their setting as a result of the visual changes to the surrounding landscape. Although the immediate setting of these assets will not experience change, the proposed housing to the east, west and south will considerably alter the character of the wider landscape. However, the proposals provide for the historic connections between these assets and the Medieval and the Post-Medieval deer park and other landscape features to be enhanced, which will increase the value of these assets. Additionally the development will result in an increase in the numbers of visitors and customers coming to the Castle and barns which will help it to remain viable.

9.4.57 The masterplan will remove some of the open land to the south, west and east of the Castle (**SM6/LB5**) and will replace it with development for housing. However, this loss of open space will be offset by the careful design of the generous envelope of open space that will be re-established around the Castle. This open space will take the form of a town park for the new settlement which will improve public appreciation of this nationally important but currently under-valued heritage asset. The park will be designed to evoke the sense of what would have been the landscaped grounds of this great house in its heyday and thereby will enhance its setting. The Castle’s former landscape included an extensive deer park, water features, river, orchards, ornamental garden and a causewayed approach. The original causewayed entrance (**149**) to the Castle will be reinstated. This will be lined by trees and have a wide green area either side allowing wide views northwards to the Castle and its barns and providing a sense of arrival. It is envisaged that thinning out of the trees on the south side of the Castle moat and removal of modern stable buildings will further enhance the views to and from the Castle. The water features to north-west of the lake (**147** and **148**) will be preserved as part of a habitat area. The Tudor Garden (**166**) will be represented by a new formal garden which evokes the Tudor gardens, although its exact layout is a subject for detailed design and will be informed by further archaeological investigations. Moreover, the former racecourse buildings will be removed, providing a larger open space between the castle and built development to the east than at present, a distance of approx. 110m compared to 60m currently.

9.4.58 Westenhanger Castle and its landscape features are a key element of the proposed new development and will be central to creating a sense of place for the new community. Therefore, these **high** value assets will experience a **minor adverse** magnitude of impact, taking into account the enhancements, which will result in a **slight adverse** significance of effect during the operation of the development which is considered non-significant.

9.4.59 There are no Listed Buildings within the application site although the settings of certain Listed Buildings **(LB11, LB15, LB20, LB27, LB29 and LB38**) do extend into the application site. Measures have been embedded into the scheme design to minimise the impact to the setting of listed buildings within the Site by careful arrangement of built form and use of green space. This will include maintaining hedgerows to create a buffer between the development and the listed buildings. Upper Otterpool and Otterpool Manor (**LB38 and LB20**) lie within the central area of the proposed development although both are outside the application boundary. Both have been afforded large areas of green space around them and the views between the two will be maintained as there will be public open space in the area between. Additionally, the historic footpath /bridleway connections from Otterpool Manor to the west will be reinforced as part of

the design. The settings of **LB11, LB15, LB27 and LB29** which very lie very close to the application boundary have had their settings protected by careful arrangement of green infrastructure. The implementation of measures to safeguard historic buildings and their settings within the development will be secured by the time the development is operational.

9.4.60 Lympne Conservation Area (**CA1**) lies close to the south east corner of the Site The setting of Lympne Conservation Area and its Listed Buildings will be preserved by gradating or otherwise limiting massing and form close to the south-east boundary of the application site.

9.4.61 Sandling Park Registered Park and Garden (**RPG2**) borders the application site. The masterplan has been designed to preserve the views to and from Sandling Park by bolstering the boundary with Sandling Park, by planting a buffer of landscaping comprising a minimum 20 metres wide tree belt along its outside edge, upon the line of the old A20 (see LVIA -Chapter 12).

Non-Designated assets

Archaeological assets

9.4.62 For many of the archaeological assets, permanent impacts from the construction phase would continue into the operational phase (as they are permanent) but would not give rise to additional effects. Therefore, no additional mitigation during operation is considered necessary for these assets.

9.4.63 Barrows **44, 58, 113, 130 and 136** will be preserved' 'in situ' under public open space. Barrows **114, 115** and **135** will be preserved 'in situ' under sports pitch which will be designed to not cut into the hillside but to be built up so as not to disturb the remains of the ring ditches or any burials that might survive. Detailed design for this particular sports pitch will include careful siting of service trenches and lighting so as not to cause damage to the barrows. The important key views between the group of barrows west of Barrow Hill, Sellindge that will be preserved in situ (**58, 113, 130, 114, 115, 135**) will be maintained. The intervisibilty between the barrows east and west of Barrow Hill, Sellindge will not be maintained within the design however there is no evidence that these groups of barrows were intervisible in prehistory therefore this is not a key view. The masterplan does not allow for a generous area of open space around Barrow **44**. Therefore although the physical remains of this barrow will be preserved in situ, its setting will experience change. The key (pre)historic view between this barrow (**44**) and the barrow to the south (**136**) cannot be retained with the masterplan due to the planned intervening housing. These barrows will experience a positive benefit from being taken out of ploughing regimes which are eroding them over time. Barrows **46, 116, 155 and 156** lie outside the application boundary and their settings will not be impacted due to distance from the scheme and intervening topography (**155 and 156**) or the enclosed nature of their locations (**46, 116**). The information derived from the trial trenching (Appendix 9.18) and potential excavation of Barrow **131** will be used to inform on-site interpretation. Following construction a strategy for the long-term management of the barrows preserved in public open space will be implemented.

9.4.64 The masterplan has been designed to incorporate the remains of the recently discovered Roman Villa (**167**) into public open space so that it will be physically preserved 'in situ'. The significance of this asset is largely derived from its evidential value i.e. its potential to answer research questions about aspects of our Roman past. Its setting is not the major contributor to its significance. However an adequate area of open space has been allowed around the known Villa buildings to allow the asset to be appreciated and understood. Further evaluation and excavation will be selectively used to extrapolate more information about the Villa and its ancillary buildings to inform mitigation. Further geophysics will be undertaken to assess the edges of Field 5 (in which the villa is located) especially the waterlogged areas that could not be surveyed using magnetometry or Ground Penetrating Radar. These areas may contain valuable information about the service areas and industrial activity associated with the Villa. Any information gained will be used to inform on-site interpretation. The most appropriate strategy for the long-term management of the villa preserved in open space will be confirmed following the results of the mitigation.

9.4.65 Stone Street (**5**) is a Roman road which runs through the eastern portion of the application site. The proposed masterplan includes the creation of a new town centre street to the west of Stone Street. Stone Street (north of Newingreen and south of the railway station) will not be a through route for traffic resulting in a benefit to this asset.

9.4.66 Those assets within the scheduled area of Westenhanger Castle (**SM6**) will be preserved in situ as they lie outside the application boundary (**42, 45, 52, 53, 54**). After the new development has been completed the views to the south will have been improved by landscaping and the re-instatement of original castle features i.e. the Tudor garden (**166**), causeway (**149**) and orchards. This is discussed in more detail above under designated assets.

9.4.67 Certain military structures will be preserved in situ due to being outside the application boundary (**30, 31, 32, 35, 38, 140, 141, 142, 143, WS14**). Other military structures inside the application boundary will be preserved - the line of the civil runway of the airfield (**152**) will be preserved as a line of green infrastructure within the new housing. Military structures (**36, 37, 162, BH42, 69**) lie at the extreme edge of the airfield within wooded or vegetated areas and will not be built on. The Battle HQ and Bunker (**28**) currently lies in an arable field and was designed to be hidden from view. Its former setting was at the edge of the airfield next to a no longer extant piece of woodland, at the edge of the airfield. This will be preserved in a strip of open space between housing and a sports pitch.

Built Heritage

9.4.68 For many of the built heritage assets, permanent impacts from the construction phase would continue into the operational phase (since they are permanent) but would not give rise to additional effects. Therefore, no additional mitigation during operation is considered necessary for these assets.

Historic Landscape

9.4.69 Embedded design measures will enable some legibility of the historic landscape within the new development. The general historic grain of the landscape as formed by the East River Stour and the alignment of fields has been reflected in the development design.

9.4.70 Retention of historic field boundaries is included in the development design across the application Site where possible (see plan OPM (P)1007G) and no physical impact will occur to them. The original setting of these fields that these hedgerows enclose has either been lost already or will be impacted by the new development.

9.4.71 The historic woodland identified will likewise be retained and not physically impacted. The original setting of these woodland assets has been lost over time due to farming and they will lose their current setting to the new development. However, no archaeological mitigation or investigation will be needed.

9.4.72 Other elements of the historic landscape including watercourses and, where possible, historic routeways will also be retained within the design. In the case of the causeway leading to Westenhanger Castle (**149**) this historic routeway will be reinstated.

9.4.73 Certain elements of the former designed landscape of Westenhanger Castle will be enhanced by the proposed development such as the recreation of a parkland-type public open space to the south of the Castle and a recreation of its Tudor garden (**166**).

9.5 Assessment of Residual and Cumulative Effects

Introduction

9.5.1 This section presents the residual and cumulative effects of the scheme on cultural heritage assets, listed in Section 9.3 with the provision of the mitigation measures proposed in Section 9.4. This section has assumed that the mitigation measures during construction and operation are in place prior to the impact assessment.

9.5.2 The proposed development could be a source of effects on the cultural heritage value or significance of the Site and surrounding area through:

- Ground disturbance for construction activities;
- The removal of existing buildings, landscape elements or character;
- The new built form, its scale, extent, appearance and character;
- The new road layout, access and patterns of circulation; and
- Changes to the visual qualities of the Site.

Residual Effects from Construction

9.5.1 Residual impacts during construction would be permanent for most receptors which lie within the application site boundary if construction involves physical impact. Residual impacts from construction

would be temporary for those whose setting would be affected by construction. All permanent impacts beginning in the construction phase would continue into the operation phase and are not repeated. This section addresses the residual impacts following mitigation for each asset. The impacts of dust, noise and traffic from construction are addressed in the relevant assessment chapters (Chapters 6, 13 & 16).

Designated Assets

9.5.2 Westenhanger Castle (**SM6/LB1/ BH34**) and its barns (**LB5**) will be affected by visual changes to their setting caused by construction activity. This visual change would include dust, excavations, and noise from movement of construction vehicles. With mitigation, the magnitude of impact is anticipated to be **minor** to these **high** value receptors. This would result in a **slight** (temporary) effect, which is considered **non-significant**. Additional mitigation is proposed including a COCP which will include measures that will minimise impacts on the Castle.

9.5.3 Stream Cottage and Grove Bridge Cottage (**LB11**) will experience changes to their setting as a result of the new built form of the development. The character of the wider setting will no longer be rural fields, with green infrastructure, in the form of woodland, to the west and proposed housing to the southwest. However, the immediate setting of this asset will still comprise the village settlement of Barrow Hill, Sellindge and there will be green space retained to the south-west. Therefore, this **high** value asset is anticipated to experience a **negligible** adverse magnitude of impact, which will result in a **slight** adverse significance of effect.

9.5.4 The Royal Oak Public House (**LB15**) will experience changes to its setting as a result of the visual changes to the surrounding landscape. The character of the wider setting will change from rural fields, and Folkestone Racecourse to the northwest, to a built area of high density housing. The asset does face away from the Site, which limits its potential to be impacted, and its immediate setting will be unchanged. Therefore, this **medium** value asset will experience a **negligible** adverse magnitude of impact, which once mitigated will result in a **slight** adverse significance of effect.

9.5.5 Upper Otterpool (**LB20/BH20**) will experience changes to its setting as a result of changes to the surrounding landscape. Green infrastructure and woodland are proposed to the west and north-west, and a sports pitch to the north-east. A SUDS infiltration site and a play area is proposed to the east. Further to the north-east will be low and medium, density housing. These proposed changes will change the predominately rural character of the wider landscape to a mixed use, sub-urban and public open space setting. Although already disrupted, it will no longer be possible to appreciate the asset within its remaining historical context and its visual connections to the past agricultural uses of the landscape will be lost. Although the visual changes to the immediate setting will be minimised by the proposed green infrastructure, the change in the character and use of the landscape will introduce change. Therefore, this **high** value asset will experience a **moderate a**dverse impact magnitude, which once mitigated will result in a **moderate** adverse significance of effect. This would be considered **significant**.

9.5.6 Belle Vue House (**LB21/BH11**) will experience changes to its wider setting as a result of changes to the character of the surrounding landscape. The setting of this asset has already been impacted by the Lympne Industrial Estate which effectively severs it from most of the Site. However, the proposed housing to the northwest will alter the remaining rural areas, resulting in a **negligible** adverse impact magnitude to this **medium** value asset, which is anticipated to result in a **slight** adverse significance of effect.

9.5.7 Little Berwick (**LB27/BH27**) and Berwick House (**LB29**) will experience changes to their setting to the west. Green infrastructure and sports pitches are proposed to the west, on the opposite side of Stone Street, with low density housing beyond. Although these proposals will change the character of the agricultural fields, the overall visual impact on the immediate setting of these **medium** value assets will be limited. Therefore, they will experience a **minor** adverse impact magnitude, which is anticipated to result in a **slight adverse** significance of effect.

9.5.8 Otterpool Manor (**LB38/BH12**) and its medieval barns (**WS8**) will experience changes to its setting as a result of visual changes to the surrounding landscape. Sports pitches are proposed to the west, a primary school to the south-west and a play area to the north-west. Beyond this will be housing of varying densities and new roads. To the north will be green infrastructure including SUDS infiltration areas. To the east, on the other side of Otterpool Lane, there will be green infrastructure and allotments with views maintained to Upper Otterpool. To the north east, the area of Otterpool Quarry that until recently housed a lorry park will be medium density housing. The character of its wider setting will change from a rural, agricultural landscape to a mixed used urban and public open space environment. It will be more difficult to appreciate the asset within its historical context as the farmstead will no longer sit within the wider agricultural landscape with which it has a functional and historical connection. Although this connection has already been partially disrupted by the introduction of different land uses, for example Lympne Industrial Estate and the lorry park at the site of Otterpool Quarry, the proposed development will increase this disruption. However, the application boundary in this location has been drawn to preserve some agricultural land to the south of the asset so the connection will not be completely severed. This **high** value asset will experience a **minor** impact magnitude, which once mitigated will result in a **slight** adverse significance of effect. This would be considered **not significant.**

9.5.9 Sandling Park Registered Park and Garden (**RPG2**) will experience some changes to its setting as a result of the proposed Development. The views from Sandling Park Registered Park and Garden are mainly to the south and east and are well screened from the Development. Therefore, this **medium** value asset will experience a **negligible** adverse impact magnitude, which once mitigated with more vegetation screening is anticipated to result in a **slight** adverse significance of effect.

9.5.10 Lympne Conservation Area (**CA1**) will experience indirect changes to its wider setting during operation. The Conservation Area is well screened to the north and west from the Site by treelines and recent development in Lympne. There is anticipated to be only limited impacts from the introduction of new built form into the background of the village. The Conservation Area lies to the south of the Aldington Road and is quite divorced from the proposed development. This high value asset is anticipated to experience a **negligible** adverse impact magnitude resulting in a **slight** adverse significance of effect.

Non-Designated Assets

<u>Archaeological Assets</u>

9.5.11 The following non-designated archaeological assets of **high** value would experience a **moderate** impact through change to their setting (**58, 113, 115, 135**). These are all prehistoric barrows. With mitigation in the form of preservation in situ and maintaining key historic views between barrows, this would give a **slight** adverse residual effect i.e**. no significant effects**.

9.5.12 The **high** value barrow (**44**) would experience a **moderate magnitude of** impact through a change to its setting. The barrow will not be physically impacted but it would be closely surrounded by new high density housing and would lose its setting. Additionally, the key (pre)historic view between it and medium value barrow (**136**) to the south would not be able to be maintained within the development due to the creation of intervening high and medium density housing. This would result in a **moderate** significance of effect for barrow **44** which would be a **significant** effect.

9.5.13 One **medium** value asset (**45**) which lies within the scheduled area of Westenhanger Castle would experience a **minor** impact to its setting but would not be physically impacted due to being outside the application boundary. Mitigation would result in a **neutral** effect i.e. no significant effects.

9.5.14 The following non-designated archaeological assets of **medium** value would experience a **major** impact through complete or partial physical removal or through a major change to their settings (**4, 26, 27, 42, 43, 44, 45, 46, 47, 60, 64, 112, 114, 121, 126, 128, 131, 132, 133, 137, 138, 139, 142, 143, 144, 145, 146, 147, 150, 128, ,199, 209, 230, 237, 151, 153, 154, 175, 177, 178, 180, 182, 183, 185, 186, 189, 190, 191, 192, 193, 194, 196, 200, 208, 210, 212, 213, 214, 215, 216, 217, 218, 219, 221, 225, 226, 238, MR1, MR2, MR3, MR4**). However, mitigation in the form of excavation or building recording of those assets that would be removed or partially removed by the development would preserve them 'by record'. This would allow valuable information to be gained about the historic development of the Otterpool Park Site and this would feed into regional research objectives. Thus, the residual effect are anticipated to be **slight adverse** i.e. **no significant effects.**

9.5.15 The following non-designated archaeological assets of **low** value would experience a **major** impact through complete or partial physical removal or through a major change to their settings (**22, 37, 40, 52, 123, 125, 127, 129, 144, 145, 146, 160, 161, 165, 174, 179, 188, 195, 198, 201, 203, 222, 223, 224, 228, 229, 231, 232, 233, 236, 237, BH42, BH43, BH44, BH45, BH46, BH47, WS1, WS16, WS17**). However, mitigation in the form of excavation or building recording of those assets that would be removed or partially removed by the development would preserve them 'by record'. After mitigation the residual effect would be **slight adverse** i.e. **no significant effects**.

9.5.16 The following non-designated archaeological assets of **medium** value would experience a minor magnitude of impact (**28, 114,130, 136,167, 168**) as they would all be preserved in situ. This includes Roman villa (**167**). As such a **neutral** or **slight** significance of effects are anticipated i.e. **no significant effects.**

Built Heritage Assets

9.5.17 Several assets were identified in the Historic Buildings and Structures Appraisal report (Appendix 9-5) as meeting criteria that gives them greater significance than most non-designated built heritage assets. These buildings will experience impacts from the proposed Development.

9.5.18 Twin (Tin) Chimney Farm (**BH24**) will not be physically impacted but will experience changes to its setting and views. Its immediate setting will be changed as a result of low to medium density housing proposed on three sides of the asset. Its wider setting to the west will be less impacted and will retain its character, although the wider setting to the east will be changed from rural fields to housing. Views from the asset out across the landscape will be altered. An area of land immediately to the west of the asset, however, will remain unchanged and traffic flows on Stone Street will be kept low as it will become a cul de sac. With mitigation i.e. careful screening through vegetation, enabled by having low density housing in the vicinity, this **medium** value asset will experience a **minor** adverse magnitude of impact. This gives rise to a **slight** adverse significance of effect.

9.5.19 The farmstead southwest of Newingreen (**BH25**) will not be directly physically impacted during operation but is anticipated to experience slight changes to its wider setting and increased noise from traffic. The setting of the asset to the east, northwest and south will remain unchanged. To the west an area of allotments is proposed, with secondary schools and sports pitches beyond. Although these proposals will change the character of the agricultural fields, the overall visual impact on the immediate setting of the asset will be limited. There will likely be an increase in the volume of traffic using the adjacent A20 road during operation, resulting in increased disturbance from noise. This **medium** value asset will experience a **negligible** magnitude of impact, resulting in a **slight** adverse significance of effect.

9.5.20 Berwick Manor Farm (**BH28**) is anticipated to experience impacts due to changes to its wider setting and increased noise from traffic. The setting of the asset to the east, south and west will remain unaltered. However, the wider setting of the asset to the northwest will be changed to sports pitches. This **medium** value asset is anticipated to experience a **negligible** magnitude of impact which is anticipated to result in a **slight** adverse significance of effect.

9.5.21 Westenhanger Station (**BH3**) will experience changes to its setting. A mixed use space is proposed directly to the south and housing to southwest. A primary road is also proposed to the south and south west of the asset, along with a water management area. The setting of this asset is informed by its location adjacent to the CTRL line, a relationship which will not be impacted by the proposed development. The character of its setting to the south will be considerably changed, however this part of its setting contributes little to its overall value and overall it is anticipated that there is potential to enhance the setting of the station building through proposals to create upgraded facilities and public realm in the vicinity. This **medium** value asset will experience a **minor** beneficial impact magnitude, resulting in a **slight** beneficial significance of effect.

9.5.22 The Oast House and Barn (**WS10**) at Barrow Hill Farm are anticipated to experience changes to its setting as a result of the operation of the proposed development. An increase in traffic may result in increased noise and disrupt its setting. Housing is proposed to the northeast, east and further away to the southeast, although its immediate setting will remain unchanged. Sports pitches are proposed to the east and south. Its relationship and historical associations with the surrounding agricultural landscape will be reduced as a result of the change in character from rural to semi-urban. This **medium** value asset is anticipated to experience a **minor** adverse impact magnitude resulting in a **slight** adverse significance of effect.

9.5.23 The Arts and Crafts Cottages on Stone Street (**WS9**) are anticipated to experience changes to their setting as a result of the operation of the proposed development. Low to medium density housing together with SUDS for water management is proposed to the east and west of the asset. This will impact on the visual ties between the asset and the rural landscape, although the proposed green space either side of the asset will reduce this. However, the setting of this asset is also informed by its relationship with the village of Westenhanger. This aspect of their setting will remain legible. This **medium** value asset is expected (with embedded mitigation) to experience a **negligible** adverse impact magnitude resulting in a **slight** adverse significance of effect.

9.5.24 The Battle Headquarters (**28**) and the Pickett Hamilton Fort are to the west of Otterpool Lane (**32**). These assets will experience change to their settings but will not be impacted physically. The magnitude of impact to the medium value Battle Headquarters (**28**) with mitigation is anticipated to be **minor**, giving a neutral significance of effect. The magnitude of impact to the **medium** value Picket Hamilton Fort (**32**) with mitigation is anticipated to be **negligible** giving a **neutral** significance of effect.

9.5.25 The following other Built heritage assets which will experience an impact to their setting during operation:

- Barrow Hill Farm (**BH13**) will experience changes to its setting. An increase in traffic may result in increased noise. Housing is proposed to the northeast, east and further away to the southeast, although its immediate setting will remain unchanged. Sports pitches are proposed to the east and south. Its relationship and historical associations with the surrounding agricultural landscape will be affected as a result of the change in character from rural to semi-urban. This **low** value asset is anticipated to experience a **minor** adverse impact magnitude which would result in a **slight** adverse significance of effect.
- The farmstead south east of Railway Cottage (**BH17**, **BH23**) is anticipated to experience changes to its wider setting. The character of the wider landscape will be noticeably changed from rural fields to housing. Although its immediate setting will be unchanged, its proximity to the Ashford Road could determine that it experiences increased noise and disruption from greater volumes of traffic. This **low** value asset is expected to experience a **minor** adverse magnitude impact resulting in a **slight** significance of effect.
- A WWII Munitions Store, at Farmead Farm (**BH1**), is screened from the Site by a dense tree line and the CTRL to the south and therefore **no change** is anticipated to its immediate setting. Therefore, this **low to medium** value asset is anticipated to experience **no change**, resulting in a **neutral** significance of effect.
- Harringe Court (**BH6**) may experience changes to its wider setting as a result of the operation of the proposed scheme. Although the immediate setting of this asset will remain unchanged, the character of the wider setting may be altered by the proposed housing to the east, sports pitches, an electricity substation and a possible Waste Water Treatment Works to the north. As Harringe Court is situated on an area of higher ground, the visual impact of the proposed development will be increased, however a landscape buffer is proposed between the asset and the development, and low density housing is proposed at the closest location. Views to the south and west will remain unchanged. An electricity substation is proposed to the north (as well as a possible waste water treatment works) which may present increased noise and traffic during construction, however this would be mitigated through appropriate routeing of construction vehicles to the site. This **low** value asset would experience **neutral** adverse impact magnitude, resulting in **a neutral** significance of effect.
- Harringe Court Cottages (**WS18**) is a **low** value built heritage asset on Harringe Lane just north of Harringe Court which be adjacent to the green infrastructure of the new development and close to a new electricity sub-station. Harringe Court Cottages (**WS18**) will experience a **negligible** change to its setting during operation due to increased traffic, noise and dust, resulting in a **Neutral** significance of effect.

9.5.26 Several non-designated built heritage assets in Barrowhill, Sellindge, identified from walkover surveys, may experience impacts during the operation phase. A milestone on the A20 at the southern end of Barrowhill (**WS4**) will experience a slight change in its setting, as a result of the changing character of the surrounding landscape. However, as the immediate setting of this asset, and its relationship with the Ashford Road, will remain unchanged, the overall impact to this **low** value asset will be **negligible** adverse, resulting in a **neutral** significance of effect.

9.5.27 Several cottages (**WS5, WS21, WS22, WS23, WS25, WS26, WS27, WS28, WS29, WS13**) and Humble Bee Hall (**WS11**), all located in Barrowhill, Sellindge, will experience impacts to their settings during the operation of the Site. Allotments and green infrastructure are proposed to the west with low density housing beyond this. This will change the character of the landscape to the west of these assets from rural fields to semi-urban. A proposed new road to the west could also increase noise and traffic, further disrupting the setting of these assets. To the east, medium and high density housing will further change the character of the landscape. All of these **low** value assets will experience **minor** adverse impact magnitude resulting in a **slight** significance of effect.

9.5.28 Three non-designated built heritage assets (**WS2, WS3, WS15)**, all houses or cottages and identified from walkover survey, will experience changes to their setting during the operation of the Site. Although the southern setting of these assets lies outside of the Site and will remain unchanged, the land to the north will become community orchards, allotments and green space with SUDS infiltration area. These proposals will only introduce slight changes, as the land is already occupied by rural fields. Low density housing further to the north will change the character of the wider landscape and will be visible in the distance from these assets. Furthermore, as these assets are situated on Aldington Road, they could experience disruption from increased traffic and noise. Overall these **low** value assets will experience **negligible** adverse impacts resulting in **neutral** significance of effect.

9.5.29 Two cottages (**WS7, WS24**) and two outbuildings at Belle Vue (**WS6**) will experience slight changes to their setting during the operation of the Site. Their immediate settings will not be impacted by the proposed Development, due to the intervening Lympne Industrial Park, although there will be minor changes to their wider settings. Although quite a distance from the assets, the proposed housing to the east of the Industrial Park, and to the north, will change the character of the area from predominately rural to mixed use sub-urban. These assets will also be affected by some increases in traffic and noise disruption. These **low** value assets will experience **negligible** adverse impacts resulting in **neutral** significance of effects. A greater impact would result from the wider Framework Masterplan development (see Cumulative Effects Section).

9.5.30 The **low** value built heritage assets (**BH26**, **WS14**) are expected to experience impact magnitudes of **no change** resulting in **neutral** significance of effects.

9.5.31 The impact of construction of the proposed scheme will include the demolition of several known built heritage assets:

- Hillhurst Farm (**BH32**) will be mostly demolished during the construction of the proposed scheme. Although the farmhouse will be retained, the majority of the associated outbuildings will be removed. The farmhouse will become part of a mixed used complex. This **low** value asset will result in a **moderate** magnitude of impact and with mitigation this will result in a **slight** significance of effect.
- An outfarm southeast of Railway Cottages (**BH19**), an outfarm southeast of Westenhanger (**BH23**) and Little Sandling (**BH38**) are three farmsteads which no longer survive above ground. However, it is possible that remains of these assets survive below ground, and as such, all three could experience direct physical impacts. These **low** value assets would experience a **moderate** adverse impact magnitude and which once mitigated through recording during construction would result in a **slight** adverse significance of effect.
- Six pillboxes (**BH42, BH43, BH44, BH45, BH46, BH47**) are known within the Site which are either recorded as non-extant (**BH45, BH46, BH47**) or assumed to be non-extant (**BH42, BH43, BH44**) based on the available information. Although all above ground evidence of these structures has been removed, some below ground remains could survive, most likely in the form of concrete foundations. Any below ground remains would be physically impacted by proposed roads or housing and would be completely removed. These **low** to **medium** value assets would experience a **moderate** adverse impact magnitude and which once mitigated would be anticipated to result in a **slight** adverse significance of effect.
- Somerfield Court Farm (**FS1**), Mink Farm (**FS2**), Red House Farm (**FS3**), Benham Water Farm (**FS4**), Elms Farm (**FS5**) are all proposed for demolition. These **negligible** and **low** value assets would experience a **major** adverse impact magnitude, result in a **slight** adverse significance of effect.
- Rose Cottage (**WS12**) is a built heritage asset proposed for demolition which will be completely removed. This **low** value asset will experience a **major** adverse impact magnitude, which once mitigated will result in a **slight** adverse significance of effect.
- A possible Military Building at Westenhanger (**WS19**) and a munitions store south of Ashford Road (**WS20**) are two assets proposed for demolition. Both **low** value assets will be completely removed and will experience **major** adverse impacts, which once mitigated would result in **slight** adverse significance of effects.

Historic Landscape

9.5.32 This historic landscape has been assessed as being of **medium** value. Key features within the landscape include the river corridors, historic field boundaries and field patterns as well as historic woodland. The landscape will experience a **major adverse** magnitude of impact from the development. However, embedded design mitigation measures have been included to preserve and enhance elements of the historic landscape which will allow some legibility of the historic landscape to remain. In addition, not all of the landscape will be impacted by the development and some (the former designed landscape south of Westenhanger Castle and the historic routeway leading to the castle) will be enhanced. With embedded mitigation therefore, the historic landscape will experience **slight adverse** impacts.

Cumulative Effects

9.5.33 The cumulative impacts assessment considers the cumulative impacts on the historic environment of the proposed development in combination with a number of consented and planned schemes near to the development area (Appendix 2.4). Those schemes considered relevant are included in Table 9-11.

9.5.34 The 250 dwelling proposed development in Sellindge (Y14/0873/SH), the 162 dwelling approved development to the rear of Rhodes House, Sellindge (Y16/1122/SH) and the extension to the existing Holiday Extras office building at Newingreen, (Y15/0175/SH) have been assessed. None are considered to have a cumulative effect with the Otterpool Park development on the listed buildings in Sellindge and in Barrow Hill, Sellindge. (see Table 9-11).

The Otterpool Park Framework Masterplan

9.5.35 The extra 1,500 homes that are planned within the Otterpool Park Framework Masterplan area are also considered (Figure 1). The Framework Masterplan plans are indicative and have not received consent, therefore the built development area, heights and other information aside from the development quantum are not certain or fixed. For the purposes of assessment the development footprint shown on In Support plan OPM(P)3017H 'Indicative Masterplan Zones' (Z9) have been used.

9.5.36 There is little design information to assess the Framework Masterplan plans in terms of how they may affect the settings of any heritage assets. Development within the Framework Masterplan boundary to the south-west of the OPA boundary, within the area between Harringe Brooks Wood and Danehurst Wood would affect the setting of the historic woodland of Harringe Brooks Wood but would not physically impact it. The woodland would be encompassed on three sides by development.

9.5.37 Two probably prehistoric barrows (**155, 156**) south of Harringe Brooks Wood identified on LiDAR but not yet verified are likely to be of **medium** value. An area of filled in military slit trenches located just west of the former Lympne Airfield (**33**) are of **low** value. Barrow **155** and the slit trenches (**33**) could be physically impacted by the development and if so they would experience a **major** magnitude of impact. With mitigation (archaeological excavation) this would result in a **slight** significance of effect. Barrow **156** would not be physically impacted but would experience a **moderate** change to its setting without mitigation. Barrow **155,** even if preserved in situ, would experience a **moderate** change to its setting without mitigation. Mitigation measure for barrows (**155, 156**) would involve preserving the barrows in situ and preserving their settings by including them in open space and preserving the intervisibility between them. This would reduce the significance of effect to **slight**.

9.5.38 Development within the Framework Masterplan boundary to the south of the OPA boundary, in the area north of Aldington Road and either side of Otterpool Lane would physically impact several military features, being within the area of the former Lympne Airfield **(27**). Military assets (**30, 31, 32, 34, 38, 142**) are of **medium** value. Military assets (**35, WS14, 140, 141**) are of **low** value. These would experience a **major** magnitude of impact from the development if they were demolished or built over. However with mitigation in the form of historic buildings recording this would result in a **slight** significance of effect. The Pickett Hamilton Fort (**32**) is considered to meet the Historic England criteria for listing (see Section 9.3) and is one of the group of military structures west of Otterpool Lane that would be affected. This would need to be preserved in situ and consideration given to its setting.

9.5.39 Development in this Framework Masterplan area to the south and south-west of the OPA boundary would bring housing very close to the listed building of Belle Vue (**LB21, BH11, 51**) and its unlisted ancillary buildings (**66, WS6**) as well as Otterpool Cottage (**WS24**) (Figure 1). However, these assets are already bordered by the industrial buildings of Lympne Park and are shielded by hedges therefore the planned housing to the north of these assets would not introduce much change. The plans also show open space to the east, west and north west of these assets which would maintain their setting. Thus the change to their setting with this embedded mitigation would be **neutral**.

9.5.40 The listed buildings (**LB22, LB23**) at the Aldington Road entrance of Port Lympne Registered Park and Garden (**RPG1**) would be adjacent to new development if the Framework Masterplan plans were carried forward. The Listed House (**LB7**), and associated features (**LB24, LB36**) within the park lie further away from the proposed built form. The significance of all these assets is primarily their group value as a designed landscape with contemporary gardens and house by the same designer. The setting of these assets is contained within the bounds of the Registered Park and Garden itself which is surrounded on all sides by woodland. The setting of the designed gardens and the built aspects has also been partially altered by the installation of the wild animal park infrastructure across the park and to the east. Views from the park (**RPG1**) and house (**LB7**) are described as lying to the south, south-east, and south-west, across Romney Marsh and towards the sea (Figure 1). Due to its enclosed nature, the topography of the steep slope south of Aldington Road and the nature of the designed views from the park and house (**RPG1, LB7**) it is considered that the proposed development would have **negligible** significance of effect setting of the assets at Port Lympne if mitigation was applied, for example by screening and by drawing back the new built form so that a buffer of green space is left between the RPG and the new development.

9.5.41 Development in this Framework Masterplan area to the south-west of the OPA boundary would bring housing approximately 300m closer to several other designated assets:

- The Burch's Rough Roman building which is a scheduled monument (**SM1,** Figure 1)
- Medieval Chapel at Court-at-Street which is a Scheduled Monument south of Aldington Road (List Entry number 1005148)
- Grade 2 listed Forge Cottage and other Cottage at Court-at-Street (**LB39,** Figure 1),
- Manor Farm Cottage Grade 2 Listed Building at Court-at Street (List Entry number 1061117)
- Aldington Church Conservation Area (**CA2**), see figure 1 of the DBA Addendum – (Appendix 9.2).

9.5.42 The setting of Burch's Rough Roman building (**SM1**) would experience a **neutral** significance of from the Framework Masterplan development due to the topography and intervening areas of woodland.

9.5.43 The scheduled medieval chapel at Court-at-Street lies south of Aldington Road, some way back from the road where the landform falls away to the south. There is a non-designated pillbox adjoining the chapel. The topography and intervening woodland would make it likely that this nationally important asset (and the pillbox) would only experience a **slight** significance of effect.

9.5.44 Forge Cottage (**LB39**) and Manor Farm Cottage front on to Aldington Road and their main setting is their immediate surroundings. Both assets face south, away from the Site. The setting of the listed buildings at Court-at-Street may be adversely impacted by the Framework Masterplan proposals. However the intervening woodland of Harringe Brooks Wood and Danehurst Wood may provide a screen. This screening combined with their limited settings would make it likely that they would experience a **slight** significance of effect.

9.5.45 The setting of Aldington Church Conservation Area (**CA2**) is mostly defined by its agricultural surroundings and the views of St Martin's Church from the Roman road and Romney Marsh to the south. However, views from the Roman road and more modern village to the west are limited due to the built form of the modern village and topography. The character of this setting is mostly rural with few modern intrusions. This significance of the conservation area is based mostly in its historic interest as a village of antiquity within the landscape which adds to the understanding of the importance of the region due to its links to the Archbishop of Canterbury and other important figures. In addition, this conservation area offers aesthetic interest for its vernacular architecture, unaltered layout, and general rural character of its immediate setting which has been unaltered for centuries. There is potential for the proposed development to bring some change within the distant setting of this village through change to a more urban landscape. However, significant views of this asset are largely from the south looking towards the church tower and these would not be affected by the proposed development. In addition, the immediate setting of this asset would not be affected, and its agrarian rural nature would be maintained. The Conservation Area is considered to be of **medium** value although it contains buildings of national significance. Due to its distance from the Site, the source of its heritage significance, and the location of its key views and main setting this asset's setting would experience a **neutra**l significance of effect from the proposed Framework Masterplan development.

Table 9-11 Proposed Committed Developments for Inclusion in Cumulative Assessment

Local Planning Authority	LPA Reference No.	Reason for inclusion in cumulative assessment
FHDC	Y14/0873/SH	Land adjacent to the surgery, Main Road, Sellindge -the 250 dwelling proposed development in Sellindge lies outside the application site's boundary and close to several listed buildings (particularly Somerfield Court Farm). The listed buildings north of the M20 do not have settings that extend beyond the M20 and CTRL (although their settings may have historically extended further). The intervening M20 and CTRL has severed the visual links between these buildings and the Otterpool Park application site and the listed buildings in Barrowhill, Sellindge and it is not considered that harm would be caused. For these reasons there are not considered to be any cumulative effects.
FHDC	Y16/1122/SH	Land rear of Rhodes House, Main Road, Sellindge -162 homes and 929 sq.m. of business space located just to the north of the M20. This was approved by FHDC Planning and Licencing Committee on 3rd April 2018 subject to the completion of a S106 agreement. It lies outside the application site's boundary and close to several listed buildings (particularly Rhodes House). For the same reasons as those stated above there are not considered to be any cumulative effects.
FHDC	Y15/0175/SH	This is a consented scheme for 1,415sqm extension to the existing Holiday Extras office building at Newingreen, together with an extension to the car park to provide 80 additional parking spaces and formation of new vehicular access to Stone Street. It lies within the application site boundary. The setting of the adjacent Listed Building – The Royal Oak Public House - is a potential issue and, to a lesser degree, the setting of Sandling Park Registered Park and Garden (RPG). Cumulatively it is considered that the existing Holiday Extra Building combined with the extension will decrease the visual impact of the Otterpool Park development on the Listed Building and RPG as the buildings (combined with hedges) effectively provide a screen to the north-west of the Listed Building. For these reasons there are not considered to be any cumulative effects.
FHDC	N/A	Additional development of Otterpool Park comprising the further 1,500 homes as contained within the Framework Masterplan boundary. Framework Masterplan to include 1500 more homes.

9.6 Assessment Summary

9.6.1 The following section presents a summary of the baseline conditions and residual effects on the proposed scheme on cultural heritage assets. The assessment summary describes the effects on the assets identified and the required mitigation to generate the resultant residual effects. This summary is presented in Table 9.12. Most residual effects are non-significant.

9.6.2 The ES chapter has assessed 238 heritage assets – one Scheduled Monument, nine Listed Buildings, one Conservation Area, one Registered Park and Garden, four military crash sites and 222 non-designated assets. These range from negligible to high importance. The site has the potential to reveal further archaeological remains.

9.6.3 Overall, most residual effects to heritage assets are **non-significant**. However, the following heritage assets would experience **significant adverse** residual effects:

- **LB20/BH20/WS8** – Upper Otterpool which is Grade II listed building, and

- **44 –**a non-designated prehistoric barrow east of Barrow Hill, Sellindge and north of the racecourse straight, and marked as *Tumulus* on OS maps.

9.6.4 Upper Otterpool sits centrally within the application area and, although the building and its barns will not be physically impacted, its setting will be. Both historically and currently its setting is largely agricultural and this informs its significance. Although the masterplan provides a generous amount of open space around this asset and does preserve views between this asset and Otterpool Manor, its immediate setting will be experience change from rural to public open space and sports (with development beyond). It will therefore no longer be possible to appreciate the asset within its historical context and its visual connections to the past agricultural uses of the landscape will be lost.

9.6.5 The barrow to the east of Barrow Hill, Sellindge (**44**) is not designated and has been ploughed almost flat. However, initial archaeological investigation has revealed that it preserves features which would make it unusual and of national significance. This asset will not be physically impacted by the development as it will be preserved under open space and it will in fact experience some benefit by being taken out of a ploughing regime. However the barrow will be surrounded by high density housing and the open space will only be large enough to preserve the barrow itself and not any of its setting. In addition, this barrow appears to have had a visual link to another barrow to the south of Ashford Road (**136**) and this visual relationship will not be maintained once the scheme is operational. The harm to the setting of this one barrow) should be balanced against the public benefit that the development will bring to the group of barrows west of Barrow Hill Sellindge which will be preserved under public open space and interpreted for the public.

9.6.6 Table 9-12 provides an assessment summary with respect to cultural heritage and how the significance of effects has been addressed.

Heritage Strategy Scope

Introduction

9.6.7 A Heritage Strategy will be prepared to guide the ongoing archaeological fieldwork and masterplanning at Otterpool Park. The Heritage Strategy will build on the archaeological appraisal reports, the Design and Access Statement and the Environmental Statement. In line with FHDC emerging policy (Core Strategy Review, 2019), the Heritage Strategy will identify how the development will conserve and enhance local designated and non-designated heritage assets and their settings. The strategy will include mitigation measures for heritage assets and will also outline measures for future long-term viable use of heritage assets within the new development. and where necessary provide mechanisms for their integration into the development. Mitigation measures will be agreed with the heritage consultees at FHDC, KCC and Historic England. In order to follow the consultees' request, it will be kept under active review and will be updated as results are added from evaluations and excavations.

9.6.8 The Heritage Strategy will consider how the heritage mitigation should be phased alongside the phased development of the site. It will draw on advice from colleagues in Landscape & Design, Socio-Economics and Biodiversity. It will tie in with the Charter for Otterpool Park and the Otterpool Park Cultural & Creative Strategy.

9.6.9 The Heritage Strategy will identify the positive role heritage can play in the district's future, including:

- Acting as a catalyst for economic and social regeneration;
- Encouraging tourism and visitors; and
- Contributing to improved public health and wellbeing.
- The deliverable would be a report complete with figures. Consideration will be given to separating out the overarching Heritage Strategy from the research agenda and mitigation strategy as the latter two will need to be frequently updated. A draft will be submitted soon after the outline planning application submission, with a fuller version submitted at Reserved Matters Stage.

Outline of Heritage Strategy

<u>Introduction and Background</u>

- Background to the development;
- Baseline -summary of everything now known about the Site in terms of the historic environment;
- Research agenda (drawing on research questions within the Folkestone & Hythe Heritage Strategy and the South-Eastern Research Frameworks);
- Significance of heritage assets and their settings (tied into the research agenda).

<u>Heritage Assets to be preserved *in situ*</u>

- Assets to be preserved in situ within the masterplan e.g. the Roman Villa, the Battle HQ, the barrows and the landscape features in front of Westenhanger Castle including opportunities for interpretation and education.
- Consideration of long term, viable uses of heritage assets and, where necessary, provision of mechanisms for their integration into the development;
- Detail on open space and consideration of management of heritage assets within it including Westenhanger Castle and re-creation of its parkland setting;
- The Heritage Strategy shall be informed by a Conservation Management Plan (CMP) setting out the management and re-use of the site in relation to Westenhanger Castle, Manor and Barns. This CMP for the Castle has already been produced (Appendix 9.9);
- Consideration of how the settings of heritage assets and Conservation Areas will be preserved and, where appropriate, enhanced including historic buildings that are within or on the edge of the scheme. This will expand on the mitigation measures in the Environmental Statement;
- Details on re-use of Historic Buildings.

<u>Fieldwork - archaeological assets requiring evaluation or to be 'preserved by record'</u>

- Define areas still to be evaluated by trial trenching that may identify hitherto unknown archaeological assets;
- Define areas which have been evaluated but where more trenches or small areas of excavation may be needed to clarify date and function e.g. the prehistoric enclosure in Field 1, and the Roman Villa;
- Define areas where geophysical survey is required e.g. electromagnetic survey on the alluvial areas along watercourses;
- Define areas where metal detecting survey is required;
- Define areas requiring geoarchaeological investigation i.e. archaeologically-led boreholes, auger transects and test-pits (this may need to be revised when or if a deposit model is completed);
- Strategies for investigating and dating deposits within the fissures in Hythe Beds (e.g. obtaining Optically Stimulated Luminescence dates);
- Define areas for 'strip map and sample' excavation and strategies for this excavation;
- Areas of archaeological watching brief e.g. in areas that will be topsoil-stripped for use as spoil handling areas or site compounds, or where archaeological excavation is not possible;
- Areas requiring earthwork survey;
- More detail on areas of ecological mitigation (e.g. creation of new ponds and water vole ditches) and how these areas will be mitigated archaeologically;
- Areas that do not require any further investigation;
- Programme of work/phasing of the above

<u>Buildings and structures to be recorded</u>

- Historic buildings that are planned for demolition or adaption and require historic building recording to 'preserve by record';
- Airfield features to be surveyed and requiring further research;
- Buildings that do not require any mitigation.

Historic Landscape

- Historic hedgerows and areas of historic woodland to be preserved;
- Measures to protect these Historic Landscape assets during construction works.

Other areas for consideration

- Roles and responsibilities of a Historic Environment Clerk of Works, or equivalent;
- Potential opportunities for community engagement and the creation of an educational resource;
- Stakeholder groups;
- How archaeological artefacts may be displayed on-site for the public;
- More details on the proposed heritage trail;
- Discussion of the long-term future of the archaeological archive;
- The role of public art in celebrating Otterpool Park's heritage (to tie in with the Otterpool Park Cultural & Creative Strategy).

Table 9-12 Assessment Summary

Receptor	Potential Significant Effect (before mitigation)	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
SM6, LB1, LB5, BH34 (Westenhanger Castle and Barns)	Moderate/Large	C, O	The flow of construction traffic would be controlled through and around the Development Site using traffic management. Use of designed hoarding and bunding, damping down of the construction area, and control of vehicle movement through site speed limits and defined routes. Enhancements brought through recreating part of its landscape and improving views. Public benefit resulting from increased accessibility and understanding. COCP to minimise impacts to Castle.	**Slight adverse** (temporary) during construction- not significant **Slight adverse** during operation – not significant
LB11-Stream Cottage and Grove Bridge Cottage	Negligible	C, O	Use of hoarding and bunding, damping down of the	**Slight – Not significant**
LB15-Royal Oak	Slight	C, O	construction area, and control of vehicle movement through site speed limits and defined routes.	**Slight – Not significant**
LB20/BH20-Upper Otterpool	Moderate	C, O		**Moderate–Significant**
LB21/BH11-Belle Vue	Slight	C, O	Keep existing buffers provided by hedgerows and trees.	**Slight – Not significant**
LB27/BH27- Little Berwick	Slight	C, O		**Slight – Not significant**
LB29 – Berwick House	Slight	C, O		**Slight – Not significant**
LB38/BH12-Otterpool Manor	Minor	C, O		**Slight – Not significant**
RPG2-Sandling Park	Slight	C, O	Bolster the boundary with Sandling Park, by planting a 20m wide tree belt along its outside edge – upon the line of the old A20.	**Slight – Not significant**
CA1-Lympne Conservation Area	Slight	C, O	Use of hoarding and bunding, damping down of the construction area, and control of vehicle movement through site speed limits and defined routes.	**Slight – Not significant**
MR1-Crash Site	Moderate /Large	C	Evaluation and Excavation. Documentary research if found to extend into Site.	**Slight – Not significant**
MR2-Crash Site	Moderate /Large	C	Evaluation and Excavation Documentary research if found to extend into Site.	**Slight – Not significant**
MR3-Crash Site	Moderate /Large	C	Evaluation andExcavation Documentary. research if found to extend into Site.	**Slight – Not significant**
MR4-crash site	Moderate /Large	C	Evaluation and Excavation. Documentary	**Slight – Not significant**

Receptor	Potential Significant Effect (before mitigation)	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
			research if found to extend into Site.	
2-London and Dover Railway	Neutral	C	None	**Neutral - Not significant**
4-Auxillary Unit Operational Base	Moderate /Large	C	Building recording	**Slight – Not significant**
5-Stone Street (Roman Road)	Slight	C	Watching brief during ground/road improvement works, trial trenching or excavation if remains found	**Neutral - Not Significant**
7- Pimple	Neutral	C	None	**Neutral - Not significant**
8- Aldington Road (Roman Road)	Neutral	C	None	**Neutral - Not significant**
20-Medieval features north of Westenhnager Castle	Neutral	C	None	**Neutral - Not significant**
22-features east and west of Stone Street	Slight/Moderate	C	Geophysical survey, trial trenching, excavation	**Slight - Not Significant**
25-post medieval features found at Royal Oak Motel	Slight/Moderate	C	Trial trenching, excavation if remains found	**Neutral - Not Significant**
26-Bronze Age Occupation site	Moderate/Large	C	Geophysical survey, trial trenching, excavation	**Slight - Not significant**
27-Lympe Airfield	Moderate/Large	C	Geophysical survey, trial trenching, excavation, building recording	**Slight – Not significant**
28-Battle HQ and shelter	Moderate	C, O	Building recording, preserve in situ	**Neutral - Not significant**
29-aircraft dispersal pen	Slight/Moderate	C	Geophysical survey, trial trenching, excavation, building recording, preserve in situ and make into a feature	**Neutral - Not Significant**
30-gas decontamination building	Neutral	C	None	**Neutral - Not Significant**
31-air raid shelters	Neutral	C	None	**Neutral - Not Significant**
32-Pickett Hamilton Fort west of Otterpool Lane	Neutral	C, O	Building recording	**Positive - Not significant**
33-slit trenches	Neutral	C	Trial trenching close to area within red line to establish if asset continues into site, excavation if required	**Neutral - Not significant**
34-slit trenches	Neutral	C	None	**Neutral - Not significant**
35-barrack huts	Neutral	C	None	**Neutral - Not significant**
36-overblister hanger and trackway	Moderate	C	Any extant remains archaeological evaluated and recorded	**Slight – Not significant**
37-machine gun testing range	Slight/Moderate	C	Any extant remains archaeological evaluated and recorded	**Slight – Not significant**
38-bulk fuel installation	Neutral	C	None	**Neutral - Not significant**
39-runway	Moderate/Large	C	Any extant remains archaeological evaluated and recorded	**Slight – Not significant**
40-aircraft dispersal pen	Slight/Moderate	C	Trial trenching, excavation	**Slight - Not significant**
42-cropmarks of medieval trackway and field system	Moderate	C	Trial trenching, excavation (although not in the scheduled area)	**Slight – Not significant**
43-post medieval ditch	Slight/Moderate	C	None	**Slight – Not significant**
44-Barrow	Moderate/Large	C	Trial trenching, excavation, preserved under small area of open space	**Moderate/Large – Significant**

Receptor	Potential Significant Effect (before mitigation)	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
45-Site of St Marys Church	Neutral	C	None	**Neutral - Not significant**
46-barrow	Neutral	C	Preserve in situ	**Neutral - Not significant**
48-cropmark of a ring ditch	Slight/Moderate	C	Trial trenching, excavation	**Slight - Not significant**
51-moated site at Belle Vue	Neutral	C	None	**Neutral - Not significant**
52-putative Anglo-Saxon palace site, south of WH Castle	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
53-putative deserted medieval village site	Slight	C	Construction and traffic management	**Slight – Not significant**
54-putative deserted medieval village site	Slight	C	Construction and traffic management	**Slight – Not significant**
58-barrow	Moderate	C	Trial trenching, excavation, preserved under public open space	**Slight – Not significant**
59-Harringe Court	Neutral	C	None	**Neutral - Not significant**
60- possible Pickett Hamilton fort in Link Park	Moderate/Large	C	If extant, excavation and/or building recording, preserve in situ within SUDs area	**Neutral – Not significant**
61-concrete base, likely military	Slight/Moderate	C	Building recording, trial trenching, excavation	**Neutral - Not significant**
64-prehistoric and medieval finds at Link park	Moderate/Large	C	Trial trenching and Excavation	**Slight - Not significant**
66-aisled barn at Belle Vue	Neutral	C	None	**Neutral - Not significant**
69-ammunitions store	Slight	C	Building recording of extant remains	**Neutral - Not significant**
74-Late Iron Age and Roman pits	Moderate/Large	C	Excavation (within the development boundary to identify if asset extends into Site)	**Slight – Not significant**
75-medieval ditch	Slight/Moderate if on site	C	Geophysical survey, trial trenching, excavation (only within the development boundary)	**Slight - Not significant**
76-medieval 11th-12th century settlement remains	Neutral	C	None	**Neutral - Not significant**
77-medieval 14th-15th century ditches and enclosures	Neutral	C	None	**Neutral - Not significant**
78-Late Iron Age rural landscape	Neutral	C	None	**Neutral - Not significant**
79-?16th century ditches	Neutral	C	None	**Neutral - Not significant**
107-medieval Holloway, enclosure and buildings	Neutral	C	None	**Neutral - Not significant**
112-cropmark of an enclosure	Moderate/Large	C	Geophysical survey, trial trenching, excavation	**Slight – Not significant**
113-barrow	Moderate	C, O	Geophysical survey, trial trenching, excavation, preserved under sports pitch	**Slight - Not significant**
114-barrow	Moderate	C, O	Geophysical survey, trial trenching, excavation, preserved under sports pitch	**Slight - Not significant**
115-barrow	Moderate	C, O	Geophysical survey, trial trenching, excavation, preserved under sports pitch	**Slight - Not significant**
116-barrow	Neutral	O	None	**Neutral - Not significant**
121-prehistoric ditch and postholes	Moderate/Large	C	Trial trenching, excavation	**Slight - not significant**
122-ridge and furrow	Neutral	C	Trial trenching around woodland	**Neutral - Not significant**

Receptor	Potential Significant Effect (before mitigation)	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
123-LiDAR feature	Slight	C	Earthwork survey, trial trenching, excavation	**Neutral - Not significant**
124-LiDAR feature	Slight	C	Earthwork survey, trial trenching, excavation	**Neutral - Not significant**
125-LiDAR feature	Slight/Moderate	C	Earthwork survey, trial trenching, excavation	**Neutral - Not significant**
126-wall of rifle range	Moderate/Large	C	Building recording	**Slight – Not significant**
127-former narrow-gauge railway	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
128-field boundary	Moderate/Large	C	Trial trenching, excavation	**Slight – Not significant**
129-possible aircraft dispersal pen	Slight/Moderate	C	Trial trenching, excavation	**Slight -Not significant**
130-barrow	Moderate	C	Trial trenching, excavation, preserved under sports pitch	**Slight - Not significant**
131-barrow	Moderate/Large	C	Trial trenching, excavation	**Slight – Not Significant**
132-Late Iron Age ring ditch	Moderate/Large	C	Trial trenching, excavation	**Slight – Not significant**
133- geophysical anomaly of a ring ditch thought to be barrow but by trial trenching proved inconclusive	Moderate	C	Trial trenching, excavation	**Slight - Not significant**
134- LiDAR feature thought to be barrow but not proved by trial trenching	Slight	C	Trial trenching, excavation	**Neutral – Not significant**
135-barrow	Moderate	C	Trial trenching, excavation, preserved under sports pitch	**Slight - Not significant**
136-barrow	Moderate	C	Trial trenching, excavation, preserved under open space	**Slight - Not significant**
137-field boundary	Moderate/Large	C	Trial trenching, excavation	**Slight - Not significant**
138-field boundary	Moderate/Large	C	Trial trenching, excavation	**Slight - Not significant**
139-field boundary	Moderate/Large	C	Trial trenching, excavation	**Slight - Not significant**
140-LiDAR feature	Neutral	C, O	None	**Neutral – Not significant**
141-LiDAR feature	Neutral	C, O	None	**Neutral – Not significant**
142-possible pillbox location	Neutral	C	None	**Neutral – Not significant**
143-possible pillbox location	Neutral	C	None	**Neutral – Not significant**
144-unknown feature, probably military	Slight/Moderate	C	Trial trenching, excavation	**Neutral - Not significant**
145-drainage channel and pond	Slight/Moderate	C	Trial trenching, excavation	**Slight - Not significant**
146-site of pond	Slight/Moderate	C	Trial trenching, excavation	**Slight - Not significant**
147-water/drainage feature or pond south of WH Castle	Slight	C	None -preserved as habitat area	**Slight - Not significant**
148-water feature south of WH Castle	Slight	C	None -preserved as habitat area	**Slight - Not significant**
149-causeway	Neutral/Slight	C	Preserved in situ and enhanced	**Neutral (possibly slight positive)**
150-unknown building, probably military	Slight/Moderate	C	Trial trenching, excavation	**Neutral – Not significant**
151-possible site of gun emplacement	Moderate	C	Trial trenching, excavation	**Slight - Not significant**
152-line of civil runway	Moderate	C	Trial trenching, excavation, will be preserved in situ	**Slight - Not significant**
153-Folkestone racecourse and buildings	Moderate/Large	C, O	Earthwork/landscape recording, trial trenching/excavation Building recording of grandstand buildings	**Slight – Not Significant**

Receptor	Potential Significant Effect (before mitigation)	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
154-deerpark boundary	Moderate	C	Earthwork/landscape recording,	**Slight – Not significant**
155-barrow	Neutral	C	None	**Neutral – Not significant**
156-barrow	Neutral	C	None	**Neutral – Not significant**
157-Former Pound House	Neutral	C	None	**Neutral – Not significant**
158-former track to Pound House	Slight/Moderate	C	Trial trenching, excavation	**Neutral – Not significant**
159-possible ridge and furrow	Slight	C	Trial trenching, excavation	**Neutral – Not significant**
160-LiDAR feature	Slight/Moderate	C	Trial trenching, landscape/earthwork investigation if needed	**Neutral – Not significant**
161-site of former orchard	Slight/Moderate	C	Trial trenching, excavation if required	**Slight – Not significant**
162- earthwork-possible dispersal pen	Slight	C	Trial trenching, excavation, preserved under green space	**Neutral – Not significant**
165-LiDAR feature	Slight/Moderate	C	Trial trenching, landscape/earthwork investigation if required	**Neutral – Not significant**
166-site of Tudor Garden	Neutral/Slight	C	Trial trenching, excavation, preserved in situ within green infrastructure	**Neutral – Not significant**
167-Roman Villa	Moderate	C	Trial trenching, excavation, preserved as public open space	**Slight- Not significant?**
168-undated ditches probably part of Roman Villa	Moderate	C	Trial trenching, excavation, preserved under public open space	**Slight – Not significant**

Receptor	Potential Significant Effect (before mitigation)	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
169-undated ditch	Neutral	C	Preservation under public open space	**Neutral – Not significant**
170-undated semi-circular feature	Neutral	C	Preservation under public open space	**Neutral– Not significant**
171-undated features	Neutral	C	Preservation under public open space	**Neutral – Not significant**
172-undated enclosures	Moderate	C	Trial trenching, excavation	**Slight – Not significant**
173-undated ditches and enclosures	Moderate	C	Trial trenching, excavation	**Slight – Not significant**
174-two burnt pits of middle Saxon date	Slight/Moderate	C	Excavation	**Neutral – Not significant**
175-Early to Middle Iron Age circular enclosure and nearby ditch and pit	Moderate/Large	C	Excavation	**Slight - not significant**
176-Early Roman linear ditches. Probably a trackway approaching 175	Moderate/Large	C	Trial trenching, excavation	**Slight – not significant**
177-Early to Middle Iron Age enclosure	Moderate/Large	C	Excavation	**Slight - Not significant**
178-early Roman field system	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
179-ditches	Slight/Moderate	C	Excavation	**Neutral – Not significant**
180-Early to Middle Iron Age ditch	Moderate/Large	C	Excavation	**Slight – Not significant**
181-undated double ditched enclosure	Moderate	C	Trial trenching, excavation	**Slight – Not significant**
182-Early to Middle Iron Age hollow	Moderate/Large	C	Excavation	**Slight – Not significant**
183-hollow containing prehistoric artefacts	Moderate/Large	C	Trial trenching, excavation	**Slight - Not Significant**
184-Four Late Bronze Age cremations cutting a Middle Bronze Age ditch	Slight/Moderate	C	Excavation	**Slight – Not significant**

Receptor	Potential Significant Effect (before mitigation)	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
185-Middle Bronze Age enclosure and ring ditch	Moderate/Large	C	Excavation	**Slight – Not significant**
186-undated ditches and enclosures	Moderate/Large	C	Trial trenching, excavation	**Slight – Not significant**
187-middle Bronze Age field system	Moderate/Large	C	Excavation	**Slight – Not significant**
188-medieval enclosure	Slight/Moderate	C	Excavation	**Slight – Not significant**
189-Late Bronze Age to Early Roman ditch	Moderate/Large	C	Excavation	**Slight – Not significant**
190-Late Bronze Age to Early Iron Age curvilinear enclosure and 3 Iron Age pits	Moderate/Large	C	Excavation	**Slight- Not Significant**
191-Early Roman field system, ditches and farmstead	Moderate/Large	C	Trial trenching, excavation	**Slight- Not Significant**
192-Early to Middle Iron Age enclosure	Moderate/Large	C	Excavation	**Slight – Not significant**
193-Roman settlement enclosure with further building within	Moderate/Large	C	Trial trenching, excavation	**Slight- Not Significant**
194-Early Iron Age to Early Roman ditches	Moderate/Large	C	Excavation	**Slight – Not significant**
195-Middle Bronze Age ditch and pit	Slight/Moderate	C	Excavation	**Slight – Not significant**
196-Neolithic ditch	Moderate/Large	C	Trial trenching, excavation	**Slight- Not Significant**
197-Medieval field boundary ditches	Slight/Moderate	C	Excavation	**Slight – Not significant**
198-Late Iron Age to Early Roman field boundary ditches	Slight/Moderate	C	Excavation	**Slight – Not significant**
199-Early 19th century brick clamp	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
200-Midle Bronze Age field system ditches	Moderate/Large	C	Excavation	**Slight – Not significant**

Receptor	Potential Significant Effect (before mitigation)	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
201-Medieval pond in the corner of the hollow left by the Middle Bronze Age enclosure	Slight/Moderate	C	Excavation	**Slight – Not significant**
202-Undated ditches, enclosure ditches and linear ditches	Moderate	C	Trial trenching, excavation	**Slight – Not significant**
203-Undated cremation (possibly Late Bronze Age)	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
204-Undated curvilinear ditch	Moderate	C	Trial trenching, excavation	**Slight – Not significant**
205-undated ditch	Moderate	C	Trial trenching, excavation	**Slight – Not significant**
206-Late Iron Age to Early Roman enclosure with ditches and pits	Moderate/Large	C	Excavation	**Slight- Not Significant**
207-undated ditches	Moderate	C	Trial trenching, excavation	**Slight – Not significant**
208-Late Iron Age to Roman Quarry Pit	Moderate/Large	C	Excavation	**Slight- Not Significant**
209-Post Medieval cobbled track	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
210-prehistoric enclosure	Moderate/Large	C	Trial trenching, excavation	**Slight- Not Significant**
211-Undated ditches, possibly a trackway	Moderate	C	Trial trenching, excavation	**Slight – Not significant**
212-Late Iron Age to Roman enclosure	Moderate/Large	C	Excavation	**Slight- Not Significant**
213-Late Iron Age - Roman settlement enclosure with post-built Roman building	Moderate/Large	C	Excavation	**Slight- Not Significant**
214-Roman ditch	Moderate/Slight	C	Trial trenching, excavation	**Slight – Not significant**
215-Late Iron Age ring ditch	Moderate/Large	C	Excavation	**Slight – Not significant**

Receptor	Potential Significant Effect (before mitigation)	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
216-Roman enclosure with Roman ditches inside	Moderate/Slight	C	Trial trenching, excavation	**Slight – Not significant**
217-Area of Middle Iron Age to Late Iron Age and Roman pits bordered by lengths of ditch	Moderate/Large	C	Excavation	**Slight- Not Significant**
218-Roman ditches	Moderate/Slight	C	Trial trenching, excavation	**Slight – Not significant**
219-undated ditches	Moderate/Large	C	Trial trenching, excavation	**Slight – Not significant**
220-Buried land surface sealed beneath barrow (Asset 136), a sizeable assemblage of Mesolithic flint	Slight	C	Excavation	**Slight – Not significant**
221-undated ditches	Moderate/Large	C	Trial trenching, excavation	**Slight – Not significant**
222-post-medieval ditches	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
223-Ring ditch east of Barrow Hill. Mixed dating.	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
224-undated features	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
225-Rectilinear system of enclosure ditches, probably Romano-British. Includes 2 trackways, pits, postholes and quarry pits	Moderate/Large	C	Trial trenching, excavation	**Slight – Not significant**
226-Prehistoric or Roman ditches (could be geological features)	Moderate/Large	C	Trial trenching, excavation	**Slight – Not significant**
227-Post Medieval ditch and robbed out wall of Tudor Garden	Slight	C	Trial trenching, excavation	**Slight – Not significant**
228-Post Medieval ditches	Slight/Moderate	C	Trial trenching, excavation	**Neutral – Not significant**
229-Ditches either sides of a layer of cobbles forming hardstanding or path, possibly a track (Asset 158)	Slight/Moderate	C	Trial trenching, excavation	**Neutral – Not significant**
230-Roman ditch	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
231-Z-shaped feature. Possible airfield related	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
232-Airfield activity (part of taxiway?)	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
233-Airfield activity (part of taxiway?)	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
234-Airfield wind tee	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
235-aircraft dispersal pen	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
236-Enclosures, possibly airfield related	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
237-Area of Romano British or Prehistoric field system	Slight/Moderate	C	Trial trenching, excavation	**Slight – Not significant**
238-Early to Middle Iron Age ditches of a possible settlement enclosure. Includes at least one Middle Iron Age pit	Moderate/Large	C	Excavation	**Slight- Not Significant**
239-Middle Bronze Age ditches of a field system	Moderate/Large	C	Excavation	**Slight- Not Significant**
BH1-WWII munitions store	Neutral	C, O	None (although traffic management plan will address general noise and traffic impacts)	**Neutral – Not significant**
BH13-Barrow Hill Farm	Slight	C, O		**Slight – Not significant**
BH17-Farmstead south east of Railway Cottage	Slight	C, O		**Slight – Not significant**

Receptor	Potential Significant Effect (before mitigation)	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
BH19-demolished outfarm north west of Berwick House	Slight/Moderate	C, O	Geophysical survey, trial trenching	**Slight – Not significant**
BH23- demolished outfarm south east of Westenhanger	Slight/Moderate	C, O	Geophysical survey, trial trenching	**Slight – Not significant**
BH24-Twin Chimney Farm	Moderate	C, O		**Slight – Not Significant**
BH25-Farmstead south west of New Inn Green	Slight	C, O	Embedded mitigation and Traffic management plan will address general noise and traffic impacts	**Slight – Not significant**
BH26-Newingreen Farmhouse and outfarm	Neutral	C, O		**Neutral – Not significant**
BH28-Berwick Manor Farm	Slight	C, O		**Slight – Not significant**
BH3-Westenhnager Station	Slight	C, O	None	**Slight – Not significant**
BH32-Hillhurst Farm	Moderate	C, O	Building recording	**Slight – Not significant**
BH38-Little Sandling Farmstead-demolished	Slight/Moderate	C, O	Geophysical survey, excavation if needed	**Neutral – Not significant**
BH42-pillbox location	Moderate	C, O		**Slight – Not significant**
BH43-pillbox location	Moderate	C, O		**Slight – Not significant**
BH44-pillbox location	Moderate	C, O	Level 1 building recording for any extant remains	**Slight – Not significant**
BH45-pillbox location	Moderate	C, O		**Slight – Not significant**
BH46-pillbox location	Moderate	C, O		**Slight – Not significant**
BH47-pillbox location	Moderate	C, O		**Slight – Not significant**
BH6-Harringe Court	Neutral	C, O	None	**Neutral – Not significant**
FS1-Somerfield Court Farm	Slight	C, O	None	**Slight – Not significant**
FS2-Mink Farm	Slight/Moderate	C, O	None	**Slight – Not significant**
FS3-Red House Farm	Slight	C, O	None	**Slight – Not significant**
FS4-Benham Water Farm	Slight	C, O	None	**Slight – Not significant**
FS5-Elms Farm	Slight/Moderate	C, O	None	**Slight – Not significant**
WS1-Features South of Harringe Court	Slight/Moderate	C, O	Evaluation trenches (within application boundary to establish if asset extends into Site), followed by excavation if required	**Neutral – Not significant**
WS10-Oast House and Barn at Barrowhill Farm	Slight	C, O	None (although traffic management plan will address general noise and traffic impacts)	**Slight – Not significant**
WS11-Humble Bee Hall '1763'	Slight	C, O		**Slight – Not significant**
WS12-Rose Cottage - possible site of early cottage	Slight/Moderate	C, O	Building recording	**Slight – Not significant**
WS13-Humble Bee Cottage	Slight	C, O		**Slight – Not significant**
WS14-Military Buildings west of Otterpool Lane associated with Lympne Airfield (includes 30,31,32,35)	Neutral	C, O	None (although traffic management plan will address general noise and traffic impacts)	**Neutral – Not significant**
WS15-Newell Cottage	Slight	C, O		**Neutral – Not significant**
WS16-Earthwork features at Upper Otterpool	Slight/Moderate	C	Evaluation, excavation if necessary	**Neutral - not significant**
WS17-holloway adjacent to Stone Street. Could be ditch to park boundary	Slight/Moderate	C	Earthwork survey, trial trenching, excavation	**Slight – Not significant**
WS18-Harringe Cottages	Neutral/Slight	C, O	None (although traffic management plan will address	**Neutral – Not significant**

Receptor	Potential Significant Effect (before mitigation)	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
			general noise and traffic impacts)	
WS19-Possible Military Building	Moderate	C, O	Building recording	**Slight – Not significant**
WS2-The Lodge, Aldington Road	Slight	C, O	None (although traffic management plan will address general noise and traffic impacts)	**Neutral – Not significant**
WS20-Munitions Store south of Ashford Road	Moderate	C, O	Building recording	**Slight– Not significant**
WS21-Bernhurst, Barrow Hill	Slight	C, O	None (although traffic management plan will address general noise and traffic impacts)	**Slight – Not significant**
WS22-Grove Bridge House – Foreman's Cottage, Barrow Hill	Slight	C, O		**Slight – Not significant**
WS23-Klondyke Villas, Barrow Hill	Slight	C, O		**Slight – Not significant**
WS24-Otterpool Cottage, Belle Vue	Slight	C, O		**Slight – Not significant**
WS25-St Johns Cottages	Slight	C, O		**Slight – Not significant**
WS26-Zulu Cottage and Ottermere	Slight	C, O		**Slight – Not significant**
WS27-Merlin Cottage	Slight	C, O		**Slight – Not significant**
WS28-Chapel Cottages	Slight	C, O		**Slight – Not significant**
WS29-Gables East and West	Slight	C, O		**Slight – Not significant**
WS3-Old Mill Cottage, Aldington Road	Slight	C, O		**Neutral– Not significant**
WS4-Milestone on A20	Neutral	C, O		**Neutral – Not significant**
WS5-Group of 1840s/Victorian Cottages/Railway cottages	Slight	C, O	Embedded mitigation and Traffic management plan	**Slight – Not significant**
WS6-Two outbuildings at Belle Vue	Neutral	C, O		**Neutral – Not significant**
WS7-Cliff Cottage	Neutral	C, O		**Neutral – Not significant**
WS8-Medieval Barn at Otterpool Manor	Minor	C, O		**Moderate- Significant**
WS9-Arts and Crafts Cottages	Moderate	C, O		**Slight – Not significant**

9.7 References

Reference	Title
Ref 9.1	*The Town and Country Planning Act* 1990 c.8
Ref 9.2	*The Planning (Listed Buildings and Conservation Areas) Regulations* Act 1990 No.1519
Ref 9.3	*The Ancient Monuments and Archaeological Areas Act* 1979 c.46
Ref 9.4	Ministry of Housing, Communities & Local Government (2012); *National Planning Policy Framework*; https://www.gov.uk/government/publications/national-planning-policy-framework--2; Accessed: 2017
Ref 9.5	Ministry of Housing, Communities & Local Government (2018); *National Planning Policy Framework*; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/740441/National_Planning_Policy_Framework_web_accessible_version.pdf; Accessed: 18 October 2018
Ref 9.6	Folkestone & Hythe District Council (2006); *Folkestone & Hythe District Council Local Plan Review, Policies Applicable 2013 Onwards;* http://www.shepway.gov.uk/planning/planning-policy ; Accessed 18 October 2018
Ref 9.7	Kent Downs AONB Unit; *Landscape Design Handbook*; https://s3-eu-west-1.amazonaws.com/explore-kent-bucket/uploads/sites/7/2018/04/18113859/Landscape-Design-Handbook.pdf ; Accessed 18 October 2018
Ref 9.8	Folkestone & Hythe District Council (2018); *Folkestone & Hythe District Council Places and Policies Local Plan Submission Draft*; https://shepway-consult.objective.co.uk/portal/pplp/places_and_policies_submission_draft/submission_draft?pointId=ID-4490611-POLICY-E1&do=view ; Accessed 18 October 2018
Ref 9.9	Folkestone & Hythe District Council (2019); *Folkestone and Hythe District Council Core Strategy Review (Submission Draft Regulation 19)*; https://www.folkestone-hythe.gov.uk/media/5566/Core-Strategy-Review-Submission-Document/pdf/Core_Strategy_Review_Submission_Draft.pdfhttp://shepway-consult.objective.co.uk/portal/core_strategy/core_strategy_review/ Accessed February 2019
Ref 9.10	Ministry of Housing, Communities & Local Government (2018); *National Planning Policy Framework, Annex 2: Glossary*; https://www.gov.uk/government/publications/national-planning-policy-framework--2; Accessed: 18 October 2018

Reference	Title
Ref 9.11	Historic England (2008); *Conservation Principles, Policies, and Guidance for the Sustainable Management of the Historic Environment*. Historic England.
Ref 9.12	Historic England (2018); *Conservation Principles, Policies, and Guidance for the Sustainable Management of the Historic Environment (Draft*). Historic England.
Ref 9.13	Highways Agency (2007); *Design Manual for Roads and Bridges (DMRB), HA208/07 Volume 11 Section 3 Part 2: Cultural Heritage*.
Ref 9.14	Historic England (2015); *Historic Environment Good Practice Advice in Planning 2: Managing significance in decision taking in the historic environment*. Historic England.
Ref 9.15	Historic England (2017); *Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (Second Edition);* Historic England.
Ref 9.16	Ministry of Housing, Communities & Local Government (2018); *National Planning Policy Framework Chapter 16 Paragraph 187 b*; https://www.gov.uk/government/publications/national-planning-policy-framework--2; Accessed: 18 October 2018
Ref 9.17	Department for Culture Media and Sport 2013 *Policy Paper 'Scheduled Monuments & nationally important but non-scheduled monuments'*
Ref 9.18	Folkestone & Hythe District Council 2018 *Draft Folkestone & Hythe District Heritage Strategy – Appendix 2: Case Study 3 Folkestone Racecourse*
Ref 9.19	ZeticaUXO 2017 *Otterpool Park, Lympne, Kent - UXO Desk Study & Risk Assessment*
Ref 9.20	Her Majesty's Stationery Office 1997 *The Hedgerows Regulations*
Ref 9.21	Historic England 2016 *Understanding Historic Buildings: A Guide to Good Recording Practice*
Ref 9.22	*The Infrastructure Planning (Environmental Impact Assessment) Regulations* 2017 (SI No. 572)
Ref 9.23	Folkestone & Hythe District Council (2013) *Folkestone & Hythe Core Strategy Local Plan*

10 Geology, Hydrogeology and Land Quality

10.1 Introduction

10.1.1 This Chapter of the ES reports the environmental impact of construction and operation of the proposed Development with respect to geology, hydrogeology and land quality. The assessment incorporates relevant design and other mitigation measures that would be employed during construction of the proposed Development.

10.1.2 This Section should be read in conjunction with Section 15: Surface Water Resources and Flood Risk and Section 17: Waste and Resource Management.

10.1.3 It has been prepared alongside and informed by a Ground Condition Report (GCR) provided in Appendix 10.1. A Mineral Resource Assessment report (Ref 10.1) has also been prepared and has been included with the planning application. Relevant environmental information detailed within this Section is illustrated on Figures 10.1 to 10.5 (ES Appendix 10.2).

Relevant Aspects of the Proposed Development

10.1.4 A full description of the Development is given in Chapter 4: The Site and the Proposed Development.

10.1.5 There is the potential for contamination to be present particularly due to the varied history of former military land uses across the Site.

10.1.6 There is a Geological Site of Special Scientific Interest (SSSI) which is located within the centre of the Site which requires protection measures to be put in place to safeguard the geological features.

10.1.7 The proposed Development is within a Mineral Safeguarding Area which requires consideration to avoid unnecessary sterilisation of viable minerals for future use.

10.1.8 Management of the effects of the Development on existing land drainage to demonstrate no detrimental impact to the groundwater regime across the Site.

10.2 Assessment Methodology

Legislation, Policy and Guidance

Legislation

10.2.1 This impact assessment has been undertaken in accordance with current legislation specific to the land quality and controlled waters specifically the hydrogeology regime, a summary of which is provided below. The Environmental Protection Act 1990 (EPA) defines, within England, the system for waste management and control of emissions into the environment. The Act was intended to strengthen pollution controls and support enforcement with heavier penalties. Before the Act there had been separate environmental regulation of air, water and land pollution and the Act brought in an integrated scheme that would seek the "best practicable environmental option".

10.2.3 Part 2A of the Environmental Protection Act 1990 (which was inserted into that Act by section 57 of the Environment Act 1995) contains a regulatory regime for the identification and remediation of contaminated land. In addition to the requirements contained in the primary legislation, operation of the regime is subject to regulations and statutory guidance.

10.2.4 The main objective underlying the introduction of the Part 2A contaminated land regime was to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment, assessed in the context of the current use and circumstances of the land.

10.2.5 The identification of contaminated land, as defined in Part 2A of the Environmental Protection Act 1990, comprises a risk-based approach. For harm to the non-aquatic environment or pollution of controlled waters to occur, there must be a 'pollutant linkage'. This linkage is based on the following being present:

- A source of contamination (hazard);
- A pathway for the contaminant to move from source to receptor; and
- A receptor (target), which is affected by the contaminant. This includes humans, ecosystems, controlled waters, physical systems and built structures, which could be affected by the hazard

10.2.6 The Water Environment (Water Framework Directive [WFD]) (England and Wales) Regulations 2003 (Her Majesty's Stationery Office (HMSO), 2003) implements the WFD in England and Wales. This legislation provides a framework for the protection of surface (fresh) water, estuaries, coastal water and groundwater. The objectives of the WFD are to enhance the status, and prevent further deterioration, of aquatic ecosystems, promote the sustainable use of water, reduce pollution of water and ensure progressive reduction of groundwater pollution.

10.2.7 The Water Resources Act 1991, as amended, sets out the regulatory regime under which water abstraction and impounding is licensed by the Environment Agency (EA). It is a criminal offence to knowingly permit any poisonous, noxious or polluting matter or any solid waste matter to enter any controlled waters.

10.2.8 Geological sites of national importance are principally afforded protection under the Wildlife and Countryside Act 1981 (as amended) or the National Parks and Access to the Countryside Act 1949 by designation as SSSIs or National Nature Reserves (NNRs).

Policy

10.2.9 The assessment has considered the National Planning Policy Framework (NPPF) (Department for Communities and Local Government, 2018) which sets out Government policy in relation to development on contaminated land.

10.2.10 The assessment also considers those relevant policies of the (then named) Shepway District Local Plan Review (2006) and Folkestone & Hythe District Council Core Strategy (2013), in addition to the Kent County Council Minerals and Waste Local Plan. These have been summarised within Table 10- 1 along with NPPF relevant policy paragraphs.

Table 10- 1 Summary of Relevant Adopted Policies

Document	Policy	Summary of Requirements	Scheme Response
National Planning Policy Framework, as amended (2019)	Paragraph 117	Planning policies and decisions should promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions. Strategic policies should set out a clear strategy for accommodating objectively assessed needs, in a way that makes as much use as possible of previously-developed or 'brownfield' land.	The assessment has considered the impact on receptors from land quality including controlled waters and detailed appropriate mitigation as detailed in Section 10.4 Design and Mitigation.
	Paragraph 118	Planning policies and decisions should: c) give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs, and support appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land;	

Document	Policy	Summary of Requirements	Scheme Response
	Paragraph 137	Before concluding that exceptional circumstances exist to justify changes to Green Belt boundaries, the strategic policy-making authority should be able to demonstrate that it has examined fully all other reasonable options for meeting its identified need for development. This will be assessed through the examination of its strategic policies, which will take into account the preceding paragraph, and whether the strategy: a) makes as much use as possible of suitable brownfield sites and underutilised land;	The assessment has considered the impact on receptors from land quality including controlled waters and detailed appropriate mitigation as detailed in Section 10.4 Design and Mitigation.
	Paragraph 170	Planning policies and decisions should contribute to and enhance the natural and local environment by: e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate	
	Paragraph 178	Planning policies and decisions should ensure that: a) a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation); b) after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and c) adequate site investigation information, prepared by a competent person, is available to inform these assessments.	
	Paragraph 179	Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner.	
	Paragraph 180	Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development.	The assessment has considered the impact on receptors from land quality including controlled waters and detailed appropriate mitigation as detailed in Section 10.4 Design and Mitigation.

Document	Policy	Summary of Requirements	Scheme Response
Shepway District Local Plan Review (2006) Shepway Core Strategy (2013)	Policy U10a (Contaminated Land)	Policy U10a: When development is proposed on or near a site that, has been used for the purpose of waste disposal; is known to be contaminated or there is good reason to believe that contamination may exist the applicant will be required to carry out a site assessment and submit a report of the findings in order to establish the nature and extent of the contamination. Development will only be permitted if practicable and efficient measures are to be taken to treat, contain and/or control any contamination so as not to:- 1. expose the occupiers of the development and neighbouring land users, including in the case of housing the users of gardens to unacceptable risk. 2. Threaten the structural integrity of any building built or to be built on or adjoining the site. 3. Lead to the contamination of any watercourse, water body or aquifer. 4. Cause the contamination of adjoining land or allow such contamination to continue. Any permission for development will require that the remedial measures agreed with the Authority must be completed as the first step in the carrying out of the development.	Design and mitigation measures to assess contaminated land have been outlined in Section 10.4 Design and Mitigation.
	Policy U4 (Protection of Ground and Surface Water Resources)	Development will not be permitted unless it is demonstrated that it would not lead to an unacceptable risk to the quality or potential yield of surface or ground water resources or lead to an unacceptable risk of pollution.	This is addressed in 10.4 Design and Mitigation and further within the Flood Risk Assessment and Surface Water Drainage Strategy in Appendix 15.1.
	Policy CSD5 (Water and Coastal Environmental Management in Shepway)	Development should contribute to sustainable water resource management which maintains or improves the quality and quantity of surface and ground water bodies, and where applicable, the quality of the coastal environment and bathing waters. This will be achieved by protecting or enhancing natural water reserves through sustainable design and construction, managing development in relation to wastewater infrastructure, and promoting long-term resilience to climatic pressures on the coast and water systems. Proposals must be designed to contribute to the maintenance of a sustainable supply of water resources in the district and the achievement of water management plans for the district.	The impact of the proposed Development on water resources has been addressed within Section 10.4 Design and Mitigation and further within the outline Water Cycle Study, provided in Appendix 15.2.
Kent County Council Mineral and Waste Local Plan 2013-30	Policy SD1 (Sustainable Development)	Locate new development within or around existing built-up areas, especially on previously developed land, in preference to 'greenfield' sites. Maintain and enhance water, soil and air quality Prevent negative impacts on coastal protection, flood defence, land drainage and groundwater resources Development proposals that would significantly conflict with the above criteria will only be permitted where it can be shown that: There is an overriding economic or social need; Negative impacts are minimised as far as possible; and 10.2.11 Measures will be taken to compensate for the adverse environmental effect. Compensatory measures, as a minimum, ensure that no net environmental loss occurs.	The proposed Surface Water Drainage Strategy, that forms Appendix 15.1, addresses the impact of the proposed Development on the surrounding water environment. Section 10.4 identifies Design and Mitigation Measures to prevent adverse impacts on the soil and water environment, including the promotion of SuDS techniques to enhance water quality. Section 15.4 provides additional mitigation measures including the promotion of SuDS techniques to enhance water quality.
	Policy DM7 (Safeguarding Mineral Resources)	Planning permission will only be granted for non-mineral development that is incompatible with minerals safeguarding, where it is demonstrated that either:	A Mineral Assessment Report has been undertaken and submitted with the planning application.

Document	Policy	Summary of Requirements	Scheme Response
		1. the mineral is not of economic value or does not exist; or 2. that extraction of the mineral would not be viable or practicable; or 3. the mineral can be extracted satisfactorily, having regard to Policy DM9, prior to the non-minerals development taking place without adversely affecting the viability or deliverability of the non-minerals development; or 4. the incompatible development is of a temporary nature that can be completed and the site returned to a condition that does not prevent mineral extraction within the timescale that the mineral is likely to be needed; or 5. material considerations indicate that the need for the development overrides the presumption for mineral safeguarding such that sterilisation of the mineral can be permitted following the exploration of opportunities for prior extraction; or 6. it constitutes development that is exempt from mineral safeguarding policy, namely householder applications, infill development of a minor nature in existing built up areas, advertisement applications, reserved matters applications, minor extensions and changes of use of buildings, minor works, non-material amendments to current planning permissions; or it constitutes development on a site allocated in the adopted development plan	
	Policy DM9 (Prior Extraction of Minerals in Advance of Surface Development)	Planning permission for, or incorporating, mineral extraction in advance of development will be granted where there sources would otherwise be permanently sterilised provided that: 1. the mineral extraction operations are only for a temporary period; and, 2. the proposal will not cause unacceptable adverse impacts to the environment or communities. Where planning permission is granted for the prior extraction of minerals, conditions will be imposed to ensure that the site can be adequately restored to a satisfactory after-use should the main development be delayed or not implemented.	

10.2.12 The following emerging policies from the Core Strategy Review have also been considered in the assessment:

Table 10- 2: Summary of relevant emerging policies from the Core Strategy Review

Document	Policy	Description	Scheme Response
Folkestone & Hythe District Council Core Strategy Review 2019	Policy 5.69 Contaminated Land	10.2.13 Development on brownfield land shall include an appropriate strategy for addressing past contamination, where present, on a risk assessed basis. Interface with and potential conflict with the objective to the implementation of SuDS, should be addressed, as infiltration drainage is not always appropriate on brownfield sites.	The assessment has considered the impact on receptors from land quality including controlled waters and detailed appropriate mitigation as detailed in Section 10.4 Design and Mitigation. SuDS will not be implemented in areas where there is an unacceptable risk that contamination could be mobilised.

Guidance

10.2.14 The following relevant guidance have been referred to and used in the assessment.

- Environment Agency, 2004. Model Procedures for the Management of Land Contamination Contaminated Land Report 11 (CLR11). Bristol. Environment Agency.
- Environment Agency Revised March 2017 Groundwater Protection: Principles and Practice (GP3)
- Environment Agency, 2015. Contaminated Land Exposure Assessment (CLEA) tool. Bristol. Environment Agency.
- Department for Environment, Food and Rural Affairs, 2012. Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance. London. The Stationery Office Limited.
- Department for Environment, Food and Rural Affairs, 2013. Environmental Permitting Guidance, Core Guidance for the Environmental Permitting (England and Wales) Regulations 2010. London. The Stationery Office Limited.

- British Standards, 2001. BS10175 Code of Practice for the Investigation of Potentially Contaminated Sites. London. British Standards Institution.
- British Standards, 2015. BS8485 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings. London. British Standards Institution.
- CIRIA, 2006. CIRIA C665 Assessing risks posed by hazardous ground gases to buildings. London. Construction Industry Research.

Consultation and Scoping

Consultation

10.2.15 Table 10-3 provides a summary of Consultee issues raised with respect to geology, hydrogeology and land quality and how they have been addressed.

Table 10-3 Summary of Consultation

Consultee/Contact/Date	Summary of Consultee Issue	How It Is Addressed
Natural England Julia Coneybeer, Sustainable development Sussex and Kent (9 May 2017 (site meeting), 17 May 2017 (letter)	<u>Geological SSSI</u> In summary, Natural England state '*Otterpool Quarry is located within the centre of the proposed Otterpool Park….. Its geological interest and open space mean it could form a key asset and even focal point of the garden town's Green Infrastructure (GI) strategy, with the benefit of improved access for the local community, an opportunity for education and recreation, and enhancement of the geological exposure itself to improve its use as a national scientific resource. The SSSI should be protected in its entirety, and integrated into the development of the garden town in a way which realises the best of these benefits*.'	Consultation has been undertaken with Natural England regarding the SSSI within the proposed Development.
Shepway District Council (SDC) Wai Tse, Environmental Protection Officer, Environmental Health (19 December 2016)	<u>Potential for historic contamination</u> The EIA should also include contaminated land implications from Westernhanger train station; Ashford Lane quarry (i.e. Otterpool Quarry Geological SSSI)/ lorry park) and former Lympne Airfield.	These elements have been considered and information included within the baseline sections of this Chapter.
Environment Agency (EA) Kent and South London Lucy Payne, Customers and Engagement officer (7 December 2016)	<u>Sensitivity of Controlled Waters</u> The EA provided further environmental desk based information on abstractions and pollution incidents which supports that reviewed to date.	This information has been included in the baseline sections of this Chapter.

Scoping

10.2.16 Table 10- 4 provides a summary of consultee responses contained within the Scoping Opinion in relation to geology, hydrogeology and land quality, and the corresponding location in the ES where they are addressed.

Table 10- 4 Summary of EIA Scoping Opinion

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
Idom Meerbrook	Key environmental receptors that should also be considered are Adjacent land Infrastructure along with existing and future buildings and structures.	Included in Sections 10.5 and 10.6
Idom Meerbrook	Construction workers should be considered during the construction phase due to potential exposure of contaminants during works	Included in Sections 10.5 and 10.6

The Study Area

10.2.17 For the geological environment, the study area would be defined to include the area within the application boundary, which includes the Geological SSSI.

10.2.18 With regards to land quality and hydrogeology, the study area has been defined to reflect the surrounding geological, hydrogeological and environmental (e.g. landfill sites) features to be inclusive of the distance over which significant effects can reasonably be possibly.

10.2.19 With regards to land quality the study area is the application site plus a surrounding area of 250m.

10.2.20 With regards to hydrogeological receptors, a study area is 1km beyond the application site boundary.

Methodology for Establishing Baseline Conditions

10.2.21 Current baseline information has been gathered by:

- Identifying an appropriate study area;
- Taking into consideration issues raised through consultation with interested parties (including during EIA scoping);
- Undertaking a desk study (including requesting information from third parties) within an agreed study area; and
- Undertaking site surveys / investigation within agreed study area(s).

10.2.22 The guidance documents detailed in paragraph 10.2.3 were considered to inform baseline information and the assessment that follows.

Forecasting the Future Baseline

10.2.23 The future baseline has been assessed by considering the current baseline and which elements have the potential to change in the future if the proposed Development does not take place.

Defining the Importance/Sensitivity of resource

10.2.24 In relation to pre-existing (i.e. historic) contaminated land, a source-pathway-receptor approach in accordance with Environment Agency (EA) CLR11 (Ref 10.2) and CIRIA C552 (Ref 10.3) has been adopted for assessing risks from contaminated soils / groundwater. Contaminant concentrations when available would be screened against appropriate screening values such as the LQM/CIEH Suitable 4 Use Levels (Ref 10.4).

10.2.25 The adopted assessment methodology comprises a number of stages and has drawn from the Design Manual for Roads and Bridges (DMRB) Section 3, Part 11 - Geology and Soils (Ref 10.5).

10.2.26 There is currently no defined methodology for assessing the value of geology receptors, so assessment of significance is undertaken using professional judgement. With regards to the Otterpool Quarry Geological SSSI the methodology will pay due regard to recommendations from Natural England.

10.2.27 In relation to hydrogeology, an assessment of effects has been undertaken that considers derogation (water level and water quality) potential to water interests and environmental receptors. A high-level groundwater interests survey has been undertaken, to identify potential interests. An assessment would then be undertaken to determine the significance of development-related impacts.

10.2.28 The value of the identified receptors / resources would be assessed against the criteria shown in Table 10-5.

Table 10-5: Criteria for Determining Value (sensitivity) for Geology, Hydrogeology and Land Quality

Sensitivity / Value	Description of resource (receptor)
Very High	Geology - Very rare and/or of very high national and regional geological/geomorphological importance with no potential for replacement (e.g. designated sites such as SSSI) Hydrogeology - Principal groundwater aquifers (Source Protection Zone 1) Hydrology – Designated Salmonid/Cyprinid Fishery, WFD Class 'High, designated sites such as SAC, SPA, SSSI, SPZ, Ramsar site, salmonid water Human Health*– Current / Future users of residential properties with private gardens Minerals - An economic mineral resource or geological strata that is very rare and or internationally important Buildings / Infrastructure – Buildings of international historical importance, hospitals, fire stations and essential public buildings
High	Geology – Medium national and/or high regional geological/geomorphological importance with limited potential for replacement (eg Regionally Important site (RIGs)) Hydrogeology - Principal groundwater aquifers (Source Protection Zone 2) Hydrology – WFD Class 'Good', Major Cyprinid Fishery, Species protected under EC or UK habitat legislation. Human Health* – Current / Future users of allotments / public open space and nearby residents / Construction Workers Minerals - An economic mineral resource or geological strata which is rare or nationally important Buildings / Infrastructure – Grade I and Grade II* Listed Buildings, significant transport links eg railways, airports and significant utilities
Medium	Geology – Low regional and/or high local geological/geomorphological importance with some potential for replacement (eg Local Geological Sites (LGS)) Hydrogeology - Secondary groundwater aquifers (Source Protection Zone 3) Hydrology – WFD Class 'Moderate'. Human Health* – Current / Future users of residential properties without private gardens
Low	Geology - Local geological/geomorphological importance with potential for replacement Hydrogeology - Secondary groundwater aquifers Hydrology – WFD Class 'Poor'. Human Health* – Current / Future users of commercial / industrial properties and associated landscaping Minerals - A Sub-economic mineral resource Buildings – Locally Listed Buildings, local infrastructure, services
Negligible	Geology / Minerals – Little local geological/geomorphological interest Hydrogeology - Non-aquifers Hydrology – WFD Class 'Poor'. Buildings – Buildings of no architectural or historical note, disused or dilapidated buildings

*In consideration of human health, the duration and frequency of exposure to contamination and number of pathways of exposure to contamination increases from commercial/industrial (minimum) to residential with private garden (maximum) land uses. Therefore, future users of industrial sites are considered to be of low importance as they would have minimal contact with underlying soils, whilst residential end users are likely to be in contact with underlying soils on a more regular basis and are therefore attributed very high sensitivity/value.

Methodology for Assessing Impacts

Impact Characterisation

10.2.29 The magnitude of impacts would be described using the criteria outlined in Table 10-6.

Table 10-6: Criteria for determining the magnitude (scale) of impact on the Geology, Hydrogeology and Land Quality

Magnitude of impact	Definition
Major adverse	Geology - The Development is very damaging to the geological environment/soils resource of the study area; may result in loss of or damage to areas designated as being of regional or national geodiversity value; and the effects cannot be mitigated. Human Health - Significant harm to a designated receptor (e.g. human health) is likely to arise from an identified hazard at the site without appropriate remedial action. Hydrogeology - Loss of, or extensive change to an aquifer used for potable supply, potential high risk of pollution of groundwater. Hydrology - Major decrease in water quality; Loss or extensive change to a fishery, Loss or extensive change to a designated Nature Conservation Site Minerals – Total sterilisation of the mineral resource Buildings - Catastrophic damage to buildings, structures or the environment.
Moderate adverse	Geology – The Scheme may result in the loss of or damage to areas designated as being of national and/or regional geodiversity value within the study area. Some mitigation may be possible but would not prevent damage to the geological environment, as some features of interest would be lost or partly destroyed.

Magnitude of impact	Definition
	Human Health - It is possible that without appropriate remedial action, significant harm to a designated receptor (e.g. human health) could arise to a designated receptor but it is relatively unlikely that any such harm would be severe and if any harm were to occur, it is likely that such harm would be relatively mild. Hydrogeology - Partial loss or change to an aquifer, potential medium risk of groundwater pollution. Partial loss of the integrity of groundwater supported designated wetlands. Hydrology – Moderate decrease in water quality; Partial loss in productivity of a fishery. Minerals – Permanent loss of part (50%) of the mineral resource Buildings - Significant damage to buildings, structures or the environment
Minor adverse	Geology - The Development would not affect areas with regional or national geodiversity value but may result in the loss of or damage to areas of local geodiversity value. The effects cannot be completely mitigated but opportunities exist for local enhancement of geodiversity value Human Health - It is possible that harm could arise to a designated receptor (e.g. human health) from an identified hazard but it is likely that at worst this harm if realised would normally be mild. Hydrogeology - No significant change to an aquifer, potential low risk of pollution to groundwater. Minor effects on groundwater supported wetlands Hydrology – Slight decrease in water quality Minerals – Permanent loss of minor (15%) part of mineral resource Buildings - Minor damage to sensitive buildings, structures services or the environment.
Negligible adverse	Geology - The Development would result in very minor loss of geodiversity value of local areas of geological interest/soils resource such that mitigation is not considered practical. Human Health - There is a low possibility that harm could arise to a designated receptor. In the event of such harm being realised, it is likely to be mild or minor. Hydrogeology - The Development is unlikely to affect the integrity of the water environment. Hydrology – Negligible decrease in water quality Minerals – Temporary loss of negligible (>15%) part of mineral resource. Buildings - Easily repairable effects of damage to buildings or structures
No change	No observable effect either adversely or beneficially.
Negligible beneficial	Geology - The Development would be of minor benefit to geodiversity value by potentially providing greater exposure and or protection. The Development may resolve minor impact from existing land or water contamination. Contaminated Land - The Development may resolve slight impact from existing land or water contamination.
Minor beneficial	Geology - The Development may result in the exposure of geological formations that may become of significant local interest. Contaminated Land - The Development may resolve minor impact from existing land or water contamination.
Moderate beneficial	Geology - There is benefit to the geodiversity value of the geological/soils resource of the area as a result of the Development. The Development may result in the exposure of geological formations that may become of significant regional interest. The Development may resolve moderate impact arising from existing land or water contamination Contaminated Land - The Development may resolve moderate impact arising from existing land or water contamination.
Major beneficial	Geology - The Development is very beneficial to the geodiversity value of the geological/soils resource of the area. The Development may result in the exposure of geological formations that may become of significant regional and or national interest. The Development may resolve major impact arising from existing land or water contamination. Note; although very few projects are likely to meet this criterion, enhancement of the SSSI presents such an opportunity. Contaminated Land - The Development may resolve major impact arising from existing land or water contamination.

Assessing Effect Significance

10.2.30 The determination of significance of the impact is a factor of the value/sensitivity of the feature/resource (receptor) and the magnitude of the impact (change) as described above. Table 10- 7shows how the significance of effect is derived.

Table 10- 7: Determination of the Significance of Effects

Magnitude of Impact (Change)	Value / sensitivity of Receptor / Resource				
	Very high	High	Medium	Low	Negligible
Major	Very large	Large / very large	Moderate / large	Moderate	Slight
Moderate	Large / very large	Moderate / large	Moderate	Slight	Neutral
Minor	Moderate / large	Moderate	Slight	Neutral	Neutral
Negligible	Slight	Slight	Neutral	Neutral	Neutral
No change	Neutral	Neutral	Neutral	Neutral	Neutral

10.2.31 Effects which are Very Large, Large or Large / Moderate are considered to be significant for the purposes of EIA. Effects which are considered to be Moderate, Slight or Neutral are considered to be non-significant and would not require further consideration.

Limitations and Assumptions

Limitations

10.2.32 The ground investigation undertaken to date across the proposed Development is preliminary in nature. This is partially due to restricted site access in some areas and that the scope of work undertaken is considered appropriate for the EIA stage. Significant contamination has not been identified to date, however there could be unforeseen ground conditions with the proposed Development which are current unknown.

Assumptions

10.2.33 Further ground investigations will be undertaken after planning permission is granted for the reserved matters stages of the proposed Development.

10.3 Baseline

Existing Baseline

10.3.1 A Ground Condition Report (GCR) has been prepared for the site. This includes a desk-based study and interpretation of the ground investigations that have taken place at targeted locations across the proposed Development. This is included as Appendix 10.1 and should be read in conjunction with this Chapter.

Topography and Geomorphology

10.3.2 The Site is at an elevation of 107 m AOD (Above Ordnance Datum) at its highest point on the south boundary, and slopes down to an elevation of 57 m AOD in the northwest, and 75m AOD in the northeast corner. The average gradient over the majority of the site is 1 in 68 (0.015) sloping down towards the north. The topography within the Site is generally undulating and dominated by the East Stour River in the north, which drains the Site to the north-west. Areas of elevated terrain are present in the south, at Westenhanger in the north and Somerfield Court Farm in the west.

10.3.3 The site is situated on the crest of the Greensand Ridge (Hythe Escarpment). This escarpment, located off-site to the south, bounds Romney Marsh to the south and formed the original coastline before c.1500 AD. The ridge is formed where the Hythe Formation overlies the less resistant Atherfield and Weald Clay Formations. These weaker materials are prone to softening and subsequent instability and landslip. The crest of the slope is adjacent to the Site boundary in the south-east and 340 m from the Site boundary in the south-west.

Published Geology

10.3.4 A review of BGS data (Ref 10.6), as shown in Table 10- 8 shows a generalisation of the geological succession of the Site, including both drift and solid deposits and the location where it is anticipated to be found in the proposed Development. The superficial deposits are shown on Figure 10.1 and the solid geology is Figure 10.2 (ES Appendix 10.2).

Table 10- 8 Summary of published superficial and bedrock geology of land underneath study area.

Geological Formation	General Description	Location within proposed Development
Drift deposits (Superficial)		
Alluvium	Clay, Silt, Sand and Gravel Normally soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel. A stronger, desiccated surface zone may be present.	Follows the course of the East Stour River and its tributaries in the north and east of the Site.
Head Deposits	Clay and Silt. Poorly sorted and poorly stratified detrital material formed by subaerial slope processes (solifluction and/or hillwash and soil creep) in layers and fans.	Present mainly in the East Stour River valley between Barrow Hill Sellindge, and Newingreen. Smaller deposits are located north of Lympne Industrial Park and north of Harrinage Brooks Wood.
Lower Greensand Group (Bedrock / Solid)		
Folkestone Formation	Sandstone Medium- and coarse-grained, well-sorted cross-bedded sands and weakly cemented sandstones; elsewhere includes calcareous sandstones	Occurs in north-east corner of site.
Sandgate Formation	Sandstone, Siltstone and Mudstone Fine sands, silts and silty clays, commonly glauconitic and locally ferruginous or calcareous. Some soft sandstones. Reaches 50-100m thickness in West Sussex.	North and east of Site plus outliers at Lympne Industrial Park and north of Otterpool Quarry.
Hythe Formation	Interbedded Sandstone and Limestone Alternating sandy limestones ("Ragstone") and (subequal or subordinate) glauconitic sandy mudstones (“Hassock”).	Underlying the above sequence and outcropping in the south and west of the site.
Atherfield Clay Formation	Mudstone and siltstone Massive yellowing brown to grey sandy mudstone, with an important phosphatic pebble bed with vertebrate bones, gritty sandstone or very shelly sandy mudstone with glauconite, at the base.	Outcrops in the valley north of Harringe Brooks Woods in the west of the Site.
Wealden Group (Bedrock / Solid)		
Weald Clay Formation	Mudstone Dark grey thinly-bedded shales and mudstones with subordinate siltstones, fine- to medium-grained sandstones, including calcareous sandstone, shelly and clay ironstones	Forms the base of the valley north of Harringe Brooks Woods in the west of the site.

10.3.5 Two geological faults are inferred situated within the proposed Development. One is inferred 800m from the western boundary, is approximately 1km in length and trends north to south with the downthrow to the east. The second fault is inferred on the eastern boundary, is approximately 700m long and is trending north to south with the downthrow to the west between the Folkestone and Sandgate Formations.

Encountered Geology

10.3.6 A preliminary intrusive ground investigation has been undertaken across the proposed Development Site The findings are detailed within the GCR in Appendix 10.1. The factual reports relating to the investigations are appended to the GCR. Exploratory holes plans are included within the factual reports.

10.3.7 The geology encountered during the investigation is generally consistent with the anticipated mapped geology. In addition to the published geology summarised in Table 10- 8 topsoil was encountered in 63 (out of 70) exploratory holes to a maximum depth of 0.6m bgl. The investigation was targeted toward areas identified as having contamination potential from previous site uses identified by desk-based data. Made Ground was encountered in 24 exploratory holes in areas associated with previous development or filling such as the lorry park / former quarry, the road off the A20 roundabout, Newingreen and areas surrounding the former airfield and current Lympne Industrial Park entrance. The maximum depth of Made Ground encountered was 3.1m bgl which is with the area of the former quarry, however the typical thickness of Made Ground was less than one metre. Anthropogenic materials logged included concrete, charcoal, plastic, metal, slag, wood and brick.

10.3.8 The tables below, which are taken from the GCR, summarise the strata encountered in the north and south of the proposed Development (with the divide being the A20). Bedrock at the site dips shallowly down to the north and therefore the surfaces of bedrock strata are generally at a lower elevation in the north of the site compared to the south.

*Table 10- 9: Summary of Strata Encountered – North**

Strata Encountered	Thickness (m)	Depth to top of strata (m bgl)	Elevation of top of strata (m AOD)
Topsoil	0.2 – 0.5	0.0	57.9 – 84.3
Made Ground	0.1 – 0.6	0.0 – 0.35	58.0 – 82.2
Alluvium	1.1 – 3.5	0.2 – 0.5	57.6 – 70.1
Head Deposits	0.6 – 4.6	0.2 – 2.0	58.3 – 81.1
Folkestone Formation	Up to 1.2 (not proven)	1.2 – 1.3	75.6 – 80.5
Sandgate Formation	Up to 6.5 (not proven)	0.3 – 4.6	60.6 – 84.0
Hythe Formation	Up to 7.5 (not proven)	2.3 – 7.1	64.0 – 67.8

Strata Encountered	Thickness (m)	Depth to top of strata (m bgl)	Elevation of top of strata (m AOD)
Atherfield Clay Formation	Up to 2.3 (not proven)	0.2 – 1.3	57.3 – 63.8
Weald Clay Formation	Up to 6.7 (not proven)	3.8	54.1

*North of Ashford Road: BH102, BH103, BH105, TP101, TP102, TP103, TP105, TP106, WS105, WS106, WS107, WS108, WS110, WS111, TP213, TP214, TP215, TP217, TP218, TP219, TP220, BH206, BH207, BH208, BH209

*Table 10- 10: Summary of Strata Encountered – South***

Strata Encountered	Thickness (m)	Depth to top of strata (m bgl)	Elevation of top of strata (m AOD)
Topsoil	0.1 – 0.6	0.0	65.2 – 106.4
Made Ground	0.1 – 3.1	0.0 – 0.5	80.3 – 106.6
Alluvium	0.5	0.4	72.6
Head Deposits	0.25 – 4.7	0.1 – 1.2	65.0 – 106.3
Folkestone Formation	Not encountered		
Sandgate Formation	2.0	4.0	97.2
Hythe Formation	Up to 9.9 (not proven)	0.2 – 6.0	85.3 – 106.1
Atherfield Clay Formation	Up to 3.2 (not proven)	6.8	87.8
Weald Clay Formation	Not encountered		

**South of Ashford Road (not including trial pits in above-ground bunds): BH101, BH104, HD101, HD102, HD103, TP104, TP107, TP108, TP109, TP110, TP111, TP111A, TP112, TP113, WS101, WS102A, WS102B, WS103, WS104A, WS104B, WS104C, WS109, WS112, TP201, TP202, TP206, TP208, TP209, TP210, TP211, TP221, TP222, TP223, TP226, TP228, BH201, BH202, BH203, BH204, HD201, WS201, WS202, WS203

Geodiversity

10.3.9 Otterpool Quarry SSSI is located in the centre of the proposed Development Site as shown on Figure 10.3 (ES Appendix 10.2). The site was designated a SSSI in 1984. The SSSI is also included within the Geological Conservation Review (Ref 10.7). This is a former ragstone quarry which was active prior to 1938 to between 1970 and 1980.

10.3.10 The key feature is the old quarry backwall face located in the south eastern corner of the designated area. The former quarry face shows a section through the Cretaceous Hythe Beds in East Kent and is of particular significance in showing the contact between this formation and the Sandgate Beds above. The Hythe Beds are especially fossiliferous at this locality. The photographs (Plates 1 and 2) below show the current condition of the SSSI. The last condition review by Natural England, in 2012, reported the site to be in a favourable condition.

Plate 1: Looking northwest along the exposure, with the spring emerging in the foreground (taken May 2017)

Plate 2: 'Rag and Hassock' Beds of the Hythe Formation (taken May 2017)

Mineral Safeguarding Area

10.3.11 The Site is located in a designated safeguarding area for minerals. The safeguarding map for Shepway from the Kent Country Council, Mineral and Waste Local Plan (Ref 10.8), indicates that the following minerals are present;

- Silica Sand / Construction Sand – Sandstone (Folkestone Formation) – northern part of the site.
- Sandstone (Sandgate Formation) – Central / northern part of the site.
- Limestone Hythe Formation (Kentish Ragstone) – southern part of the site.
- Sub-alluvial River Terrace Deposits.

10.3.12 A drawing showing the extent of the mineral safeguarding area is provided as Figure 10.4 (ES Appendix 10.2).

10.3.13 A Mineral Resource Assessment (MRA) report (Ref 10.1) has been prepared by SLR Consulting to identify areas of currently unsterilized mineral deposits with the area of the proposed Development. Information sources relating to the extent of geological deposits, physical properties of the deposits, and the potential for extraction in respect of possible environmental impacts have been consulted to attempt to establish the amount of mineral that could be potentially sterilised by the proposed Development. Mineral sterilisation refers to when, the mineral is no longer available for extraction due to development. The MRA report has been submitted as part of the Otterpool Park planning application. The following information has been taken from the SLR report to provide baseline information on minerals.

10.3.14 The MRA report concludes that two of the deposits (Sandgate Formation and Sub-alluvial River Terrace Deposits) are of insufficient extent or quality to classify as viable mineral deposits.

10.3.15 The Hythe Formation and the Folkestone Formation occur within the Site across sufficient areas to be considered as *potentially* viable mineral deposits. Data on the thickness and quality of the minerals is not available for this location, so assumptions based on similar areas and geological literature have been made to assess the potential viability of the minerals.

10.3.16 Based on the information consulted and the assumptions made, the estimated tonnages of presently unsterilised minerals within the development Site are c.1.1Mt of Folkestone Formation and c.17.2Mt of Hythe Formation.

10.3.17 With regards the Hythe Formation (Kentish Ragstone), the stock of planning permissions for crushed rock (ragstone) in Kent at the time of plan preparation (Ref 10.8) are sufficient to maintain a landbank of ten years supply throughout and beyond the end of the plan period and so no additional crushed rock (ragstone) sites will be identified in the Emerging Minerals Sites Plan.

10.3.18 Local historic market conditions have been such that the ragstone quarry in Otterpool became unviable and extraction ceased during the mid-2000's. No further interest in the resumption of quarrying activities has been published, suggesting that the Site is not viable under current conditions.

10.3.19 Higher quality deposits of Hythe Formation ragstone, with lower proportions of waste sand 'hassock' are more extensive around Maidstone, where current and historic quarrying operations are located.

10.3.20 With regard to the Folkestone Formation (Silica Sand), the landbank of soft sand within Kent is such that two new sites have been proposed in the Emerging Minerals Sites Plan, which if developed would satisfy the landbank requirements for the Plan period and beyond.

10.3.21 The relatively small area of Folkestone Formation outcrop in the east of the proposed Development Site is such that a mineral resource of viable scale to warrant the exclusion of the proposed Development in that area is unlikely to be present. Large scale prior extraction of the minerals would likely be incompatible with the proposed Development, due to the resultant excavations created by extraction of bedrock materials.

10.3.22 In addition, the investment required to purchase or hire an aggregate processing plant, the associated infrastructure costs, and, the environmental impacts in terms of noise, traffic movements etc., also serve to make minerals development for a small resource in an existing residential location both unviable and likely to cause an unacceptable adverse impact to the environment and local amenity.

10.3.23 Based on the conclusions of the MRA report, the minerals in the safeguarding areas are not considered to be receptors as extraction is not considered to be viable. Minerals safeguarding has therefore not been considered further within this assessment.

Hydrogeology

10.3.24 Table 10- 11 below details the EA aquifer designations for the different geology strata within the proposed Development Site. This is illustrated on Figure 10.5 (ES Appendix 10.2).

Table 10- 11 Aquifer designation of geological strata

Geological Strata	Aquifer Status[1]
Alluvium	Secondary A
Head Deposits	Unproductive Strata
Folkestone Formation	Principal
Sandgate Formation	Secondary A
Hythe Formation	Principal

10.3.25 There are no groundwater Source Protection Zones (SPZ) within 1 km of the Site boundary and no abstraction is recorded within the study area. The nearest groundwater abstraction is approximately 2km to the east.

10.3.26 FHDC confirmed that the records they hold of private drinking water supplies indicate none within a 500m radius of the proposed Development Site.

10.3.27 Groundwater in the superficial deposits is anticipated to be associated with the Alluvium local to the streams and rivers in the northern portion of the proposed Development Site. Typically groundwater is anticipated to be present at a relatively shallow depth across much of the Site, evidenced by the springs shown on Ordnance Survey maps at Otterpool Quarry and Newingreen Farm and confirmed during the ground investigation.

10.3.28 Groundwater flow in the Hythe Formation is usually through joints and fractures in the weathered limestone layers, with some limited matrix flow though the sand layer, depending on the proportion of silt and clay.

10.3.29 Groundwater percolating downwards is retarded by the lower permeability of the underlying Atherfield Clay and is expected to flow northwards consistent with the gentle dip of the clay strata, to emerge at springs feeding the East Stour River which is in the northern part of the proposed Development. In wetter periods, near to the Hythe escarpment in the south, there is a southwards flow component emerging at or below the contact between the Hythe and Atherfield Clay formation sometimes to form springs in the area. From the PBA report (Ref 10.9), the groundwater divide is estimated to be approximately 370m north of the Aldington Road.

10.3.30 The Kent Greensand Eastern groundwater body (GB40701G501400) is considered within the Water Framework Directive Screening report (ES Appendix 7.22). This groundwater body is currently considered to have poor levels of groundwater chemical and quantitative quality. No mitigation measures are provided in the South East River Basin Management Plan to improve the status of this groundwater body.

10.3.31 Groundwater was encountered during the intrusive ground investigation and full strike details are included in the factual reports appended to the GCR in Appendix 10.1. Groundwater monitoring was undertaken after the investigation in installed boreholes and the following piezometric levels were observed in the different strata;

- Head Deposits – groundwater recorded between 0.93m and 2.67mbgl.
- Sandgate Formation – groundwater recorded between 2.25m and 4.68m bgl.
- Hythe Formation – groundwater recorded between 1.48m and 11.39m bgl

10.3.32 .A woodland burial cemetery site is proposed on the western boundary within the proposed Development and a technical memo hydrogeological study (Ref 10.10) was undertaken to establish the most suitable

[1] Principal - These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

Secondary A - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers;
Unproductive - These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

location for this feature with regards to groundwater levels and sensitivity. The objective of the technical memo was to determine the most suitable potential locations for the Cemetery, based on aquifer vulnerability and as assessed via EA guidance (Ref 10.11).

10.3.33 Th technical memo concluded that the Site should be ranked as Moderate vulnerability with the following exceptions:

- A large area in the north of the Site should be excluded from consideration, where the groundwater level is expected to be less than 1 m below ground level. It is noted that there is some uncertainty on groundwater level in this area due to limitations in the spatial extent of available data.
- Some areas of the Site are expected to be classified a Low vulnerability, owing to their high relative elevation and depth to water, and due to a lower density of drainage features in these higher elevation areas. The largest of these Low vulnerability areas is centred between Lympne and Lympne Industrial Park close to Aldington Road and the southernmost point of the Site. It is noted that this location would be due north and immediately upgradient of the Lympne Escarpment Site of Special Scientific Interest (SSSI) and would therefore likely be unsuitable for the Cemetery.

10.3.34 The proposed location for the Cemetery within the proposed Development Site is of Moderate vulnerability overall and therefore would be considered suitable for the intended use, however it is noted that there are areas of High vulnerability present on the perimeter adjacent to the proposed watercourses SuDS infrastructure.

Hydrology

10.3.35 Surface water is addressed in detail in this ES Section 15: Surface Water Resources and Flood Risk. However, surface water is considered to be a receptor with regards to land quality and therefore brief baseline details are provided below.

10.3.36 The major surface water features found within the proposed Development include tributaries of the East Stour River running easterly from Newingreen past the racecourse and Barrow Hill Sellindge and out of the northwest corner of the Site. Another tributary drains Harringe Brooks Wood to the west of the site toward the same direction, following the line of the inferred fault.

10.3.37 There are several ponds in the northern half of the Site with the largest located at the racecourse.

10.3.38 A licenced surface water abstraction point is recorded west of the pond in the centre of Folkestone Racecourse, however this is thought to no longer be in use. There are 3 discharge consents to surface water within the proposed Development as shown on Figure 10.3 (ES Appendix 10.2).

Historical Review / Aerial Photography

10.3.39 A table detailing the historical development of the Site from review of the available Ordnance Survey (OS) maps is included within the GCR (Appendix 10.1). The salient points are detailed below and illustrated on Figure 10.3 (ES Appendix 10.2).

10.3.40 The first edition (1876-1877) shows the area to mainly comprises fields, woods with scattered farm buildings. The South Eastern Railway is shown in its current alignment along the northern boundary. Westernhanger Station is located off- site to the northeast.

10.3.41 Generally, the Site does not change significantly over the next 60 years, with the majority remaining undeveloped. Some features include; small pits are shown in north west (1871-1883) which are later infilled or grassed over, a quarry at Upper Otterpool (1898-1899) and Folkestone Racecourse in north east (1907). The main Otterpool quarry (now SSSI) is indicated in 193 which is shown as enlarged in size in 1970s.

10.3.42 In 1938 three large hanger buildings are shown in southern area of the Site which is in the location of the current adjacent Lympne industrial estate. Around this time Lympne Airport is indicated on the maps. No paved runways are shown. The layout of the airport changes over time and is later known as Ashford Airport and paved runways were introduced. This remains on maps until around 1990. Historic England have provided several aerial photographs of Lympne Airport which are included in the GCR for information.

10.3.43 On the 1970-1974 edition a refuse tip is indicated 200m east of Upper Otterpool.

10.3.44 In 1989 / 1990, a pumping station (sewage) is shown to the east of the race track at Folkestone Race Course. This is still shown on current base mapping.

Environmental Information

10.3.45 Additional environmental information for the study area has been obtained from Landmark Information Group Ltd. A detailed summary is given in Table 4 of the GCR. Information provided from consultations with consultees detailed in Table 10-3 have also been included.

10.3.46 Pertinent information is provided below;

- Landfills – there is one landfill site within the proposed Development Site. This is located to the north of the Lympne Industrial park. The first waste (inert) input was recorded in 1992 but it is unknown when waste was last deposited. The licence has been cancelled. There is another landfill site called Quarry Field which is in the location of the former Shipway Cross Quarry, to the east of Lympne Village, 270m south-west of the proposed Development. The last waste was deposited in 1962 and included inert and household waste.
- Pollution Incidents – three pollution incidents (two minor, one significant) are indicated within the proposed Development, however all date to late 1990s and therefore severe impact is unlikely to still be present.
- Fuel Stations / Trade Directory Entries – there are three fuel stations within the study area; Lympne Industrial Park, Crosskeys Service Station and a facility at Area Auto. It is noted that whilst these are within the study area for this Chapter, the fuel stations within the industrial park and Arena Auto are not within areas which are proposed for development. There are 87 trade entries across the study area. Approximately half of these relate to activities at the industrial park and many of these are no longer active. As detailed above this area is not within the area proposed for development and therefore the active entries are unlikely to cause a concern with regards to the proposed Development.

Unexploded Ordnance (UXO)

10.3.47 An Unexploded Ordnance (UXO) desk study was undertaken by Zetica (Ref 10.12) to establish the risk of explosives originating from WW2 to remain at the proposed Development Site. The report is included as an Appendix of the GCR (Appendix 10.1).

10.3.48 Based on the information collected, Zetica zoned the Site (low to very high) as shown in Figure 10-6. There is a high potential for UXO around the former RAF Lympne as it was used during World War II (WWII).

10.3.49 Records have been found that at least 500 High Explosive bombs fell on the southern part of the Site during several heavy air raids.

10.3.50 Records indicate that RAF Lympne was underlain with pipe mines which could be detonated to destroy the airfield if it was going to be invaded. Clearance of the pipe mines was undertaken, but further mines have been discovered and therefore there is uncertainty as to whether all the mines have been removed. A letter from 33 Engineer Regiment (Explosive Ordnance Disposal) which is included in the Zetica report concludes that there is “a high possibility of uncleared pipe mines” and that a full clearance should take place prior to development work.

10.3.51 An abandoned bomb is indicated in the north western corner of the Site which is given a high risk rating.

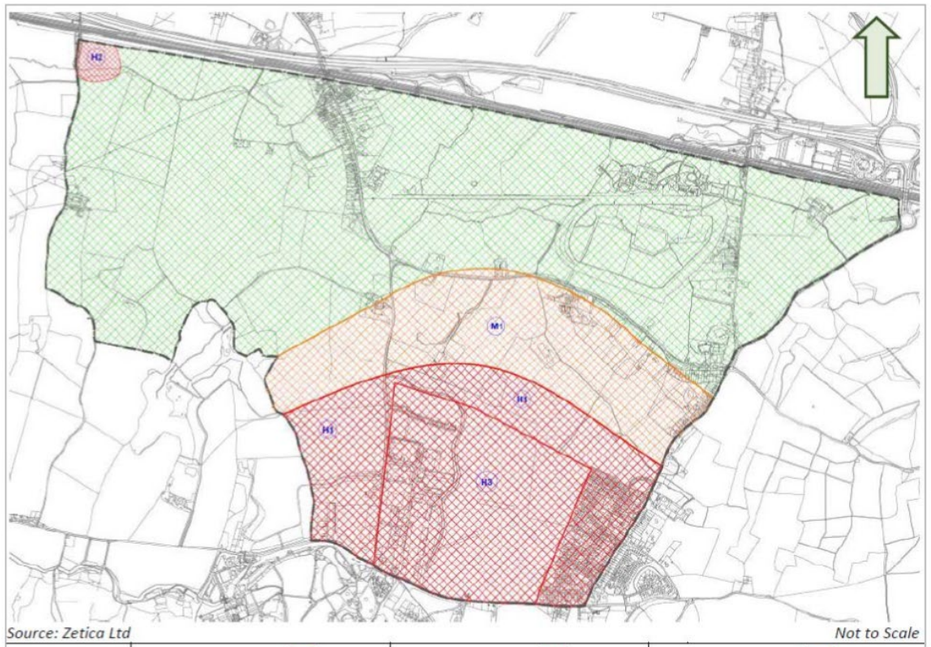


Figure 10.6: UXO Hazard Level Plan

10.3.52 The majority of the Site has been given a low hazard level, where no significant bombing has been identified.

10.3.53 Prior to the intrusive ground investigation works on the former RAF Lympne, Zetica undertook a non-intrusive geophysical survey using a multi-frequency electromagnetic sensor of the areas around the proposed exploratory hole locations. The findings are detailed in a report entitled UXO Risk Mitigation for Ground Investigation (Ref 10.12) which is included as an Appendix in the GCR. Approximately 250 isolated metallic anomalies were identified during the survey which cannot be discounted as potential unexploded bombs and 38 linear features were identified which may relate to the presence of pipe mines. Other features such as utility services, demolition arisings and areas of possible buried waste were detected.

Ground Investigation – Contamination Data

10.3.54 A contamination assessment was undertaken by SLR (Ref 10.14) in 2008 for a planning application (PAG/AW/SH/08/124) at Otterpool Quarry. This report detailed that the Site was used for the manufacture of cement and asphalt and vehicle maintenance, and which was demolished in 2005. An investigation undertaken in 2005 reported hydrocarbon contamination in the former weighbridge and plant area, impacting on shallow groundwater.

10.3.55 This report concluded that there was a low risk to human health and controlled waters in the context of the proposed industrial development and no specific remediation was recommended except for the removal of above and below ground tanks and contaminated soil.

10.3.56 To address the potentially significant risks and areas of uncertainty across the proposed Development, a preliminary ground investigation was undertaken by Arcadis in 2017 and 2018. This work was undertaken over 2 phases and targeted areas of potential contamination as well as to provide general ground conditions data across the proposed Development. The factual information including exploratory hole logs, chemical data is provided in two factual reports (Ref 10.15 and 10.16) which are appended to the GCR and the interpretation of the findings presented in the GCR.

10.3.57 Soil and groundwater samples were analysed for a suite of contaminants such as metals, non-metals, asbestos (soils only) and hydrocarbons.

10.3.58 The soil results have been compared to generic assessment criteria (GAC) for a residential land use (sensitive) to establish the contamination status of the soils analysed. The full assessment is provided in the GCR.

10.3.59 Contaminant concentrations above the residential GAC were recorded in relatively few samples compared to the number (77) analysed. The following details summarise where exceedances were recorded. Further details are provided within the GCR.

- Asbestos fibres were encountered in 4 samples which were either from Made Ground or Topsoil.
- Polycyclic Aromatic Hydrocarbon (PAH) compounds were present in elevated concentrations in 9 samples mainly from the Made Ground or Topsoil.
- Lead was elevated in one topsoil sample.

10.3.60 The groundwater samples were screened against appropriate Water Quality Standards WQS). In general, the groundwater analysis indicated that contaminant levels were low in all the samples. No hydrocarbons were detected. Several heavy metal were recorded above WQS protective of surface water features however these were generally minor exceedances.

10.3.61 Gas monitoring was carried out in the installed exploratory holes across the proposed Development Site. These include holes near to potential gas sources such the landfill at Lympne Industrial Park and backfill at the former Otterpool Quarry.

10.3.62 Low concentrations of methane (<LOD to 0.1% v/v) and carbon dioxide (<LOD to 4.7 % v/v) were recorded. Flow rates ranged between -0.9l/h and 0.6l/h. A gas risk assessment has been undertaken in the GCR based on the results to date. This concluded that a low risk gas regime within the proposed Development which is typical of natural soils of a low organic content or typical of Made Ground which was encountered across the Site.

10.3.63 Table 10- 12 provides a summary of the values assigned to receptor. These have been assigned using the criteria presented in Table 10-5.

Table 10- 12 Summary of the Value of Geology, Hydrogeology and Land Quality Receptors

Receptor Type	Receptors	Value (Sensitivity)
Human Health	Construction Workers	High
	Existing residents in nearby properties	High
Geology	Geological SSSI – Otterpool Quarry	Very High
	Superficial deposits / Bedrock	Medium to Low
Hydrogeology	Principal Aquifer / Secondary A	High / Low
Surface Water	East Stour, ponds, springs	Medium
Buildings / Structures	Existing and proposed	High to Low

Future Baseline

10.3.64 The proposed Development is expected to be constructed in phases over an approximate 20 - 22-year period to 2042 following which there would be further development to complete the Framework Masterplan for 10,000 homes by 2046. Existing baseline conditions with respect to geology, hydrogeology and land quality would be unlikely to change significantly between now and 2046 in the absence of the Development.

10.3.65 Contamination is generally due to historic land uses as operations / procedures of current works / industry are more tightly controlled. It should be noted that the proposed Development is within a mainly rural setting and no significant contamination has been identified to date. Therefore, the existing baseline conditions are considered likely to represent the future baseline conditions for the proposed Development Site.

10.3.66 It is not possible to predict future changes to regulatory policy and frameworks so the future baseline assumes no significant changes with respect to these. It is not envisaged that future minor changes or refinements would materially affect this assessment.

10.4 Design and Mitigation

10.4.1 Details of the design and mitigation measures that act to minimise significant environmental effects to the identified receptors are summarised below.

Construction Approach and Mitigation of Construction Effects

10.4.2 An assessment of the effects on the geological and hydrogeological and land quality receptors resulting from the construction of the proposed Development has been undertaken. This has considered the baseline information presented and the types of construction activities likely to be involved. When assigning magnitude to the impacts identified, in accordance with Table 10-4, the following measures and controls have been assumed to be in place.

10.4.3 A preliminary intrusive ground investigation has taken place across the proposed Development to establish the general ground conditions. This has targeted potential contaminated land areas. The data has been assessed using the source-pathway-receptor principles and a Conceptual Site Model for the Development has been created. Further intrusive investigations will need to be undertaken across the proposed Development for detailed design which will increase the understanding of ground conditions and potentially identify areas of contamination.

10.4.4 To date contamination concentrations in areas targeted for investigated have been found to be low. However, if unacceptable risks are identified in further intrusive investigations due to the concentrations of contaminants found, remedial action would be proposed to reduce the risk to receptors. This could include removal of contaminated materials or remediation by appropriate *in-situ* or *ex-situ* techniques. The action required would be detailed in a Remediation Strategy.

10.4.5 The construction works would include the removal of vegetation, stripping of topsoil, excavation and localised earth movements. These activities could cause the spreading and mobilisation of contaminants (if present) into the water environment in these areas.

10.4.6 During these works a watching brief protocol would be adopted as detailed in Code of Construction Practice (CoCP), with site workers remaining vigilant such that visual or olfactory signs of contamination are noted and that contaminated soil is kept separate from other materials. Suspected contaminated material would be analysed to determine if it is suitable for re-use on the Site or requires disposal off-site to an appropriate soil recycling or disposal facility.

10.4.7 In line with best practice and as detailed in the CoCP, prior to any construction compound area being prepared, a baseline survey will be undertaken to determine the current land quality across the compound area. This will highlight localised contamination if present above risk based suitable for use criteria. If appropriate such areas will be remediated prior to, or as part of, the soil stripping / enabling works or other measures such as the use of an appropriate cover system / barrier to reduce the risk of exposure to site workers.

10.4.8 Within the construction site compounds, specific areas would be designated for the storage of chemicals, waste oils and fuel and refuelling activities. These areas will be bunded and placed on hardstanding to prevent downward migration of contaminants. Any transfer of fuel or other potentially contaminated liquids would only take place within a designated fuel transfer area. Drip trays would be provided to reduce the risk of spillages. These areas would be designed with appropriate drainage to ensure any spillages can be isolated. Waste water generated from the construction compound will be disposed of via appropriate means, e.g. pumped out and removed from Site by tanker.

10.4.9 An Emergency Response / Spill Response Plan would be produced by the Main Works Contractor. Appropriate equipment (e.g. spill kits, absorption mats) would be made easily accessible on-site and personnel will be trained in using them. Clear protocols and communication channels would be provided to ensure that any spillages are dealt with immediately and adequately. This would prevent large areas of soil / geology potentially becoming contaminated and in turn protect surface water quality.

10.4.10 During the construction phase, localised contamination may occur within the compound areas through spillages / leakages of fuel and therefore a repeat baseline survey would be undertaken once the construction has finished and the compound dismantled to demonstrate the area has been returned to its previous state. If contamination has occurred during the lifetime of the compounds, remediation would be undertaken to return the land to its previous land quality state as detailed in the CoCP.

10.4.11 Mitigation measures to prevent pollution incidents to receptors during the construction phase would be provided in the CoCP. This would be to ensure best practice is utilised and the receptors are protected. The Contractor would prepare detailed method statements and appropriate controls to protect receptors. The plan would include best practice pollution prevention guidelines for activities such as excavation and dewatering, storage of fuels, chemicals and oils, vehicle washing, pollution control and emergency contingency.

10.4.12 Excavated soils would be appropriately stored to ensure that if dust is generated in dry weather periods, it is not directed towards existing properties. Other best practice measures such as damping down areas, vehicle wheel washing, covering stockpiles and lorries containing soils would be utilised to reduce the impacts from dust. Further information is presented in Section 6.4 (Air Quality Chapter).

10.4.13 To reduce the spread of contaminants, contaminated soils (identified by intrusive investigation works and subsequent assessment) within areas to be excavated would be removed prior to the main works as detailed in the previously referred Remediation Strategy. Materials would be treated so they can be reused within the proposed Development or if this is not possible materials would be disposed of at an appropriate waste facility. Re-use criteria (protective of human health and groundwater) would be defined within the Remediation Strategy which would be regulatory approved prior to implementation.

10.4.14 Structures such as bridges are proposed within the proposed Development. Geotechnical techniques such as piling for the foundations of the structures may be used to construct these features. Such techniques can introduce pathways for contaminants in pore water to migrate into underlying groundwater. Appropriate techniques would be reviewed and appropriate design would be included to safeguard the underlying groundwater regime to ensure that groundwater quality is not compromised.

10.4.15 To reduce the risk to surface water, excavated materials will be appropriately stored to ensure that water runoff from stockpiles does not enter the water environment via drains and nearby watercourses. If necessary stockpiles would be covered. Pollution prevention best practice protocols would be adopted to ensure contamination do not enter surface water as detailed in the CoCP.

10.4.16 A Site Waste Management Plan (SWMP) and a Materials Management Plan (MMP) that would form part of the CoCP would be developed by the Contractor. The MMP would be prepared following the protocols within the CL:AIRE Definition of Waste: Development Industry Code of Practice (Ref 10.17) to ensure that excavated material are re-used appropriately, sustainably and remain outside the waste hierarchy.

10.4.17 During the construction phase, construction / site workers would be exposed to soil via accidental ingestion, inhalation or dermal contact. If contamination is present to mitigate risks, all persons engaged in site construction works would be made aware of the findings of the intrusive investigations and the hazards associated with handling potentially contaminated materials via the CoCP and Health and Safety Plan. All works would be conducted in accordance with the Health and Safety Executive publication entitled Protection of Workers and the General Public during the Development of Contaminated Land (HSE, 1991) (Ref 10.18) and follow Construction (Design and Management) Regulations (2015) (Ref 10.19).

10.4.18 Suitable Personal Protective Equipment (PPE) including Respiratory Protective Equipment (RPE) would be available to all site workers as detailed in the Health and Safety Plan. Appropriate site hygiene protocols would be adopted during the construction phase.

10.4.19 Where any hazardous chemicals are used in the construction works, risk assessments would be made under The Control of Substances Hazardous to Health Regulations (as amended) and detailed in the CoCP.

10.4.20 Prior to excavation works in the medium and high UXO risk areas and especially in the area where pipe mines were installed, further assessment would be undertaken to establish the true UXO risk in this area. This may involve both non-intrusive (desk based and geophysical surveys) and intrusive surveys (excavations to determine if objects are UXO). The process to establish the UXO risk and remove an devices encountered would be undertaken in a systematic approach as detailed in a UXO Mitigation Strategy. This strategy would be agreed with the local planning authority and relevant organisations prior to implementation.

10.4.21 The groundwater is known to be shallow (<1m bgl) in the northern part of the Site. During construction of infrastructure and foundations in these areas, groundwater control may be required. Whilst groundwater contamination has not been encountered to date, if during further works, contamination is found, produced groundwater would be disposed of appropriately and with the necessary agreements in place. During such activities, consideration would be given to soil concentrations in the locality to ensure that contaminants do not become mobilised and enter the water environment.

10.4.22 Use of minerals / materials derived through incidental extraction during the development would be considered, subject to confirmation of their properties to reduce the demand for importation of construction aggregates from off-site sources. Further ground investigation would be required to assess the potential for incidental use and would be considered during the detailed design stages of the proposed Development.

10.4.23 The use of the mineral Kentish Ragstone as a visible element of the proposed Development (such as building facing or landscaped areas) would be considered as a suitable use of site-won materials in promoting the geodiversity and heritage of the region.

10.4.24 A woodland burial cemetery is proposed within the proposed Development. The current location has a moderate vulnerability rating. The siting of the cemetery would be in a location within the proposed Development which would protect the underlying groundwater. Appropriate EA guidance (Ref 10.11) includes that burials should not take place within 30m of the watercourse on the western boundary of the proposed cemetery site or within 10m of any proposed SuDS drainage infrastructure that would be utilised. A ground investigation would be completed within the proposed indicative cemetery site to determine groundwater levels, ground conditions and soil quality to check conditions are appropriate for the detailed design of the burial cemetery.

10.4.25 Existing buildings and infrastructure are present within the Site. Some of the buildings have high importance due to their national (historical) significance. If required, assessment of ground conditions near to existing buildings / infrastructure would be undertaken to demonstrate that construction techniques (e.g. piling) and excavations near to existing features would not have detrimental effect to the foundations of these features. If a potential risk is considered present, appropriate mitigation would be implemented.

10.4.26 Based on current gas monitoring data, there is a low risk gas regime across the proposed Development. This would be confirmed by additional investigation / monitoring for detailed design. Appropriate gas protection measures (if required) will be designed into buildings to mitigate the risk from ground gases present.

10.4.27 Foundations for buildings would be appropriately designed to accommodate the ground conditions across the Site and reduce the risk of instability. The inferred faults would be investigated and considered during detailed design.

Scheme Design and Mitigation of Operational Effects

10.4.1 The assessment of the operational effects of the proposed Development has been undertaken. When assigning magnitude to the impacts identified, in accordance with Table 10-4, the following measures and controls have been assumed to be in place.

10.4.2 The following aspects were scoped out of the operational phase assessment at EIA scoping stage.

- The effects of historic (pre-existing) ground and groundwater contamination on the identified receptors following construction. It is expected that any significant adverse effects that require mitigation will be reduced to acceptable levels by the time the Development is operational i.e. any contamination encountered would be remediated during construction phases.
- The potential for the introduction of future contamination as a result of new potentially significantly contaminative land uses on site is not considered likely given the mix of proposed uses and legislative operational controls that will be required for any future potentially contaminative activities e.g. tank bunding in accordance with EA guidance, on-Site.
- In terms of natural contaminants, the site is located in a low probability area for radon gas emissions from the ground. Less than 1% of homes are estimated to be at or above the Action Level for Radon. Remedial measures in new dwellings are therefore unlikely to be a statutory requirement.

10.4.3 The proposed Development would utilise Sustainable Drainage Systems (SuDs) to manage surface water in terms of both water quality and quantity. Further information is provided in Chapter 15: Surface Water Resources and Flood Risk. SuDs would be designed to appropriate standards to safeguard the quality of the underlying groundwater regime. Appropriate green infrastructure spaces throughout the proposed Development would be determined in areas where infiltrations rates and ground conditions are suitable for these features.

10.4.4 The proposed Development does not propose to abstract groundwater for water supply (potable or otherwise e.g. irrigation). Should this position change, abstraction licences would be obtained via regulatory approval and this process would consider the impacts to the wider hydrogeological regime.

10.4.5 The proposed Development design does not include deep basements or structures which would create a groundwater barrier. If building design changes and such features are included a groundwater assessment would be undertaken to establish the implication on the groundwater regime and if any mitigation is required.

10.4.6 Should deeper infrastructure be required, e.g. deep main sewers, their design would include clay stanks (or similar) to prevent them acting as a preferential groundwater drainage pathway.

10.4.7 The proposed Development design assumes that the geological SSSI (Otterpool Quarry) is located within a woodland Country Park. The former quarry face will be maintained and potentially enhanced (benched back) to expose additional areas of the Hythe Formation geology. Natural England NE) has in principal agreed the setting of the SSSI (in letter dated 7th Nov 2018) and the detailed design of the area including access and maintenance would be agreed with NE prior to implementation.

10.5 Assessment of Residual and Cumulative Effects

Residual Effects from Construction

10.5.1 Construction workers will be present during the construction of the proposed Development. They can be exposed to soils (potentially contaminated) during earthworks including excavation, topsoil stripping, stockpiling, transportation and backfilling. Exposure could be through accidental ingestion, inhalation of dust and dermal exposure. Near-by residents could be exposed to dust blown from earthwork activities. These receptors are considered to be of high value. With the implementation of the design and mitigation measures detailed in Section 10.4, the magnitude of impact on these receptors is considered to be negligible with a **Slight Adverse** significance of effects.

10.5.2 During construction activities there is the potential for accidental spillages of oils, chemicals, cement and fuels from the movement of construction traffic and the storage of chemicals. This could impact the underlying geology and with the potential for contamination to migrate into the water environment. Geology (excluding the Geological SSSI) across the site is considered to have medium to low value. With the implementation of the design and mitigation measures detailed in Section 10.4 the magnitude of impact is considered to be negligible with an overall **Neutral** significance of effects. Groundwater underlying the site in considered to be high value when considering the Principal aquifer designation and low value with regards the Secondary A aquifer. With the implementation of the design and mitigation measures detailed in Section 10.4 the magnitude of impact is considered to be negligible with an overall Slight Adverse or **Neutral** significance of effects. Surface water is considered to be of medium value and assuming the appropriate environmental design measures and mitigation are adopted, the magnitude of impact is considered to be negligible. The significance of effects is assessed as **Neutral**.

10.5.3 During the construction of new bridges across the East Stour and other watercourses, there is the potential for the creation of pathways into the underlying aquifers using techniques such as piling.

Excavations and general earthworks activities could mobilise contaminants present which in turn could migrate into the water environment. Groundwater underlying the site in considered to be high value when considering the Principal aquifer designation and low value with regards the Secondary A aquifer. With the implementation of the design and mitigation measures detailed in Section 10.4 the magnitude of impact is considered to be negligible with an overall Slight or **Neutral** significance of effects. Surface water is considered to be of medium value and assuming the appropriate environmental design measures and mitigation are adopted, the magnitude of impact is considered to be negligible. The significance of effects is assessed as **Neutral**.

10.5.4 There are existing buildings on site which are given a high value due to their national significance. Infrastructure such as roads and utilities are present and the HS1 rail line is present adjacent to the northern Site boundary. Damage could occur to these features during construction. With the implementation of the design and mitigation measures detailed in Section 10.4, the magnitude of impact on these receptors is considered to be minor adverse resulting in an overall **Moderate Adverse** to **Neutral** significance of effects.

10.5.5 During construction there is a risk of disturbance of UXO and pipe mines which may be present on the Site. The main risk is to Construction Workers and nearby residents. Both these receptors are considered to be of high value. With the implementation of the design and mitigation measures detailed in Section 10.4, the magnitude of impact on these receptors is considered to be negligible with a **Slight Adverse** significance of effects.

Residual Effects from Operation

10.5.6 As detailed above, the impacts from potential contamination during the operational phase has been scoped out as existing contamination would be remediated prior to construction through measures such as the Remediation Strategy. In addition, operational activities associated with those of a Garden settlement are considered not to be of significance with respect to ground contamination, given the proposed mix of uses and low likelihood of significant contamination being generated from them.

10.5.7 The former Otterpool quarry which is a designated SSSI is considered to have a very high sensitivity due to the geological features present. With the proposed mitigation to enhance this feature within a woodland country park as detailed in Section 10.4, the magnitude of impact is considered to be moderate to major beneficial. The significance of effects is assessed to be Large to **Very Large beneficial.**

10.5.8 SuDS are proposed within Development to manage surface water drainage. This will infiltrate and join the underlying groundwater across the Site which could reduce water quality or change the groundwater regime within the locality. With the implementation of the design and mitigation measures detailed in Section 10.4 and Section 15.4 in Surface Water Resources and Flood Risk, the magnitude of impact is considered to be negligible with an overall **Slight Adverse** or **Neutral** significance of effects.

10.5.9 A woodland burial is proposed within the Development, which could impact the underlying groundwater. Groundwater is considered to be high value in area of Principal aquifer designation and low value with regards the Secondary A aquifer. With the implementation of the design and mitigation measures detailed in Section 10.4, the magnitude of impact is considered to be negligible with an overall **Slight Adverse** or **Neutral** significance of effects depending on the location within the Site.

10.5.10 New buildings / infrastructure are proposed which would be considered to have medium to low value. With the implementation of the design and mitigation measures detailed in Section 10.4, the magnitude of impact is considered to be negligible which would result in an overall **Neutral** significance of effects.

Cumulative Effects

10.5.11 The cumulative effects of the proposed Development have been assessed with reference to the those listed in Appendix 2.4 of the ES. The assessment considers those schemes that have been consented within the borough of Ashford and FHDC and that have the potential to have a cumulative impact on geology, hydrogeology and land quality. All consented developments should follow best practice with regards to land quality and are likely to need to satisfy planning conditions with regulatory approval prior to construction. Significant discharges to groundwater which may change the hydrogeological regime would need to considered for any of the new development and seek regulatory approval. With this in mind, it is considered that the cumulative effect on geology, hydrogeology and land quality receptors would be **Neutral**.

10.6 Assessment Summary

10.6.1 This assessment has concluded that the development of the Site could be undertaken without detrimental significant effects on geology, hydrogeology and land quality receptors. This would be achieved by implementation of best construction practice and appropriate design. With regards the Geological SSSI present the proposed Development would provide a beneficial effect as the feature would be enhanced and made more accessible.

10.6.2 Table 10- 13 provides assessment summary with respect to Geology, Hydrogeology and Land Quality and how they have been addressed.

Table 10- 13 Assessment Summary

Receptor	Potential Significant Effect	Phase (Construction ©, Operation (O))	Mitigation Measure	Residual Effect Significance
Human Health	Exposure to potentially contaminated soils via accidental ingestion, inhalation and dermal contact.	C	Determine areas of contaminated soils prior to earthworks detailed within a remediation strategy. Use of best practice on site to avoid creation of dust. Use of appropriate PPE on site. UXO Mitigation Strategy implemented prior to construction.	**Slight Adverse/ Not significant**
Geology	Pollution with fuels, oils, construction products etc	C	Baseline survey prior to development of construction compounds. Best practice e.g. implementation of pollution prevention measures. Repeat survey at end of construction and removal of any contamination created.	**Neutral / Not Significant**
Geological SSSI	Enhancement of feature within the Woodland Country Park	O	Not required	**Large to Very Large / Very Large beneficial**
Hydrogeology (Principal / Secondary aquifers)	Pollution with fuel, oils, cement or concrete. Mobilisation of contaminants. Creation of pathways during construction	C	Use of pollution prevention measures on site. Removal of contaminated materials via remediation strategy to reduce mobilisation. Appropriate construction techniques (eg piling) to reduce risk of creating pathways.	**Slight Adverse or Neutral / Not Significant**
Hydrogeology (Principal / Secondary aquifers)	Use of SuDS within Development – reduction in water quality / increase groundwater level	O	Appropriate design and location of features within development. Appropriate location for the feature.	**Slight Adverse or Neutral / Not Significant**

	Creation of woodland burial site			
Surface Water	Pollution with fuel, oils, cement or concrete. Mobilisation of contaminants.	C	Use of pollution prevention measures on site. Removal of contaminated materials via remediation strategy to reduce mobilisation. Best practice in stockpiling of materials away from water courses	**Neutral / Not Significant**
Existing Buildings / infrastructure	Damage due to construction around features	C	Assessment of ground conditions around existing buildings.	**Moderate Adverse to Neutral / Not Significant**
New Buildings / infrastructure	Damage from instability during lifetime	O	Further site investigation for detail design and appropriate design of new building.	**Neutral / Not Significant**

10.7 References

Reference	Title
Ref 10.1	SLR Consulting (2018) Mineral Resources Assessment Otterpool Park (Ref 409.01645.0004 Version 3)
Ref 10.2	Environment Agency (2004) Model Procedures for the Management of Land Contamination Contaminated Land Report 11 (CLR11). Bristol. Environment Agency.
Ref 10.3	CIRIA (2001) Contaminated land risk assessment. A guide to good practice (C552)
Ref 10.4	LQM / CIEH (2015) The LQM / CIEH S4ULs for Human Health Risk Assessment
Ref 10.5	Highways Agency (2009) Design Manual for Roads and Bridges (DMRB) Volume 11
Ref 10.6	BGS (1974) Geological Map of Folkestone and Dover (Solid and Drift) 1:50,000
Ref 10.7	Joint Nature Conservation Committee (JNCC) The Geological Conservation Review http://jncc.defra.gov.uk/
Ref 10.8	Kent County Council (2016) Kent Minerals and Waste Local Plan (2013-30) (Adopted July 2016)
Ref 10.9	Peter Brett Associates (PBA) (2008) Link Park, Lympne, Kent, report on Hydrogeological Assessment (16003/051D Doc Ref 6962 JC ab)
Ref 10.10	Arcadis Consulting (UK) Limited (2018) Determining the best location for a Woodland Burial Cemetery Site at the Otterpool Park development: Spatial assessment of groundwater vulnerability to controlled waters (10011914-35564-ARC-XX-XX-MR-YY-0002-P1.0-FINAL)
Ref 10.11	Environment Agency (2002) Pollution Potential of Cemeteries Draft Guidance R&D Technical Report P223, Almondsbury, UK:
Ref 10.12	Zetica (2017) UXO desk Study and Risk Assessment, Otterpool Park, Lympne, Kent (P6258-17-R1)
Ref 10.13	Zetica (2018) UXO Risk Mitigation for Ground Investigation, Otterpool Park (P6248-17-R2-A)
Ref 10.14	SLR (2008) Otterpool Quarry, Nr Hythe, Kent, Contamination Assessment (Ref 409.1376.00002)
Ref 10.15	Arcadis Consulting (UK) Limited (2017) Otterpool Park Ground Investigation Report (0001-UA008926-43-AFS-GLR-G0001)
Ref 10.16	Arcadis Consulting (UK) Limited (2018) Otterpool Phase 2, Ground Investigation Factual Report (10011914-AFS-GLR-G0001)
Ref 10.17	CL:AIRE (2011) Definition of Waste: Development Industry Code of Practice, Version 2
Ref 10.18	Health and Safety Executive (1991) Protection of Workers and the General Public during the Development of Contaminated Land
Ref 10.19	Construction (Design and Management) Regulations (2015)

11 Human Health

11.1 Introduction

11.1.1 This Chapter of the ES assesses the potential impact of construction and operation of the proposed Development with respect to human health, providing a summary of the Health Impact Assessment (HIA) prepared in support of the outline planning application. The Chapter sets out relevant information relating to design of the proposed Development and sets out the relevant legislation, policy and guidance, methodology, baseline description and findings of the HIA.

Relevant Aspects of the Proposed Development

11.1.2 A full description of the proposed Development is given in Chapter 4. Specific aspects that relate to human health include the impacts of the delivery of up to 8,500 homes along with retail, commercial, leisure, education, health and community facilities, green infrastructure and public open space. Embedded design details and mitigation measures of relevance to specific environmental topics are described in detail within the relevant chapters of this ES.

11.2 Assessment Methodology

Legislation, Policy and Guidance

Legislation

11.2.1 Changes to EIA Directive 2014/52/EU came into force in May 2017. The Regulations introduced new topics to the environmental assessment process including a requirement to assess population and human health. This requirement was then transposed into English law via the EIA Regulations

Policy

11.2.2 At national level, relevant policy includes:

- Government White Paper: Healthy Lives, Healthy People (Ref.11.1)
- National Planning Policy Framework (Ref.11.2)
- A Green Future: Our 25 Year Plan to Improve the Environment (Ref.11.3)

11.2.3 At regional level, relevant documents include the South Kent Health and Well-being Strategy (Ref.11.4), based on the Kent Joint Strategic Needs Assessment (Ref.11.5), and which identifies current and future needs for adults and children. Kent County Council's Strategic Statement 2015-2020 (Ref.11.6) includes as one of its strategic outcomes for '*Kent communities to feel the benefits of economic growth by being in-work, healthy and enjoying a good quality of life'.*

11.2.4 Relevant policy context at local level relating to health and well-being together with details relating to policy compliance is summarised in Table 11-1.

Table 11- 1 Summary of EIA Scoping Opinion

Policy Document	Summary of Relevant Policy	Policy Compliance
Shepway District Council Local Plan Review (2006) (Ref.11.7)	The Local Plan has no specific health policies. However, policies SD1, LR1, LR3 and LR9 relate to the promotion of leisure and recreation facilities and the loss of open space. The criteria for Sustainable Development in Policy SD1 includes the 'need to maintain and enhance the provision of recreational open space and amenity land'. The Leisure and Recreation Policy LR1 states that planning permission will not be granted if development proposals would result in the loss of indoor recreational facilities whereas the development of formal sport and recreational facilities in the countryside are promoted by Policy LR3. The provision of an adequate level of open space within the district is supported by Policy LR9. The policy seeks to protect existing and potential areas whilst providing new open spaces in areas where deficiency exists in Shepway. Policy HW2 (Improving the Health and Wellbeing of the Local Population and Reducing Health Inequalities) states that for residential development of 100 or more units and non-residential development in excess of 1,000sqm a Health Impact Assessment will be required, which will measure the wider impact of the development on healthy living and the demands that may be placed on health services and facilities arising from the development. Where significant impacts are identified, measures to address the health requirements of the development should be provided and/or secured by planning obligations or planning conditions as appropriate.	The proposed Development is compliant with policy in terms of the provision and emphasis on quality open space and amenity land.
Folkestone & Hythe District Council Places and Policies Local Plan (Submission Draft, February 2018) (Ref. 11.8)	Policy HW3 (Development that Supports Healthy, Fulfilling and Active Lifestyles) states that to increase, create and safeguard opportunities for healthy, fulfilling and active lifestyles and to reduce the environmental impact of importing food development proposals should: 1. Incorporate productive landscapes in the design and layout of buildings and landscaping of all major developments; 2. Not result in the net loss of existing allotments; and 3. Not result in the loss of the best and most versatile agricultural land (Grades 1, 2 and 3a) unless there is a compelling and overriding planning reason to do so and mitigation is provided through the provision of productive landscapes on-site or in the locality. Policy HW4 relates to the promotion of active travel and notes that planning permission will be granted for development likely to give rise to increased travel demands, where the site has (or will attain) sufficient integration and accessibility by walking and cycling including, where appropriate, through:	A standalone HIA has been prepared for the proposed Development. The proposed Development meets policy requirements in terms of good design, provision of open space and landscaping, fostering of a sense of place through community led projects, and active travel proposals.

	1. The provision of new cycle and walking routes that connect to existing networks, including the wider public rights of way network, to strengthen connections between settlements and the wider countryside; 2. The protection and improvement of existing cycle and walking routes, including the public rights of way network, to ensure the effectiveness and amenity of these routes is maintained, including through maintenance, crossings, signposting and way-marking, and, where appropriate, widening and lighting; 3. The provision of safe, direct routes within permeable layouts that facilitate and encourage short distance trips by walking and cycling between home and nearby centres of attraction, and to bus stops or railway stations, to provide real travel choice for some or all of the journey; and 4. The provision of, or contributions towards, new cycle and walking routes identified in adopted strategic documents.		
Folkestone & Hythe District Council Core Strategy Review (2019) (Ref. 11.9)	Policy SS6 (New Garden Settlement – Development Requirements) relates to the provision of a new garden settlement, to be developed on garden town principles and which will have a distinctive townscape and outstanding accessible landscape. It will be planned to be sustainable, providing new homes with a broad mix of tenures, employment opportunities and community facilities within easy walking and cycling distance. It will be a landscape-led development with an emphasis on woodland planting, open space and recreation that supports healthy living and encourages interaction between residents. Environmentally the settlement will be a beacon of best practice, making best use of new technologies, and will be designed to achieve a low carbon, low waste and low water usage development with an aspiration for water and carbon neutrality. The policy states that a health centre shall be provided in the early phases of development, in partnership with local Clinical Commissioning Groups and the Kent Health and Wellbeing Board, drawing from exemplar facilities elsewhere. The centre shall be designed to deliver an integrated service for patients - including a cluster of general practitioners, a wide range of diagnostic services and primary care treatment – to minimise the requirement for secondary care treatment at local hospitals. The centre should be located on an accessible site close to other community services.	The proposed Development is compliant with Policy SS6 in terms of the provision of a sustainable development that supports healthy living through a range of environmental interventions and good practice.	

11.2.5

Guidance

11.2.6 Guidance that has been used to inform the human health assessment is as follows:

- NHS London Healthy Urban Development Unit (HUDU), Planning for Health: Rapid Health Impact Assessment Tool (third edition April 2017) (Ref. 11.10) which identifies determinants of health likely to be influenced by a specific proposal; and
- IEMA Health in Environmental Impact Assessment – A Primer for a Proportionate Approach (June 2017) (Ref. 11.11), which is primarily a discussion document designed to outline and identify issues arising from changes to EIA Directive 2014/52/EU. The changes to the UK EIA Regulations introduced in 2017 require a focus on significant effects as they relate to human health, although do not elaborate on how significance should be defined. The IEMA guidance referred to earlier suggests that *'the consideration of significant effects on population and health requires a statement on the way in which any change can be expected to manifest itself'*, enabling a description of the predicted health and well-being outcomes. Scoping of population and human health issues should be proportionate and pay specific attention to vulnerable groups

Consultation and Scoping

Consultation

11.2.7 Table 11- 2 provides a summary of Consultee issues raised with respect to human health and how they have been addressed.

Table 11- 2 Summary of Consultation

Consultee/Contact/Date	Summary of Consultee Issue	How Addressed?
FHDC	A Scoping Report for the HIA was presented and discussed, focusing on the methodology to be used and identifying key issues.	Comments from the meeting and follow-up emails were incorporated into a revised Scoping Report, which formed the basis for the HIA.

Scoping

11.2.8 Table 11- 3 provides a summary of consultee responses contained within the Scoping Opinion in relation to human health, and the corresponding location in the ES where they are addressed.

Table 11- 3 Summary of EIA Scoping Opinion

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
FHDC	Potential effects on the health of construction workers should be considered.	This topic is covered in detail within Chapter 10: Geology, Hydrogeology and Land Quality.
Ashford Borough Council	Interest expressed in the consideration of health infrastructure, including impacts on existing services and the location of additional facilities.	The quantification and mix of health infrastructure required as part of the proposed Development is discussed in the Community Infrastructure and Facilities Report which accompanies the planning application, with relevant aspects summarised in Chapter 14: Socio-

		Economics and Community, the standalone HIA and Section 11.4 of this Chapter.
Kent County Council	Supports the provision of C2 and/or C3 land uses to cater for social care needs and would also support the incorporation of smaller units for people with learning disabilities / mental health needs or autism.	Considered in the HIA and Chapter 14: Socio-Economics and Community.
Natural England	Opportunities to provide people with access to nature and recreation should be included, thereby benefitting health and well-being.	Considered in Section 11.4 of this Chapter, the standalone HIA and Chapter 14: Socio-Economics and Community.

The Study Area

11.2.9 The proposed Development has the potential for health impacts on the existing population of settlements in the vicinity of the site and surrounding area. The geographical scope for the HIA has therefore used the following study areas:

Local level using data at Lower Super Output Area (LSOA) level where available.

District level using data covering Folkestone & Hythe District Council.

Regional level using data at Kent / South-East England level, primarily for comparative purposes.

11.2.10 Where relevant, the spatial scopes of other environmental topics have been taken into consideration (for example where impacts may be experienced over a wider area, specifically with respect to traffic and transport, air quality and noise). These spatial scopes are described in the relevant Chapters 16, 6 and 13 respectively of this ES.

Methodology for Assessing Impacts

11.2.11 The HIA (which has informed this Chapter) has followed guidance produced by the NHS London Healthy Urban Development Unit (HUDU), Planning for Health: Rapid Health Impact Assessment Tool (third edition April 2017). The HUDU guidance helps identify those determinants of health likely to be influenced by a specific project or proposal. The aim of the Assessment Tool is to ensure 'health is properly considered when evaluating and determining planning proposals and that where possible development plans and proposals have a positive rather than a negative influence on health'.

11.2.12 A scoping exercise to identify those determinants to be assessed within the HIA was undertaken during the summer of 2018, the findings from which are summarised in Appendix A of the HIA.

11.2.13 Reviewing available research and information has enabled understanding of the links and potential interactions between topics scoped in to the HIA and the effects on health and well-being. A desk-top literature research has been undertaken to identify sources of information and findings of relevance to individual effects and topics, helping to inform the assessment.

11.2.14 Different impacts are likely to be experienced during different stages of the development. Accordingly, three stages have been identified during which it would be beneficial to consider specific health impacts. These are:

Construction Impacts of the proposed Development on residents of existing settlements and properties.

Early Occupation Impacts of the proposed Development on residents of existing settlements and properties as well as early occupants of Otterpool Park.

Full Build-Out Impacts of the proposed Development on residents of existing settlements and properties as well as all occupants of Otterpool Park.

11.2.15 For each of the topic areas scoped in to the HIA the following criteria have been used, together with professional judgement, to make an assessment of the potential impacts on health and well-being:

- change – identification of the aspect of the scheme that would cause the change, how the health determinant might change as a result (including whether the change would be beneficial or adverse).
- duration – an assessment of the duration of change (temporary or permanent).
- intensity and exposure – consideration of the magnitude or severity of the change in the health determinant, and the scale of people likely to be exposed to the change, including identification of vulnerable populations.

Assessing Significance

11.2.16 Table 11-4 summarises how significance of effect has been identified taking into account the above.

Table 11-4 Assessment of Significance of Health Impacts

Significance of Impact	Definition	Intensity and Exposure	Duration
Major Negative	Health effects are categorised as a major negative if they could lead directly to deaths, acute or chronic diseases or mental ill health. They can affect either both physical and mental health, either directly or through the wider determinants of health and wellbeing. These effects can be important local, district, regional and national considerations. Mitigation measures and detailed design work can reduce the level of negative effects though residual effects are likely to remain.	The exposures tend to be of high intensity and/or over a large geographical area and/or affects a large number of people (e.g. over approximately 500 people) or impacts on vulnerable groups	Long term duration Intermittent, temporary or permanent in nature.
Moderate Negative	Health effects are categorised as a moderate negative if health effects are long term nuisance impacts e.g. odours and noise or may lead to the exacerbation of an existing illness. Moderate negative effects may include nuisance/quality of life impacts which may affect physical and mental health either directly or through the wider determinants of health. The cumulative effect of a set of moderate effects could lead to a major effect. These effects could be important locally or regionally. Mitigation measures and detailed design work can reduce an in some/many cases remove the negative and enhance the positive effects through residual effects are likely to remain.	The exposures tend to be of moderate intensity and/or over a relatively localised area and/or likely to affect a moderate-large number of people e.g. between approximately 100-500 people and/or vulnerable groups.	Medium term duration Intermittent, temporary or permanent in nature.
Minor Negative	Health effects are categorised as minor negative if they lead to lesser change in quality of life or wellbeing.	The exposures tend to be of low intensity and/or over a small area and/or affect a small number of people	Short term duration Intermittent, temporary or

Significance of Impact	Definition	Intensity and Exposure	Duration
	Increases in noise, odour, visual amenity, etc. are examples of effects, which could be important local considerations. Mitigation measures and detailed design work can reduce the negative and enhance the positive effects such that there are only some residual effects remaining.	e.g. approximately less than 100.	permanent in nature.
Neutral / No Effect	No health effects or effects within the bounds of normal/accepted variation.	N/A	N/A
Minor Positive	Health effects are categorised as minor positive if they lead to lesser change in quality of life or wellbeing. Reductions in noise, odour, visual amenity, etc. are examples of effects, which could be important local considerations. Mitigation measures and detailed design work can reduce the negative and enhance the positive effects such that there are only some residual effects remaining.	The exposures tend to be of low intensity and/or over a small area and/or affect a small number of people e.g. approximately less than 100.	Short term duration Intermittent, temporary or permanent in nature.
Moderate Positive	Health effects are categorised as a moderate positive if they enhance mental wellbeing significantly and/or reduce exacerbations to existing illness and reduce the occurrence of acute or chronic diseases.	The exposures tend to be of moderate intensity and/or over a relatively localised area and/or likely to affect a moderate-large number of people e.g. between approximately 100-500 people and/or vulnerable groups.	Medium term duration Intermittent, temporary or permanent in nature.
Major Positive	Health effects are categorised as a major positive if they prevent deaths/prolong lives, reduce/prevent the occurrence of acute or chronic diseases or significantly enhance mental wellbeing.	The exposures tend to be of high intensity and/or over a large geographical area and/or affects a large number of people (e.g. over approximately 500 people) or impacts on vulnerable groups	Long term duration Intermittent, temporary or permanent in nature.

11.3 Baseline

11.3.1 Baseline data relating to health and well-being has been collected for each study area as relevant using a variety of sources including:

- Office for National Statistics, for example Census data (2011)
- Public Health England community profile data (2017 and 2018)
- Public Health England localhealth.org website
- Department for Communities and Local Government (DCLG), for example Indices of Deprivation (2015)
- Regional and district level strategy documents, including the Joint Strategic Needs Assessment for Kent, Shepway in Context, and the Shepway Community Safety Plan.

11.3.2 These data sources have been used to establish a community profile, covering demographic and socio-economic characteristics. The identification of population and human health issues must pay specific attention to vulnerable groups. These include children, older people, people with disabilities and people from low income groups.

11.3.3 Environmental baseline information has been derived from other reports and documents prepared in support of the OPA for Otterpool Park. These have included:

- Environmental Statement;
- Design and Access Statement;
- Energy Strategy;
- Housing Strategy;
- Sustainability Statement;
- Transport Assessment;
- Community Infrastructure and Facilities Strategy; and
- Retail Impact Assessment.

11.4 Assessment Summary of Potential Effects on Human Health

Introduction

11.4.1 Table 11-5 summarises the effects on human health as a result of the proposed Development in relation to the three stages of construction, early occupation and operation. The acceptability of the potential effects are assessed against the magnitude of change and compared to the sensitivity of the receptor, in relation to baseline conditions. Mitigation measures to address health effects during the three stages are proposed and described in detail within relevant topic chapters in this ES. Further detail relating to the assessment is contained in the HIA.

Table 11-5 Summary of EIA Scoping Opinion

	Construction	Early Occupation	Full Operation
Housing quality and design	There are no direct effects on housing quality and design as a result of construction of the proposed Development. A potential indirect effect may relate to take-up of local rental properties by members of the construction workforce, with a resultant increase in rental values / shortage of rental homes for local occupation. However, taking into account factors such as the scale of the regional construction workforce in the South East, the relatively mobile nature of construction workers and the duration over which the proposed Development is planned, the effects are considered to be **minor negative** overall, therefore, not significant.	The proposed Development would have a beneficial long-term impact on health through the provision of new housing. The range of housing types and tenures proposed cater for a range of lifestyles, income ranges and life stage, particularly including affordable housing provision and a range of accommodation to suit retired and elderly people. Vulnerable populations that may be affected positively include the elderly and low-income households. The Folkestone & Hythe district is home to a higher proportion of retired and elderly people than is the case for Kent as a whole. The proposed Development provides a mix of options for older people to meet a range of care needs, including large flats to appeal to 'down-sizers', a retirement village in close proximity to the new town centre, extra care housing with a range of levels of support from independent living to care packages, and a nursing home for those with higher care needs. The scale, range and quality of new housing proposed is considered to have a **major positive** significant impact on the health and well-being of both early occupiers and longer term residents.	The health effects relating to housing quality and design are considered to be similar for both the early occupation and operational phases. Therefore, the new housing proposed is considered to have a **major positive** impact on the health and well-being of longer-term residents and therefore, significant.
Access to healthcare services and other social infrastructure	No healthcare or other social infrastructure facilities are planned to be affected by construction activities. Accessibility by car and bus to community services and facilities will not be affected during construction. The effect on vulnerable populations who may be more dependent on car use and public transport, including people with limited mobility, will therefore be minimised. Any disruption to access as a result of disruption to existing road or footpath networks would be temporary in nature and not significant. There is potential for increased demand on local healthcare services as a result of the presence of temporary construction workers, although this effect is anticipated to be minor given the long build out of the development meaning that the number of workers at the development at any particular time will not be significant. The construction phase of the development is anticipated to have a **neutral** impact on access to healthcare services and other social infrastructure.	The potential health implications of early occupation are primarily related to mental health issues; these can be associated with a lack of a sense of belonging, lack of opportunities for community interaction and stresses created by ongoing construction activity (for example noise or amenity issues). All age groups and backgrounds are potentially vulnerable to these issues. Phasing of the proposed Development importantly incorporates opportunities for community interaction at the earliest stage – the first phase includes provision of education and community centre space. Sellindge Surgery is the closest existing surgery to the Site. The continued sustainability of Sellindge Surgery is very important and will be considered as part of any new provision at Otterpool Park. The early occupation phase of the development is considered to have a potentially **moderate negative** effect on access to healthcare services and other social infrastructure. The early provision of services and facilities and use of the Sellindge Surgery as outlined above as mitigation, together with management of construction impacts through the Code	Otterpool Park provides a significant opportunity for a GP practice with extended services. The exact model for delivering these services will depend on the strategic plans, objectives and funding available to the Clinical Commissioning Groups at the time of detailed planning permission and delivery. The delivery model could be a Multispeciality Community Provider (MCP) or a Treatment Centre. It is expected that, whatever model the healthcare offer might take, it will also include dentists, opticians and pharmacies in a mixture of private and NHS settings according to the NHS licencing programme for these facilities (which includes an up to date needs assessment). The exact model for phasing a new health centre at Otterpool Park has not been decided at this early stage and will be the subject of discussion and agreement between the Applicants, FHDC (as LPA) and the CCGs as part of the Section 106 agreement. However, the need to provide early years healthcare provision is acknowledged.

	Construction	Early Occupation	Full Operation
		of Construction Practice (CoCP) are anticipated to mitigate against further negative impacts. .	There are beneficial health impacts from the opportunities provided by increased social interaction presented by new community provision, and education opportunities for local residents provided by the new schools and early years provision. Vulnerable populations that may benefit from new facilities include children and the elderly. Overall the impacts are likely to be beneficial and long-term; the provision of new education opportunities will have a positive effect, as will the provision of new opportunities for social interaction. The health effects arising from access to healthcare services and other social infrastructure are considered to be **major positive**.
Access to open space and nature	Public footpaths within the application boundary are planned to remain operational during the construction of the proposed Development. Any disruption to the existing road and footpath networks during construction, thereby impacting upon access to open space and nature, would be temporary in nature and any health impact is thereby considered to be **negligible** and not significant.	During the early build out of the development, open space provision is planned to be delivered alongside new homes, services and facilities. Notably, it is proposed that the town park proposed to the south of Westenhanger Castle is developed in the first five years. The effects during early occupation are therefore regarded to be the same as during operation, providing a significant **major positive** health benefit to residents.	The masterplan proposals have been designed to complement and, where possible, enhance existing PRoW and bridleways within the application Site and to link in with external routes adjoining the Site. Proposed new walking and cycling routes will link into the existing footpath network. As such, existing PRoW and bridleways are expected to experience an increase in usage levels due to increased accessibility and an increase in local population. The incorporation of green infrastructure, open space and a variety of habitats and landscapes forms an intrinsic part of the design of Otterpool Park. There is likely to be a beneficial and long-term impact on health and well-being as a result of improved access to open space and nature from the proposed Development. Vulnerable populations that may particularly benefit from this effect include children and low-income households, through the creation of walkable neighbourhoods and improved footpath links. The health impact is thereby considered to be **major positive** for access to open space and nature and therefore significant.
Accessibility and active travel	There may be potential impacts on pedestrian amenity and public safety due to the increase in vehicle flows and the change in flow composition i.e. an increase in heavy goods vehicles travelling to and from site. Construction traffic will be restricted from travelling past schools and where this is not possible, vehicles will be restricted during start and closing times. A Construction Traffic Management Plan would be produced to mitigate effects, effectively routing construction vehicles away from sensitive residential areas where possible. The effects during this stage are considered to be **minor negative** and therefore not significant.	Bus routes will be developed through the build out of the development in conjunction with bus operators. An improved walking and cycling connection along the A20 will be provided as part of the early build out of the development. Walkable neighbourhoods will be created from the outset. The effects during this stage are considered to be **minor positive** and therefore not significant.	Pedestrian severance occurs when there is difficulty experienced in crossing a heavily trafficked road; the transport chapter of the Environmental Statement identifies ten road links that are expected to experience a 30% or greater traffic flow increase. For affected links, mitigation measures are proposed to reduce severance and improve pedestrian amenity as necessary, including where dedicated pedestrian crossing facilities such as zebra or signalised crossings are provided on key desire lines, such as the walk from Lympne to the Village Hall. The accessibility of Otterpool Park on foot and bicycle has been assessed using TRACC software, by considering distances reached by walking and cycling modes for appropriate timescales from the centre of the site. The modelling showed that the majority of the Otterpool Park site is within a 20-minute walk (approximately 1.6km) and areas of Sellindge and

	Construction	Early Occupation	Full Operation
			Lympne within a 30-minute walk (approximately 2.4km) of a node. The majority of Otterpool Park is accessible within a 15-minute cycle. A threshold of up to 30 minutes is shown to extend to Folkestone and Hythe, including National Cycle Network Route 2. A 45-minute cycle accesses National Cycle Network Route 18 and the regional network to Canterbury. The gradients in the wider area are however recognised, which may restrict the ability of all but the most able to walk or cycle from the proposed Development to some destinations in the wider area. Due to the emphasise on accessibility and active travel the proposed Development could potentially offer the rental of electric bicycles; to further promoting cycling, in particular to populations unable to use normal bicycles. The proposed Development incorporates new footpaths and cycleways, including links with the existing network of Public Rights of Way, thus enabling the local population to walk and cycle to local destinations, including links with nearby residential areas, through the creation of a range of safe, secure routes. The provision of regular public transport from well-planned and located bus stops, will enable local residents to make sustainable travel choices and reduce dependence on the private car. Vulnerable populations that may benefit particularly include young people, through the provision of appropriate walking and cycling routes to school and community facilities. The proposed development would therefore have a significant **moderate positive** long-term impact on the health of local residents, by virtue of improvements in accessibility and active travel.
Crime reduction and personal safety	The presence of a construction workforce for a major project can have an impact on the existing community as a result of the mistrust/fear of workers, fear of increased crime rates/antisocial behaviour. Vulnerable populations include the elderly for whom fear of crime may be heightened during the construction phase, thus having a potential effect of mental well-being. The Code of Construction Practice (CoCP) prepared for the project would include information about construction activities and how this will be communicated to existing residents. The CoCP would also include information about mitigation measures that may assist with promoting an enhanced feeling of security during the construction phase (for example ensuring construction areas are well-lit). During the construction phase, the proposed Development is considered to have a **minor negative** effect on the health of local residents and therefore not significant.	During early occupation, there is the potential for an increase in anti-social behaviour as a result of several factors – there may be a perceived 'lack of things to do' for younger populations, combined with a lack of community cohesion in the very early phases. The phasing of the proposed Development is such that a proportion of play space, strategic park provision and playing fields are provided during Phase 1. Equally, provision of community space and primary school provision (which has an important role to play in terms of developing community cohesion through provision of a social network) takes place during Phase 1. Construction will continue throughout the early occupation period, and therefore the issues associated with fear of crime and construction activities highlighted earlier are likely to continue, mitigated through measures outlined in the CoCP. As a result of these combined factors, the proposed Development could potentially have a **minor negative** effect on the health of new and existing local residents	The incorporation of good design into the proposed Development will ensure that crime and the fear of crime of crime is minimised through a variety of measures. This will potentially lead to health benefits for both new and existing local residents who should feel able to access open space and make healthy travel choices due to a perception of safety in their local environment. Over time, community cohesion and the development of social networks will contribute to feelings of community safety. The proposed Development is therefore likely to have a **moderate positive** effect on the health of new and existing residents, making it significant.

	Construction	Early Occupation	Full Operation
		during the initial early occupation phase, although this is likely to improve over time. The phasing of the proposed Development is not yet fixed, however there is a commitment to ensure that each phase is successful and sustainable in its own right. This will therefore include the provision of appropriate retail facilities within each phase. The majority of the retail provision is currently planned for Phases 1 and 2.	
Access to healthy food	During construction, there are not anticipated to be any impacts on existing food outlets or community allotments in terms of either land-take or loss of access. Existing residents of villages within the study area will therefore be able to continue to access food choices in much the same way as at present. The health effect of the proposed Development in terms of access to healthy food choices during construction is considered to be **negligible**.	The creation of allotments and community orchard areas will also be phased. Early phases (Phases 1 and 2) will see the development of nearly 2ha of these uses (just over a quarter of the total), thus providing some opportunity for local residents to grow their own fresh produce. The health effect of the proposed Development in terms of access to healthy food choices during early occupation is considered to be **minor positive** and therefore, not significant.	Once the proposed Development is fully built out, there will be a wide range of food retail opportunities for new residents, as part of the town and local centres. This will provide a suitable range of choice of food outlets – including for example hot and cold provision, healthy food outlets, takeaways as is expected in most towns of this size. Residents will continue to have opportunities to grow / acquire fresh produce from the allotment areas and community orchards. The health effect of the proposed Development in terms of access to healthy food choices during operation is considered to be **major positive** and therefore, significant.
Access to work and training	Construction employment has been calculated using regional data for employment and turnover within the construction sector based on Standard Industrial Classification 2007 subclasses and using data from the 2017 Annual Business Survey (Office for National Statistics). Estimates indicate that a total of 336 net FTE construction jobs could be created in the local area, with a further 496 jobs created in the wider region. Construction workers tend to be relatively mobile, and therefore it is uncertain what proportion of workers may come from the immediate area, however there is no doubt that the opportunity for employment will exist both within the immediate construction industry and its wider supply chain. The phased approach to the proposed Development offers long-term opportunities and could facilitate career development through apprenticeships and training in construction trades. The proposed Development also presents an opportunity for growth in new and developing construction trades, such as sustainable techniques and the green construction sector. Opportunities have been identified for establishing links with local education and training providers such as the construction skills centre at the Folkestone Campus of East Kent College, which has recently expanded. Health effects arising from the construction of the proposed Development in relation to access to work and training are therefore likely to be positive overall. Although effects are likely to be generally temporary in nature (due to the finite nature of the construction programme), there may be longer-term / permanent effects resulting from training programmes and skills	During early occupation, the health effects as described in relation to construction will continue. There will also be the added effect associated with the provision of employment created directly as part of the proposed Development. Just over 8,500sqm of employment space is planned within the first phase (of which the majority is likely to comprise retail uses (A1/A2/A3)). Employment will also arise from the primary school development forming part of the initial phase. Both new and existing residents may benefit from the creation of these opportunities, with the health effects considered to be **moderate positive** and therefore, significant. Again, vulnerable groups that may benefit in particular include low-income populations and the unemployed.	Once the development has been fully built out, there will be a wide range of employment and training opportunities across the Site. A significant proportion of new jobs (75%) is estimated to be taken up by residents within the district, based on current commuting patterns. The employment generated within the proposed Development has the potential to create a range of jobs across different occupational groups with varying skills requirements. Given the mix of commercial floorspace proposed, a high proportion of jobs are expected to come forward in high value sectors such as professional, scientific and technical activities and manufacturing (61.8% and 3.4% respectively), with an estimated 64.6% of jobs in Otterpool Park requiring high-skilled workers. Health effects are considered to be **major positive** – impacting on physical and mental health and general well-being as a result of improved lifestyles, income and feelings of self-worth. The impact on health is therefore, significant. Vulnerable populations include low-income groups and the unemployed.

	Construction	Early Occupation	Full Operation
	development. In relation to the workforce in total, these beneficial effects are likely to generate a significant **moderate positive** effect. Vulnerable groups that may benefit in particular include low-income populations and the unemployed (particularly young people who may benefit from access to apprenticeships and construction training programmes).		
Air quality, noise and neighbourhood amenity	Construction phase impacts, including on human health, are anticipated (if unmitigated) from dust emitted by construction activities and vehicle movements. The maximum risk of dust effects for construction of the proposed Development is considered to be high; therefore mitigation measures detailed in the IAQM construction dust guidance commensurate with a high risk site should be adopted as part of the outline CoCP. With appropriate mitigation measures, residual construction phase dust impacts should be no worse than negligible. Impacts to specific identified receptors as a result of noise levels during the construction phase are expected to be relatively short-term in duration as a result of the changing operational areas as construction phasing progresses. The exact duration over which impacts might arise at any given receptor is not yet known and will not be concluded until detailed phasing of the construction programme is produced. Any element of the construction works that may have a significant adverse effect will be identified and considered within the Construction Environmental Management Plan (CEMP) and CoPA S61 agreement at which time appropriate mitigation measures and best practice techniques will be proposed. Demolition work in particular has the potential to create higher noise levels that may have a temporary adverse impact upon existing residents located close to these properties. Typically works during the construction phase would only be undertaken during daytime hours. To prevent any adverse effects on visual impact from the construction period a Code of Construction Practice (CoCP) will be secured as a planning condition to safeguard the visual amenity of the area. The health impacts from air quality, noise and neighbourhood amenity are considered to be **moderate negative** during construction and therefore, significant.	Construction vehicle exhaust emissions have been considered as part of the 2022 and 2029 operational phase local air quality assessments as construction would be ongoing as the first phases of the proposed development are built out and occupied. The Air Quality assessment provided in Chapter 6 of the ES states that all sensitive receptors bar four experience a negligible effect on air quality in 2022; the four receptors identified are all located in Newingreen and are predicted to experience a slight beneficial impact, as a result of the construction of the new A20 link road. Annual mean PM_{10} and $PM_{2.5}$ impacts at existing receptors in 2022 are negligible as all increases are less than or equal to 0.2 µg/m^3. The year 2029 represents peak construction year. Again, the majority of sensitive receptors are likely to experience a negligible impact in relation to NO_2. Two receptors have been identified as experiencing a slight adverse impact in local air quality; sites are approximately 30m south of the M20 in Cheriton and at Hatch Lodge immediately north of the A20 between Ashford and the application site and increases are attributable to vehicle increases on the A20 and M20. Annual mean PM_{10} and $PM_{2.5}$ impacts at existing receptors are negligible as all increases are less than or equal to 0.3 µg/m^3. The operation of the partially built proposed development in 2029 is not expected to result in any significant adverse impact on local air quality. The slight adverse impacts (associated with two receptors) are not sufficient in magnitude or quantity to suggest that the proposed development would result in a long term significant adverse effect on local air quality. During the early occupation phase structural planting of native vegetation will commence, to allow to vegetation to mature and act as a visual mitigation method towards further construction. During early occupation the health impacts from air quality, noise and neighbourhood amenity are considered to be **minor negative**, therefore, not significant.	The operation of the fully developed proposed development (inclusive of the Framework Masterplan) is not expected to result in any significant adverse effect on local air quality. The slight adverse impacts (associated with three receptors) are not sufficient in magnitude or quantity to suggest that the proposed development would result in a long term significant adverse effect on local air quality. Two of the three receptors are located to the south of the application site on Aldington Road, with the third located on the A20 Hythe Road between Ashford and Sellindge. Annual mean PM_{10} and $PM_{2.5}$ impacts at existing receptors are negligible as all increases are less than or equal to 0.7 µg/m^3 Changes in concentrations at existing receptors are negligible for the vast majority of receptors for all pollutants. Total concentrations across the application site are well below relevant annual mean AQS objectives indicating that the occupants of the site in 2046 would be subject to an acceptable standard of air quality. The proposed Development would generate increases in noise as a result of changes in traffic flow characteristics and composition on road links in the area; the proposed Development also results in the creation of new noise sources (for example sports pitches, commercial activities). Although there will be permanent adverse effects from noise created by the new proposed development, the noise is to be considered within the scope of an appropriate Acoustic Design Strategy (DS), therefore, not to have a significant residual effect. Major short-term impacts are expected along Aldington Road with the with the 2046DM and 2046DS scenario, however, in the long term these would be expected to reduce to Minor adverse effects. As with this development noise along this main route would be typical of many busy roads of this type. Structural planting as supported in the F&HDC-CSR policy SS7 (New Garden Settlement – Place Shaping Principles) will be used to separate neighbourhoods within the settlement itself and provide a visual and physical buffer from the M20 and railway from noise and air quality mitigation purposes.

	Construction	Early Occupation	Full Operation
			The health impacts on residents from air quality, noise and neighbourhood amenity are considered to be **minor negative** and therefore, not significant due to mitigation measures.
Social cohesion and lifetime neighbourhoods	There is potential for adverse effects during construction as a result of reduced community interaction; however there are not proposed to be any changes in access to existing community centres or facilities and mitigation measures proposed in the CoCP should ensure that environmental effects as a result of construction activities are minimised. As such, the health effects are considered to be **negligible**. Vulnerable populations may include groups such as the elderly, for whom there may be a perception of reduced community interaction, or a perception of changes to mobility, as a result of the presence of construction activities in the area.	The potential health implications of early occupation are primarily related to mental health issues; these can be associated with a lack of a sense of belonging, lack of opportunities for community interaction and stresses created by ongoing construction activity (for example noise or amenity issues). All age groups and backgrounds are potentially vulnerable to these issues. Phasing of the proposed Development importantly incorporates opportunities for community interaction at the earliest stage – Phase 1 includes provision of education and community centre space. It will also be important that measures are put in place to develop the community interaction as part of the stewardship of the Development. With such measures provided, the effect on health from early occupation is considered to be **minor negative** and therefore, not significant.	The proposed development includes for the creation of new neighbourhoods, linked together through new accesses and infrastructure, and including the creation of community facilities. Health effects are considered to be beneficial and long-term, providing new opportunities for social interaction. It is considered that the proposed Development will have a significant **major positive** impact on the health and well-being of residents. Vulnerable populations include those for whom mobility may be impaired, such as people with disabilities and the elderly, who may find it difficult to undertake social interactions.
Minimising the use of resources	It is anticipated that construction materials would be managed efficiently, minimising waste, that all demolished materials would be reused onsite and that, with the implementation of a 'cut and fill neutral' strategy, all excavated materials would be reused onsite. Recycling all inert and non-hazardous waste onsite, adhering to the requirements of the Waste Strategy and the Site Waste Management Plan submitted with the OPA would ensure that impacts of construction waste are minimised. Therefore, despite the high volumes of construction waste likely to arise from the construction of the proposed Development, the significance of effect on the FHDC and KCC waste management infrastructure has been assessed in the Environmental Statement as neutral. The proposed Development is considered to have a negligible effect on health as a result of measures to minimise use of resources and appropriate waste management. The proposed Development is considered to have a negligible effect on health as a result of measures to minimise use of resources, and appropriate waste management. During the construction phase, construction / site workers would be exposed to soil via accidental ingestion, inhalation or dermal contact. If contamination is present to mitigate risks, all persons engaged in site construction works would be made aware of the findings of the intrusive investigations and the hazards associated with handling potentially contaminated materials via the CoCP and Health and	Construction effects as described above would continue during the early occupation period. With relation to early phases of development, the Sustainability Statement contains further detailed information relating to domestic waste collection infrastructure planned for inclusion in residential units. An Energy Strategy has also been developed for the proposed Development which sets out how energy efficiency of homes and wider development can be achieved. As during the construction phase, the proposed Development is considered to have a **negligible** effect on health as a result of measures to minimise use of resources and appropriate waste management.	During the lifetime of the proposed Development, large quantities of operational waste are likely to be produced on the Site (which currently generates minimal volumes of waste from a small number of existing homes and businesses). This could have a potentially significant effect on local waste management infrastructure and the ability of FHDC and the wider KCC to meet waste management targets. It is anticipated that operational waste would be managed efficiently, minimising waste arisings and diverting waste from landfill. A Waste Strategy has been developed as an embedded mitigation measure to provide a planned approach to resource as well as waste management. The Waste Strategy has identified the likely quantities and composition of waste that would be generated and proposes appropriate waste management options that would optimise the management of waste generated during both construction and operation phases. The Sustainability Statement contains further detailed information relating to domestic waste collection infrastructure planned for inclusion in residential units. An Energy Strategy has been developed for the proposed Development which sets out how energy efficiency of homes and wider development can be achieved. The proposed Development is considered to have a significant **moderate positive** impact on health as a

	Construction	Early Occupation	Full Operation
	Safety Plan. All works would be conducted in accordance with the Health and Safety Executive publication entitled Protection of Workers and the General Public during the Development of Contaminated Land (HSE, 1991) and follow Construction (Design and Management) Regulations (2015). Suitable Personal Protective Equipment (PPE) including Respiratory Protective Equipment (RPE) would be available to all site workers as detailed in the Health and Safety Plan. Appropriate site hygiene protocols would be adopted during the construction phase. Where any hazardous chemicals are used in the construction works, risk assessments would be made under The Control of Substances Hazardous to Health Regulations (as amended) and detailed in the CoCP. Prior to excavation works in the medium and high UXO risk areas and especially in the area where pipe mines were installed, further assessment would be undertaken to establish the true UXO risk in this area. This may involve both non-intrusive (desk based and geophysical surveys) and intrusive surveys (excavations to determine if objects are UXO). The process to establish the UXO risk and remove any devices encountered would be undertaken in a systematic approach as detailed in a UXO Mitigation Strategy. This strategy would be agreed with the local planning authority and relevant organisations prior to implementation. The proposed Development is considered to have a **negligible** impact on human health as a result of ground contamination and UXOs.		result of the minimisation of resources used during the operational phase.
Climate change	The design of the proposed Development aims to reduce GHG emissions by avoiding, preventing and exploring alternative lower carbon options and using materials and techniques efficiently to minimise carbon output. Materials for the construction process where practical will be sourced locally to minimise further travel emissions. The construction process will further mitigate measures as detailed in the CoCP which will serve as a live document for the contractor. There are not considered to be any health effects arising from issues associated with climate change as a result of the construction of the proposed Development, provided that mitigation measures set out in the CoCP are incorporated into construction practices and that measures identified in the Sustainability Statement are followed. Therefore, the health effects from the construction phase from the proposed Development will be **negligible**.	As with the construction phase, there are not considered to be any health effects associated with climate change as a result of the construction of the proposed Development. There may be long-term beneficial effects on health and well-being for new occupants of Otterpool Park arising from the incorporation of measures to create a sustainable development (and thereby reduce localised effects of climate change). Accordingly, it is considered that there would be a **minor beneficial** effect on health during this stage and therefore, not significant.	A wide range of measures have been put in place to reduce CO_2 emissions, and save energy as well as the incorporation of strategies to respond to environmental events such as flooding. The overall effects on health and well-being are considered to have a significant **major positive** effect.

11.5 References

Reference	Title
Ref 11.1	Department of Health and Social Care, White Paper: Healthy Lives, Healthy People: Our Strategy for Public Health in England, 2010
Ref 11.2	Ministry of Housing, Communities and Local Government, National Planning Policy Framework, July 2018
Ref 11.3	Department for Environment, Food and Rural Affairs, A Green Future: Our 25 Year Plan to Improve the Environment, 2018
Ref 11.4	Kent County Council on behalf of the Kent Health and Wellbeing Board, Kent Health and Wellbeing Strategy 2014 (extended to 2021)
Ref 11.5	Kent County Council, Kent Joint Strategic Needs Assessment reports
Ref 11.6	Kent County Council, Increasing Opportunities, Improving Outcomes, Kent County Council Strategic Statement 2015-20
Ref 11.7	Shepway District Council Local Plan Review (2006)
Ref 11.8	Folkestone & Hythe District Council, Places and Priorities Local Plan (Submission Draft February 2018
Ref 11.9	Folkestone and Hythe District Council Core Strategy Review (2019)
Ref 11.10	NHS London Healthy Urban Development Unit (HUDU), Planning for Health: Rapid Health Impact Assessment Tool (third edition April 2017)
Ref 11.11	IEMA Health in Environmental Impact Assessment – A Primer for a Proportionate Approach (June 2017)

12 Landscape and Visual Impact

12.1 Introduction

12.1.1 This Chapter assesses the potential impact on the landscape resource and upon visual amenity of the proposed Development which is the subject of an outline planning application to Folkestone & Hythe District Council (F&HDC) with all matters reserved except access.

12.1.2 The assessment examines the potential impact of the scheme on the landscape resource and the visual amenity of the Site and its surrounds. It comprises a series of descriptive texts, a methodology, assessment tables, and graphic information which are intended to be read together.

12.1.3 Other parts of the Environmental Statement (ES) relevant this this Section include the Parameter Plans (appended to Chapter 4) and the sections addressing Biodiversity (Chapter 07), Cultural Heritage (Chapter 09), Socio-economic Effects and Community (Chapter 14) and Transport (Chapter 16). Other parts of the outline planning application are also relevant such as the Illustrative Masterplan, the Design & Access Statement (DAS), and the Planning Statement (which assesses the proposed Development against relevant planning policy at national, regional and local scale).

12.1.4 In line with the Third Edition of The Guidance for Landscape and Visual Impact Assessment (Ref-12-1) (GLVIA3) this section of the ES distinguishes between 'impact' (defined as the action being taken), and 'effect' (defined as the change resulting from that impact upon the sensitivity of a receptor). The process is referred to as '*impact assessment*' but any changes identified as likely to arise from the development are referred to as '*effects*'.

Scope of the Assessment

12.1.5 This assessment considers the potential for direct, indirect, cumulative and temporary significant effects (negative and / or positive) to arise on the landscape resource and visual amenity of the Site, and its surrounding area within a 10km extent of the planning application boundary – the Study Area (see Appendix 12-3 Figure 1), as a result of the proposed Development.

12.1.6 Taking into account the scale and type of development proposed and having regard for the issue of proportionality, as recommended within GLVIA3 (paragraph 6.2), only those effects that are likely to be significant are assessed within this report.

12.1.7 The scope of these, and the extent of the study area, has been agreed through extensive consultation with key stakeholders such as F&HDC, Ashford Borough Council (ABC), Natural England (NE) & the Kent Downs Area of Outstanding Natural Beauty Unit (AONB Unit).

12.1.8 This Chapter follows a process of describing:

- the methodology used to undertake the assessment;
- the key landscape characteristics and visual context of the Site and its surrounds;
- the baseline landscape character receptors upon which the effects of the Development have been assessed;
- the 'value' of the landscape character receptors, and their 'susceptibility' to change - as based upon the definitions set out in GLVIA3, to ascertain their 'sensitivity';
- the 'zone of theoretical visibility' (ZTV) for the Development and the visual receptors (i.e. potential viewers and/or viewing groups) within this upon which the effects of the Development have been assessed;
- the selection of viewpoints which are specific to or representative of these receptors, and the collection of photographs in both during summer (best-case scenario) and winter months (worst-case scenario) from each, and at night;
- the 'value' of the visual receptors, and their 'susceptibility' to receive change - as based upon the guidance set out in GLVIA3;
- the aspects of the Development proposals which have been embedded into the design to avoid, reduce, abate and/or compensate for adverse landscape and visual effects, as well as other related mitigation and enhancement measures;
- the nature of the residual impact that is likely to occur, i.e. the magnitude of change, brought about by the Development to landscape character and visual receptors at key points in time, i.e.: during the proposed construction phasing (peak construction year), at full completion of the scheme and 15 years after completion (when the last of any structural planting would have suitably established);
- the likely significant adverse or beneficial effects that would occur upon any receptor by considering the predicted magnitude of change upon the receptor together with its sensitivity; and
- the cumulative landscape and visual impact of the Development.

Effects Assessed in Full

12.1.9 This assessment considers physical changes to the landscape as well as changes in landscape character, and the visual impacts of the proposed Development as perceived by people. It also considers changes to areas designated for their scenic or landscape qualities.

12.1.10 All potentially significant landscape and visual effects have been examined; including those relating to construction and operation of the Development.

Effects Scoped Out

12.1.11 On the basis of: the desk-based assessments and field survey work undertaken; the reasoned professional judgement of the assessment team; analysis of assessments previously carried out on the Site and feedback received from consultees, effects on receptors outside the visual envelope of the development and beyond 10km from the boundary of the Site were scoped out, as it is judged that significant landscape and visual effects would not occur beyond this distance.

12.1.12 No specific assessment has been made, in this Chapter, of impacts on the historic landscape character of the Site and its surrounds or any cultural heritage receptors such as Conservation Areas, Scheduled Monuments and Listed Buildings. These are covered within Chapter 09 Cultural Heritage.

12.1.13 The impact on the provision, capacity, and recreational value of public rights of way (PRoWs) is assessed in Chapter 14 Socio-Economic Assessment.

12.1.14 The effect of increased access on the AONB and Folkestone to Etchinghill Escarpment Special Area of Conservation and other areas for their biodiversity value is assessed in the Chapter 07 Biodiversity.

12.2 Assessment Methodology

Legislation, Policy and Guidance

12.2.1 Legislation, planning policy and planning guidance which is relevant to this assessment is set out in the following paragraphs.

Legislation

<u>European Legislation</u>

12.2.2 The European Landscape Convention (Ref-12-2), ratified by the UK in 2006, defines landscape as "*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*". The convention recognises that "*the landscape is an important part of the quality of life for people everywhere; in urban areas and in the countryside, in degraded areas as well as in areas of high quality, in areas recognised as being of outstanding beauty as well as everyday areas.*"

12.2.3 It defines 'landscape protection' as "*actions to conserve and maintain the significant or characteristic features of a landscape, justified by its heritage value derived from its natural configuration and/or from human activity.*"

The Countryside and Rights of Way Act 2000

12.2.4 The primary legislation relating to AONBs is set out in the Countryside and Rights of Way Act 2000 (CRoW Act). Section 85 of this Act requires that "*in exercising or performing any functions in relation to, or so as to affect*" land in AONB, a relevant authority "*shall have regard to their statutory purposes*."

Planning Policy

National Planning Policy

12.2.5 National planning policies, which relate to the landscape character and/or visual amenity of the Site and its surrounds, and which have been referred to in this assessment, where these may have a bearing on the proposed Development and its potential effects are set out below.

12.2.6 The National Planning Policy Framework (NPPF), published by the Ministry of Housing, Communities and Local Government in July 2018 sets out the Government's planning policies for achieving and delivering sustainable development. Policies of particular relevance to this assessment of the proposed Development at Otterpool Park are highlighted in the following paragraphs.

12.2.7 With regard to the status of a planning authority's strategic policies Paragraph 20 of the NPPF highlights that these "*should set out an overall strategy for the pattern, scale and quality of development, and make sufficient provision for d) conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure.*" The glossary of the NPPF defines Green Infrastructure (GI) as a "*network of multi-functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities*."

12.2.8 In terms of longevity, Paragraph 22 stresses that "*Strategic policies should look ahead over a minimum 15 year period from adoption, to anticipate and respond to long-term requirements and opportunities, such as those arising from major improvements in infrastructure.*"

12.2.9 Paragraph 72 within Section 5 of the NPPF highlights that where a large number of homes are required within an area this can "*often be best achieved through planning for larger scale development, such as new settlements or significant extensions to existing villages and towns, provided they are well located and designed…". In doing so, the NPPF states that "clear expectations for the quality of the development and how this can be maintained (such as by following Garden City principles)*" should be set.

12.2.10 Section 11 of the NPPF sets out provision for the effective use of land, and in particular achieving appropriate housing densities. Paragraph 122 states that the planning decisions in this regard should take into account: "*a) the identified need for different types of housing and other forms of development, and the availability of land suitable for accommodating it; … c) the availability and capacity of infrastructure and services – both existing and proposed ... d) the desirability of maintaining an area's prevailing character and setting (including residential gardens), or of promoting regeneration and change; and e) the importance of securing well-designed, attractive and healthy places.*". Paragraph 123 stresses the need for planning decisions to "*avoid homes being built at low densities, and ensure that developments make optimal use of the potential of each site*" where there is an existing or anticipated shortage of land for meeting identified housing needs.

12.2.11 Section 12 of the NPPF "*Achieving well-designed places*" stresses, at paragraph 124 the importance of designing high quality buildings and places as a key aspect of sustainable development. It highlights that well designed places help to make development acceptable to communities. Paragraph 125 recognises that local authority 'development plans' are able to set out "*a clear design vision and expectations, so that applicants have as much certainty as possible about what is likely to be acceptable.*"

12.2.12 Paragraph 126 states that to "*provide maximum clarity about design expectations at an early stage, plans or supplementary planning documents should use visual tools such as design guides and codes.*"

12.2.13 Paragraph 127 seeks to ensure that developments:

> "*a) will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;*
>
> *b) are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;*
>
> *c) are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities);*
>
> *d) establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit;*
>
> *e) optimise the potential of the site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) and support local facilities and transport networks.*"

12.2.14 Paragraphs 128 to 130 place importance on early and ongoing meaningful engagement between the applicant the local planning authority and stakeholders. They also stress the importance of ensuring "*the quality of* approved *development is not materially diminished between permission and completion.*"

12.2.15 Section 14 of the NPPF highlights the critical nature of preparing for climate change and flooding. In respect of landscape character, the NPPF seeks development which promotes environmental and community resilience through, for example, its GI proposals.

12.2.16 Section 15 of the NPPF promotes planning decisions which "*contribute to and enhance the natural and local environment" by "protecting and enhancing valued landscapes*"; recognising the "*intrinsic character and beauty of the countryside"; and "remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate*" (paragraph 170).

12.2.17 With regards to designated landscapes, paragraphs 171 and 172 of the NPPF require local planning authorities to "*distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value*" within their plans. The NPPF also here highlights the great weight that should be given to "*conserving and enhancing the landscape and scenic beauty*" of Areas of Outstanding Natural Beauty (AONB) and defines factors such as 'scale and extent' where development is proposed within these.

12.2.18 Paragraph 172 states that consideration of such applications within such designations should include an assessment of: "*any detrimental effect on the landscape and recreational opportunities, and the extent to which that could be moderated.*"

12.2.19 In addition, paragraph 180 encourages planning decisions which "*identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*"; and "*limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*"

12.2.20 Section 16 of the NPPF address "*Conserving and enhancing the historic environment.*" With regards to landscape character impact assessment this section requires local planning authorities when determining applications to take account of the "*desirability of new development making a positive contribution to local character and distinctiveness.*"

Local Planning Policy

12.2.21 The local planning policies, which relate to the landscape character and/or visual amenity of the Site and its surrounds, and which have been referred to in this assessment, where these may have a bearing on the proposed Development and its potential effects, are set out below.

Folkestone & Hythe District Council

12.2.22 On 1 April 2018 Shepway District Council (SDC) changed its name to F&HDC. References to SDC are kept where they refer to published documents. Elsewhere the name of the council has been updated to F&HDC.

12.2.23 The F&HDC statutory development plan consists of the *Shepway Core Strategy,* 2013 (Ref-12-4) (SDC-CS) the overarching planning policy document for the district, and saved policies from Shepway District Local Plan Review, 2006 (SDC-LPR) as directed upon the document entitled: *Shepway District Local Plan Review: Policies Applicable 2013 Onwards*.

12.2.24 In terms of emerging policies F&HDC have produced a *Core Strategy Review* (Ref-12-3) (F&HDC-CSR) and have produced the *Places and Policies Local Plan (Submission Draft, February 2018)* (F&HDC-P&PLP).

12.2.25 The F&HDC-CSR, which was published in January 2019 and consulted upon until May, was felt to be necessary due to: updates of the national population projection figures; changes to the National Planning Practice Guidance; and F&HDC's review of their own Corporate Plan. Section 1. Of the F&HDC-CSR states that the review is being undertaken to "*assess housing and employment requirements over a longer period than the Policies & Places Local Plan period - to 2036/37 - based on the most up-to-date evidence.*"

12.2.26 The F&HDC-P&PLP, which was submitted to the Secretary of State for Housing, Communities and Local Government on the 28th September 2018 for independent examination, identifies specific sites for the new homes and work spaces (separate to Otterpool Park) that are needed in the District and defines the policies that will be used to consider the suitability of development proposals upon them. The plan covers the period from 2006 to 2031, in line with the adopted Core Strategy. Paragraph 3.20 of the F&HDC-P&PLP states that when the plan is adopted by the Council, it will replace the saved policies in the 2006 Shepway District Local Plan. Paragraph 3.52 affirms that Policies in F&HDC-P&PLP will apply to all proposals, whether for the sites allocated in the document or planning applications submitted on other sites in the District.

12.2.27 The pertinent factors of those adopted and emerging policies contained in all these documents which are applicable to this assessment are set out in the paragraphs below, grouped per topic.

Strategic & Spatial Policies

12.2.28 SDC-CS policy SS1 District-wide Spatial Strategy; gives priority to '*major new development*' upon previously developed land in urban areas – i.e. Folkestone, as a sub-regional centre, and states that '*additional development*' should be focused on the most sustainable towns and villages as set out in policy SS3. The policy introduces the three 'character areas' of the district, including the '*North Downs*' area in which the Site lies.

12.2.29 The extent of the '*North* Dow*ns*' area is shown on Figure 12-1.

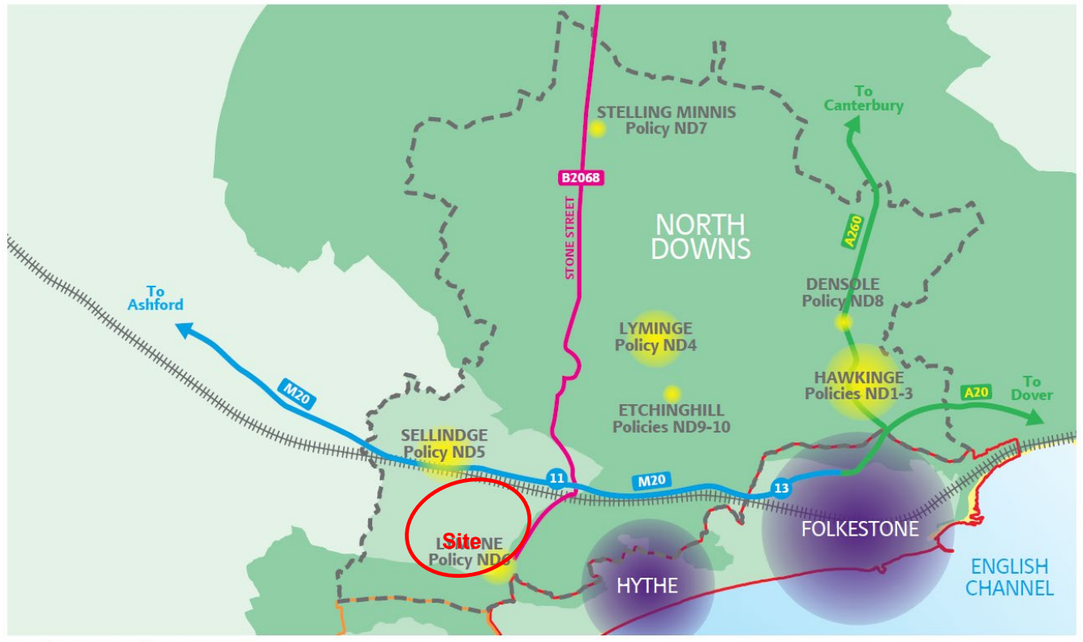
12.2.30 SDC-CS policy SS3 states that the priority for development within the '*North Downs*' area should be "*outside of the AONB and without material impact on its setting.*" It also states that "*in all locations throughout Shepway, d*evelopment should be designed to directly contribute to the sense of place and sustainable design."

12.2.31 The emerging F&HDC-CSR describes the 'vision' for the 'North Downs' area of the District in which the Site lies. Paragraphs 3.24 and 3.25 state: *"there is an opportunity and environmental capacity for strategic scale development in this area in the form of a new garden settlement to meet the increased housing needs of the district. … The new settlement will be a landscape-led garden town, which respects the setting of the Kent Downs Area of Outstanding Natural Beauty (AONB) by including strategic landscaping and lower density development in those parts of the town that are more visible from the North Downs ridge and the wider escarpment.*" Paragraph 3.32 makes clear that "*the provision of a garden town will capitalise on existing infrastructure to open up opportunities for wider communities, while also ensuring that villages such as Lympne and those within the AONB retain their distinct character.*"

12.2.32 Emerging F&HDC-CSR policy SS1 District Spatial Strategy states that "*The future spatial priority for new development in the North Downs area is on the creation of a landscape-led sustainable new settlement based on garden town principles outside the Kent Downs Area of Outstanding Natural Beauty (AONB) boundary and without material impact on its setting,*" that must be *"in accordance with policies SS6-SS9.*"

12.2.33 Section 4.3 of F&HDC-CSR '*Place Shaping and Sustainable Settlements Strategy*' states, at paragraph 4.70 that in order to "*maintain the character and integrity of the countryside, and protect small rural places, the extent of existing and proposed settlements is defined through boundaries separating settlements from open countryside*". As such defensible edges around the Development must be well defined and robust.

Figure 12-1 Extract from FHDC-P&PLP: Figure 7.1 North Downs Policy Context Map



12.2.34 Paragraph 4.75 seeks to encourage development where the quality of the "*physical environment is lower, for example in terms of landscape value*".

12.2.35 Emerging F&HDC-CSR policy SS6 New Garden Settlement – development requirements set out a number of general principles and specific requirements for the planning of the settlement. Of particular relevance to this assessment are that:

- "The settlement will be developed on garden town principles and will have a distinctive townscape and outstanding accessible landscape, both of which will be informed by the historic character of the area;
- It will be a landscape-led development that responds to its setting within the Kent Downs AONB landscape and the adjacent Lympne Escarpment with an emphasis on a network of green and blue spaces including woodland and other planting, open space and recreation that supports healthy living, encourages interaction between residents, enhances local biodiversity and mitigates impacts on views from the scarp of the Kent Downs;
- The settlement shall provide for a minimum of 6,375 new homes in a phased manner within this plan period (to 2036/37) with potential for future growth to provide a total of 8000-10,000 homes (subject to detailed masterplanning) within the site allocation area beyond the plan period."

12.2.36 In terms of landscape related 'place-shaping principles F&HDC-CSR policy SS6 states that "*generous structural landscaping should be provided that includes advanced planting and habitat creation for future phases and buffers to the motorway and high-speed rail corridor. The masterplan will be supported by a green infrastructure strategy which should enhance natural features while providing high levels of accessibility and enjoyment for those who live in the area. A long-term management plan of the green infrastructure estate should be set up in a way which gives the community control and custodianship, avoids fragmentation and degradation in future years, and ensures features provided as specific mitigation measures remain intact and functioning.*"

12.2.37 It also states that a "*landscape-led masterplanning and the high quality design and layout of the town (its 'townscape') will be key to the success of the settlement, with particular regard to the impact on views from the AONB. Each neighbourhood should have a distinctive character with different densities of development. The masterplan should show the relationship of different land uses, the height and massing of buildings, the legibility of streets and how the development will make use of high quality materials that are sensitive to, and sit comfortably alongside, the local environment.*"

12.2.38 The F&HDC-CSR encourages the use of the Kent Design Guide AONB Kent Downs Area of Landscape Design Handbook but reiterates that the Development "*will need to be informed by detailed design codes drawn up with the participation of the local community. The area's heritage assets, in particular Westenhanger Castle and its setting, together with other non-designated heritage assets, can make a significant contribution to the character of the new settlement, that can help attract future residents, businesses and visitors and create a strong sense of place from the outset*."

12.2.39 Emerging F&HDC-CSR policy SS7 New Garden Settlement – Place Shaping Principles reinforces the 'landscape-led' approach to the planning of Otterpool Park. The policy states that this should entail respect of topography and views, guided by and Landscape and Visual Impact Assessment (LVIA), and that in addition, a "*green and blue infrastructure strategy shall be developed that enhances existing green and blue infrastructure assets in accordance with*" SDC-CS policy CSD4.

12.2.40 Specifically, F&HDC-CSR policy SS7 seeks delivery of:

- "Advanced woodland planting and habitat creation using native species to benefit later phases of development, particularly from prominent locations visible from the Kent Downs Area of Outstanding Natural Beauty. Woodland planting and habitat creation shall also be designed to prevent the coalescence of the new settlement with Lympne and to separate neighbourhoods within the settlement itself. Planting and habitat creation should also be used to provide distance buffers between the M20/High Speed transport corridor for noise and air quality mitigation purposes;
- A new country park, easily accessible from the town centre and beyond and supported by and linked to other areas of strategic open space, that enhances the historic landscape setting of Westenhanger Castle;
- Playing fields and sports provision, play areas, informal open spaces, allotments and woodland located to maximise use and meet the sporting leisure and recreational needs of the garden settlement;
- Publicly accessible, well-managed and high quality open spaces, which are linked to the open countryside and adjoining settlements. This shall be informed by an access strategy that balances the demands for public access with ecological and landscape protection, taking into account the impacts of increased access on the Kent Downs AONB and Folkestone to Etchinghill Escarpment Special Area of Conservation and other protected areas."

12.2.41 In addition to the 'landscape-led' approach F&HDC-CSR policy SS7 states, with regard to the settlement's town centre, encourages "*higher density housing and town centre uses to act as a focal point to the settlement"* and that *"mixed-use development with several storeys of residential use above commercial premises will be appropriate.*"

12.2.42 With regards to the new neighbourhoods, that would be created away from the town centre, F&HDC-CSR policy SS7 states that each "*shall be designed to have its own distinctive identity, to create a special character within the unique setting of the Kent Downs*.".

12.2.43 With regards to overall townscape character F&HDC-CSR policy SS7 states that:

- "a. Neighbourhoods, buildings and spaces within the settlement shall be planned to create a unique and distinctive character, taking advantage of long-range and local views to create interest and drawing on the historic character and grain of the area;
- b. Design codes shall be drawn up to guide all phases of development with the participation of the local community. The codes should establish the parameters for achieving the highest standards of urban design, architecture and landscaping;
- c. A high quality palette of building materials will be used throughout, drawing on a thorough understanding of local distinctiveness, landscape and palette and tone. Building materials, landscaping and design should be of a consistently high quality regardless of tenure; and
- e. External lighting should be designed to support the aims of the Kent Downs Management Plan on Dark Skies and the Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Light Pollution, to ensure the impact of lighting is minimised and that the most efficient technology is used."

12.2.44 With regards to enveloping the area's historic landscape into the settlement F&HDC-CSR policy SS7 states that: "*Westenhanger Castle and its setting shall become a focal point for the new settlement that informs its character. The development shall provide an enhanced setting for the Castle, including generous public open space through the delivery of a new park, and shall protect key historic views. Proposals shall explore the opportunity to recreate the historic southern approach to the Castle and provide mechanisms for its integration with the development.*"

12.2.45 With regards to access and movement through the new settlement F&HDC-CSR policy SS7 states that:

- "c. The capacity of M20 junction 11 shall be upgraded and other key junctions on the road network will be redesigned and improved
- d. A permeable network of tree-lined streets, lanes, pathways, bridleways, cycleways and spaces will be created that provides connections between neighbourhoods, the town centre, employment opportunities and public transport facilities."

12.2.46 The accompanying F&HDC-CSR policy SS8 New Garden Settlement – Sustainability and Healthy New Town Principles promotes the application of an 'energy strategy' that "*takes a fabric-first approach, makes the maximum use of passive solar gain, as well as energy generation from the latest technologies in and on buildings and structures. All community buildings shall seek to meet zero carbon standards as exemplars, with an aspiration for the development to achieve carbon neutrality*."

12.2.47 F&HDC-CSR policy *SS9 New Garden Settlement – Infrastructure, Delivery and Management* sets out the need for long-term management and governance of all infrastructure. It states that the strategy for the long-term stewardship of the settlement's infrastructure shall include the creation of a "*Community Trust or new elected body*" to manage and maintain it. Those aspects of GI to be included in this are: "*i. Strategic and local open spaces; ii. Sports pitches; Leisure facilities; iv. Community buildings; v. Public squares and spaces; vi. Sustainable drainage systems (SuDS); and vii. Allotments, community orchards and woodlands*.". The policy states that "*requirements to ensure the quality of all open space and physical assets on handover to the Trust or elected body will be set out in a Section 106 legal agreement.*"

Development in the Countryside

12.2.48 SDC-LPR Policy 'CO1 - Development in the Countryside' seeks protection of the "*countryside for its own sake*". With relevance to landscape character and visual amenity, the wording of the policy states that: *"subject to other Plan policies, development in the countryside will be permitted where proposals:*

a) maintain or enhance features of landscape, wildlife, historic, geological and agricultural importance, and the particular quality and character of the countryside

c) are of a high standard of design and, sympathetic in scale and appearance to their setting.

e) preserve or enhance the amenity, character and functioning of rural towns and villages."

12.2.49 SDC-LPR policy CO1 also states that "*development proposals that would significantly conflict with one or more of criteria a - e above will only be permitted where it can be shown that: i) there is an overriding social or economic need; ii) negative impacts are minimised as far as possible and; iii) adequate measures will be taken to compensate for any the adverse environmental effect. Compensatory measures should, as a minimum, ensure that no net environmental loss occurs.*"

Designated Landscapes & Green Infrastructure

12.2.50 SDC-CS policy CSD4 Green Infrastructure of Natural Networks, Open Spaces and Recreation seeks improvement in the GI assets in the district by "*working with partners and developers in and around the sub-region, including through pursuing opportunities to achieve net gains in biodiversity, and positive management of areas of high landscape quality or high coastal/recreational potential.*"

12.2.51 Specifically, it requires that GI will be "*protected and enhanced and the loss of GI uses will not be allowed*". The policy states that the GI within new development will "*be in full accordance with national policy, or a significant quantitative or qualitative net GI benefit is realised or it is clearly demonstrated that the aims of this strategy are furthered and outweigh its impact on GI.*"

12.2.52 In demonstrating the close correlation between GI and the integration of new development into its landscape context, the policy states that "*planning decisions will have close regard to the need for conservation and enhancement of natural beauty in the AONB and its setting, which will take priority over other planning considerations. Elsewhere development must not jeopardise the protection and enhancement of the distinctive and diverse local landscapes in Shepway (especially where these support the setting of the AONB) and must reflect the need for attractive and high-quality open spaces throughout the district.*"

12.2.53 F&HDC-CSR policy CSD4 Green Infrastructure of Natural Networks, Open Spaces and Recreation reaffirms the requirements of SDC-CS policy CSD4.

12.2.54 SDC-LPR policy *CO4 - Special Landscape Areas* includes the areas shown on Appendix 12-3 Figure 2. The policy states that "*where areas are also within the Kent Downs AONB, Policy CO3* [of the SDC-LPR or subsequent AONB related policies] *will take precedence*". The policy requires development proposals to protect or enhance the natural beauty of the Special Landscape Area (SLA). Development proposals that are inconsistent with this objective will not be permitted unless the "*need to secure economic and social wellbeing outweighs the need to protect the SLAs countywide landscape significance*".

12.2.55 The preamble to SDC-LPR policy CO4 states that "*Development within the AONB and SLA should be kept to a minimum and where acceptable, should be designed and constructed so that the visual impact on the landscape is minimised and it makes a positive contribution to the attractiveness of the area.*"

12.2.56 SDC-LPR policy *CO5 - Local Landscape Areas* addresses other areas of district-wide importance of which there are none in relation to the Site.

12.2.57 The SDC-CS does not refer to SLAs directly, but instead states, at paragraph 5.51 that the policies saved by the SDC-LPR included "*other notable landscapes, for example those significant to the setting of the Kent Downs, and the Romney Marsh*" – hence the SLAs and the Local Landscape Areas.

12.2.58 SDC-LPR policy CO24 Landscaping at Key Development Opportunities seeks protection of areas around the boundary of key developments sites where "*appropriate structural landscaping and retention of important existing landscape features will be required.*" The places identified in the policy preamble include land around Link Park Industrial Estate and the village of Lympne.

12.2.59 F&HDC-P&PLP policy *NE3 Protecting the District's Landscapes and Countryside* reaffirms the District's position on designated and non-designated landscapes contained in its earlier and adopted development plans, and will, once adopted replace SDC-LPR policies CO1 and CO4.

12.2.60 With regards to the Kent Downs AONB policy NE3 sets a number of criteria with which permissible development must accord:

- "1. The natural beauty and locally distinctive features of the AONB and its setting are conserved and enhanced;
- 2. Proposals reinforce and respond to, rather than detract from, the distinctive character and special qualities including tranquillity of the AONB. The design scale, setting and materials of new development must be appropriate to the AONB;
- 3. Either individually or cumulatively, development does not lead to actual or perceived coalescence of settlements or undermine the integrity of the predominantly open and undeveloped, rural character of the AONB and its setting;
- 4. Development is appropriate to the economic, social and environmental well-being of the area or is desirable for the understanding and enjoyment of the area (where this is consistent with the primary purpose of conserving and enhancing natural beauty); and
- 5. Development meets the policy aims of the Kent Downs AONB Management Plan and AONB Unit produced supporting design guidance."

12.2.61 With regards to SLAs policy NE3 states that development proposals will be refused should they not "protect or enhance the natural beauty" of these areas of "county-wide significance" "unless the need to secure economic and social wellbeing outweighs the need to protect" them. Appendix 12-3 Figure 2 shows the location of the 'North Downs' SLA in relation the Site.

12.2.62 Policy NE3 also sets out guidance on *Local Landscape Areas* – of which there are none in relation to the Site.

12.2.63 Finally, policy NE3 refers to '*Landscape Character Areas*'. Whilst the origin of these areas is not made explicit it is assumed, for the purpose of this assessment, that this refers to the *High Level Landscape Appraisal* (Ref-12-4) (SDC-HLLA) that was published by F&HDC in February 2017 as part of the *Growth Options Study*. With regard to '*Landscape Character Areas*' Policy NE3 states that "*proposals should demonstrate that their siting and design are compatible with the pattern of natural and man-made features of the Landscape Character Areas, including their cultural and historical associations. Opportunities for remediation and improvement of damaged landscapes will be taken as they arise.*"

Built Environment

12.2.64 SDC-LPR policy BE1 Building Design, Layout and Special Needs Access requires development to "accord with existing development in the locality, where the site and surrounding development are physically and visually interrelated in respect of building form, mass, height, and elevational details."

12.2.65 SDC-LPR policy *BE4 Conservation Areas* BE4 seeks respect for the character and appearance of Conservation Areas.

12.2.66 SDC-LPR policy BE16 - Landscape and Amenity' requires "*development proposals to retain important existing landscape features and make appropriate provision for new planting using locally native species of plants wherever possible.*" F&HDC will where "*necessary, make any permission conditional upon a satisfactory landscaping scheme being agreed and implemented within a specified period, where such a scheme does not accompany an application.*"

12.2.67 SDC-LPR policy BE17 – Trees' states that development "*will not be permitted if it would damage or destroy any tree protected by a TPO [Tree Preservation Order] unless the removal of one or more trees would: a. be in the interests of good arboricultural practice; or unless b. the desirability of the proposed Development outweighs the amenity value of the protected tree(s). If the removal of one or more trees is permitted as part of a development, a condition will require that at least an equivalent number, or more, of new trees be planted either on or near the site.*"

12.2.68 SDC-LPR policy BE18 - Historic Parks and Gardens states that "*planning permission will be refused where development proposals would adversely affect the site or setting*" 'Registered Parks and Gardens of Historic Interest' (RPGHI). In the context of the Site, as shown on Appendix 12-3 Figure 3, these include Sandling Park, Lympne Castle and Port Lympne.

12.2.69 Emerging F&HDC-P&PLP policy *HB1 Quality Places Through Design* states that that planning permission will be granted where a proposal:

- "1. makes a positive contribution to its location and surroundings, enhancing integration while also respecting existing buildings and land-uses, particularly with regard to layout, scale, proportions, massing, form, density, materiality and mix of uses so as to ensure all proposals create places of character;
- 3. Creates, enhances and integrates areas of public open space, green infrastructure, biodiversity and heritage and other public realm assets;
- 4. Does not lead to an adverse impact on the amenity of future occupiers, neighbours, or the surrounding area, taking account of loss of privacy, loss of light and poor outlook."

12.2.70 Emerging F&HDC-P&PLP policy *HB2 Cohesive Design* sets out a number of design principles for major developments in the District. These are grouped around the headings of '*Integrates into the Neighbourhood*', '*Creates Places*' and '*Creates Streets and Homes*'.

12.2.71 Those relevant to this assessment are:

- "1. Integrates into its surroundings by reinforcing existing connections and creating new ones where appropriate; while also respecting existing buildings and land-uses along the boundaries of the development site;
- 5. Creates a place with a locally inspired or otherwise distinctive character, well related to the local landscape character;
- 6. Takes advantage of existing topography, landscape features (including water courses), trees which contribute positively to the landscape; wildlife habitats, existing buildings, heritage assets, site orientation and micro-climates;

- 7. Integrates buildings with landscaping to define and enhance streets and spaces and turn street corners well."

12.2.72 SDC-LPR policy U15 Light pollution requires development which involves outdoor lighting to satisfy the following criteria: "*a) The quantity and illumination of the lighting proposed is the minimum necessary to meet its stated purpose. b) The lighting is positioned and shaded so as to minimise glare and light spillage from the site, or impact on local residents, road users and pedestrians or wildlife. c) The impact on the visibility of the night sky is reduced as far as possible.*"

12.2.73 Emerging F&HDC-P&PLP policy NE5 Light Pollution and External Illumination states that "*applications for major development, and development including significant external lighting, will be approved if: 1. The proposal does not materially alter light levels outside the development site; 2. The proposal does not adversely affect the use or enjoyment of nearby buildings or open spaces; and 3. The proposed lighting scheme accords with the best practice guidance provided by the Institution of Lighting Professionals (ILP (2011) relevant to the particular Environmental Zone*."

12.2.74 On the basis that the Site: borders the Kent Downs AONB; contains Sites of Special Scientific interest (SSSI); and is located in a partially rural area, but balanced with the fact that the F&HDC-P&PLP and the F&HDC-CSR acknowledge the potential of new garden settlement as a '*Strategic Town*' (F&HDC-CSR, *Table 4.4 District Settlement Hierarchy*) alongside Hythe and New Romney, the '*environment zones*' set out in Table 12-1 are relevant to this assessment.

Table 12-1 Extract from F&HDC-P&PLP Policy NE5 - Table 14.1: Obtrusive Light Limitations for External Lighting Installation

Zone	What is acceptable?	Where does this apply?
E1	Natural: External lighting to be limited to accord with ILP lighting guidance for this zone. Decorative lighting generally settlement inappropriate All lighting must be extinguished after 23:00 except in exceptional circumstances.	Kent Downs AONB; Sites of Special Scientific Interest; Rural areas outside settlement confines.
E2	Rural: For large-scale developments, lighting levels should accord with ILP technical guidance for this zone.	Within identified secondary and primary village confines, Hawkinge, Seabrook, Saltwood, and suburban areas of New Romney, and Hythe.
E3	Suburban: External lighting levels should accord with ILP technical guidance for this zone	Suburbs of Folkestone, and New Romney and Hythe town centres.
E4	Urban: External lighting levels should accord with ILP technical guidance for this zone. Street lighting proposals should be carefully planned and specified to achieve best practice in light pollution control.	Within Folkestone town centre

12.2.75 Policy NE5 requests that "*applications should include a lighting assessment with details of the following: Where the light shines; When the light shines; How much light shines; and Possible ecological impact.*"

Sustainable Development

12.2.76 SDC-LPR policy SD1 Sustainable Development seeks to ensure that "*all development proposals should take account of the broad aim of sustainable development … whilst respecting the following environmental criteria:*

- b) Preserve and enhance built and cultural heritage including Listed Buildings and their settings, conservation areas, sites and settings of nationally and locally important ancient monuments and archaeological sites, historic parks and gardens and, historic landscapes;
- c) Protect and enhance areas of countryside that are of special quality, particularly the Kent Downs Area of Outstanding Natural Beauty, Special Landscape Areas, Local Landscape Areas, Heritage Coast and undeveloped coast, ancient woodlands and, the best and most versatile agricultural land. Sustain the character and diversity of the wider countryside in general;
- f) Maintain and improve the character and vitality of the built environment, promote a high quality of design and ensure that development density is appropriate to its location;
- i) Maintain and enhance the provision of recreational open space, amenity land and tree and hedgerow cover;
- k) Safeguard and enhance the amenity of residents
- Development proposals that would significantly conflict with one or more of environmental criteria a)- k) above will only be permitted where it can be shown that: i. there is an overriding economic or social need; ii. negative impacts are minimised as far as possible and iii. measures will be taken to compensate for the adverse environmental effect. Compensatory measures should, as a minimum, ensure that no net environmental loss occurs."

Outdoor Recreation

12.2.77 SDC-LPR policy LR3 Formal Sport and Recreation in the Countryside stipulates that development should meet the following criteria: "*a) It is compatible with the character of the local landscape, the AONB, ….; e) Does not unacceptably impact the amenity of local residents and other users of the countryside.*"

12.2.78 SDC-LPR policy LR8 - Public Rights of Way states that PRoWs "*will require to be properly integrated into the design and layout of development sites. … Regard will be had to a route's attractiveness, safety and convenience for public use.*"

12.2.79 SDC-LPR policy 'LR9 Loss of Open Space' seeks provision of "*an adequate level of public open space for leisure, recreational and amenity purposes, by protecting existing and potential areas of open space." These are identified on the SDC-LPR Proposals Map. The policy states that "development proposals which would result in a net loss of such space will only be permitted if:- a) sufficient alternative open space exists; b) development does not result in an unacceptable loss in local environmental quality; c) it is the best means of securing an improved or alternative recreational facility of at least equivalent community benefit having regard to any deficiencies in the locality.*"

Ashford Borough Council

12.2.80 A substantial proportion of the Study Area for this assessment covers part of the administrative area of ABC. Whilst ABC is not the determining authority for the planning application that this assessment forms part of, its policies in respect of potential significant landscape and visual effects arising from the Development, are relevant to this section.

12.2.81 The: ABC *Local Plan, 2000* (ABC-LP); those policies that were 'saved' from it in 2014 (Ref-12-5); the ABC *Local Development Framework Core Strategy, 2008* (ABC-CS); and various Development Plan Documents (DPD), including the *Tenterden and Rural Sites* DPD (ABC-T&RS), together, form the adopted development plan for the Borough.

12.2.82 The ABC-LP contains a number of policies relevant to this assessment. These include:

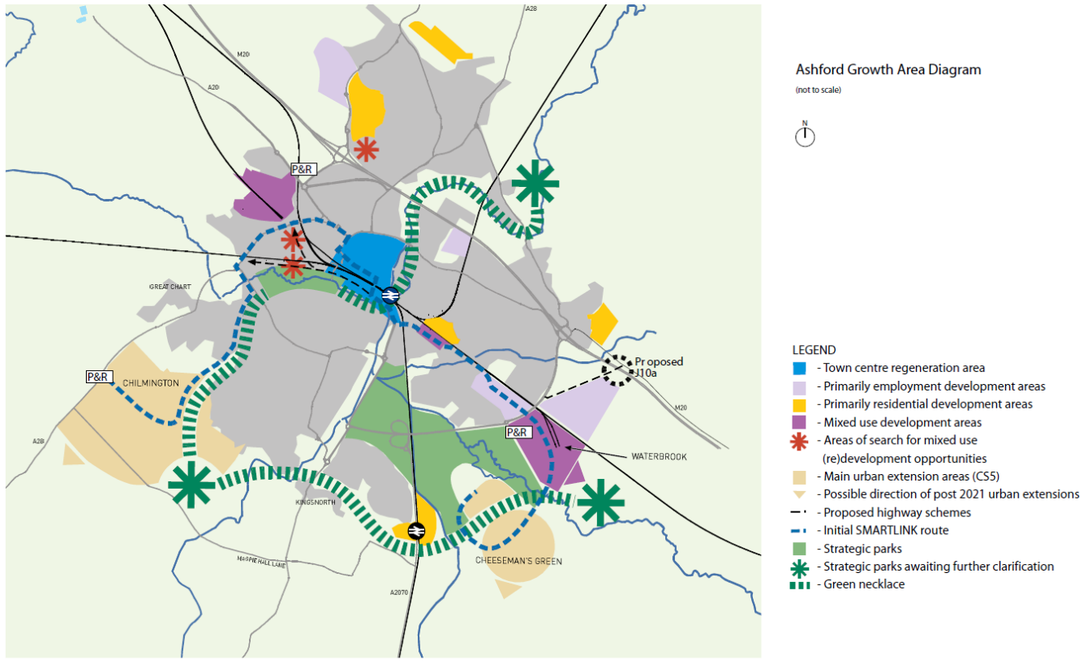
- GP12 - which seeks protection of the countryside "*for its own sake, for its landscape and scenic value.*";
- EN27 - seeks protection for those SLA's within the Borough by stating that "*Priority will be given over other planning considerations to the conservation or enhancement of natural beauty, including landscape, ... features, while recognising that landscape considerations carry less weight in SLA than in AONB*". The ABC-CS terms SLA as "*A local, non-statutory designation protecting areas with higher quality, locally distinctive landscapes.*"

12.2.83 The ABC-CS policy *CS1 Guiding Principles* seeks protection for the countryside, landscape and villages from adverse impacts of growth. Paragraph 6.37 of the ABC-CS states that "*development located outside an AONB but which would have a significant adverse effect on the setting of the AONB should also be resisted.*" In addition, it cites the use of Landscape Character Assessments (LCA) in

order to conserve and enhance the "*most distinctive characteristics of these areas …when new development occurs.*"

12.2.84 The ABC-CS policy *CS2 The Borough Wide Strategy* advocates a number of urban extensions to Ashford as shown on Figure 12-2.

Figure 12-2 Extract from ABC-CS: Figure 2: Ashford Growth Area Diagram



12.2.85 The ABC-T&RS is an adopted document that forms part of the ABC development plan. Along with the ABC-CS it provides a policy framework for assessing planning applications affecting the rural area of the Borough.

12.2.86 ABC-T&RS policy TR17 Landscape Character and Design states that "*development in the rural areas shall be designed in a way which protects and enhances the particular landscape character area within which it is located, and, where relevant, any adjacent landscape character area". In addition, its states that proposals shall have particular regard to any "relevant guidance given in an AONB Management Plan or in a Landscape Character SPD. … For the purpose of this policy, the Kent Downs Area of Outstanding Natural Beauty … are to be treated as landscape character areas.*"

12.2.87 A new ABC *Submission Local Plan 2030* (Ref 12-6) (ABC-SLP) was submitted to the Secretary of State on 21 December 2017. Once examined, amended and adopted, this will update and replace all of the key current development plan documents and policies.

12.2.88 ABC-SLP policy ENV3b: Landscape Character and Design in the AONB states that the AONB should be "*conserved, and where appropriate enhanced or restored, in accordance with their landscape significance. … proposals within and affecting the AONBs will be permitted under the following circumstances:*

- *The location, form, scale, materials and design would conserve and enhance the character of the landscape.*
- *The development would enhance the special qualities, distinctive character and tranquillity of the AONB.*
- *The development conforms with the relevant AONB management plan and any associated guidance.*"

12.2.89 ABC-SLP policy ENV4: Light Pollution and Promoting Dark Skies states that all "*proposals will be expected to comply with the guidance and requirements set out in the Council's Dark Skies SPD (2014). …Within the area proposed to be designated as a 'dark sky zone', proposals will only be permitted where they adhere to the above requirements and where they can demonstrate that there will be no significant adverse effects on the visibility of the night sky or its intrinsically dark landscapes.*"

12.2.90 The potential 'dark sky zone' cited in ENV4 is referred to in the amplification of the policy as "*rural areas in the southern part of the borough" and the "area around Woodchurch in particular, to the east of Tenterden.*"

Guidance

National Level

National Planning Practice Guidance

12.2.91 The *National Planning Practice Guidance* (Ref 12-7) (NPPG) is a supplementary suite of guidance prepared by the Ministry of Housing, Communities & Local Government covering a variety of topics.

Natural Environment - Landscape

12.2.92 Paragraph 003 (Reference ID: 8-003-20140306, Revision date: 06-03-2014) of the NPPG states that the '*duty of regard*' in relation of AONB's, that is set out in the CRoW Act (see paragraph 12.2.4), is "*relevant in considering development proposals that are situated outside National Park or Area of Outstanding Natural Beauty boundaries, but which might have an impact on the setting of, and implementation of, the statutory purposes of these protected areas*".

Natural Environment - Green Infrastructure

12.2.93 Paragraph 027 (Reference ID: 8-027-2160211, Revision date: 11-02-2016) describes GI as "*not simply an alternative description for conventional open space. As a network it includes parks, open spaces, playing fields, woodlands, but also street trees, allotments and private gardens. It can also include streams, canals and other water bodies and features such as green roofs and walls.*"

12.2.94 Paragraph 028 (Reference ID: 8-028-20160211, Revision date: 11-02-2016) stresses that GI is "*important to the delivery of high quality sustainable development, alongside other forms of infrastructure." It states that GI "provides multiple benefits… for the individual, for society, the economy and the environment", and to ensure that these benefits are delivered it states that GI "must be well planned, designed and maintained.*" With regards to proposed Development it states that GI "*should, therefore, be a key consideration in both local plans and planning decisions where relevant.*"

12.2.95 With direct reference to landscape character Paragraph 028 states that well designed GI (which includes conservation of existing GI assets) can help create a sense of place by responding, reinforcing and enhancing, local landscape character.

Light Pollution

12.2.96 Paragraph 001 (Reference ID: 31-001-20140306, Revision date: 06-03-2014) states that artificial light "*provides valuable benefits to society, including through extending opportunities for sport and recreation, and can be essential to a new development". Equally, it stresses that it "has the potential to become what is termed 'light pollution' or 'obtrusive light' …... It can be a source of annoyance to people, … undermine enjoyment of the countryside or detract from enjoyment of the night sky. For maximum benefit, the best use of artificial light is about getting the right light, in the right place and providing light at the right time.*"

12.2.97 Paragraph 002 (Reference ID: 31-002-20140306 Revision date: 06-03-2014) requests that when assessing whether a development proposal might have implications for light pollution consideration of material change to light levels outside of the development and "*the potential to adversely affect the use or enjoyment of nearby buildings or open spaces*", particularly if the development is "*in or near a protected area of dark sky or an intrinsically dark landscape where it may be desirable to minimise new light sources*" should be taken into account.

12.2.98 In addition, Paragraph 005 (Reference ID: 31-005-20140306 Revision date: 06-03-2014) states that the "*character of the area and the surrounding environment may affect what will be considered an appropriate level of lighting for a development.*"

12.2.99 Paragraph 003 (Reference ID: 31-003-20140306 Revision date: 06-03-2014), Paragraph: 004 (Reference ID: 31-004-20140306, Revision date: 06-03-2014) and Paragraph 005 (Reference ID: 31-005-20140306 Revision date: 06-03-2014) provide guidance upon how '*light-intrusion*' can be avoided.

Paragraph 003 states that '*light-intrusion*' can "*usually be completely avoided with careful lamp design selection and positioning*" and timing.

12.2.100 This would involve: avoiding "*lighting near or above the horizontal … to reduce glare and sky glow (the brightening of the night sky)*"; implementing 'part-night lighting' "*when a business is closed or, in outdoor areas, switching-off at quiet times between midnight and 5am or 6am*"; and " 'dimming' to lower the level of lighting (e.g. during periods of reduced use of an area, when higher lighting levels are not needed)." Paragraph 004 states that "*planning conditions could potentially require this*."

Industry Level

12.2.101 A number of guidance documents exist that are relevant to the LVIA process, and which are referred to in this Chapter:

- GLVIA3 provides guidance upon the range of methodologies that can be employed in the preparation of LVIAs. A number of statements of clarification to this have been issued by the Landscape Institute (Ref 12-8) (LI).
- NE have produced guidance on the various approaches to LCA including *An Approach to Landscape Character Assessment* (Ref 12-9) (NE-ALCA).

Local

F&HDC development plan Supplementary Planning Guidance

12.2.102 F&HDC have adopted a number of '*supplementary planning documents*' (SPD) to expand upon or add details to policies laid out in their local plan documents. SPD's are material considerations for F&HDC when considering planning applications. A description of those that are applicable to this assessment, and their particular areas of relevance are set out in the paragraphs below. There are however SPDs relating to plots of land within the Site where existing planning permissions and allocations have been granted. A description of these is located in the *Future Baseline* section of this assessment at paragraph 12.3.309.

12.2.103 The Kent Design Guide (Ref 12-10) (KDG), adopted by F&HDC as an SPD on 20th June 2007, aims to "*encourage well considered and contextually sympathetic schemes that create developments where people really want to live, work and enjoy life*."

12.2.104 The Kent Downs AONB Landscape Design Handbook (Ref 12-11) (AONB-LDH) was adopted by F&HDC in 2006. Paragraph 1.2 states that it aims to "*provide design guidance to contribute to the conservation and enhancement of the special characteristics of the AONB as a whole, and the distinctiveness of its individual character areas*." This paragraph also states that "*the guidelines are not meant to inhibit innovative design, but to provide a sound framework and information basis from which sympathetic design and management can be developed*." With regards to the Kent Downs AONB Management Plan (Ref 12-12) paragraph 1.6 states that the AONB-LDH contributes to "*the implementation of the management plan objectives and policies*."

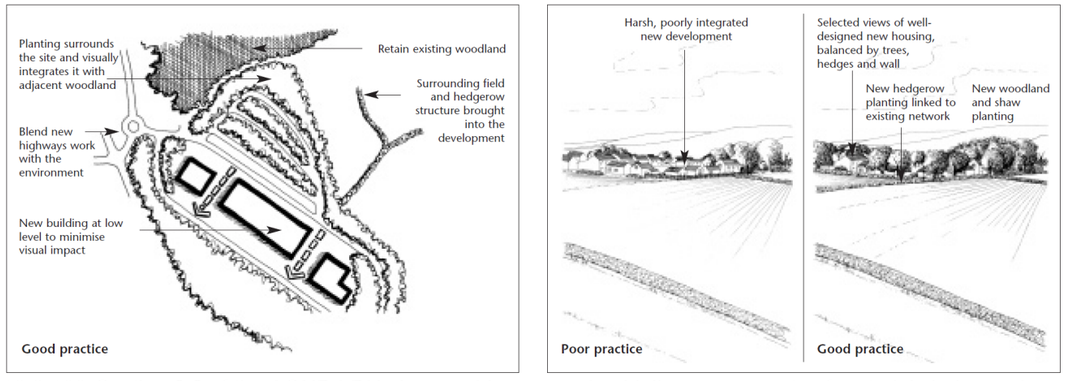
12.2.105 Whilst the AONB-LDH neither addresses development outside of the AONB, or development of the scale being assessed within this assessment, there are design principles listed within it that have been worthy of consideration during the planning of the proposed Development.

12.2.106 With regards to new built development, section 2.2 of the AONB-LDH states that the "*presumption should be against AONB edge developments where they impact upon views into and out of the AONB landscape*". The AONB-LDH states that where this is unavoidable ensure that:

- "buildings and infrastructure are located to avoid loss of important off-site views towards features such as church towers, fine buildings, or the wider landscape, as well as avoiding intrusion onto sensitive ridgelines, prominent slopes and damage to distinctive landscape settings.
- Seek to retain key landscape features on development sites – such as woodland, shaws, hedgerows, orchards, mature trees, watercourses and ponds as a basis for the new landscape structure and setting of the site.
- Avoid straight lines or regimented buildings on the settlement edge for new development.
- Integrate new development in keeping with local character, using open space and planting to provide a visual link to the countryside and an attractive backdrop/foil to development.
- Secure and manage native woodland, shaws (narrow belts of woodland, which are a remnant of larger woods but which have been cut back by fields), hedgerow and tree planting to integrate and/or screen new and existing developments. (Refer to suggestions for planting species within Landscape Character Areas).
- Consider massing, form, height and colour, texture of buildings and structures, taking account of local distinctiveness and characteristics."

12.2.107 Page 6 of the AONB-LDH graphically demonstrates how new built development should be integrated into its rural edge. An extract from this is shown in Figure 12-3.

Figure 12-3 Extract from AONB-LDH – Page 6 – Guidelines for integration of commercial and residential urban edge development



12.2.108 Section 2.2 of the AONB-LDH also provides general guidelines on aspects of material choice and colour, lighting and fencing, that are more applicable to the detailed planning application stage of any future Otterpool Park proposals.

12.2.109 The AONB-LDH sets out a number of particular landscape design guidelines for those landscape character areas (LCAreas) defined in the Countryside Commission's *Landscape Assessment of the Kent Downs AONB* (Ref 12-13). The LCAreas that are relevant to the Site are: *East Kent Downs*, Stour Valley, *Postling Vale*, and *Lympne*. The guidelines for each provide recommendations for native woodland and hedgerow species that are particular to these areas and the local character areas within them. These have been referenced in section 12.4 of this assessment.

F&HDC development plan Evidence Base

12.2.110 A description of the documents, applicable to this assessment, that form the 'e*vidence base*' for SDC-CS, and SDC-LPR, and F&HDC-P&PLP and their particular areas of relevance is set out in the paragraphs below.

The Shepway Green Infrastructure Report

12.2.111 The *Shepway Green Infrastructure Report* (Ref 12-14) (SGIR) defines the typology, components, functions and benefits of GI across the District. The report's main focus is upon the GI aspects of biodiversity, linear resources, areas of civic amenity. With regards to key GI issues and opportunities concerning the strategic development sites of Folkestone Racecourse it states that: improved management of the East Stour River corridor is required; the creation of areas of biodiversity, civic amenity, a neighbourhood green, and SuDS should feature in development proposals; and that there should be improved PRoW links to the North Downs Way, Saxon Shore Way and the Royal Military Canal path.

Romney Marsh Local Character Assessment

12.2.112 The findings of the *Romney Marsh Local Character Assessment* (Ref 12-15) (RM-LCA) are set out in section 12.3 of this Chapter.

Guidance Notes for the Reduction of Obtrusive Light

12.2.113 The *Guidance Notes for the Reduction of Obtrusive Light* (Ref 12-16) (GNROL) provides; definitions for the different types of '*obtrusive light*'; principles for good lighting design; environmental zones for lighting; and guidance in terms of luminance, light intensity, and light fitting types.

Kent Downs AONB Rural Streets and Lanes Design Handbook

12.2.114 The *Kent Downs AONB Rural Streets and Lanes Design Handbook* (Ref 12-17) (AONB-RS&LDH) sets out: the contextual need for the guidance; design principles to adopt when planning changes to highways, junctions and streetscapes; and case study designs within particular pertinence to the AONB.

Kent Downs AONB Management Plan (2014-2019)

12.2.115 The *Kent Downs AONB Management Plan* (AONB-MP) has been prepared by the AONB Unit with the AONB Joint Advisory Committee (AONB-JAC). It describes the '*special characteristics and qualities*' of the AONB, establishes long-term visions and policies for a five year period for these, and sets out methods for their implementation and future monitoring.

12.2.116 The 'special characteristics and qualities' of the AONB are identified within the AONB-MP as: 'dramatic landform and views'; 'biodiversity'; 'the farmed landscape'; 'woodland and trees'; 'a rich legacy of historic and cultural heritage'; 'geology and natural resources'; 'vibrant communities'; 'development pressure'; and 'access and enjoyment'.

12.2.117 The detailed aspects of landscape character and visual amenity that inform the '*special characteristics and qualities*', and which are relevant to the Site, are described in more detail in section *12.3 – Baseline* of this Chapter. However, those policies which address potential new development, and which again are relevant to the Site and this assessment are set out the following paragraphs.

12.2.118 Section 3 of the AONB-MB identifies a number of guiding and recurrent themes for the management of the AONB. The document states that these themes *"should be considered before referring to specific topic policies.*"

12.2.119 The 'guiding themes' are:

- 'natural beauty' – the purpose of the original designation, and, as outlined by the Countryside Agency in their publication Areas of Outstanding Natural Beauty: A guide for AONB Partnership Members (Ref 12-18), "*natural beauty is not just the look of the landscape, but includes landform and geology, plants and animals, landscape features and the rich history of human settlement over the centuries*";
- '*local character*' – what is specific, distinctive and locally special to either the entire AONB, or individual parts of it; and
- '*climate change*' – the vulnerability of the AONB to changes in the natural environment.

12.2.120 The 'recurring themes' are:

- '*Tranquillity and remoteness*' – areas which have remained relatively undisturbed by noise, light and movement, and which have recreational and amenity value for this reason;
- 'Setting' – "*broadly speaking the land outside the designated area which is visible from the AONB and from which the AONB can be seen*", but which is "*not formally defined or indicated on a map*". The AONB-MP goes on to say that "*proposals which would affect the setting of the AONB are not subject to the same level of constraint as those which would affect the AONB itself. The weight to be afforded to setting issues will depend on the significance of the impact. Matters such as the size of proposals, their distance, incompatibility with their surroundings, movement, reflectivity and colour are likely to affect impact. Where the qualities of the AONB which were instrumental in reasons for its designation are affected, then the impacts should be given considerable weight in decisions. This particularly applies to views to and from the scarp of the North Downs*". The AONB-MP states that with 'setting' as a recurrent theme, "*reference to development 'in the AONB' will also apply as appropriate 'in its setting' too.*"
- '*Design and materials*' – the built form and settlement patterns that contribute to the distinctiveness of the AONB, and which are reinforced in the AONB Unit's design guidance documents. With regards to new development, the AONB-MP seeks proposals which draw from the past, and which use "*available, sustainably sourced traditional as well as appropriate new materials and a design approach which fits neatly with and complements the valued traditions, forms and patterns of the past, while securing environmental efficiency and affordability*";
- '*Pressure of growth and infrastructure*' – The AONB-MP sets out the forces of demographic change, development and infrastructure that are acting upon the AONB; and
- 'Mitigation' – The 'mitigation hierarchy' of 'avoid', 'pursue alternatives', 'ameliorate' and 'compensate', as set out in the NPPF.

12.2.121 The policies of the AONB-MP are arranged into the topics related to the '*special characteristics and qualities*', but also divided into those that are related to '*control*' and '*intent*'.

12.2.122 '*Control*' policies infer that they are needed to help stop or mitigate negative impacts on the AONB, and include the words '*oppose*', '*resist*', '*will/shall*' and/or '*expect/expected*'. '*Intent*' policies imply that the AONB-Unit will '*pursue*', '*support*', '*encourage*', '*maintain*' and/or '*monitor*' actions.

12.2.123 With regard to 'sustainable development' policy SD1 states that the "*need to conserve and enhance the natural beauty of the Kent Downs AONB is recognised as the primary purpose of the designation and given the highest level of protection within the statutory and other appropriate planning and development strategies and development control decisions.*"

12.2.124 Policy *SD3* states that new development or changes to land-use that "*disregard or run counter to the primary purpose*" of the AONB will be opposed.

12.2.125 Policy SD2 states that the "*local character, qualities and distinctiveness*" of the AONB "*will be conserved and enhanced in the design, scale, setting and materials of new development*" through use of the appropriate AONB design guidance and position statements.

12.2.126 Policy *SD8* broadens this by stating that new developments which negatively impact on the *"setting and views to and from"* the AONB would be opposed "*unless they can be satisfactorily mitigated."*

12.2.127 Policy SD7 states that new development, including roads that "*negatively impact on the local tranquillity*" of the AONB will be opposed "*unless they can be satisfactorily mitigated." Use of "new technologies" and "careful design" is required to "retain and improve tranquillity, including the experience of dark skies at night.*"

12.2.128 Policy SD9 requires all development, including highway design, to be "*complementary to local character in form, setting, scale, contribution to settlement pattern and choice of materials" through the "application of appropriate design guidance such as the AONB's 'Rural Streets and Lanes Design handbook').*"

12.2.129 Policy SD10 supports the application of "*positive measures to mitigate the negative impact of infrastructure and growth on the natural beauty and amenity of the AONB*". This is further extended in policy SD11 where it calls for "*mitigation measures appropriate to the national importance of the Kent Downs landscape will be identified, pursued, implemented and maintained"* and for the *"removal or mitigation of identified landscape detractors.*"

12.2.130 With regards to 'Landform & Landscape Character', policy LLC1 supports the '*protection, conservation and enhancement of special characteristics and qualities, natural beauty and landscape character*' of the AONB.

12.2.131 With regard to access through the AONB policy *AEU 14* provides resistance to proposals which *"detract from the amenity and enjoyment of users*" of PRoW.

12.2.132 Section 2.2.2 of the AONB-MP states that its policies "*will be reflected and in part implemented through policies in each Local Plan and in development management decisions*" of the local authorities the AONB spans across. It affirms that the AONB-MP policies are therefore not meant to formulate land-use planning policies but are a "*component of the decision making process in planning applications*". It states that, when "*combined with the thorough process of plan making and review*", the AONB-MP and its policies "*are a material consideration in planning matters and should be afforded weight in decisions*". This is reiterated in paragraph 14.18 of the F&HDC-P&PLP

12.2.133 The F&HDC development plan documents have regard for the implementation of the AONB-MP policies within their administrative area. Appendix 3: '*Monitoring and Risk*' within Section 6 of the SDC-CS, and Appendix 1 '*Monitoring and Risk*' within Section 6 of the F&HDC-CSR, both address management of sensitive landscapes, such as the AONB, that are "*shaping the character of the district, especially on the edge of settlements or within the Kent Downs AONB and its setting*". They state that with the SDC-CS and F&HDC-CSR in place the authority is already "*on track for full implementation of district applicable Management Plan actions by end of plan period (proportion completed).*"

AONB - Setting Position Statement

12.2.134 The AONB-JAC have prepared *The Kent Downs AONB Setting Position Statement* (Ref 12-19) (AONB-SPS). The introduction to the document states that this is an advisory document, intended to provide

"*further guidance on issues of setting for local planning authorities, land owners and other interested parties*". The AONB-SPS "*focuses on ensuring avoidance of harm and the conservation and enhancement of the setting of the AONB, through good design and the incorporation of appropriate mitigation measures*."

12.2.135 As previously described in the AONB-MP, the AONB-SPS, in section 4, affirms the view that the AONB's setting "*does not have a geographical border*" but in most cases "*comprises land outside the AONB which is visible from the AONB and from which the AONB can be seen*". It recognises that in some cases "*the setting area will be compact and close to the AONB boundary, perhaps because of natural or human made barriers or because of the nature of the proposed change. However, the setting area maybe substantial for example where there is a contrast in topography between higher and lower ground.*"

12.2.136 The AONB-SPS lists those locations where development and changes to the landscape where the setting of the AONB "*may be more keenly felt*" in views to and from them. Of the five listed in the AONB-SPS one contains the Site: "*Scarp of the Kent Downs to the Vale of Holmesdale - the valley that lies at the foot of the North Downs and incorporates the A20/M20, M26 and M25 corridors, together with views from the Lympne escarpment to the Romney Marsh and from the Greensand Ridge.*"

12.2.137 Section 5 of the AONB-SPS lists examples of adverse impacts on the setting of the AONB. These include:

- development which would have a significant impact on views in or out of the AONB;
- loss of tranquillity through the introduction or increase of lighting, noise, or traffic movement or other environmental impact including dust, vibration and reduction in air quality;
- introduction of abrupt change of landscape character;
- loss or harm to heritage assets and natural landscape, particularly if these are contiguous with the AONB;
- development giving rise to significantly increased traffic flows to and from the AONB, resulting in erosion of the character of rural roads and lanes; and
- increased recreational pressure as a result of development in close proximity to the AONB.

12.2.138 This Chapter of the ES assesses the impact of the proposed Development upon the setting of the AONB in terms of landscape character and visual amenity. Other Chapters of this ES assess the impact upon the setting in terms of heritage, air quality, noise, traffic, and recreation.

12.2.139 The AONB-SPS also recognises the cumulative impacts that can also arise from multiple developments within the setting of the AONB, highlighting that these are of "*particular concern in the views to and from the scarp of the North Downs to the Vale of Holmesdale*", and noting the "*juxtaposition of the dramatic landform with the transport corridor and the settlements around them on the lower ground mean it is a focus of attention for new development.*"

12.2.140 Section 7 of the AONB-SPS identifies that many of the adverse impacts upon the AONB from new development or landscape change within its setting "*can be resolved through careful design and incorporation of appropriate mitigation and/or management measures.*" As well as endorsing those recommended in the AONB-LDH, the AONB-SPS also lists:

- care over orientation, site layout, height, scale and massing of structures and buildings to minimise impact when viewed from the AONB;
- appropriate densities to allow for significant tree planting between buildings;
- consideration not just of the site but also the landscape, land-uses and heritage assets around and beyond it;
- careful use of colours, materials and non-reflective surfaces;
- restraint and care over the installation and use of external lighting including street lighting, to prevent harm to the dark night skies of the AONB. Where essential, lighting should be well-directed and full cut off and of low level in form and lumen intensity;
- the grouping of new structures and buildings close to existing structures and buildings to avoid new expanses of development that are visible and out of context; and
- detailed mitigation and management measures, for example including native landscaping that is locally appropriate (where possible contributing to Biodiversity Action Plan targets) and noise reduction.

F&HDC Growth Options Study

12.2.141 The '*evidence base*' for the F&HDC-CSR included a *Growth Options Study* to identify and test potential approaches to strategic planning for future growth in the district. This study includes a suite of three related documents:

- Shepway Strategic Growth Options Report: 'High Level Options Report' (Ref 12-20)
- Shepway Strategic Growth Options Report: 'Phase Two Report' (Ref 12-21)
- SDC-HLLA

12.2.142 Whilst the findings of the SDC-HLLA are referred to in section 12.3 of this Chapter, the aspects of the Shepway Strategic Growth Options Report: 'High Level Options Report (SDC-HLOR) and the 'Phase Two Report' (SDC-PTR), where applicable to this assessment, are described in the paragraphs below.

12.2.143 The SDC-HLOR divided the District into six character areas, based on the three general character areas (the '*Urban Area*', '*Romney Marsh Area*' and '*North Downs*') previously identified in the SDC-CS: 1) *Folkestone and surrounding area*; 2) *Hythe and surrounding area*; 3) *Romney Marsh and Walland Marsh*; 4) *Lydd, New Romney and Dungeness*; 5) *Sellindge and surrounding area* (containing the Site); and 6) *Kent Downs*.

12.2.144 Each character area was assessed against ten criteria drawn from the spatial planning principles outlined in the NPPF including '*statutory and non-statutory designations*' such as the AONB, '*landscape and topography*'; '*heritage*;' and '*spatial constraints and opportunities*' (which included the need to avoid settlements coalescing).

12.2.145 The consideration of '*landscape and topography*' was informed by the SDC-HLLA- in particular by its study of landscape character, landscape value, susceptibility to change, and sensitivity to change and therefore capacity for change across the district.

12.2.146 A range of potential spatial distributions to growth arising from this assessment were then developed and assessed with stakeholders and partner organisations. The study concluded that '*Sellindge and surrounding area*' was the location which was most free from strategic constraints, and should therefore form the basis for more detailed study in SDC-PTR.

12.2.147 The SDC-PTR used site-specific evidence (including the SDC-HLLA) and detailed analysis to define sub-areas (A, B, C & D) within the '*Sellindge and surrounding area*', shown on Figure 12-4, and to assess the potential of these to accommodate strategic growth.

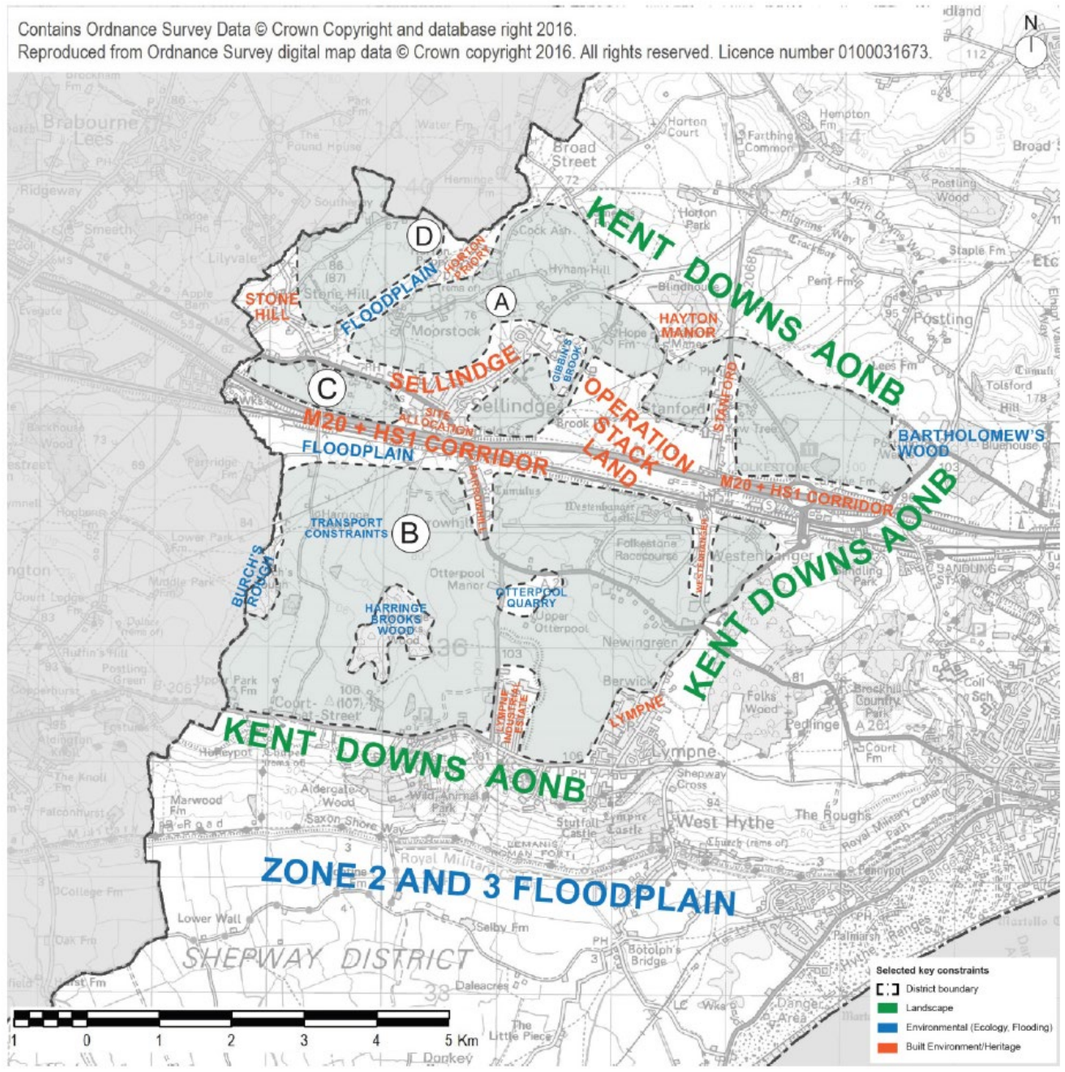
12.2.148 Topic-based criteria, similar to those used in the SDC-HLOR, were applied in this assessment of each sub-area.

12.2.149 The '*landscape*' criteria included: avoidance of visually prominent locations: minimising impact on the AONB and its setting; and identifying locations with the potential for landscape mitigation.

12.2.150 The '*spatial*' considerations included: maximising use of existing defensible boundaries to development and opportunities for creating new ones; avoiding "*less sustainable development patterns, such as ribbon development along roads; also taking account of existing development, planning proposals and/or policy support for development*" (section 1.2 page 1-9).

12.2.151 The SDC-PTR found that land within Area B and some of Area C was considered to be more suitable for strategic-scale development on the landscape criterion without needing extensive mitigation. Section 2.4 page 2.-48 identified that strategic development within these area "*would not avoid adverse landscape and visual effects entirely" but in some areas "these effects could be more readily mitigated through the siting, type, layout and design of development to assimilate it into the landscape, and limit potential wider landscape and visual effects, allowing for a higher density of development."*

Figure 12-4 Extract from SDC-PTR – Figure 1: Areas A-D, comprising the starting point for this Phase Two report

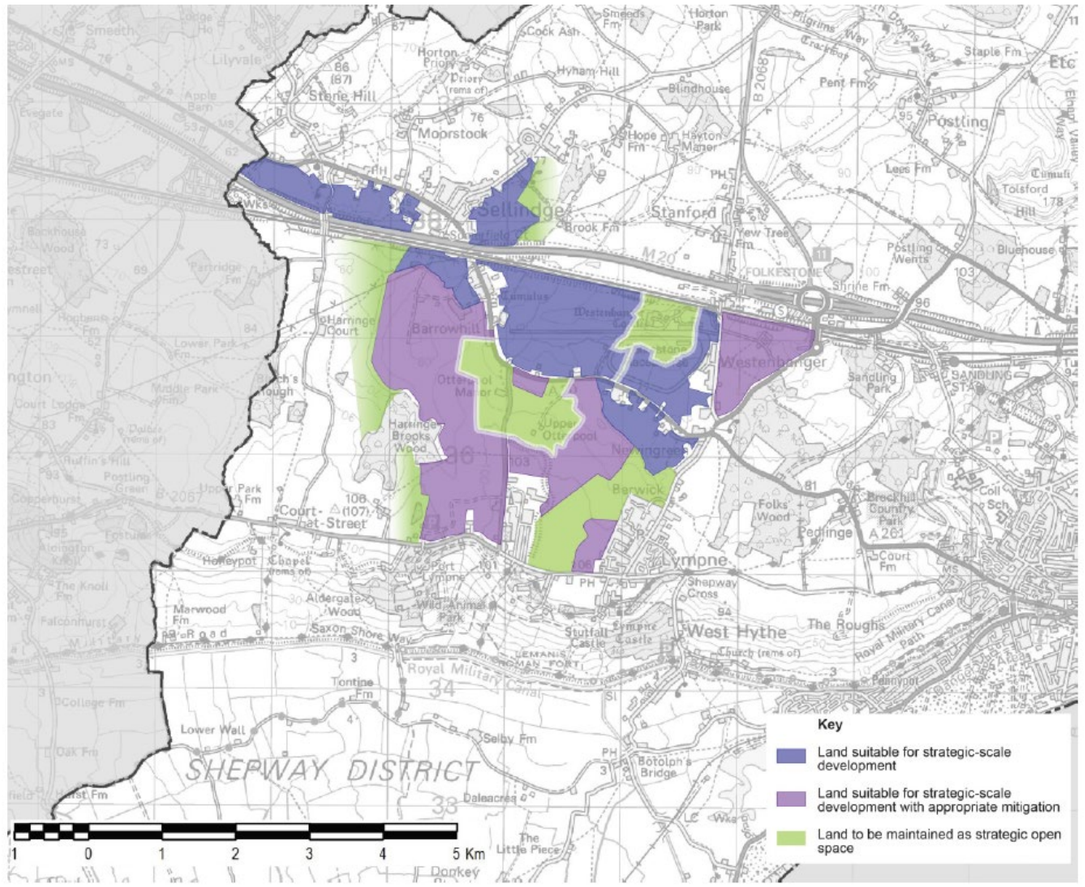


12.2.152 Other areas, such as the "*rising land either side of Otterpool Lane between Harringe Brooks Wood, Barrowhill, Lympne and the A20, and the land within the triangle east of Westenhanger…. would only be suitable for strategic-scale development with appropriate mitigation, including a lower, more suburban, density of development, use of suitable local building materials, and extensive landscape softening through tree planting.*" The SDC-PTR considers this suitable for development "*subject to appropriate mitigation, having regard to the definition of the setting*" of the AONB.

12.2.153 With regards to '*Spatial opportunities and constraints*' it was also found that Area B contained a suitable number and type of '*defensible boundaries*' (such as roads, tree belts, hedgerows, and watercourses) within which to site strategic scale development, and that there was the ability to maintain the "*character of Lympne as a free-standing hilltop village*."

12.2.154 The conclusion of the SDC-PTR (page 3-104) stated that "*simple inter-visibility of land from viewpoints within the AONB [should] not automatically preclude development*" and that rather, suitability should be determined "*based on relative impact of development on AONB setting, opportunities for landscape and visual mitigation.*"

Figure 12-5 Extract from SDC-PTR: Figure 51: All land considered suitable for strategic-scale development and strategic open space



ABC development plan Supplementary Planning Guidance

12.2.155 ABC have adopted a number of SPDs to expand upon or add details to policies laid out in their development plan documents. A description of those that are applicable to this assessment, and their particular areas of relevance are set out in the paragraphs below.

12.2.156 ABC produced a *Landscape Character SPD* (Ref 12-22) (ABC-LC SPD) in 2011. As the main purpose of the ABC-LC SPD is to highlight the landscape character of the Borough it is referenced in section 12.3 of this Chapter.

12.2.157 The *ABC Dark Sky SPD* (Ref 12-22) (ABC-DS) was adopted in 2014. Its summary of associated planning policy context, and its design guidance regarding lighting (where it forms part of a planning application) are similar to those found in Policy NE5 of F&HDC-P&PLP, the NPPG and the GNROL. Much like these documents, the ABC-DS SPD states that it is the aim of the Authority *"to balance the need for any lighting proposal against the implications it may have on the environment in terms of obtrusive light*."

12.2.158 The ABC-DS also discusses, issues regarding '*dark skies*' and other lighting topics that are specific to ABC. The ABC-DS SPD states that the:

> "*Council's rural areas to the south and east of the urban area [of Ashford] currently enjoy some of the darkest skies in the region, unaffected as yet by the effects of external lighting often brought by developmental pressures. The area around Woodchurch in particular, east of Tenterden, has been measured by global satellites as comprising one of the only areas in the*

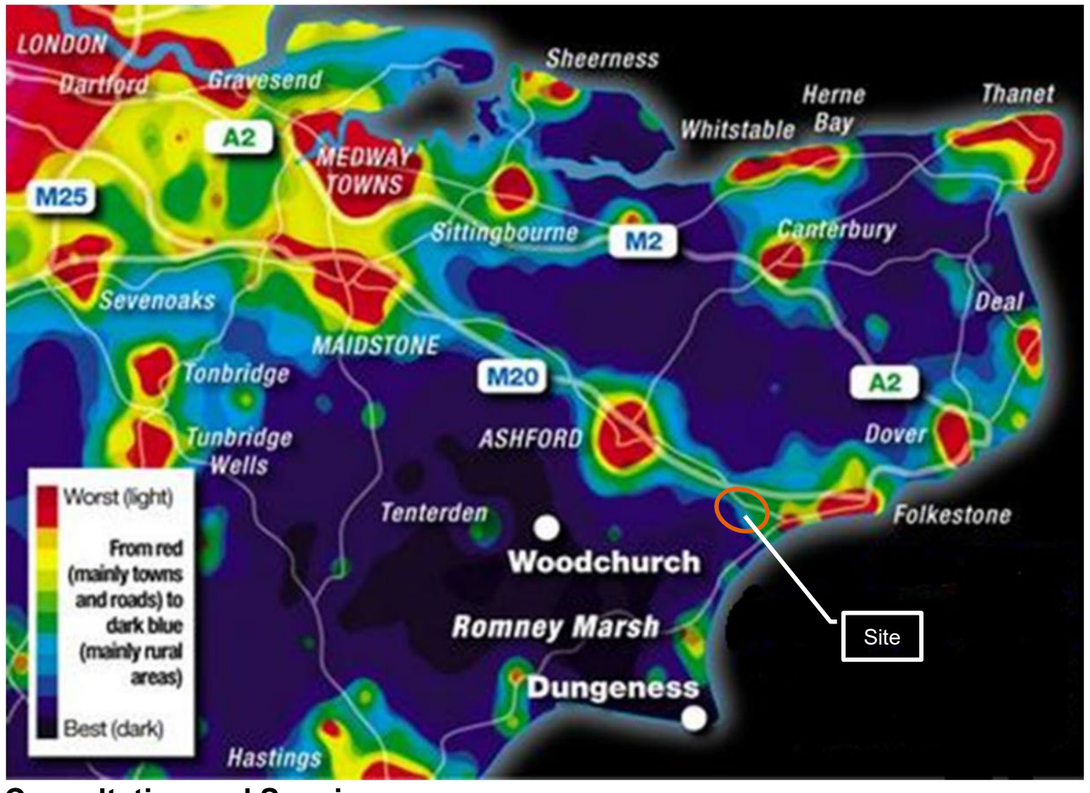
Borough with no light detected, and thus is worthy of protection as an 'intrinsically dark' sky as alluded to within the NPPF (paragraph 125)." (paragraph 1.4)

12.2.159 Paragraph 4.4.2 confirms that ABC:

"*does not yet contain any areas designated 'Protected'. It is possible that the area of 'intrinsic darkness' around Woodchurch can become a designated Dark Sky Protected Zone in the future. At this stage, planning applications within the area of darkest skies will be subject to E1 (AONBs; SSSIs; rural areas outside of settlement confines) or E2 (identified rural settlement confines) controls.*"

12.2.160 Figure 12-6 shows "*how unique is the zone around Woodchurch on a county level*". The location of the Site in relation to this has been added.

Figure 12-6 Extract from ABC-DS SPD: Plan 1 Showing areas of darkest skies in South East England (courtesy of Ashford Astronomical Society) and the location of the Site



Consultation and Scoping

Consultation

12.2.161 Provides a summary of the consultation carried out with key stakeholders during the course of the preparation of the application with regards to this assessment. This includes engagement with officers at F&HDC, NE, Historic England (HE), AONB-Unit, KCC and ABC.

Table 12-2 Summary of Consultation

Consultee/Contact/Date	Scoping / Other Consultation	Summary of Consultee Issue	How Addressed?
16/11/2016 F&HDC: Piran Cooper Landscape & Urban Design Officer 16/11/2016 AONB Unit: Nick Johannsen, Director 07/12/2016 NE: Julia Coneybeer, Senior Advisor, Sustainable Development team Sussex & Kent team; Rebecca Bishop Adviser, Sustainable Development Team	Pre-application consultation	- applicable existing published LCA for consideration in the LVIA. - key landscape and visual receptors; - potential likely landscape-related impacts and opportunities; - relevant landscape related planning policy; - applicable cumulative developments; - future engagement with F&HDC, AONB & NE; - the setting of the AONB; - role of NE as the Statutory Consultee regarding the AONB.	- landscape and visual baseline data collected; - cumulative developments identified and mapped;
31/05/2017 F&HDC: Piran Cooper AONB Unit: Katie Miller, Planning Manager NE: Julia Coneybeer	Pre-application consultation	- LVIA study area extents; - landscape character and visual receptors with the potential to experience significant effects; - representative viewpoints; - initial masterplanning work.	- agreed LVIA study area extents; - agreed landscape character and visual receptors with the potential to experience significant effects; - agreed representative viewpoints; - response to the initial masterplanning work feedback to others within the Masterplanning team; - appropriate level of engagement through the process of masterplanning and planning process through on-going dialogue, and involvement in selected pre-application meetings.
31/05/2017 F&HDC: Piran Cooper ABC: Dr Matthew Nouch, Planning Policy Officer	Pre-application consultation	- as meeting on 31/05/2017, plus consideration of ABC's Dark Skies Protection Area planning policy area.	- consideration of ABC's Dark Skies Protection Area planning policy area within the LVIA.
17/11/2017 F&HDC: Piran Cooper NE: NE: Julia Coneybeer; Rebecca Bishop	Pre-application consultation	- overall character-building design principles.	- 'in principle' agreement to overall character-building design principles

Consultee/Contact/Date	Scoping / Other Consultation	Summary of Consultee Issue	How Addressed?
AONB Unit: Katie Miller			
31/07/2018 F&HDC: Piran Cooper; James Farrer, Planning Case Officer AONB Unit: Katie Miller	Pre-application consultation	- agreement to those viewpoints from which visualisations would be prepared.	- inclusion of visualisations within LVIA.
24/10/2018 F&HDC: Piran Cooper; James Farrer NE: NE: Julia Coneybeer; Martin Moss, Green Infrastructure Officer; Abbi Bamping, Geological SSSI Officer	Pre-application consultation	- Discussion upon the green infrastructure proposals and the approach taken to the key open spaces within the scheme.	- n/a

Scoping

12.2.162 An Environmental Impact Assessment Scoping Report (EIA-SR) was issued to F&HDC in April 2018 (see Chapter 3). Chapter 12 of the EIA-SR included a description of the study area for this assessment, the methodology to be used, what baseline data had been, or would be collected, which key receptors had been identified, a description of possible significant effects, and identification of potential mitigation measures.

12.2.163 A formal Scoping Opinion Report (SOR) was received from F&HDC on 27 June 2018 (see Chapter 3). This report, prepared by Temple on behalf of F&HDC, took into account written responses (contained within the appendices of the SOR) from key stakeholders regarding the matters raised in Chapter 12. These including the Landscape & Urban Design Officer at F&HDC, NE, HE, AONB Unit, KCC and ABC.

12.2.164 Follow-up meetings were held with F&HDC, NE and AONB Unit to clarify issues raised within the SOR.

12.2.165 Table 12-3 provides a summary of consultee responses contained within the SOR related to the landscape character and visual amenity. The table also sets out the location within this assessment, the ES or elsewhere in the planning application where these have been addressed.

Table 12-3 Summary of EIA Scoping Opinion

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
Natural England	Sufficient detail will be required within the ES so that impacts to the AONB can be fully understood – including the location, density and height of buildings.	The LVIA addresses the impact upon the AONB. The Parameter Plans set out the location, density and height of built form – but not individual buildings, given the outline nature of the application.
Natural England	Details of green and blue infrastructure measures will also be required.	The DAS sets out green and blue infrastructure proposals.
Kent Downs AONB Unit	Addition of a further representative viewpoint at Grid Reference 610500 142400.	Inclusion of viewpoint (no.28) near to this within the visual analysis.
Kent Downs AONB Unit	Inclusion of planning application Y16/1122: Land rear of Rhodes House, Main Road, Sellindge within the cumulative assessment.	Included within the cumulative assessment section of the LVIA.
Kent Downs AONB Unit	Inclusion of an assessment of both direct and indirect impacts on the special characteristics and qualities of the AONB and its purpose for designation.	Included within the Assessment of Residual and Cumulative Effects within the LVIA.
Kent Downs AONB Unit	Inclusion of potential effects relating to tranquillity, including noise pollution, visitor pressure and transport effects.	Effects on tranquillity regarding noise pollution included within Chapter 13- Noise & Vibration of the ES.
Kent Downs AONB Unit	Inclusion of potential effects relating to tranquillity, including light pollution effects.	Effects on tranquillity regarding light pollution included within the Assessment of Residual and Cumulative Effects within the LVIA.
Kent Downs AONB Unit	Inclusion of potential effects relating to tranquillity, including visitor pressure effects	Effects on tranquillity regarding visitor pressure included within Chapter 14 - Socio-economic Effects and Community of the ES.
Kent Downs AONB Unit	Inclusion of potential effects relating to tranquillity, including transport effects	Effects on tranquillity regarding visitor pressure included within Chapter 16 - Transport of the ES.
Kent Downs AONB Unit	Greater transparency, detail, and consistency in the definitions of criteria used within the LVIA methodology.	Detailed methodology set out in the LVIA.
Kent Downs AONB Unit	Include consideration of Ash Die-Back in the future baseline section of the LVIA.	Included in the future baseline section.
F&HDC	Inclusion of viewpoints capturing visual amenity of users of the Saxon Shore Way south of the Application Boundary.	Inclusion of a further viewpoint (No. 29) within visual analysis.
ABC	Inclusion of a number of additional sites within the cumulative assessment.	These sites are reviewed as part of the cumulative effects assessment.
ABC & Kent Downs AONB Unit	An assessment of the potential; effects of lighting at night should be provided as part of the ES	Included within the Assessment of Residual and Cumulative Effects within the LVIA.

The Study Area

12.2.166 The Site location and study area, in which the likelihood of significant effects on landscape character and visual amenity is possible is shown on Appendix 12-3 Figure 1. This was established through the preparation of an initial preliminary Zone of Theoretical Visibility (ZTV), shown on Appendix 12-3 Figure 10, for the proposed Development, and its inter-visibility with other committed developments that are likely to be included within the assessment of cumulative impact. An initial study area of 10km was considered to be appropriate to cover all potentially significant landscape and visual impacts; beyond this distance the development would be difficult to discern visually.

12.2.167 This was then supplemented by fieldwork and consultation with stakeholders, including F&HDC, ABC, NE and the AONB Unit. It was agreed, that beyond the area shown in Appendix 12-3 Figure 1 the proposed Development, taking into consideration anticipated building heights and the distances they would be reasonably perceptible from, would not result in significant effects on landscape character and visual amenity.

12.2.168 Field survey work in preparation for this assessment was carried out over several days under differing weather conditions, and times of day between summer 2016 and winter 2018/19 and included visits to the Site, known viewpoints and designated landscapes, and travel around the Study Area and across a wider area to consider potential effects on landscape character and on views.

Methodology for Establishing Baseline Conditions

12.2.169 The methodology for this assessment is based upon on the guidance set out in *GLVIA3*.

12.2.170 The guidance contained within *GLVIA3* is not prescriptive but seeks to establish certain principles that would help to achieve a degree of consistency with regard to the production of LVIAs. The process of landscape and visual assessment uses a combination of quantitative and qualitative considerations involving the use of structured, informed and reasoned professional judgement.

12.2.171 The assessment includes a combination of objective and subjective judgements. To avoid making assumptions regarding people's expected responses, subjective judgements are avoided where possible, focussing instead upon what objectively would be experienced. Inevitably subjective professional judgment does have to be applied as part of the assessment process.

12.2.172 The key steps in the methodology for assessing landscape and visual effects has been as follows:

- Baseline: this involved the gathering of documented information; site visits and initial reports to client of issues that may need to be addressed within the design, and included:
  - determining the area over which the development will be visible was established through creation of a ZTV;
  - analysing the existing landscape character baseline of the study area, the overall landscape resource, and identifying landscape character receptors that are the components of this; and
  - recording the visual baseline in terms of the different groups of people who may experience views of the development (the visual receptors) and the nature of their existing views and visual amenity.
- Design: input into the planning of the Development including the scheme layout, land-use, open space proposals, structural landscape proposals, and the embedded design, mitigation and enhancement measures.
- Assessment: involved an assessment of the landscape and visual effects of the scheme, requiring site-based work and the completion of a full report and supporting graphics, including:
  - selecting viewpoints in consultation with F&HDC, ABC, NE and AONB Unit, to be representative of these visual receptors, and photographs from them were collected in both winter (the worst-case) and summer months;
  - using a worst-case scenario of winter views, the likely effects on the landscape character and visual receptors were identified with reference to the sensitivity of the receptor (its susceptibility and value) and magnitude of change (a combination of the scale of impact, geographical extent and duration/reversibility); and
  - determining whether the effects were 'significant' or 'not significant'.

Alignment of Effects

12.2.173 The effects identified in this assessment have been described as:

- direct: caused by activities which are an integral part of the Proposed Development resulting in a change in environmental conditions;
- indirect: due to activities that affect an environmental condition or receptor, which in turn affects other aspects of the environment or receptors; or
- cumulative: comprising multiple effects from different sources within the Proposed Development, or in-combination with other developments on the same receptor(s).

Landscape Resource & Visual Amenity

12.2.174 The landscape resource describes areas and places which have evolved over time and the inherent features which give them their distinctive character. Visual amenity is a linked but separate resource which considers the views experienced by people within the landscape resource.

12.2.175 The ZTV shown on Appendix 12-3 Figure 10 is an indication of the area within which the proposed Development may be visible considering existing topography (the terrain model is derived from LiDAR elevation data at 1m resolution supplemented with OS 5 Terrain data) and principal woodland vegetation (using the *National Forest Inventory* (Ref 12-23): broad leaved, coniferous and mixed categories -15m height, young trees - 10m height). Actual visibility on the ground would be noticeably less than indicated by the ZTV as it cannot reflect the obstructing influence of non-woodland vegetation (tree belts, hedgerows, shelter belts, domestic vegetation) or buildings. Additionally, the ZTV does not reflect the extent to which visibility reduces with distance from the Development.

12.2.176 The ZTV is calculated using the building heights of the proposed Development indicated on Parameter Plan 06- *OPM(P)1013 –Building Heights* from a viewing height of 2.0m above ground level. A 200m by 200m grid was placed over this and the heights of proposed built form at the intersections of these was then used. No change was recorded where the grid intersections fall within areas of proposed open space.

Forecasting the Future Baseline

12.2.177 The baseline described in this assessment is that which currently exists on the Site and in its surrounds at the present time. It is acknowledged, however, that given the length of time which would elapse before the Development is completed, the baseline conditions of these areas may change during that period, irrespective of the Development occurring. As such, a future baseline for each of the points in time that the Development has been assessed upon (known as the Development Case) has also been forecast – this is known as the Base Case. The points in time that this assessment addresses are:

- Current baseline (2018);
- Future baseline (2020) – predicted start of construction;
- Peak building year (2029);
- Year of completion (2044); and
- 15 years following completion, when structural planting implemented as part of the development is anticipated to have properly established (2059).

Preparation of Visualisations

12.2.178 Visualisations from the five locations along the North Downs escarpment that were agreed with stakeholders are and whose location is shown on Appendix 12-3 Figure 11 have been prepared to aid the assessment of the visual effect of the proposed development.

12.2.179 These and were created using site photography, a DTM (Digital Terrain Model) and a 3D block model of the development. The methodology used to prepare them complies with the current LI advice notes upon the use of photography and photomontage in LVIAs (Ref 12-24) (and their newer emerging note 2018 (Ref 12-25)) and the visual representation of development proposals (Ref 12-26).

<u>Photography</u>

12.2.180 Photographs were taken with a Canon 5D MKIII SLR camera (full frame sensor) with a fixed focal length 50mm lens (35mm film equivalent). Photographs were taken on a levelled tripod 1.50m above

ground level and viewpoints were located using a handheld global positioning system (GPS) unit. A compass bearing was taken as close to the centre of each panorama as possible. A 50% (20 degree) overlap was used between each frame.

Photomontage and Wireline Work

12.2.181 Panoramas were created using PTGui software which corrected the individual frames for barrel distortion and cylindrical projection. These frames are then spliced together digitally with a 50% overlap to produce the final 90 degree horizontal field of view baseline panoramic image.

12.2.182 AutoCAD polylines of the proposed development blocks and areas of proposed 'advance' and other structural planting (see paragraphs 12.4.16 to 12.4.18) for the three assessment periods (indicating the different levels of maturity of the planting at each stage) were then 'draped' onto a surface ground model (created using OS Terrain 5 DTM data). Each development block was then extruded to the maximum height from ground level as indicated on Parameter Plan OPM(P)1013 Building Heights. Resoft Windfarm R4 was used to create the wirelines using the photomontage module to accurately locate the proposals. 3DS Max software was then used to render the blocks and the final images were edited using Adobe Photoshop.

12.2.183 The development and structural planting blocks were accurately positioned over the photograph and masked out where they were hidden by existing intervening vegetation, buildings or topography. The 90 degree baseline image (cylindrical projection) was used as the base image for the photomontages. Once the photomontages were completed, 53.5 degree extracts were then cropped out of the 90 degree photomontage and resized to 820 x 260mm and then re-projected to planar projection using Hugin software.

12.2.184 The baseline photographs (with an image size of 820 x 130mm) and wirelines (Appendix 12-3 Figure 41, 45, 49, 53 and 57), and the completed photomontage images (Appendix 12-3 Figure 42-44, 46-48, 50-52, 54-56 and 58-60) are displayed with the relevant geographical and technical data on 841 x 297mm (A3 landscape height and A1 landscape length) sheets to comply with the current LI guidelines.

Defining the Importance/Sensitivity of the Resource

The Landscape Character Resource

12.2.185 Given that this assessment forms part of an outline planning application, and that, should permission be granted, further 'reserved matter' or detailed planning applications are likely to be required before the proposed Development could be implemented, this assessment considers the effects to the overall landscape resource in terms of effects upon those LCAreas (including their key landscape components, characteristics, and perceptual and aesthetic qualities) containing and surrounding the Study Area. An assessment of the effects on the finer grained physical landscape fabric of individual potential development plots of the Site and its surrounds (i.e. individual hedgerows, trees, fieldscapes) may be necessary as part of future 'reserved matter' or detailed planning applications.

Nature of Landscape Receptors (Sensitivity)

12.2.186 GLVIA3 (paragraph 3.26) states that the sensitivity of the landscape character resource, and the receptors identified to be representative of this, should be determined by consideration of the '*susceptibility*' of the receptor (to the change proposed) with the receptor's relative '*value*', i.e.:

Landscape Sensitivity = Landscape Susceptibility + Landscape Value

Landscape Receptor Susceptibility

12.2.187 '*Susceptibility*' is defined in GLVIA3 (paragraph 5.40) as "*the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular type or area, or an individual element and/or feature, or a particular aesthetic and perceptual aspect) to accommodate the proposed Development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies*."

12.2.188 Reasoned professional judgements on the '*susceptibility*' of landscape receptors are recorded as '*high*', '*moderate*' or '*low*', as set out in indicative definitions within Table 12-4.

Table 12-4 Susceptibility of Landscape Receptors

Susceptibility (indicative)	Description
High	The landscape receptor is less able to accommodate the development proposed without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape offer limited opportunities for accommodating the change without key characteristics being fundamentally altered, leading to a different landscape character.
Moderate	The landscape receptor is partly able to accommodate the proposed Development without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape offer some opportunities for accommodating the change without key characteristics being fundamentally altered.
Low	The landscape receptor is more able to accommodate the proposed Development without undue negative consequences to the baseline situation. Attributes that make up the character of the landscape are resilient to being changed by the development proposed.

12.2.189 The '*susceptibility*' that is determined is not absolute and relates to the type of change that is proposed. As a particular landscape receptor may exhibit differing levels of '*susceptibility*' a narrative commentary is provided, to describe and justify the indicative grading levels ascribed to that or the intermediate grading between them. Where intermediate ratings are given, e.g. 'Low/Moderate', this indicates a grading that is both less than 'Moderate' and more than 'Low', rather than one which varies across the range.

Landscape Receptor Value

12.2.190 In contrast to '*susceptibility*', the categorisation of landscape '*value*' of a landscape receptor relates purely to its existing baseline, and as such is independent of any development proposal.

12.2.191 'Value' is defined in the GLVIA3 (paragraph 5.19) as "*…the relative value that is attached to different landscapes by society, bearing in mind that a landscape may be valued by different stakeholders for a whole variety of reasons…*"

12.2.192 It goes on to state that "*A review of existing landscape designations is usually the starting point in understanding landscape value, but the value attached to undesignated landscapes also needs to be carefully considered and individual elements of the landscape- such as trees, buildings or hedgerows - may also have value. All need to be considered where relevant.*"

12.2.193 Paragraph 5.20 of GLVIA3 indicates information which might contribute to landscape value and includes:

- information about areas recognised by statute such as Areas of Outstanding Natural Beauty;
- local planning documents for local landscape designations;
- information on features such as Conservation Areas, listed buildings, historic or cultural sites;
- art and literature, identifying value attached to particular areas or views;
- material on landscapes of local or community interest, such as local green spaces, village greens or allotments; and
- any evidence that indicates whether the landscape has particular value to people that would suggest that it is of greater than community value.

12.2.194 Taking these into account the relative landscape value of each landscape receptor has been determined using the eight criteria identified within paragraph Box 5.1 of GLVIA 3. The value of each criterion has been graded as '*High*', '*Moderate*' or '*Low*'. The criteria and value grades are described in turn below. These accord to the methodology set out within the SDC-HLLA:

- Landscape quality/condition

Described in GLVIA3 as: "A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements."

  - High – landscape is in good condition with intact elements that are well-managed.

- Moderate – landscape is in fair condition with some intact elements and signs of good management practices.
- Low – landscape is in poor condition with few intact elements and limited signs of management.

- Scenic quality;

Described in GLVIA3 as: "The term used to describe landscapes that appeal primarily to the senses (primarily, but not wholly the visual senses)."

- High – landscape is of high scenic quality, usually recognised in some form of landscape designation (local or national).
- Moderate – landscape is of moderate scenic quality.
- Low – landscape is of a low scenic quality.

- Rarity of particular elements/features;

Described in GLVIA3 as: "The presence of rare elements or features in the landscape or the presence of a rare character type."

- High – landscape has several rare elements or is of a rare character type.
- Moderate – landscape has a few rare elements or characteristic.
- Low – landscape has no rare elements or characteristics.

- Representativeness

Described in GLVIA3 as: "Whether the landscape contains a particular character and/or features or elements which are considered particularly important examples."

- High – landscape which displays most of the characteristics of its corresponding LCArea.
- Moderate – landscape which displays some of the characteristics of its corresponding LCArea.
- Low – landscape which displays few or none of the characteristics of its corresponding LCArea.

- Conservation interest;

Described in GLVIA3 as: "The presence of features of wildlife, earth science or archaeological or historical and cultural interest can add to the value of the landscape as well as having value in their own right."

- High – landscape has several different conservation interests, often of national or international importance.
- Moderate – landscape has some conservation interests, often of regional or local importance.
- Low – landscape has few or no conservation interests.

- Recreation value;

Described in GLVIA3 as: "Evidence that the landscape is valued for recreational activity where experience of the landscape is important."

- High – landscape is highly valued for recreation, likely to have many public rights of way and potentially including some national trails or national cycle routes and/or a well-used destination public open space.
- Moderate – landscape is locally valued for recreation, likely to have public rights of way, and local or neighbourhood public open spaces.
- Low – landscape is not greatly valued for recreation and is likely to be lacking in public rights of way or public open space.

- Perceptual aspects;

Described in GLVIA3 as: "A landscape may be valued for its perceptual qualities, notably wildness and/or tranquillity".

- High – landscape is aesthetically pleasing, devoid of human influence, tranquil and/or remote and has a strong sense of place.
- Moderate – landscape has a sense of being aesthetically pleasing, devoid of human influence, tranquil and/or remote and has a sense of place.
- Low – landscape has very few positive perceptual qualities and lacks a sense of place.

- Cultural associations.

Described in GLVIA3 as: "Some landscapes are associated with particular people, such as artists or writers, or events in history that contribute to perceptions of the natural beauty of the area."

- High – landscape has strong associations with people, literature or historic events that link directly with the characteristics and landscape elements/features of the area (e.g. The Bronte sisters with the Yorkshire Moors).
- Moderate – landscape has associations with people, literature or historic events that link with the characteristics and landscape elements of the area but do not necessarily rely solely on them (e.g. H.G. Wells with Sandgate).
- Low – landscape has no associations that link with the characteristics and landscape elements/features of the area.

12.2.195 Based upon the consideration of each criterion set out above a reasoned professional judgement is made as to what the relative overall '*value*' of each landscape receptor is: '*High*', '*Moderate'* or '*Low*' or, where necessary, intermediate grades between these. Where intermediate ratings are given, e.g. 'Low/Moderate', this indicates a grading that is both less than 'Moderate' and more than 'Low', rather than one which varies across the range. As a particular landscape receptor may exhibit differing levels of '*value*' a narrative commentary is provided to describe and justify the indicative grading level ascribed to that.

Overall Landscape Receptor Sensitivity

12.2.196 The values for '*susceptibility*' and '*value*' are then considered together, by use of reasoned professional judgement, to derive an overall '*sensitivity*' for each receptor – graded as per the criteria set out in Table 12-5 below.

12.2.197 The '*sensitivity*' that is determined is not absolute and relates to the type of change that is proposed. As a particular landscape receptor may exhibit differing levels of '*sensitivity*' a narrative commentary is provided, to describe and justify the indicative grading levels ascribed to that or the intermediate grading between them. Where intermediate ratings are given, e.g. 'Low/Moderate', this indicates a grading that is both less than 'Moderate' and more than 'Low', rather than one which varies across the range.

Table 12-5 Sensitivity of Landscape Receptors

		Value of the Landscape Receptor (indicative)		
		High	Moderate	Low
Susceptibility to Change	High	High	Moderate/High	Moderate
	Moderate	Moderate/High	Moderate	Moderate/Low
	Low	Moderate	Moderate/Low	Low

The Visual Resource

12.2.198 This assessment is concerned with the potential effects that may occur to the visual amenity of specific groups of people (the receptors) within the study area as a result of the proposed Development. This includes groups such as residents, those in their place of work, those traveling through the study area, and recreational users of publicly accessible areas etc. The assessment of effects on settlements focuses on the visual amenity of users of public spaces and streets, though views from groups of dwellings will also be noted in the descriptions.

12.2.199 The visual assessment determines the significance of change in visual amenity experienced by consideration of the nature of the visual receptors (sensitivity) and the nature of the impact (magnitude of change) upon them.

12.2.200 The method of determining visual effects is ostensibly the same as for landscape effects. The nature of the receptor affected is identified, as is the nature of the impact that would occur. These can then be considered together to identify the significance of effect.

12.2.201 A key part of the visual assessment is the assessment of effects from predetermined viewpoints, which reflects views of the proposed Development that would be experienced by different receptors.

12.2.202 It should be reiterated that the viewpoint itself is not the receptor; rather it is the people that would be experiencing the view from the viewpoint. These people will generally have different responses to a change in view depending upon their location, the activity they are following and other factors, including the weather and time of day/year.

12.2.203 Viewpoints fall into three categories, as set out in the GLVIA3:

- representative viewpoints (which represent the experience of different types of receptors in the vicinity);
- specific viewpoints (a particular view, for example a well-known beauty spot);
- illustrative viewpoints (which illustrate a particular effect/issue, which may include limited/lack of visibility).

Nature of Visual Receptors (Sensitivity)

12.2.204 GLVIA3 states that the nature of visual amenity receptors, commonly referred to as their sensitivity, should be assessed in terms of the combination of the susceptibility of the receptor (to the type of change proposed) with the value attached to the receptor.

Visual Amenity Sensitivity = Visual Amenity Susceptibility + Visual Amenity Value

Visual Receptor Susceptibility

12.2.205 As described in GLVIA3, the susceptibility of visual receptors to changes in visual amenity is a function of the "*occupation or activity of people experiencing the view*" and "*the extent to which their attention is focussed on the views and visual amenity the experience at particular locations.*" Drawn from the guidance within GLVIA3 this is recorded as 'high', 'moderate' or 'low' according to Table 12-6. or, where necessary, intermediate grades between these. Where intermediate ratings are given, e.g. 'Low/Moderate', this indicates a grading that is both less than 'Moderate' and more than 'Low', rather than one which varies across the range. As a particular landscape receptor may exhibit differing levels of '*susceptibility*' a narrative commentary is provided to describe the reasoned professional judgement used to justify the indicative grading level ascribed to that.

Table 12-6 Susceptibility of Visual Receptors

Susceptibility (indicative)	Description
High	People engaged in outdoor recreation, whose attention/interest is likely to be focused on the landscape or particular views, including from public rights of way; Visitors to heritage assets or other attractions, where views of the surroundings are an important contributor to the experience; Communities where views contribute greatly to the landscape/townscape setting enjoyed by residents.
Moderate	People engaged in outdoor recreation, whose attention/interest is not directly linked to the landscape or particular views, and who are not upon public rights of way. Communities where views contribute moderately to the landscape/townscape setting enjoyed by residents; Travellers on road, rail, or other transport routes.
Low	People engaged in outdoor sport/recreation which does not involve or depend upon appreciation of views of the landscape; Communities where views contribute little to the landscape/townscape setting enjoyed by residents; People at their place of work whose attention may be focused on their work/activity and not their surroundings.

Visual Receptor Value

12.2.206 GLVIA3 (paragraph 6.3.7) suggests that when considering the value of a view experienced, that account should be taken of recognition of the:

- "value attached to particular views, for example in relation to heritage assets, or through planning designations.
- Indicators of the value attached to views by visitors, for example through appearances in guidebooks or on tourist maps, provision for their enjoyment (such as parking places, sign boards and interpretative material) and references to them in literature or art … ."

12.2.207 Drawn from the guidance within GLVIA3 this is recorded as 'high', 'medium' or 'low' according to Table 12-7. The 'sensitivity' that is determined is not absolute and relates to the type of change that is proposed. As a particular landscape receptor may exhibit differing levels of 'value' a narrative commentary is provided, to describe the professional judgement used to justify the indicative grading levels ascribed to that or the intermediate grading between them. Where intermediate ratings are given, e.g. 'Low/Moderate', this indicates a grading that is both less than 'Moderate' and more than 'Low', rather than one which varies across the range.

Table 12-7 Value of Visual Receptors

Value (indicative)	Description
High	Views experienced by receptors are widely-known, well frequented and/or promoted as a beauty spot/visitor destination. The cultural associations of the visual experience are recognised in art, literature or other media. The view relates to the experience of other features, for example heritage assets.
Moderate	Views experienced by receptors, whilst they may be valued locally, are not widely-known. The views experienced have no strong cultural association.
Low	Views experienced by receptors have little/no recognised value. The public are unlikely to visit to experience the views available.

Overall Visual Receptor Sensitivity

12.2.208 The values for '*susceptibility*' and '*value*' are then considered together, by use of reasoned professional judgement, to derive an overall sensitivity for each receptor – graded as per the criteria set out in Table 12-8 below.

The '*sensitivity*' that is determined is not absolute and relates to the type of change that is proposed. As a particular landscape receptor may exhibit differing levels of '*sensitivity*' a narrative commentary is provided, to describe and justify the indicative grading levels ascribed to that or the intermediate grading between them. Where intermediate ratings are given, e.g. 'Low/Moderate', this indicates a grading that is both less than 'Moderate' and more than 'Low', rather than one which varies across the range.

Table 12-8 Sensitivity of Visual Receptors

		Value of the Visual Receptor (indicative)		
		High	Moderate	Low
Susceptibility to Change	High	High	Moderate/High	Moderate
	Moderate	Moderate/High	Moderate	Moderate/Low
	Low	Moderate	Moderate/Low	Low

Methodology for Assessing Impacts and Effects

Methodology for Assessing Landscape Effects`

Landscape Impact Characterisation

12.2.209 The impact characterisation, or as it is referred to in GLVIA3 - the 'magnitude of change', on each landscape receptor is reported in terms of the combination of its 'size and scale', 'geographical extent', 'duration and reversibility'. The indicative grading for each is described below:

- Scale: For landscape receptors, the size/scale of change depends on the degree to which their key characteristics are altered, removed, or added to.
  - *Large*: Very obvious/intensive change to the balance of existing valued landscape characteristics, with a resulting change in overall character.
  - *Medium*: Obvious change to some of the key valued characteristics, but overall character does not fundamentally change.
  - Small: Unremarkable change to key valued characteristics; and/or little/no change upon the overall character.
- Geographic Extent: The geographical extent over which the landscape impact will be felt is described as being:
  - *Large*: the majority of the landscape receptor experiences notable change.
  - *Moderate*: a moderate degree of the landscape receptor experiences notable change.
  - *Small*: little-to-none of the landscape receptor experiences notable change.
- Duration and Reversibility: The duration relates to the length of time for which the visual change would be experienced:
  - *Permanent* – the change is expected to be permanent and there is no intention for it to be reversed.
  - *Long-term* – the change is expected to be in place for 10-30 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.
  - *Medium-term* – the change is expected to be in place for 5-10 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.
  - *Short-term* – the change is expected to be in place for 0-5 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.

12.2.210 Most changes will be long-term or permanent; however medium or short-term changes may be identified where mitigation planting is proposed or local factors will result in a reduced duration of change (for example where maturing woodland will screen views in future).

The three factors of '*scale*', *'geographic extent*' and '*duration and reversibility*' are then considered together to derive an overall magnitude of change for each receptor - based on the indicative grading set out in Table 12-9, based on from the guidance within GLVIA3. The reasoned professional judgement considers the distribution of grading for each criterion to make an informed assessment of the overall level of each change.

Table 12-9 Magnitude of Change upon Landscape Receptors

Magnitude of Change (indicative)	Description
Very Large	A fundamental change, often long-term and irreversible, in the make-up and balance of all of the receptor's key landscape components, characteristics, and perceptual and aesthetic qualities over its entire geographic area – insofar that a totally new character for the area is composed, after taking into account the proposed embedded design, mitigation and enhancement measures.
Large	An obvious change, often medium to long-term and mostly irreversible, in the make-up and balance of the majority of the receptor's key landscape components, characteristics, and perceptual and aesthetic qualities over an extensive proportion of its geographic area, – insofar that the integral character of the area is compromised, after taking into account the proposed embedded design, mitigation and enhancement measures.
Moderate	A change, sometimes medium-term and partially reversible, in in the make-up and balance of some of the receptor's key landscape components, characteristics, and perceptual and aesthetic qualities, which, whilst notable, does not alter the overall form of these, across a moderate degree of its geographic area, after taking into account the proposed embedded design, mitigation and enhancement measures.
Small	A change, sometimes short to medium-term and reversible, to a few of the receptor's key landscape components, characteristics, and perceptual and aesthetic qualities, over a small proportion of its geographic area, after taking into account the proposed embedded design, mitigation and enhancement measures.
Very Small	A small change, sometimes short-term and fully reversible, in a few of the receptor's key landscape components, characteristics, and perceptual and aesthetic qualities, over a negligible proportion of its geographic area, after taking into account the proposed embedded design, mitigation and enhancement measures
None	No perceptible change to the receptor's key landscape components, characteristics, and perceptual and aesthetic qualities, after taking into account the proposed embedded design, mitigation and enhancement measures

12.2.211 The criteria levels outlined in the tables above are indicative only. In all cases, a narrative commentary is provided as part of this assessment, to describe and justify the criteria levels ascribed to each receptor. In line with the GLVIA3 no numerical or formal weighting system was not applied. Where variations between relevant criteria occur, reasoned professional judgement is applied and described in the assessment to determine the magnitude of change.

Direction of Landscape Effects

12.2.212 The direction of landscape effects is judged to be positive (beneficial) and/or negative (adverse) or neutral in their consequences for the receptor's key landscape components, characteristics, and perceptual and aesthetic qualities.

12.2.213 The determination of the direction of effect on a landscape receptor is related to the baseline situation and what is considered to be by that receptor, on balance, either a desirable or an undesirable change. As this can vary from person to person, professional judgement has (by necessity) been applied to consider such a subjective matter. As noted in GLVIA3 (paragraph 2.15) this is a "*particularly challenging*" aspect of the LVIA process, particularly in the context of a changing landscape and sustainable development.

12.2.214 As there are likely to be both positive and negative impacts identified upon a receptor the assessment has sought to both list these and make a reasoned professional judgement upon the overall balance between them to determine the overriding direction of effect. For example, a current detracting feature within the landscape may be removed by the development of new built form that is more appropriate to the character of the area, but more extensive. This would therefore have both beneficial and adverse effects. The assessment seeks to identify the resultant direction, positive or negative, after weighing both aspects up. Should they be equal in weight a 'neutral' direction of effect is recorded.

12.2.215 This decision is entirely separate to the decision regarding the significance of effect. For example, a rating of 'major' and 'adverse' would indicate an effect that was of great significance and on balance negative, but not necessarily that the proposals would be majorly negative. As such the narrative text within this assessment that accompanies any judgement on the effect of the development upon a particular receptor must be also read and understood.

Assessing Significance of Landscape Effects

12.2.216 The significance of an effect, whether adverse or beneficial, will be assessed by comparing the sensitivity of the receptor relative to the magnitude of change, and by considering the indicative criteria set out in Table 12-10, based upon the guidance within GLVIA3.

12.2.217 What constitutes a significant landscape effect, and what is the meaning of a significant landscape effect' is without specific definition in any related guidance, including the GLVIA3. The GLVIA3 however requires the process of the assessment of significance to be clearly defined for each project and for this to be expressed as transparently as possible. In paragraph 3.32 (and reiterated in paragraphs 5.56) it identifies that:

> "*There are no hard and fast rules about what effects should be deemed 'significant' but LVIAs should always distinguish clearly between what are considered to be significant and non-significant effects… .*"

12.2.218 Significance should therefore only be defined in relation to each particular development and its specific location.

Table 12-10 Landscape Effects Significance Criteria

Landscape Effect (indicative)	Description
Major	An adverse or beneficial very large change to a landscape receptor of high sensitivity after embedded design, mitigation and enhancement measures have been taken into account.
Moderate	An adverse or beneficial medium degree of change to a landscape receptor of moderate sensitivity after embedded design, mitigation and enhancement measures have been taken into account. An adverse or beneficial small degree of change to a landscape receptor of high sensitivity after embedded design, mitigation and enhancement measures have been taken into account. An adverse or beneficial large degree of change to a landscape receptor of low sensitivity, after embedded design, mitigation and enhancement measures have been taken into account.
Minor	An adverse or beneficial very small degree of change to a landscape receptor of low sensitivity, after embedded design, mitigation and enhancement measures have been taken into account
Negligible/None	Little or no perceived change to a landscape receptor despite its sensitivity, after embedded design, mitigation and enhancement measures have been taken into account.

12.2.219 The criteria levels outlined in Table 12-10 and which are set out within the effect significance matrix (Table 12-11 are indicative only. In all cases, a narrative commentary is provided as part of the LVIA, to describe and justify the levels ascribed to each landscape receptor whether they adhere to the criteria listed in Table 12-10 or to criteria between these. While the methodology is designed to be robust and transparent, reasoned professional judgement is ultimately applied to determine the significance of each effect In line with the GLVIA3, no numerical or formal weighting system has been applied during this process.

12.2.220 The significance ratings indicate a 'sliding scale' of the relative importance of the landscape effect, with 'Major' being the most important and 'Minor' being the least. Effects that are towards the higher level of the scale (Major) are those judged to be most important, whilst those towards the bottom of the scale are '*of lesser concern*' (GLVIA3 paragraph 3.35).

12.2.221 Where intermediate ratings are given, e.g. 'Moderate/Minor', this indicates an effect that is both less than 'Moderate' and more than 'Minor', rather than one which varies across the range. In such cases, the rating given first means that the impact is closer to that rating.

12.2.222 Landscape effects that are shown above the dashed line in Table 12-11are considered '*significant*' insofar that a fundamental alteration to a receptor's key landscape components, characteristics, and perceptual and aesthetic qualities, would occur, which negatively (or positively) and irreversibly (after taking into account the embedded design, mitigation and enhancement measures) alters it's overall integral character. This could include small but critical changes to very highly sensitive landscapes, but could also be comprehensive changes to areas with more limited landscape sensitivity. Where the significance of the landscape effect is considered to be 'moderate' reasoned professional judgement is used to determine whether or not this is significant.

Table 12-11 Landscape Effect Significance Scale

		Sensitivity of the Receptor (indicative)		
		High	Moderate	Low
Magnitude of Change	Very Large	Major	Major/ Moderate	Moderate/ Major
	Large	Major/ Moderate	Moderate/ Major	Moderate
	Moderate	Moderate/ Major	Moderate	Moderate/ Minor
	Small	Moderate	Moderate/ Minor	Minor/ Moderate
	Very Small	Moderate/ Minor	Minor/ Moderate	Minor
	Negligible/None	Minor/ Moderate	Minor	None

12.2.223 Those landscape effects that fall beneath the dashed line are considered to be '*not-significant*'. This does not mean, however, that they have been disregarded within the planning of the proposed Development or should be disregarded from the planning decision making process.

Methodology for Assessing Effects on Visual Amenity

Visual Impact Characterisation

12.2.224 The impact characterisation, or as it is referred to in GLVIA3 - the 'magnitude of change', on each visual receptor is reported in terms of the combination of its 'scale', 'geographical extent', and 'duration and reversibility'.

12.2.225 The representative viewpoints agreed and selected with the F&HDC, NE and AONB unit are used as the most open examples or 'samples' on which to base judgements of the magnitude of change on visual receptors. Many of these viewpoints have been chosen to represent different types of visual receptor (e.g. users of a PRoW and users of a public Highway, users of a PRoW and users of Open Access Land, or users of a recreation ground and those using an existing settlement).

12.2.226 With the exception of specific viewpoints, each route, settlement or location will encompass a range of possible views, which might vary from no view of the development to very clear, close views. Therefore, changes are described in such a way as to identify where views towards the development are likely to arise and what the scale, duration and extent of those views are likely to be. In some cases, this will be further informed by a nearby viewpoint and in others it will be informed with reference to the ZTV, aerial photography and site visits. Each of these individual changes are then considered together in order to reach a judgement of the impact on the visual receptors along that route, or in that place.

Scale

12.2.227 This takes into account the loss or addition of features in the view and changes in the composition of the view including the proportion of the view occupied by the proposed Development. It also considers

the degree of contrast or integration of any new features, embedded design, mitigation and enhancement measures, or changes in the landscape scene with the existing or remaining landscape elements and characteristics in terms of form, scale and mass, line, height, colour and texture is also considered.

Geographic Extent

12.2.228 This takes into account the: general angle(s) of view in relation to the main activity of the receptor (i.e. whether it is direct or oblique); the general proximity of the receptor to the proposed Development i.e. are they within the Site, localised/close range - 0-2km; intermediate/ medium range – 2-5km; wide/long range - beyond 5km); the overall geographic extent of area, or length of route, over which the changes would be visible to visual receptors; and whether views would be full, partial or glimpses.

Duration & Reversibility

12.2.229 The duration relates to the length of time for which the visual change would be experienced:

- Permanent – the change is expected to be permanent and there is no intention for it to be reversed.
- Long-term – the change is expected to be in place for 10-30 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.
- Medium-term – the change is expected to be in place for 5-10 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.
- Short-term – the change is expected to be in place for 0-5 years and will be reversed, fully mitigated or no longer occurring beyond that timeframe.

12.2.230 Most changes will be long-term or permanent; however medium or short-term impact may be identified where mitigation planting is proposed or local factors will result in a reduced duration of change (for example where maturing woodland will screen views in future).

12.2.231 The three factors of 'scale', 'geographic extent' and 'duration and reversibility' are then considered together to derive an overall magnitude of change for each receptor - based on the indicative grading set out in Table 12-12 below, drawn from the guidance within GLVIA3. The reasoned professional judgement considers the distribution of grading for each criterion to make an informed professional assessment of the overall magnitude of change.

Table 12-12 Magnitude of Change upon Visual Receptors

Magnitude of Change (indicative)	Description
Very Large	Where there would be a fundamental change in the character, and an entire change to the make-up and balance of the visual experience, and where the proposals become the dominant, and controlling feature to which all other elements become subordinate, after taking into account the proposed embedded design and mitigation and enhancement measures. Typically involves direct views at close range over a wide horizontal and vertical extent.
Large	Where the proposals would be the immediately apparent and prominent (but not wholly dominating) element of the visual experience, where they would considerably alter (but not entirely change) the balance and make-up of views, after taking into account the proposed embedded design, mitigation and enhancement measures. Typically involves direct or oblique views at close range with notable changes over the horizontal and vertical extent.
Moderate	Where proposals would form a visible, distinct and recognisable change in views, but where the balance and make-up of the visual experience is only affected moderately, after taking into account the proposed embedded design, mitigation and enhancement measures. This may lead to an overall change in the nature of the view depending upon the type and nature of change. Typically involves direct or oblique views at medium range with a moderate horizontal and/or vertical extent of the view affected.
Small	Where proposals would be visible as a new feature, but where the change would be limited and not alter the balance and make-up of the visual experience as a whole, and would constitute only a small component of wider views, where awareness of it does not affect the overall experience of the scene, after taking into account the proposed embedded design, mitigation and enhancement measures. Typically involves an oblique view at medium or long range or a direct view at long range with a small horizontal/vertical extent of the view affected.
Very Small	Where only a very small part of the development is discernible or that it is at such a distance that the changes are scarcely appreciated, after taking into account the proposed embedded design, mitigation and enhancement measures.
Negligible/None	The change in the view is non-existent, imperceptible or difficult to discern, after taking into account the proposed embedded design, mitigation and enhancement measures.

12.2.232 The criteria levels outlined in the tables above are indicative only. In all cases, a narrative commentary is provided as part of this assessment, to describe and justify the criteria levels ascribed to each visual receptor. In line with the GLVIA3 no numerical or formal weighting system was not applied. Where variations between relevant criteria occur, reasoned professional judgement is applied and described in the assessment to determine the magnitude of change.

Direction of Visual Effects

12.2.233 The direction of a visual effect is judged to be positive (beneficial) and/or negative (adverse) or neutral in their consequences for the receptor's visual amenity.

12.2.234 The determination of the direction of effect on a visual receptor is related to the baseline situation and what is considered to be by that receptor, on balance, either a desirable or an undesirable change. For this reason, professional judgement has (by necessity) been applied to consider such a subjective matter. As noted in GLVIA3 (paragraph 2.15) this is a "*particularly challenging*" aspect of the LVIA process, particularly in the context of a changing landscape and sustainable development.

12.2.235 As there are likely to be both positive and negative impacts identified upon a receptor the assessment has sought to both list these and to make a reasoned professional judgement upon the overall balance between them to determine the overriding direction of effect. For example, a current detracting feature within the landscape may be removed by the development of new built form that is more beneficial to the amenity of a visual receptor, but more extensive in that view. This would therefore have both beneficial and adverse effects. The assessment seeks to identify the resultant direction, positive or negative, after weighing both aspects. Should they be equal in weight a '*neutral*' direction of effect is recorded.

12.2.236 This decision is entirely separate to the decision regarding the significance of effect. For example, a rating of 'major' and 'adverse' would indicate an effect that was of great significance and on balance negative, but not necessarily that the proposals would be majorly negative. As such the narrative text within this assessment that accompanies any judgement must be also read and understood.

Assessing Significance of Visual Effects

12.2.237 The significance of an effect, whether adverse or beneficial, will be assessed by comparing the sensitivity of the receptor relative to the magnitude of change, and by considering the indicative criteria set out in Table 12-13.

12.2.238 What constitutes a significant visual effect and what is the meaning of a significant visual effect is without specific definition in any related guidance, including the GLVIA3. The GLVIA3 however requires the process of the assessment of significance to be clearly defined for each project and for this to be expressed as transparently as possible. In paragraph 3.32 (and reiterated in paragraphs 6.44) it identifies that:

> "*There are no hard and fast rules about what effects should be deemed 'significant' but LVIAs should always distinguish clearly between what are considered to be significant and non-significant effects… .*"

12.2.239 Significance should therefore only be defined in relation each particular development and its specific location.

Table 12-13 Visual Effects Significance Criteria

Visual Effect (indicative)	Description
Major	An adverse or beneficial very large change to the amenity of a visual receptor of high sensitivity after embedded design, mitigation and enhancement measures have been taken into account.
Moderate	An adverse or beneficial medium degree of change to the amenity of a visual receptor of moderate sensitivity after embedded design, mitigation and enhancement measures have been taken into account. An adverse or beneficial small degree of change to the amenity of a visual receptor of high sensitivity after embedded design, mitigation and enhancement measures have been taken into account. An adverse or beneficial large degree of change to the amenity of a visual receptor of low sensitivity, after embedded design, mitigation and enhancement measures have been taken into account.
Minor	An adverse or beneficial very small degree of change to the amenity of a visual receptor of low sensitivity, after embedded design, mitigation and enhancement measures have been taken into account
Negligible	Little or no perceived change to the amenity of a visual receptor despite its sensitivity, after embedded design, mitigation and enhancement measures have been taken into account.

12.2.240 The criteria levels outlined in Table 12-13 and which are set out within the effect significance matrix (Table 12-14) are indicative only. In all cases, a narrative commentary is provided as part of this assessment, to describe and justify the levels ascribed to each landscape receptor whether they adhere to the criteria listed in Table 12-13 or to criteria between these. While the methodology is designed to be robust and transparent, reasoned professional judgement is ultimately applied to determine the significance of each effect. In line with the GLVIA3, no numerical or formal weighting system has been applied during this process.

Table 12-14 Visual Effect Significance

		Sensitivity of the Receptor (indicative)		
		High	Moderate	Low
Magnitude of Change	Very Large	Major	Major/ Moderate	Moderate/ Major
	Large	Major/ Moderate	Moderate/ Major	Moderate
	Moderate	Moderate/ Major	Moderate	Moderate/ Minor
	Small	Moderate	Moderate/ Minor	Minor/ Moderate
	Very Small	Moderate/ Minor	Minor/ Moderate	Minor
	Negligible/None	Minor/ Moderate	Minor	None

12.2.241 The significance ratings indicate a 'sliding scale' of the relative importance of the visual effect, with 'Major' being the most important and 'Minor' being the least. Effects that are towards the higher level of the scale (Major) are those judged to be most important, whilst those towards the bottom of the scale are 'of lesser concern' (GLVIA3 paragraph 3.35).

12.2.242 Where intermediate ratings are given, e.g. 'Moderate/Minor', this indicates an effect that is both less than 'Moderate' and more than 'Minor', rather than one which varies across the range. In such cases, the rating given first means that the impact is closer to that rating.

12.2.243 Effects that are shown above the dashed line in Table 12-14 Visual Effect Significance are considered 'significant' insofar that the Development proposals become the defining element in the receptors' visual experience, considering the particular aspects of their '*sensitivity*', and after taking into account the embedded design, mitigation and enhancement measures. This could include small but critical changes to the amenity of very highly sensitive visual receptors, but could also be comprehensive changes to that experienced by visual receptors with more limited sensitivity. Where the significance of the visual effect is considered to be '*moderate*' reasoned professional judgement is used to determine whether or not this is '*significant*'.

12.2.244 Those effects that fall beneath the dashed line are considered to be '*not-significant*'. This does not mean, however, that they have been disregarded within the planning of the proposed Development or should be disregarded from the planning decision making process.

Cumulative Impact Assessment Methodology

12.2.245 An assessment of cumulative effects concerns the additional effects of a proposed Development in conjunction with other development(s), and also with the combined effects of a series of developments when taken together, i.e. what are the additional effects of introducing development B into a context where development A is already present and, what are the combined effects of development A + B together.

12.2.246 The GLVIA3 affirms this by stating at paragraph 7.2 that cumulative landscape and visual effects are those which:

> "*…result from additional changes to the landscape or visual amenity caused by the proposed Development in conjunction with other development (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.*"

12.2.247 The GLVIA3, at paragraph 7.5, goes on to identify that:

> "*The challenge is to keep the task reasonable and in proportion to the mature of the project under consideration. Common sense has an important part to play in reaching agreement about the scope of the assessment. Where the competent authority and other stakeholders are uncertain about the preferred approach the landscape professional may have to exercise judgement about what is appropriate and be able to justify the approach taken. It is always important to remember that the emphasis in EIA is on likely significant effects rather than on comprehensive cataloguing of every conceivable effect that might occur… .*"

12.2.248 Whilst the non-cumulative part of this assessment has addressed the effects of introducing the proposed Development into a baseline scenario where other existing development (and development under construction) is present, the cumulative part of this assessment is concerned with the effects of the proposed Development based upon two further cumulative baseline scenarios:

- Other existing development (including development under construction) along with other development that has planning consent;
- The first baseline, along with other development that is the subject of a formal planning application and potentially major schemes that have 'allocation' within a development plan.

12.2.249 It is not typical to include development that is only at the development plan 'allocation;' or pre-planning application stages as there is generally a lack of information about such schemes, and uncertainty about their deliverability, and as such the implications of these types of development upon the

landscape and visual resource are not reasonably foreseeable. The GLVIA3 identifies that, in relation to the inclusion of such development:

> "*…there may be occasions where such schemes may be included in the assessment if the competent authority or consultation bodies consider this to be necessary. Such a request should only be made if absolutely necessary to make a realistic assessment of potential cumulative effects*… ." paragraph 7.14

12.2.250 The types of other development to consider within the cumulative part of this assessment, and also the geographical extent of the study area, will vary from project to project. The GLVIA3 identifies that:

> "*The baseline for the LVIA itself will include evidence about change that may affect the landscape in the future. There may therefore be some degree of overlap with the baseline for the cumulative effects assessment. The key is to ensure that the assessment is true to the spirit of the generic definition of cumulative effects in dealing with 'other past, present or reasonably foreseeable actions' but that it is again proportional and reasonable and focuses on likely significant effects*." Paragraph 7.15

12.2.251 Cumulative effects that haven been considered in relation to the proposed Development have included:

- An intensification of the effects of the Development resulting from an extension to it, or the introduction of another development;
- The 'filling' of the study area with development over time, such that it may substantially alter the landscape and/or views;
- The interaction between different developments, which may lead to a greater total effect than the sum of the effects of each development individually;
- Temporal effects of simultaneous or successive developments over a period of time;
- Indirect effects of the Development, such as enabling or disabling other development, which may lead to landscape and visual effects;

12.2.252 Cumulative landscape effects would involve additional and/or combined changes to the receptor's key landscape components, characteristics, and perceptual and aesthetic qualities. Whereas cumulative visual effects may be either:

- In combination - where two or more features are seen together at the same time from the same place, in the same arc of view, with their visual effects being combined;
- In succession - where two or more features are present in views from the same place but cannot be seen at the together because they are not in the same arc of view. As the arc of view experienced by the observer changes, the features become visible in succession;
- Sequential - where two or more features are not present in views from the same point on a route and cannot therefore, ever be seen at the same time even if the arc of view experienced by the observer changes. The observer must move to another point on the same route to see the second or more of them, so they will then appear in sequence. These sequential views may occur frequently along the route, or more occasionally.

12.2.253 Cumulative effects are determined in the same way as set out in paragraphs 12.2.183 to 12.2.247 above, using professional judgement guided by the indicative criteria set out in Table 12-4 to Table 12-14.

Limitations and Assumptions

Limitations

Extents of the Study Area

12.2.254 As set out in paragraph 12.1.11, effects on receptors outside the visual envelope of the development and beyond 10km from the location of the Site have been scoped out as it is judged that significant landscape and visual effects will not occur beyond this distance.

Outline Planning

12.2.255 As a result of the outline nature of the proposal, full details of individual building designs, materials and the landscape design of the Scheme are not yet finalised. This assessment has therefore been informed by the level of detail shown upon the Parameter Plans, the Illustrative Plans, the Phasing Plans, set out in the Development Specification, and illustrated in the plans and 'design guidelines' contained within the DAS. It has also been cognisant to the level of detail shown within these and the planning status each has.

12.2.256 As such it is assumed that potential future reserved matters applications may need to be supported by further studies should greater definition of the landscape and visual effects arising from particular parts of this Scheme deemed to be required by the competent planning authority, once greater design detail of them is known, which has not been possible at this outline stage.

Visualisations

12.2.257 Whilst the Illustrative Plans and illustrations within the DAS indicate a potential layout of the scheme the Parameter Plans provide the maximum parameters in which the development will be contained (i.e. the worst-case). As such, the form and style of the visualisations (rendered wirelines), that have been prepared as part of this assessment, were chosen to show the height of the tallest of buildings (to the ridge lines of their pitched roofs) within proposed development parcels for which outline planning permission is being sought, rather than the likely average height that is also indicated upon the Parameter Plans.

12.2.258 The visualisations do not, therefore, demonstrate the greater visual permeability that would exist in reality should the aspects of: gaps between individual buildings: variety in building height and building density; and pitched roofs be taken into account. The resultant rendering of these, also, does not indicate the likely: variety in colour, texture and material; fading with distance; shadow; and all intervening vegetation that would exist in reality.

12.2.259 As such, whilst this style of visualisation is suitable for an outline planning application, it is not intended to provide a realistic image of how the finished development might look.

Assumptions

Distances

12.2.260 Where distances are given in the assessment, these are approximate distances (rounded to the nearest 10m) between the nearest part of the Site and the nearest part of the receptor in question, unless explicitly stated otherwise. Distances to residential properties are also approximate (rounded to the nearest 10m) and given to the dwelling (not the garden).

Assessment Phasing

12.2.261 In order to assess the effects on landscape character and visual amenity receptors that would be brought about by the proposed Development during the course of its construction and its operation, but also giving consideration to the fact that parts of the Development are likely to be in operation (i.e. occupied by residents and businesses etc.) whilst further construction is being undertaken the assessment has been undertaken at specific points in time:

- Peak building year (ten years following commencement) - Construction & Operation
- Year of completion (twenty five years after commencement) - Operation
- 15 years following completion of construction (when structural planting implemented as part of the development is anticipated to have established) - Operation.

12.3 Baseline

Existing Baseline

Landscape Character Baseline

12.3.1 Published, and Site-specific LCA's, supplemented by fieldwork, have informed the identification of landscape character receptors for use in this assessment. The relevant descriptions of the landscape context of the Site and its surrounds contained within these LCA's and their related guidance documents, that have been used in the preparation of this assessment are set out below.

National Level Character Assessment

12.3.2 NE has divided England into 159 distinct National Character Areas (NCAs). Each is defined by a unique combination of landscape, biodiversity, geodiversity and cultural and economic activity. As shown on Appendix 12-3 Figure 4 the Site sits within NCA no.120 Wealden Greensand. The description of this NCA and the three others covered by the study area (NCA no.119 North Downs; NCA121 Low Weald; and NCA no.123 Romney Marshes) are set out in a series of NCA Profiles (NCAP) published by NE (Ref 12.27). The key characteristics of these areas and aspects described in these publications that are relevant to the Site and its surrounds, the Development proposals and this assessment are described in the following paragraphs.

NCA no.120 Wealden Greensand

Area Description

12.3.3 The Wealden Greensand NCA runs parallel with the North Downs NCA through Kent and Surrey and separates this from the Low Weald NCA to the south. The underlying calcareous Sandstone and Ragstone geology has shaped the scarp-and-dip slope topography of the narrow Greensand Ridge that follows much of the southern edge of this area. This also has had a significant bearing on the area's sense of place in terms of settlement, built vernacular architecture, industry and structural vegetation and agriculture.

12.3.4 In relation to the Site and the study area, the Wealden Greensand NCA covers the corridor between Ashford and the Hythe/Folkestone conurbation, up to and including the coast line.

Key characteristics

12.3.5 The key characteristics of the Wealden Greensand NCA are:

- an undulating and organic landform which is gentler and more open through east Kent, but which offers far-reaching views over adjoining areas, including the Romney Marshes NCA from the ancient coastline of the Lympne Escarpment;
- a landform that has been shaped by numerous water courses that pass through the area;
- extensive areas of mixed woodland and coppice containing hazel, oak, birch, and sweet chestnut;
- small or medium irregular shaped fields parcels derived from medieval enclosure, and bounded by hedgerows and shaws (remnant strips of cleared woodland) comprising hawthorn and blackthorn, also with occasional oak trees, and often trimmed low;
- mosaic of mixed farming with occasional orchards;
- mixture of dispersed farmsteads, hamlets and some nucleated villages, using Kentish Ragstone and weatherboarding in their built vernacular, along with large houses set within extensive parks and gardens; tern end
- numerous towns and transport infrastructure between Dorking & Folkestone which have reduced the tranquillity of the eastern end of the NCA;
- wide range of historic landscape features including old military defences, prehistoric tumuli, Roman remains, small quarries, older deer parks and more recent 18th-century parklands.

Landscape Change

12.3.6 NCAP-120 describes the pressure that is likely to occur on this area from future new development, and advises the use of well-planned GI within these to bring about a range of environmental benefits.

Statements of Opportunity

12.3.7 The following '*Statements of Opportunity*' for the Wealden Greensand NCA (which are relevant to the Site and its surrounds, the Development proposals and this assessment) are provided in NCAP-120:

- "SEO 1: Protect and manage the nationally recognised and distinctive character of the landscape, conserving and enhancing historic landscape character, tranquillity, sense of place, and the rich historical and geological heritage of the Wealden Greensand. Enhance access provision where appropriate, to maintain public benefit from and enjoyment of the area." For example by:
  - "*Restoring and creating broadleaved woodlands surrounding major transport corridors and urban areas to help reduce noise, light and air pollution, and to maintain and enhance the pockets of tranquillity.*
  - *Maintaining and enhancing access to geodiversity, providing educational and research opportunities, and linking communities with their local heritage, including through the sensitive restoration of redundant quarries, exploiting their biodiversity, recreational and geological potential.*
  - *Restoring and managing the nationally important parklands … Management works should be prioritised and informed by an assessment of the historic design, use and significance of the parkland.*
  - *Conserving and improving the management of historical landscape features ... while promoting opportunities for access, education and sensitive interpretation at historic sites.*"
- "SEO 3: Manage and significantly enhance the quality of the characteristic wetland and water environment of the Greensand. This will contribute to sustainable flood risk management, will benefit the regulation of water quality and water availability, as well as enhancing the sense of place, biodiversity, recreation and wetland habitat adaptation to climate change."
- "SEO 4: Plan to deliver a network of integrated, well managed green spaces in existing and developing urban areas, providing social, economic and environmental benefits, and reinforcing landscape character and local distinctiveness – particularly on or alongside the boundaries of the designated landscapes within the Wealden Greensand." For example by:
  - "*Where appropriate, creating areas of broadleaved woodland (under coppice management where possible) around towns to provide a buffer to new development. Providing local recreational opportunities that divert pressures from the SPA and SAC designated areas of heath, helping to provide climate change adaptation, flood alleviation, enhanced landscape character and biodiversity benefits.*
  - *Creating enhanced areas of new – and improving any existing – multifunctional natural green space, including community food gardens, orchards, and extensive wetlands that form part of sustainable urban drainage systems. These link into the heart of urban areas and provide sustainable recreational links into the wider countryside as part of green infrastructure planning. They will help to meet Accessible Natural Greenspace Standards (ANGSt), and ensure that developments retain soil functionality, as much as possible and do not have a negative effect on flood risk within the NCA.*
  - *Ensuring that development and its associated infrastructure (including light, noise and air pollution), does not intrude on the rural landscapes or the special qualities of adjacent protected landscapes conserving remaining areas of tranquillity.*
  - *Promoting the use of sustainable and locally sourced materials, vernacular building techniques and styles, and existing landscape character, to inform design and ensure integration with the surrounding landscape.*
  - *Developing a strategic approach to green infrastructure across the NCA and its boundaries, to take account of the existing urban areas and areas of growth. Planning a network of green spaces across the urban areas, urban fringe and adjacent countryside, which can result in multiple benefits for the environment and communities.*"

NCA no. 119 North Downs

12.3.8 The North Downs NCA comprises the escarpment and dip slopes of the linear chalk landform that stretches between the Hog's Back in Surrey to the White Cliffs of Dover. It separates the Wealden landscape to its south with the Thames valley and estuary areas to the north.

12.3.9 In relation to the Site and the study area, North Downs NCA covers the foot-slopes, scarp-slopes, escarpment and dip-slopes of the North Downs between Wye and Caple-le-Ferne. At its closest point it lies approximately 1.9 km north of the Site boundary. The Zone of Theoretical Visibility (ZTV) shown on Appendix 12-3 Figure 10, indicates that areas of the North Downs NCA between the Wye National Nature Reserve and Dover Hill have the potential to obtain views to the proposed Development.

Key characteristics

12.3.10 The key characteristics of the North Downs NCA (which are relevant to the Site and its surrounds, the Development proposals and this assessment) are:

- A distinctive chalk downland ridge with a steep scarp slope facing south and gentle incised dip slope heading northwards;
- Views from the "eastern scarp are dominated by generally undeveloped landscapes much valued by visitors, with outstanding views across the Vale of Holmesdale to the Weald and from many parts of the downs to France. These views are affected to varying degrees by the Channel Tunnel terminal development and the M25 and M20 corridors;

- influence from the urban-fringe of numerous settlements and major transport routes occur lie close to the boundary upon tranquillity and sense of remoteness, but "areas of extensive woodland cover and farmland offer tranquillity and calm even where development is present."

Landscape Change:

12.3.11 NCAP-119 describes the pressure from existing and new development close to the edge of the NCA, and how "*high-quality and well managed green infrastructure both within and surrounding the NCA could help to service the demands of a growing population.*"

Statements of Opportunity

12.3.12 The following '*Statements of Opportunity*' for the North Downs NCA (which are relevant to the Site and its surrounds, the Development proposals and this assessment) are provided in NCAP-119:

- "SEO 1: Manage, conserve and enhance the distinctive rural character and historic environment of the North Downs, …. Protect the tranquillity of the landscape and sensitively manage, promote and celebrate the area's rich cultural and natural heritage, famous landmarks and views for future generations." For example by:
  - *"Using AONB design guidance ...to inform ….and plan for and inspire any new development which makes a positive contribution to local character.*
  - *Seeking opportunities to minimise the impact of new developments, including visual intrusion, disturbance and noise, on the tranquillity and beauty of the countryside. Green infrastructure planning should be maximised for its multiple benefits … .*"
- "SEO 2: Protect, enhance and restore active management to the diverse range of woodlands and trees of the North Downs,… . Seek opportunities to establish local markets for timber and biomass to support the active management of local woods, …" For example by:
  - "*encouraging new markets for the products of native woodland underwood and timber. This will provide the market driver to encourage and maintain viable and sustainable woodland management.*"
- "SEO 4: Plan to deliver integrated, well-managed multi-functional green space in existing and developing urban areas, providing social, economic and environmental benefits and reinforcing landscape character and local distinctiveness, particularly on or alongside the boundaries of the designated landscapes within the North Downs."

NCA no. 121 Low Weald

12.3.13 The Low Weald NCA is a broad, low-lying clay vale which largely wraps around the northern, western and southern edges of the High Weald, and which borders the Wealden Greensand NCA to its north and west.

12.3.14 In relation to the Site and the study area, the Low Weald NCA covers the broad area between Ashford and Romney Marshes NCA. At its closest point it lies approximately 3.5 km west of the Site boundary, beyond the village of Aldington. The ZTV shown on Appendix 12-3 Figure 10 indicates that there are a few areas of the Low Weald NCA between the Ashford-Dover railway line in the north and Stone Cross in the south that have the potential to obtain views to the proposed Development. Much of this area is however wooded, and the NCAP-121 recognises that as a result "*views to higher ground are limited*".

Key characteristics

12.3.15 The key characteristics of the Low Weald NCA (which are relevant to the Site and its surrounds, the Development proposals and this assessment) are:

- "broad, low-lying, gently undulating clay vales with outcrops of limestone or sandstone providing local variation;
- A generally pastoral landscape with … areas of fruit cultivation in Kent;
- Field boundaries of hedgerows and shaws … enclosing small, irregular fields and linking into small and scattered linear settlements along roadsides or centred on greens or commons. Rural lanes and tracks with wide grass verges and ditches;
- Small towns and villages are scattered among areas of woodland, permanent grassland and hedgerows on the heavy clay soils where larger 20th-century villages have grown around major transport routes;
- Frequent north–south routeways and lanes, many originating as drove road, … ."

Statements of Opportunity

12.3.16 The following '*Addition Opportunity*' for the Low Weald NCA (which is relevant to the Site and its surrounds, the Development proposals and this assessment) is provided in NCAP-121:

- "Additional Opportunity 1: Plan for the creation of high-quality blue and green space and green corridors to provide a framework for new and existing development in urban areas and along major transport routes for the enjoyment and wellbeing of communities …." For example by:
  - *"Working to identify and maintain important views to elevated landforms outside the NCA such as the Wealden Greensand … ;*
  - *Creating … extensive areas of multifunctional green space within and surrounding … identified new development areas, … as part of green infrastructure planning;*
  - *Creating community allotments and potentially developing community orchards on the edges of urban areas;*
  - *Encouraging measures such as restoration and expansion of networks of hedgerows and shaws to minimise the effects of development and its associated infrastructure (including light, noise and air pollution) intruding on the rural character and the special qualities of adjacent protected landscapes;*
  - *Ensuring that high-quality green infrastructure provision is integral to all development planning …;*
  - *Seeking to conserve areas with high levels of tranquillity … of this predominantly rural area.*
  - *Encouraging detailed landscape assessment in advance of all significant development to identify ways of minimising impact on the rural character … ."*

NCA no. 123 Romney Marshes

12.3.17 As described in the NCAP-123 the Romney Marshes is an "*open landscape of reclaimed, low-lying marshland. The area is bounded to the south and east by the English Channel and to the north and west by the clearly recognisable ancient cliff-line, which now forms the backdrop to the marshes.*"

12.3.18 In relation to the Site and the study area, the Romney Marshes NCA covers the broad area beyond the southern edge of the Wealden Greensand NCA. At its closest point it lies approximately 300m south of the Site's boundary along Aldington Road. The NCA encompasses the lower half of the Lympne Escarpment. The ZTV shown on Appendix 12-3 Figure 10, indicates that there are areas of the Romney Marshes NCA that have the potential to obtain views to the proposed Development. The NCAP-123 recognises that the "*flat topography of the Romney Marshes allows for long views across to neighbouring, higher NCAs.*"

Key characteristics

12.3.19 The key characteristics of the Romney NCA (which are relevant to the Site and its surrounds, the Development proposals and this assessment) are:

- "Romney Marshes is a flat, open and agricultural landscape, with distinctive drainage dykes, marshes and open skies. … ;
- Former sea cliffs, mainly of sandstone, mark the post-glacial shoreline and form a notable feature overlooking Romney Marshes at Lympne, Rye, Winchelsea, Hythe and Pett;
- Low woodland cover features throughout, with clumps of trees and patches of woodland found on the higher ground and around settlements.
- Narrow, straight roads and winding lanes link the widely dispersed settlements, with their distinctive churches. The overall open character provides a sense of remoteness.
- Dungeness Power Station forms a prominent landmark on the coastline. Widely visible from other NCAs, the power station and its transmission lines that extend out from the NCA provide energy for the National Grid. Little Cheyne Court Wind Farm is also a prominent landmark on the skyline across the area and can be seen from adjoining NCAs."

Statements of Opportunity.

12.3.20 The following '*Statement of Opportunity*' for the Romney Marshes NCA (which are relevant to the Site and its surrounds, the Development proposals and this assessment) are provided in NCAP-123:

- "SEO 1: Maintain and enhance the distinctive character of the remote, open, low-lying Romney Marshes landscape, recognise the value they provide in contributing to the understanding of the landscape and its history, local distinctiveness and sense of place;" For example by:
  - "Maintaining landscape character, tranquillity, sense of remoteness and connection to the maritime environment by … ensuring that any new development and its associated *infrastructure (including light, noise and air pollution) does not undermine or have a detrimental impact on the tranquillity of the marshes and landscape character."*

County Level Landscape Character Assessment

Landscape Assessment of Kent, 2004

12.3.21 KCC published the *Landscape Assessment of Kent* (LAK) in 2004. It drew together existing LCA of the county and updated them to conform to the LCA guidance current to that time. The authors intend the LAK to be used "*in a variety of forward planning strategies, in land management schemes and in planning control.*" (paragraph 1.1.2).

12.3.22 The objectives for the LAK are based upon "identifying the important characteristics of the landscape that assist the process of accommodating change, where this is both desirable and practicable, whilst maintaining the links with the past and the natural environment.".

12.3.23 The LAK highlights that there "is a need to retain pattern and diversity in the landscape to ensure that character and local distinctiveness are maintained." And that "this is not necessarily about keeping the landscape as it is but is more about preventing everywhere becoming the same" (section 1.0).

12.3.24 The LAK also highlights that it's study only offers a "*broad-brush, strategic approach*" and that the character areas identified within it "*may have pockets that are in better or worse condition, or higher or lower sensitivity*" than the summarised conclusions drawn.

12.3.25 For this reason, the LAK states the intention that "*for development proposals, the most detailed / local landscape assessment* [if available] *should be referred to in the first instance*" (paragraph 1.1.4) rather than this county-wide LCA.

12.3.26 In addition, it is important to highlight that the LAK:

- was written fourteen years ago, and as such the landscape described within it has the potential to have materially altered;
- was written prior to the most up-to-date An Approach to Landscape Character Assessment publication by NE in 2014; and
- was written prior to the publication of more detailed LCA for the F&HDC and ABC administrative areas.

12.3.27 As such the more recent and targeted LCAs for the F&HDC and ABC areas have been more greatly relied upon than the LAK for the purpose of this assessment. This is an opinion reinforced by the AONB-MP:

> "*The Kent Landscape Group (a group of landscape practitioners and managers established through the Kent Forum's Kent Environment Strategy) has identified that the County and Local Landscape Assessments do not necessarily align and that there is a need for a review of the 2004 Landscape Assessment for Kent.*" (Section 4.3)

12.3.28 Nevertheless, many of the assessments made within the LAK are still crucial to understanding the relative importance of the landscapes within this assessment's study area at a county-level, and are hence summarised below.

12.3.29 The LAK divides the county into eight regional zones, that loosely follow the NCA's identified by NE (see paragraph 12.3.2). Within these the LAK identifies 209 individual LCAreas (see Appendix 12-3 Figure 5 for those within the study area of this assessment). For each area the LAK describes its general character and key features.

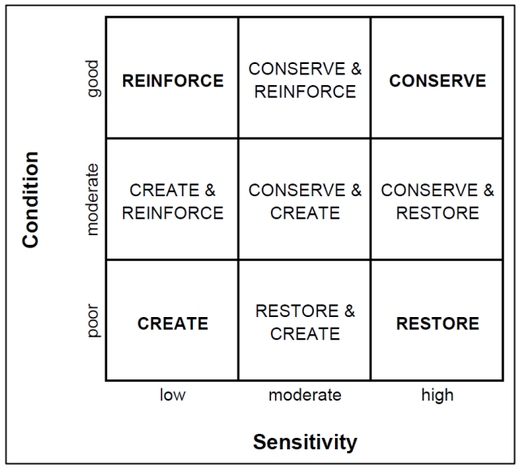
12.3.30 It then set outs the overall '*condition*' of the character area as defined by its: pattern of elements; detracting features; visual unity; cultural integrity; ecological integrity; and functional integrity.

12.3.31 It also defines the character area's overall '*sensitivity*' as defined by its: distinctiveness; continuity; landform; extent of tree cover; and visibility.

12.3.32 Section 6.0 of the LAK states that this "analysis gives a broad indication of each area's ability to accommodate a change in management or use without loss of overall integrity."

12.3.33 The categorisation of 'condition' (good, moderate or poor) and 'sensitivity' (low, moderate or high) are set against each other upon a matrix (see Figure 12-7) which determines the broad landscape '*strategy*' for that character area, which may be used to "*assist in the direction of any policy that might be applied to the land in question*."

Figure 12-7 Extract from The Landscape Assessment of Kent (2004) - Section 6.0, Condition / Sensitivity Matrix



12.3.34 The LAK provides definitions for each 'strategy':

- "Conserve - actions that encourage the conservation of distinctive features and features in good condition.
- Conserve and reinforce - actions that conserve distinctive features and features in good condition, and strengthen and reinforce those features that may be vulnerable.
- Reinforce - actions that strengthen or reinforce distinctive features and patterns in the landscape.
- Conserve and restore - actions that encourage the conservation of distinctive features and features in good condition, whilst restoring elements or areas in poorer condition and removing or mitigating detracting features.
- Conserve and create - actions that conserve distinctive features and features in good condition, whilst creating new features or areas where they have been lost or are in poor condition.
- Restore - actions that encourage the restoration of distinctive landscape features and the removal or mitigation of detracting features.
- Restore and create - actions that restore distinctive features and the removal or mitigation of detracting features, whilst creating new features or areas where they have been lost or are in poor condition.
- Reinforce and create - actions that strengthen or reinforce distinctive features and patterns in the landscape, whilst creating new features or areas where they have been lost or are in poor condition.
- Create - actions that create new features or areas where existing elements are lost or in poor condition.

12.3.35 The LAK then provides 'guidelines' "which are locally appropriate to the character area and respond to the generic strategies that have been identified."

12.3.36 Appendix 12-3 Figure 5 identifies that the Site spans across three character areas identified within the LAK, and a further twenty one fall within the study area and ZTV of the proposed Development. The key characteristics of each area, that are relevant to this assessment, and their '*condition*', '*sensitivity*', and '*strategy*' are set out in Table 12-15 and Table 12-16.

Table 12-15 Summary of the findings of the Landscape Assessment of Kent (2004), for within the Site

LAK Character Areas within the Site (and their extents)	Key characteristics	Condition	Sensitivity	Strategy and Actions
Aldington Ridge (encompassing the south, south-west and west half of the Site)	Well drained, good quality loam soils across generally open rural pasture, which gradually slope down to the Sellindge Plateau, with the North Downs visually above. The settlements of Lympne and its industrial estate on the site of the old airfield are discordant elements in the landscape, their siting appearing "*unrelated to topography or other natural features*".	MODERATE: strongly unified with few visual detractors, apart from the Industrial Estate – which weakens its 'functional integrity'. Other built form has a moderate positive impact - large farmsteads and houses are interspersed with 20th century linear development. Sparse woodland cover.	HIGH: the ridgeline road, the Ragstone farmsteads upon it, pasture and copses give area an "*ancient time depth.*" Moderate 'sense of place'. Visibility 'high' due to elevation and limited tree cover.	CONSERVE and RESTORE: "*Restore the frequency of woodland areas to the lower slopes of the ridgeline.* *Restore a smaller scale, but more open landscape by removing field boundary divisions.* *Conserve the open settings of the farmsteads.* *Conserve the infrequency of built form and conserve open views.* *Conserve the open nature of the field system.* *Conserve and restore small woodland areas.*"
Sellindge Plateau Farmlands (encompassing the north, north-east, and east half of the Site)	A large scale, gently undulating open plateau landscape of deep silty brickearth soils that support arable crops, and pasture particularly along streams. There are small copses, but hedgerows are gappy or missing. Sellindge and the settlements around Folkestone Race Course sprawl across the landscape, and the M20 and railway line bring physical and aural discordance and disruption to it.	VERY POOR: a "*fragmented landscape with little clear pattern and many visual detractors associated with road and rail transport corridors and linear development. Agricultural buildings and fences also detract from the view. … tree cover is poor and built form has a high negative impact on the area. Ragstone and brick vernacular buildings are overshadowed by recent built development.*"	MODERATE: the historic landscape patterns are obscured, there is a lack of distinction and sense of place, but the area is visually apparent, with some long views.	RESTORE and CREATE: Take the opportunity to "*create a new landscape framework using small woodland and copses, that respect the small scale patterns of adjacent character areas.* *Restore historical landscape framework in key areas immediately around the remaining farming settlements.* *Create landscape features to define linear settlements and transport corridors, and control visual detractors.*"
Upper Stour Valley (a small area in the very north-west of the Site)	A flat, open, relatively bland valley landscape enclosed by outliers of Greensand which restrict views. Mixed intensive farming, including a high percentage of arable, has led to the discordant fragmentation of this landscape with only occasional clumps of trees and copses, irregular riparian vegetation, and gappy hedgerows.	VERY POOR: a fragmented, visually ununified landscape resulting from intensive farming, vegetated field boundary degradation, coupled with the presence of many visual detractors such as overhead cables, transport corridors, village enlargements, and industrial development which has led to some neglected areas. There is some positive impact from the visible cultural heritage of large red brick farms, estate parkland, ragstone walls and bridges.	LOW: Strength of character is weak with an indistinct sense of place. Landform is insignificant and the lack of tree cover gives a moderate visibility.	CREATE: "*Create a new landscape structure building upon the existing ditches and hedgerows to create linked corridors for wildlife.* *Ensure that the important roadside hedgerows are gapped up and reinforced with standard trees to give structure to the landscape.* *Create new hedgerows and copses to screen intrusive elements such as the urban edge and transport corridors.* *Create new waterside and ditch vegetation using native wetland species and pollarded willows to reinforce the riparian character.*"

Table 12-16 Summary of the findings of the Landscape Assessment of Kent (2004), for within assessment's study area, but outside of the Site

LAK Character Areas within this assessment's study area, but outside of the Site	Key characteristics (relevant to this assessment)	Condition	Sensitivity	Strategy and Actions
Petham: East Kent Downs	Intimate, remote, long rolling chalk valleys, with deciduous woodland on ridges, and overgrown hedgerows with many trees.	GOOD	HIGH	CONSERVE
Elham: East Kent Downs	"*A large-scale landscape. Densely wooded ridges to the west with conifer plantations and ancient woodland. Intensively cultivated plateau to east with small woodlands on the valley sides. Hedgerow trees and scattered dwellings.*"	GOOD	HIGH	CONSERVE

LAK Character Areas within this assessment's study area, but outside of the Site	Key characteristics (relevant to this assessment)	Condition	Sensitivity	Strategy and Actions
Alkham: East Kent Downs	"*Long ridges and isolated valleys, formerly an ancient unenclosed landscape. Some woodland of high nature conservation value on steeper valley slopes. Coastal downs, open hill-top fields, wild with pockets of scrub.*"	MODERATE	MODERATE	CONSERVE and CREATE
Folkestone Outskirts: Postling Vale	In views from the steep enclosed coombes of the North Downs scarp slope just north of Folkestone, the M20 and Channel Tunnel terminal dominate.	POOR	MODERATE	RESTORE and CREATE
Stowting: Postling Vale	Comprising of two halves. The first is an area of relatively open, arable fields surrounded by small shaws or overgrown hedges on the lower slopes of the North Downs scarp. Grassed upper slopes with occasional hilltop blocks of deciduous woodland "*draw the eye away from scarp-foot developments such as the motorways, and provide a means of orientation in the landscape*" The gradual ribbon of development and pockets of suburbanisation along the scarp foot including the M20 motorway and railway line not only dominate but also sever the LCA in two. The flatter arable farmed landscape of the second area, around Pedlinge, is broken up by large blocks of woodland. Further south steep stream valleys, small woodlands and pasture surround the outskirts of Hythe.	VERY GOOD: a "*coherent pattern of elements with very few detracting features. Rural heritage features - woodland, hedges, small villages - are in good condition, built development in general has a moderate positive impact on the area. The landscape has strong cultural links."*	VERY HIGH: *"The landform is a dominant element of the view and visibility is very high over the open landscape. There is an historic time depth to landscape elements and landscape pattern, although field boundaries are becoming indistinct. …* *Built form is a less distinct element of the landscape. This is considered to be a highly sensitive landscape."*	CONSERVE: "*Conserve views of the dominant landform.*"
Saltwood Postling Vale	A "*intimate and enclosed*" character area within the wider Postling Vale zone, created by the "*significant amount of deciduous woodland, especially along the valley sides, and … dense hedges and hedgerow trees*" which limits visibility.	MODERATE	HIGH	CONSERVE and RESTORE
Brabourne Vale	An area of gently sloping landform, mixed farmland, small hamlets and farmsteads, small woodlands and larger plantations with the sometime bushy hedgerows, which "*give parts of the area a feel similar to the Low Weald*".	VERY GOOD	MODERATE: "*Visibility is very low throughout*"	CONSERVE and REINFORCE
Brabourne Lees Mixed Farmland	An area of gentle undulating mixed farmland with medium sized woodlands. From higher parts there are tremendous views to the North Downs to the north.	VERY GOOD	MODERATE: "*Views are intermittent over an unremarkable landform, therefore visibility is low.*"	CONSERVE and REINFORCE
Mersham Farmland	An undulating area of open arable fields and small-scale pastoral mixed farmland, with small copses and gappy hedgerows. The area is enclosed by the M20 to the north, railway to the south, and the Ashford ring-road to the west.	VERY POOR	MODERATE	RESTORE and CREATE
Bethersden Farmland	A flat, open arable landscape, which has a remote, unpopulated feel.	VERY GOOD	MODERATE	CONSERVE and REINFORCE
Old Romney Shoreline Wooded Farmlands	A flat, and occasionally gently undulating agricultural landscape with distinctive ridges and valleys, dropping down to Romney Marsh, with a remote feel. The area is populated with large broadleaf or mixed woodlands, a small -scale pattern of pastoral fields, and scattered settlement.	VERY GOOD	MODERATE	CONSERVE and REINFORCE

LAK Character Areas within this assessment's study area, but outside of the Site	Key characteristics (relevant to this assessment)	Condition	Sensitivity	Strategy and Actions
Romney Marsh Settlements	A distinctive flat lowland of scattered farmsteads and small villages, with varied tree lines enclosing fields. To the north the area is contained by the old cliff line. Views are distantly enclosed by the cliff line and by tree-lined horizons. The settlements compact, small and sheltered from view by groups of trees.	GOOD: "*The landscape elements are unified and there are few detractors in the view.*"	VERY HIGH: "*This area is comparatively rural and has fewer recent features than some of the marsh areas. Visibility is very high over the dominant landform.*"	CONSERVE: "*Conserve open views.*"
Romney Marsh Mixed Farmlands	A flat, open agricultural landscape with long views, in which settlements are enclosed by trees.	MODERATE: "*The landscape has a unified pattern of elements, but with some visual detractors; transmission towers and agricultural buildings are highly visible in the open landscape.*"	HIGH: "*Visibility is very high over the dominant landform, resulting in the high sensitivity of the landscape.*"	CONSERVE and RESTORE:
Romney Marsh Lympne	A flat remote agricultural landscape with scrubby, windblown trees around settlements. "*The flatness and remote qualities of the Marsh make it very vulnerable to the intrusive effects of development, which are often worsened by inappropriate measures to conceal the damage, such as conifer shelterbelts. … The scarp is highly visible from the flat marsh, forming a long hillside of rough grassland, dotted with scrub. Several large deciduous woodlands break up the sweep of the landform, being more characteristic in the west around Aldington.*"	MODERATE: "*The flat and remote landscape has a coherent pattern of elements but with many visual detractors, although some of these are small scale, such as temporary buildings. The long views permit the intrusion of large scale elements such as lines of pylons.*"	MODERATE: "*The flat and remote landscape has a coherent pattern of elements but with many visual detractors, although some of these are small scale, such as temporary buildings. The long views permit the intrusion of large scale elements such as lines of pylons.*"	CONSERVE and CREATE:
Romney Coast	A linear belt of 20th century development behind the sometimes visually dominant sea defences, containing a mixture of occasional historic structures, tourist sites and dunes.	MODERATE: "*There are many visual detractors which include a proliferation of overhead cables, general road furniture and fencing, and unsympathetic commercial development.*"	HIGH: "*The sense of place is considered to be moderate. Visibility is very high…*"	CONSERVE and RESTORE:
Aldington Lympne	At the western end of the Hythe Escarpment the landform become gentler and rounded, with deciduous woodland dominating the scarp. The elements of suburbanisation associated with the substantial properties which are scattered across this area diminish its otherwise wild, bleak appearance.	VERY GOOD: "*This is a strongly unified, simple landscape with very few visual detractors, dominated by heavily-wooded ridges.*"	HIGH: "*Although on a dominant scarp landscape, views are well enclosed by woodland, therefore the visibility is limited to 'moderate' within the area itself. … Other characteristic elements are more recent, such as the ridgeline residential development.*"	CONSERVE: "*Conserve the limited influence of built development within the area and in views of the scarp.*"
Hythe escarpment: Lympne	A sandstone scarp with rough grassland, remnant hedgerows, and unimproved agricultural grasslands with scrub at the base of the slopes. The area is also characterised by the extensive array of buildings, fences and paths of the Port Lympne Wildlife Park, the settlement around Lympne Castle and St Stephen's Church, the buildings of Lympne Place and other substantial properties – mainly upon the upper slopes. "*The simplicity and integrity of this landscape and its high visibility from much of Romney Marsh mean that any developments or changes which take place on its slopes will have major effects not only on the immediate landscape but also on the wider setting of Romney Marsh.*"	GOOD: "*This is not an entirely traditional landscape; the view of agricultural grasslands is occasionally interrupted by wire fencing and inappropriate planting. Prominent castles and extensive houses have a high positive impact on the area.*"	VERY HIGH: "*The scarp is a dominant landform, particularly as it looks over the wide expanse of coastal marsh. The limited tree cover does not curtail the high visibility within and around the landscape.*"	CONSERVE: "*Conserve the setting of ancient/historic sites and monuments by ensuring long views to sites, but retaining the element of inaccessibility.*"
The Stour – Stour Gap	"*Low-lying flat or gentle undulating landscape with… open arable farmland enclosed by Downs to the north.*"	VERY POOR:	LOW:	CREATE:

LAK Character Areas within this assessment's study area, but outside of the Site	Key characteristics (relevant to this assessment)	Condition	Sensitivity	Strategy and Actions
The Stour – Stour Valley	A flat, low-lying valley of mixed farmland with sparse settlement and long views to the North Downs.	POOR:	MODERATE:	RESTORE and CREATE:
Hampton: Stour Valley	This gently undulating landscape contains considerable woodland and is characterised by the backdrop of wooded North Downs scarp.	GOOD: "*There are few visual detractors.*"	HIGH: "*Visibility is moderate as views are intermittent over the apparent landform.*"	CONSERVE:
Wye: Stour Valley	A wide, flat floodplain with lines of trees and overgrown hedges, and with steep slopes in east with rough grass, scrub and deciduous woodland.	VERY POOR: "*an incoherent landscape and there are several detractors, especially the railway line and the post-war linear development of existing villages*"	MODERATE: "*Landform is apparent and tree cover is intermittent, giving a moderate visibility.*"	RESTORE and CREATE:

Historic Landscape Character

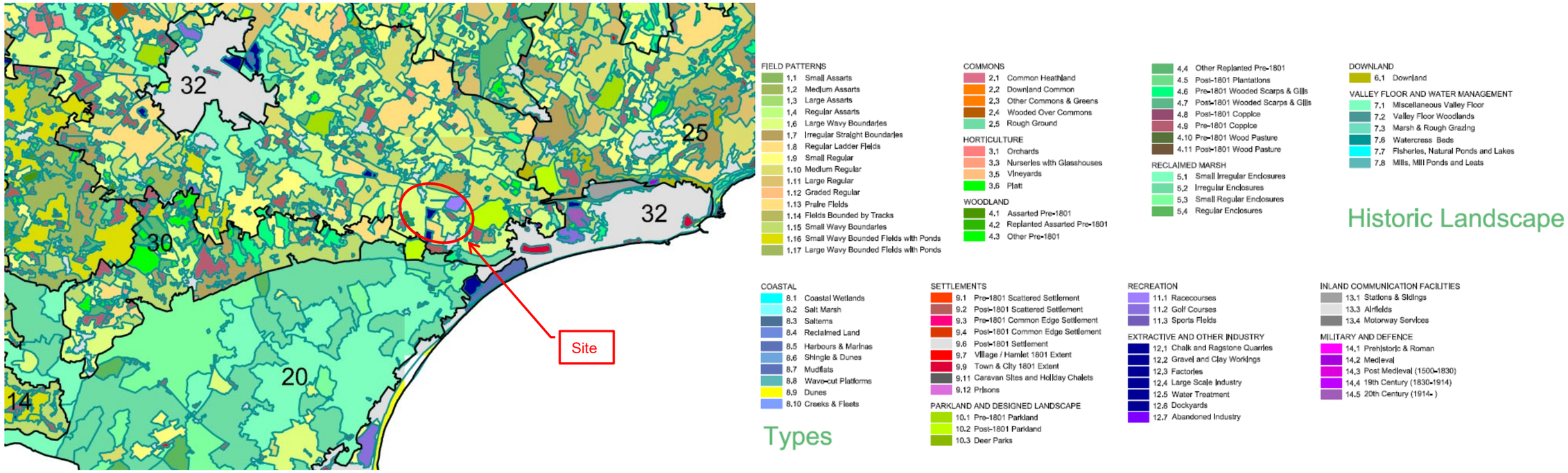
Kent Historic Landscape Characterisation, 2001

12.3.37 KCC and HE published the Kent Historic Landscape Characterisation (Ref 12.28) (KHLC) in 2001. Paragraph 1.8 states that the purpose of the study was to recognise "*the ways in which the present physical landscape reflects how people have exploited, changed and adapted to the physical environment through time, with respect to different social, economic, technological and cultural factors.*" The authors intend the document to be used to "*enhance the formulation of development plans, structural planning programmes, development control and conservation activities.*". It was prepared "*in conjunction with the complimentary county-wide landscape assessment*", i.e. the LAK that was finalised a few years later.

12.3.38 Whilst there is greater reference to the KHLC within Chapter 09 - Cultural Heritage of the ES, an appreciation of the time depth element of the landscape is a necessary part of the understanding of the landscape character of an area.

12.3.39 shows the historic landscape character areas (HLCAreas) and historic landscape types (HLTs). The Site lies within HLCArea 31: Central Valley Area. This is described in volume 1 of the KHLC as: "*dominated by regular and wavy bounded fields (HLTs 1.9–1.11, 1.6, 1.15) with a considerable subsidiary element of 'prairie' fields (HLT 1.13), all of which indicate extensive agricultural activity over the last 200+ years.*"

Figure 12-8 Extract from the Kent Historic Landscape Characterisation, 2001: Figure 3.1 Historic Landscape Character Areas and Historic Landscape Types



12.3.40 The HLTs that have been recorded in the Site are:

- 1.6 - Medium to Large Fields with Wavy Boundaries: This enclosure type is assumed to relate to the late medieval or 17th/18th-century informal enclosure, predating the period when boundaries were carefully surveyed. There may be exceptions. Enclosures are typified by their regular shape (usually rectilinear) and wavy boundaries. Size is variable. This type can occur throughout the county, but is typical of relatively open areas on the chalk, coastal strip and open clay and river valleys.
- 1.9 - Small Regular Fields with Straight Boundaries: These enclosures were typically formed by 19th and 20th-century enclosure. Some enclosures of this type may have resulted from straightening of wavy bounded fields. Small regular enclosures that are typically rectangular with straight surveyed boundaries. These enclosures are to be found in lowland and coastal areas generally dominated by small fields.
- 1.10 - Medium Regular Fields with Straight Boundaries: This type of field was typically created by 19th and 20th-century enclosure of downland and low lying areas. This type can also include enclosures whose boundaries have been straightened. These enclosures are generally rectangular with straight surveyed boundaries and can form a regular grid like field pattern. Located throughout the county.
- 1.13 - Prairie Fields: These enclosures have generally been created by 20th-century boundary loss of 19th-century or earlier enclosures. These enclosures are very large with edge lengths often well over 1000m. This type is found across the northern half of the county with isolated areas in the southern areas.
- 9.2 - Post 1801 Scattered Settlement: Scattered properties within a pattern of very small rectilinear field enclosures or gardens. … areas are likely to be a 19th and 20th-century continuation of the type of rural settlement represented by HLT 9.1 *[Pre-1801 Scattered Settlement]*. Seen on OS 1:25,000 and 1:10,000 as scattered settlements with very small rectilinear enclosures. Mainly associated with all enclosure and woodland types.
- 9.6 - Post 1801 Settlement: Settlement which has developed since 1801. Includes expansion of hamlets, villages, towns and cities as well as new settlement groups. Not present on OS 1801 1" map. Main urban areas are predominant, but a high proportion of older settlements have some post-1801 settlement. Associated with other nucleated settlement types (HLTs 9.7 Hamlet or Village).
- 11.1 – Racecourses: Racecourse or gallops for horses. Identified on OS 1:25,000 and 1:10,000 maps as an open area with a round or oval track and associated buildings. Also named as racecourses or gallops. Not common. Mainly on or adjacent to the chalk.
- 12.1 - Active and Disused Chalk and Stone Quarries: Identified on OS 1:25,000 and 1:10,000 by name and by map symbols for 'other pits'. Disused pits and quarries are often identified by map symbols for refuse areas. … occur on the greensand.

12.3.41 In summary, the Site displays evidence of a mixture of field sizes following enclosure in the 19th century, or earlier. Most fieldscapes are of a rectilinear nature, but the larger ones having more irregular boundaries. The KHLC recognises the scattered settlement pattern that has existed through this area, and the expansion of hamlets and villages. It also identifies the use of the parts of the Site through time as a racecourse, airfield, quarry, and industrial complex.

Folkestone & Hythe District Council Draft Heritage Strategy, 2018

12.3.42 The draft F&HDC Heritage Strategy (Ref 12.29) is an evidence base document prepared for the F&HDC-P&PLP and is also intended to provide information for planning applications. It "*sets out positive objectives and priorities to ensure the district's heritage assets provide a unique opportunity for future place-making, guiding and stimulating regeneration and making significant contributions to recreation, tourism, health and education*".

Local Level Landscape Character Assessment

Shepway District High Level Landscape Appraisal

12.3.43 F&HDC (formerly Shepway District Council) prepared a number of documents as part of the 2017 Strategic Growth Options Study. One of the documents prepared was the SDC-HLLA.

12.3.44 The purpose of the document, as outlined in its introduction, was to:

> "*inform a strategic review of the likely relative impacts of strategic level development in various locations. It is intended that the HLLA will inform opportunities and constraints for growth with regard to landscape character and visual amenity, alongside other key evidence based documents, as part of a partial review of the Council's adopted Core Strategy Local Plan*."

12.3.45 The specific focus for the study was "*identifying the relative sensitivity of the landscapes within Shepway District to strategic level development*" within them.

12.3.46 Strategic level development is defined within the SDC-HLLA as "*residential development of at least 250 houses at an assumed density of 20 units per hectare (including land for essential infrastructure)". To affirm the impartiality of the study the document highlights that "specific development sites are not considered in this HLLA, and proposals or recommendations for development land are not made or implied; … .*"

12.3.47 The study divides the District (including its urban areas) into twenty-six LCAreas (see Appendix 12-3 Figure 7) and appraises each on its:

- landscape value (in accordance with those aspects contained within Box 5.1 of GLVIA3); and
- susceptibility to change (in accordance with the definitions contained with GLVIA3) should strategic development be located within.

12.3.48 When judgements on these were combined into one they determined the sensitivity of each LCArea as either:

- 'High': High sensitivity landscape considered to be least suitable for strategic level development in terms of likely impact on landscape character and visual amenity;
- 'Medium': Medium sensitivity landscape where impact on landscape character and visual amenity would not necessarily be an obstacle to strategic level development, and where suitability is likely to be determined by other sustainability or strategic environmental considerations; and
- 'Low': Low sensitivity landscape considered to be most suitable for strategic level development in terms of likely impact on landscape character and visual amenity.

12.3.49 The methodology applied, and the draft findings of the appraisal were consulted upon, for discussion and agreement, with F&HDC and invited stakeholders including AONB Unit and NE. The latest NE guidance for the preparation of LCA, the NE-ALCA was used to develop the methodology. Appendix 12-3 Figure 7 identifies that the Site is contained within one LCArea within the SDC-HLLA, is bounded by a further three, and a further nine lie within the Study Area and ZTV of the proposed Development. The key characteristics of each area, that are relevant to this assessment, and their 'value', 'susceptibility' to strategic scale development, and 'sensitivity', are set out in Table 12-17.

Table 12-17 Summary of the findings of the Shepway District High Level Landscape Appraisal (2017), for LCAreas within this assessment's study area and ZTV

Character Area	Key Characteristics	Value (using terminology referred to in SDC-HLLA)	Susceptibility (using terminology referred to in SDC-HLLA)	Sensitivity (using terminology referred to in SDC-HLLA)
F&HDC-LCArea 01: Elmsted Valley	- Intimate and remote landscape • Rolling landscape of narrow valleys; • Medium-large scale arable landscape; • Scattered and isolated settlement of small farms and hamlets; • Narrow lanes; and • Sense of enclosure	MEDIUM/HIGH Landscape Quality (Condition): The LCA is in a fair condition, hedgerows are occasionally gappy but generally being well-managed Scenic Quality: The LCA is considered to be of a high scenic quality, as recognised by its designation as an AONB. Rarity: The LCA contains a substantial amount of Ancient Woodland but few other rare characteristics. Representativeness: The LCA is considered to be highly representative of the landscape character of NCA 119: North Downs. Conservation Interests: The LCA includes a number of listed buildings, as well as a scheduled monument. Recreation Value: The LCA is highly valued for recreation and includes a network of public rights of way in the AONB. Perceptual Aspects: The LCA is considered to have a remote and tranquil character. Its designation as an AONB recognises its nationally important aesthetic qualities. Associations: The LCA has some historical associations evident in the landscape history in elements including the Roman road. The AONB Management Plan notes that the landscape has been 'an inspiration to artists, scientists and leaders, from Shakespeare to Samuel Palmer and Darwin to Churchill'.	HIGH	HIGH
F&HDC-LCArea 03: Elham Valley	• Predominantly agricultural landscape of mixed arable and pasture; • Strongly rural character; • Village settlements; and Scattered farmsteads; • Narrow winding lanes; • Roads and fields generally lined with hedgerows and occasionally tree belts; • Dispersed small-scale woodland blocks; • Ancient Woodland; • High voltage pylons; and • Tranquil and attractive character.	HIGH/MEDIUM Landscape Quality (Condition): The LCA is in a fair condition, hedgerows are occasionally gappy but generally being well-managed. Scenic Quality: The LCA is considered to be of a high scenic quality, as recognised by its designation as an AONB. Rarity: The LCA contains a substantial amount of Ancient Woodland but few other rare characteristics. Representativeness: The LCA is considered to be highly representative of the landscape character of NCA 119: North Downs. Conservation Interests: The LCA includes Elham Conservation Area, a substantial number of listed buildings dispersed across the area, several scheduled monuments, and a SSSI. Recreation Value: The LCA is valued for recreation and includes a good network of public rights of way that includes the Elham Valley Way Recreational Trail. Valley walks around this part of the AONB are highly valued and popular. Perceptual Aspects: The LCA is considered to have a tranquil character with a strong sense of place. Its designation as an AONB recognises its nationally important aesthetic qualities. Associations: The AONB Management Plan notes that the landscape has been 'an inspiration to artists, scientists and leaders, from	HIGH	HIGH
F&HDC-LCArea 05: Postling Vale	• North Downs Ridge scarp; • Far-reaching attractive views from the scarp; • Species rich grassland along scarp; • Large-scale arable fields bounded by patchy hedgerows and tree belts; • Small-scale historic villages; • Dispersed farmsteads; • Remote character; and • Tranquillity affected by M20 motorway to south.	HIGH Landscape Quality (Condition): The LCA is considered to be in a fair condition, with intact elements but some limited signs of good management of hedgerows. Scenic Quality: The LCA is considered to be of a high scenic quality, as recognised by its designation as an AONB. Rarity: The LCA has rare characteristics including Ancient Woodland, species-rich grassland, and far-reaching views. Representativeness: The LCA is considered to be highly representative of the landscape character of NCA 119: North Downs. Conservation Interests: The LCA includes a number of dispersed clusters of listed buildings and several scheduled monuments. Recreation Value: The LCA has a comprehensive network of public rights of way and includes the North Downs Way National Trail which follows the top of the scarp.	HIGH	HIGH

Character Area	Key Characteristics	Value (using terminology referred to in SDC-HLLA)	Susceptibility (using terminology referred to in SDC-HLLA)	Sensitivity (using terminology referred to in SDC-HLLA)
		Perceptual Aspects: The LCA is considered to have a remote character. Its designation as an AONB recognises its nationally important aesthetic qualities. Associations: The AONB Management Plan notes that the landscape has been 'an inspiration to artists, scientists and leaders, from Shakespeare to Samuel Palmer and Darwin to Churchill'.		
F&HDC-LCArea 06: Stanford	• Gently undulating; • Large-scale open arable landscape; • Some smaller grazed paddocks; • Gappy hedgerows, fencelines or open fields; • North Downs Ridge scarp prominent to the north; • Open views of the motorway corridor; • M20 motorway a substantial visual and tranquillity detractor; and • Line of prominent high voltage pylons.	MEDIUM Landscape Quality (Condition): The LCA is considered to be in a fair condition, with intact elements but some limited signs of good management of hedgerows. Scenic Quality: There are prominent visual detractors within the LCA, including the M20 and high voltage pylons. However, the LCA is part of the wider open landscape setting of the Kent Downs AONB, with some attractive views of the North Downs Ridge to the north, and is therefore considered to have a moderate scenic quality. Rarity: The LCA contains some Ancient Woodland, but few other rare characteristics. Representativeness: The LCA is considered to display some of the characteristics of NCA 120: Wealden Greensand. Conservation Interests: The LCA has a few listed buildings including the locally distinctive Stanford Windmill. Recreation Value: The LCA is locally valued for recreation and has a comprehensive network of public rights of way. Perceptual Aspects: The LCA is greatly influenced by the open nature of the M20 which substantially affects tranquillity and its connection with the landscape to the south. Associations: The LCA has no known historical or cultural associations.	MEDIUM Development in this area would potentially be a prominent feature in the wider landscape setting of the Kent Downs AONB.	MEDIUM
F&HDC-LCArea 07: Tolsford Hill	• Prominent steep-sided hills; • Mixed agricultural landscape; • Small village settlements; • Large areas of woodland, including Ancient Woodland; • Far-reaching panoramic views from Tolsford Hill; • Prominent telecommunications mast; • M20 motorway and Channel Tunnel Terminal detracting visual and tranquillity features; and • Rugged, wild landscape.	HIGH Landscape Quality (Condition): The LCA is in a good condition, with intact elements that are generally well-managed Scenic Quality: The LCA is considered to be of a high scenic quality, as recognised by its designation as an AONB Rarity: The LCA includes large areas of Ancient Woodland, and the landform of Tolsford Hill is considered to be a rare characteristic. Representativeness: The LCA is considered to be highly representative of the landscape character of NCA 119: North Downs Conservation Interests: The LCA includes a number of listed buildings and scheduled monuments, and a large SSSI Recreation Value: The LCA is highly valued for recreation and includes a network of public rights of way, including the North Downs Way National Trail Perceptual Aspects: The LCA is considered to have a rugged and wild character despite its proximity to the M20 and Channel Tunnel Terminal. Its designation as an AONB recognises its nationally important aesthetic qualities Associations: The AONB Management Plan notes that the landscape has been 'an inspiration to artists, scientists and leaders, from Shakespeare to Samuel Palmer and Darwin to Churchill'.	HIGH	HIGH
F&HDC-LCArea 08: North Downs Ridge	• Prominent scarp slope; • Species rich grassland; • Woodland blocks along foot of scarp slope; • Limited settlement; • Pastoral fields in the west; • Far-reaching panoramic views; and • Views south dominated	HIGH Landscape Quality (Condition): The LCA is in a good condition, with intact elements that are generally well-managed Scenic Quality: Despite the prominent visual detractors to the south, the LCA is considered to be of a high scenic quality, as recognised by its designation as an AONB. Rarity: The LCA has several rare elements including views, landform and grassland habitats Representativeness: The LCA is considered to be highly representative of the landscape character of NCA 119: North Downs Conservation Interests: The LCA includes a number of scheduled monuments, as well as internationally important conservation designations. Recreation Value: The LCA is highly valued for recreation and includes a network of public rights of way, including the North Downs Way National Trail.	HIGH	HIGH

Character Area	Key Characteristics	Value (using terminology referred to in SDC-HLLA)	Susceptibility (using terminology referred to in SDC-HLLA)	Sensitivity (using terminology referred to in SDC-HLLA)
		Perceptual Aspects: The LCA is considered to have a rugged and wild character despite its proximity to the M20 and Channel Tunnel Terminal. The LCA is important to the setting of Folkestone. Its designation as an AONB recognises its nationally important aesthetic qualities. Associations: The AONB Management Plan notes that the landscape has been 'an inspiration to artists, scientists and leaders, from Shakespeare to Samuel Palmer and Darwin to Churchill'		
F&HDC-LCArea 09: Sellindge	• Gently undulating; • Dispersed linear settlement alongside roads; • Mixed agricultural landscape • Moderate tree cover from hedgerow tree belts; • Low tranquillity; and • Sense of enclosure.	MEDIUM Landscape Quality (Condition): The LCA is in a fair condition, with intact elements and signs of good management. Scenic Quality: The LCA is part of the wider landscape setting of the Kent Downs AONB, with some attractive views of the North Downs Ridge to the north, and is therefore considered to have a moderate scenic quality. Rarity: The LCA includes a small amount of Ancient Woodland, but very few other rare characteristics. Representativeness: The LCA is considered to display some of the characteristics of NCA 120: Wealden Greensand. Conservation Interests: The LCA has a number of listed buildings, a scheduled monument, and a SSSI. Recreation Value: The LCA is locally valued for recreation and has a good network of public rights of way Perceptual Aspects: The LCA is partially influenced by the noise of the M20 which affects tranquillity and its connection with the landscape to the south. Parts of the LCA around Stone Hill have a historic and remote, enclosed character. Associations: The LCA has no known historical or cultural associations.	MEDIUM	MEDIUM
F&HDC-LCArea 10: M20 and HS1 Corridor	• Major transport corridor; • Strong linear development; • M20 motorway; • High Speed 1 railway line; • Intermittent tree belts; • Severing feature; and • Limited tranquillity.	LOW Landscape Quality (Condition): The LCA is considered to be in a fair condition, with landscaping associated with the corridors under management. Scenic Quality: The LCA is considered to be of a low scenic quality that detracts from surrounding views. Rarity: The Channel Tunnel Terminal is considered to be a rare feature within the UK, however, the LCA does not contain any rare landscape elements. Representativeness: The LCA displays few or none of the characteristics of NCA 120: Wealden Greensand. Conservation Interests: The LCA has no conservation interests. Recreation Value: The LCA is not valued for recreation. Perceptual Aspects: Tranquillity is substantially reduced by the M20 and HS1 corridors. Associations: The LCA has no known historical or cultural associations.	LOW	LOW
F&HDC-LCArea 11: Lympne	• Undulating landscape with a northerly aspect; • Predominantly arable farmland; • Medium-large scale fields; • Fields bounded by hedgerows, fencelines and tree belts; • Village settlements; • Folkestone Race Course and Lympne Industrial Park noticeable features; and • Views of the North Downs Ridge.	MEDIUM/LOW Landscape Quality (Condition): The LCA is considered to be in fair condition with signs of good management practices. There are areas where hedgerows are gappy alongside the A20. Scenic Quality: The LCA is part of the wider landscape setting of the Kent Downs AONB, with some attractive views towards, and from, the North Downs Ridge. It is considered to have a moderate scenic quality. Rarity: The LCA includes a small amount of Ancient Woodland, but very few other rare characteristics. Representativeness: The LCA is considered to be highly representative of the characteristics of NCA 120: Wealden Greensand. Conservation Interests: The LCA has a number of listed buildings, a scheduled monument, and a SSSI. Recreation Value: The LCA is lacking in public rights of way and public open space. Perceptual Aspects: The LCA is partially influenced by the noise of the M20 which slightly reduces tranquillity and its connection with the landscape to the north. Associations: The LCA has no known historical or cultural associations.	MEDIUM Depending on the siting of development: - the LCA is potentially capable of accommodating development without the loss of landscape elements or characteristics which add value to the area. - in relation to existing development, it could potentially be a prominent feature in the wider landscape setting of the Kent Downs AONB, however there is	MEDIUM

Character Area	Key Characteristics	Value (using terminology referred to in SDC-HLLA)	Susceptibility (using terminology referred to in SDC-HLLA)	Sensitivity (using terminology referred to in SDC-HLLA)
			also potential for more discreet siting	
F&HDC-LCArea 12: Brockhill	• Varied landform including plateau and narrow twisting valley; • Substantial areas of woodland, much of which is Ancient Woodland; • Mixed farmland; • Limited settlement; and • Strong sense of enclosure.	HIGH Landscape Quality (Condition): The LCA is in a good condition, with intact elements that are generally well-managed. Scenic Quality: The LCA is considered to be of a high scenic quality, as recognised by its designation as an AONB. Rarity: The LCA includes a large quantity of Ancient Woodland, but few other rare landscape characteristics. Representativeness: The LCA is considered to be highly representative of the landscape character of NCA 119: North Downs. Conservation Interests: The LCA includes a few listed buildings, a Registered Park and Garden, and some large areas of Ancient Woodland. Recreation Value: The LCA is valued for recreation and includes a network of public rights of way, including the Saxon Shore Way, a long distance recreational trail. Brockhill Country Park is locally valued. Perceptual Aspects: The LCA is considered to have a generally tranquil character. Its designation as an AONB recognises its nationally important aesthetic qualities. Associations: The AONB Management Plan notes that the landscape has been 'an inspiration to artists, scientists and leaders, from Shakespeare to Samuel Palmer and Darwin to Churchill'.	HIGH	HIGH
F&HDC-LCArea 13: Greensand Ridge	• Prominent scarp landform; • Rough species-rich grassland; • Scrub and areas of woodland, mostly in the west of the LCA; • Limited settlement; • Significant historic fortifications including the Royal Military Canal; • Arable and pastoral farmland along top of scarp; • Panoramic, far-reaching views across Romney Marsh to the south; and • Open and exposed.	HIGH Landscape Quality (Condition): The LCA is in a good condition with signs of good management practices. Scenic Quality: The LCA is considered to be of a high scenic quality, as recognised by its designation as an AONB. Rarity: The LCA has several rare elements including views, landform and grassland habitats. Representativeness: The LCA is considered to be highly representative of the landscape character of NCA 120: Wealden Greensand. Conservation Interests: The LCA includes a number of listed buildings and scheduled monuments (including the Royal Military Canal), a Registered Park and Garden, and a SSSI. Recreation Value: The LCA is highly valued for recreation and includes a network of public rights of way, including the Saxon Shore Way and Royal Military Canal Path, both long distance recreational trails. Perceptual Aspects: The LCA is considered to have a generally tranquil and wild character. Its designation as an AONB recognises its nationally important aesthetic qualities. Associations: The LCA has historical associations evident in remnant features in the landscape today. The AONB Management Plan notes that the landscape has been 'an inspiration to artists, scientists and leaders, from Shakespeare to Samuel Palmer and Darwin to Churchill'.	HIGH	HIGH
F&HDC-LCArea 21: Romney Marsh Proper Farmlands	• Flat, open landscape; • Low-lying; • Agricultural landscape comprising predominantly arable land; • Fields bounded by network of winding ditches; • Dispersed nucleated villages; • Scattered farmsteads; • Narrow winding roads; • Long distance views, including of the dramatic scarp to the north;	HIGH Landscape Quality (Condition): The LCA is considered to be in a good condition and well managed. Scenic Quality: The LCA is considered to be of a moderate scenic quality, with some attractive views across the Romney Marshes and towards the Greensand Ridge, high voltage pylons form localised detractors. Rarity: The flat agricultural landscape defined almost exclusively by ditches is considered to be a rare and distinctive characteristic within England. Representativeness: The LCA is considered to be highly representative of the key characteristics of NCA 123: Romney Marshes. Conservation Interests: The LCA includes Newchurch Conservation Area, and has a number of listed buildings and scheduled monuments, including the Royal Military Canal.	MEDIUM/HIGH	HIGH

Character Area	Key Characteristics	Value (using terminology referred to in SDC-HLLA)	Susceptibility (using terminology referred to in SDC-HLLA)	Sensitivity (using terminology referred to in SDC-HLLA)
	• Churches are prominent historical features; and • Limited tree cover, predominantly around settlement.	Recreation Value: The LCA has a strong network of public rights of way between settlements, and National Cycle Network Route 2, which is a major long distance trail. The Royal Military Canal Path is a long distance recreational trail alongside the Royal Military Canal in the north of the area. Perceptual Aspects: The LCA is tranquil and has a sense of remoteness and a strong sense of place. Associations: The Romney Marsh landscape has a number of historical and cultural associations with links to past invasions and wars, literary authors, and smuggling.		

The Ashford Landscape Character Supplementary Planning Document

12.3.50 ABC published the ABC-LC SPD in 2011. It brought together two LCA that had previously been carried out for two areas of the Borough to provide a comprehensive study. These were the:

- '*Ashford Landscape Character Study*'' (Ref 12.30) (ALCS) which assessed the urban fringe of Ashford;
- '*Ashford Landscape Character Assessment*' (Ref 12.31) (ALCA) which assessed the remaining rural parts of the Borough surrounding this, that are outside of AONB designation.

12.3.51 Paragraph 3.14 of the ABC-LC SPD states that for "*the purpose of implementing local landscape character policies, the areas of land designated as AONB in the Borough will be treated as separate landscape character areas and guidance material on these AONBs should be obtained from the relevant AONB Unit.*" Such as the AONB-MP. To provide a level of consistency the ABC-LC SPD provides a description of the key characteristics of each of the LCAreas contained in the two documents. Those that are relevant to this assessment are set out in Table 12-18 and shown in Appendix 12-3 Figure 7 .

Table 12-18 Summary of the findings of the Ashford Landscape Character SPD (2011), for LCAreas within this assessment's study area and ZTV

Character Area	Key Characteristics
ABC-10 East Stour Valley	• Well vegetated East Stour River cuts through valley with land rising to Bested Hill in the north • Mosaic like pastoral field pattern • Mixed and broadleaf woodland blocks • Mature isolated oak trees within pasture • Narrow lanes follow the undulations of the landscape, often hedgerow and ditch lined • Some recent individual housing sporadically located along the lanes • Scattered farmsteads set back from the lanes
ABC-14 Bonnington Wooded Farmlands	• Undulating landform which forms part of the immediate foreground to the Kent Downs AONB which rises to the east • Mixed farmland with small fields • Deciduous and evergreen enclosing woodland blocks • Native hedgerows with large standard oak trees • Isolated oaks trees set within pasture • Strong sense of enclosure • Equestrian grazing and land-use • Narrow and hedge lined roads • The non-nucleic settlement of Bonnington with traditional houses and stone farm buildings • Recent housing development arranged around closes
ABC-25 Aldington Ridgeline	• High ridgeline topography • North Downs frame the views to the north • Mixed farmland with enclosed pasture immediately surrounding settled areas • Loss of historic field pattern where land is intensively farmed • Small woodland copses, tree belts and native hedgerows • Very distinctive ragstone church and remains of Archbishops Palace isolated from main settlement of Aldington • Strong use of ragstone and locally distinctive chequered brick • Farm building conversions • Recent development within Aldington situated along a Roman road
ABC-26 Brabourne Lees Hilly Farmlands	• Hilly topography • Strong sense of enclosure provided by woodland blocks, hedgerows, landform and settlement • Pasture for horses and livestock • Chestnut coppice and evergreen woodland blocks • Recent development within Brabourne Lees • Large, historic farm houses to the south amid a parkland landscape of pasture and isolated trees
ABC-29 Evegate Mixed Farmlands	• Undulating topography • Intensively farmed landscape with small pockets of pasture • Comprehensive network of tree cover provided by highway planting, hedgerows and a block of broadleaf ancient woodland • Ponds and vegetation lined water courses • Fragmentation caused by major infrastructure routes • Large electricity sub station • Converted oast houses at Evegate Business Park
ABC-30 Brabourne Arable Farmlands	• Intensive arable land • Large, open, extensive fields • Extensive hedgerow loss and limited tree cover • Dramatic panoramic views of the Kent Downs AONB • Narrow water courses originating from a series of springs along the foot of the Downs

Character Area	Key Characteristics
	• Isolated farms
ABC-31 Brabourne Farmlands	• Gently undulating landform which forms part of the immediate foreground to the Kent Downs AONB • Series of narrow streams run perpendicular to the Downs • Mature pollard ash trees mark woodland boundaries • Isolated oak trees set within arable fields • Series of parallel narrow lanes run perpendicular to the Downs • Clusters of vernacular style buildings • Traditional and more recent residential development is strewn along the lanes
ABC-34 to 37 Cheesemans Green, Colliers Hill, Clap Hill, and Aldington Frith	• Generally open, mainly flat arable land with cluster of farms around Cheeseman's Green and small hamlet at South Stour • Captain's Wood, an ancient oak and ash woodland with some hornbeam coppice and associated semi-improved grassland/rush • Hedgerows are variable, and generally high to lanes, but where arable there is evidence of hedgerow and ditch clearance, river and dyke dredging. • Rising ground between the Stour floodplain with distant views to Ashford • Predominantly arable farmland rising to distinctive knoll at Collier's Hill and extending to East Stour river at Swanton Mill. • Large fields intensively farmed and evidence of hedgerow clearance. • Mature hedgerow to Roman Road and tree cover limited to farmsteads and pollarded willows at Swanton Mill. • Broad Oak on the Roman Road is a mix of bungalows and traditional farm cottages. • Large open arable fields along the Aldington Ridge. • Traversed by Bank Road – a Roman Road with high hedges and localised tree cover. • Extensive views north to Mersham, west and north west to Ashford and the North Downs and south to Dungeness. • A close grained landscape of gentle folds and sunken lanes contained with high hedges and trees which absorbs much of the development of Aldington Frith. • Frith Road/ Priory Road crossroads has a collection of traditional Kentish style buildings, with newer properties to the lanes and scattered farmsteads. • Mixed farmland with paddocks and hedges, and more open arable farmland
BC-52-54 Hinxhill North Farmlands, Game Rearing Farmlands, and Hatch Park	• The southern part is steeply sloping with series of mixed woodland containing some plantation conifers and sweet chestnut coppice with wet woodland and pasture on the valley floor. • Hedgerows and streams provide a good field pattern and link to adjoining woodlands and marshes. • Sales Wood is sited on a knoll in the central part surrounded by open arable fields with long views to the North Downs and fringes of Ashford. • Undulating farmland with scattered farmsteads and distinctive pattern of linear tree cover and copses. Large productive arable fields have lost some internal field boundaries. • Woodlands comprise various mixed plantation woodlands with notable mature oak, ash and beech, wet alder coppice, sweet chestnut and hornbeam coppice. Many are managed for pheasant rearing and game. • Lanes are sunken and winding in places bounded by species rich mature hedgerows.

Character Area	Key Characteristics
	• Series of springs and associated streams with flushes of willow and wet meadows with rough pasture. • Deer park with woods, springs, lakes and pasture, some conversion to arable to south. • Veteran trees remain – north of park is designated SSSI • M20 in cutting to southern edge – noise impacts onto area
ABC-55 to 57 Nackholt Higher Fields, Bourne Dyke Wet Pastures, and Nackholt Wood	• The land gently falls to the floodplain and lies on Gault Clay. The soils are easily waterlogged and have been drained by a series of dykes creating large fields predominantly for sheep pasture but with some arable. The dykes are marked by flushes of crack willow and ash. • There is a good network of hedges to lanes. • Old brick works at Naccolt with lake. • Long views to north across the Wye Valley and to east to North Downs • Valley floor with series of sheep pastures enclosed by good network of dykes, streams and ditches with mature hedgerows and scrub. • Blocks of wet willow woodland are linked to surrounding network of wetland habitats and species rich wet meadows. • A mixed use woodland with tall stand of poplars and pond to west, mature wet woodland with ditches and dense hazel coppice, veteran oaks adjoining lane to south and open wet flower meadows. Designated Site of Nature Conservation Interest. • The conifer plantation within is well screened. • Good hedgerow corridors to north west and southern boundaries.
ABC-65 to 68 Sevington High Fields, Mersham Paddocks, Bower Road Farmlands, and West Mersham Farmlands	• Open arable farmland on gentle rise crossed by Highfield Lane (bounded with hedgerows) and dominated by Sevington Church. • A line of poplars delineates the brook. • The noise from the M20, CTRL and bypass is very apparent. • Steep valley with sheep pasture and bog, poached gappy hedges, woodland plantation and edge planting to M20 in cutting. • Large open arable fields with some pasture around Bower Farm on the steeper slopes. • Adjacent to Mersham the landscape is more intact with high hedgerows and trees, streams, poplar windbreak and fine block of alder coppice. • Bower Road has fine hedgerow in places. • M20 and CTRL in cutting with new planting are well screened, but noise is apparent. • Business Park at Wembden Farm is a local detractor. • Long views south to Aldington Ridge but very restricted to west by woodland and poplars. • A group of farms with gentle open undulating arable fields with gappy hedgerows and some paddocks adjacent to the farm buildings. • The sunken lanes, such as Blind Lane have high mature hedges and the area to the west has a wooded feel with small mixed woodland adjacent to the CTRL. • The CTRL is on embankment in places and is particularly prominent

Area-Specific Landscape Character Assessment

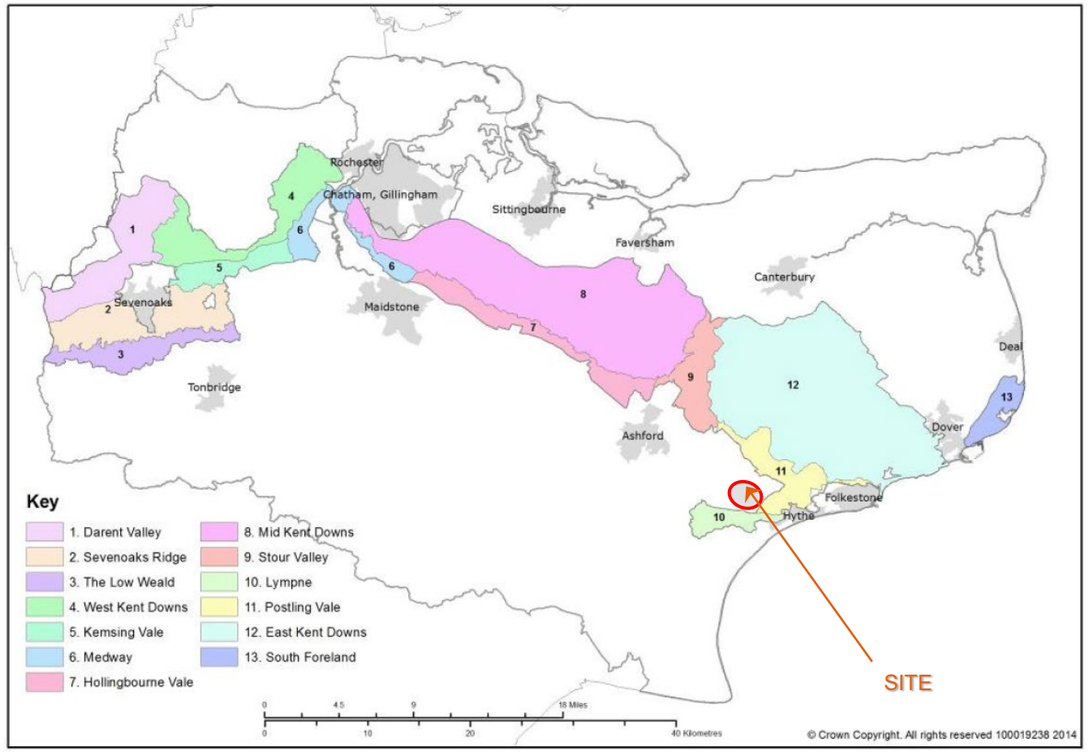
Kent Downs AONB Landscape Assessment

12.3.52 The character of the Kent Downs AONB is described in the Countryside Commission publication '*The Kent Downs Landscape – An assessment of the AONB*' (Ref 12.32) (AONB-LCA) published in 1995 and referred to latterly in the AONB-MP and the AONB-LDH.

12.3.53 Despite the relative age of the publication, the AONB Unit confirmed at the consultation meeting with them in July 2018 that their planned update of '*The Kent Downs Landscape*' is not ready for circulation, and that the AONB-LCA should still be relied upon within this assessment.

12.3.54 The AONB-LCA identifies thirteen individual LCAreas within the AONB (see Appendix 12-3 Figure 6) and divides many of these into '*local character areas*', which "l*ook in more detail at the specific characteristics of these localities and highlight some of the pressures facing them*". Areas of particular sensitivity have been highlighted as '*vulnerable landscapes*'. Certain AONB-wide aspects of landscape character such as the '*Chalk Scarp*' , '*Chalk Grasslands*' and '*Buildings*' have been examined in more detail.

Figure 12-9 Extract from Kent Downs AONB Management Plan (2014-2019) Figure 5 Landscape character areas



12.3.55 As shown on Appendix 12-3 Figure 6 the Site lies adjacent to the Postling Vale and Lympne character areas. The key characteristics of these areas and other aspects described in the AONB-LCA that are relevant to the Site and its surrounds, the Development proposals and this assessment are described in the following paragraphs.

Lympne LCArea

12.3.56 The 'Lympne' LCArea comprises the greensand ridge of the Hythe escarpment between Aldington and Hythe, as well as parts of the Wealden clay landscape at the west end of this and part of the Romney Marsh to its south.

12.3.57 The '*Hythe escarpment*' local character area is characterised by: its magnificent views across Romney Marsh and the English Channel from the escarpment; the steep, uneven eroded face of the scarp populated by small blocks of woodland and scrub; and the old military defences scattered across the area, from the Royal Military Canal at the base of the scarp to the Second World War 'Sound Mirrors' on the slopes behind Burmarsh, and the ragstone Lympne Castle.

12.3.58 The scarp is highly visible from the flat, remote '*Romney Marsh*' local character area, and so is vulnerable to further development upon its slopes. The local character area of 'Aldington', at the west end of the scarp has "*softer, more rounded slopes*" and a higher proportion of deciduous woodland which reflects the change to more stable clay soils. There is also more cultivation of the land and more scattered large properties.

Postling Vale LCArea

12.3.59 The '*Postling Vale*' LCArea is characterised by its: "*magnificent views*" from the scarp; the rough grassland of the scarp slope with typically a notable belt of scrub at its foot; and the large fields, remnant hedgerows and scattered large woodlands at the base of the slope.

12.3.60 The local character area of '*Stowting'* forms the eastern edge of the Site and it is also the closest part of the AONB to the its north. This area is described as a more "*open, intensively farmed landscape which extends out towards Ashford.*" There are "*large arable fields … surrounded by small shaws or overgrown hedges or trimmed remnant hedges*". The AONB-LCA notes that although the scarp in this area is "*largely grassland, there are occasional blocks of deciduous woodland on the top*." The "*distinctive features draw the eye away from the scarp-foot developments such as the motorways and provides a means of orientation in the landscape.*" In the west part of the *Stowting* local character area, around the village of Brabourne, the scarp is described as becoming shallower and more cultivated, which has "*marred the characteristic 'natural appearance of the eastern slopes which is further compromised by gradual ribbon development and pockets of suburbanisation along the scarp foot.*"

12.3.61 The part of the '*Stowting'* local character area immediately to the east of the Site is described as an area of "*flat farmland … broken up by large blocks of woodland and small ditches*" in which a considerable amount of "*hedgerow loss has occurred.*" East of here this the '*Saltwood*' local character is described as a more intimate landscape of "*steep stream valleys, small woodlands and pasture.*"

12.3.62 Further east around the local character area known as the '*Folkestone outskirts*' the AONB-LCA highlights the presence of the: steep, enclosed coombes, and prominent landforms of Sugarloaf Hill and Summerhouse Hill dominating the edge of the town. It also notes the Channel Tunnel Terminal and M20/A20 motorway at the foot of the scarp through this area which sever the Downs from the town and dominate views from the scarp.

East Kent Downs' LCArea

12.3.63 The '*East Kent Downs*' are described a "*remote, peaceful area of downland* " located "*above the southern scarp*." It is characterised by: the long parallel dry valleys of the dip-slope running north-east; thick shaws and overgrown hedgerows on the steep valley sides; large arable ridge-top fields; a predominance of conifer and coppice woodlands on the upper slopes, decreasing in quantity towards the coast; single-track lanes leading to scattered remote settlements; and *shaves* (narrow strips of rough grassland – usually too steep to cultivate). The local character areas which are closest to the Site are *Petham* and *Elham*. *Petham* has a notable intimate, remote character, whereas Elham is described as a transitional landscape between this and the more open downland between Folkestone and Dover.

Stour Valley LCArea

12.3.64 In the far north-west of the Study Area lies the '*Stour Valley'* LCArea. Whilst the majority of this area's characteristics are associated with those of the river valley, and floodplain, the AONB-LCA local character area within this – '*Hampton'*, includes the part of the scarp slope known as the '*Devils Kneading Trough*'. This publicly accessible coombe and the escarpment at its peak, for a "*dramatic backdrop to the gentle farmland below*."

AONB-wide aspects of landscape character

12.3.65 The AONB-LCA highlights that the 'chalk scarp' through the AONB (stretching, in fact from Farnham, Surrey within the Surrey Hills AONB, to Folkestone) provides a "*strong sense of continuity*" throughout the length of the AONB. The AONB-LCA highlights the "*magnificent southerly views across Kent*" that

are possible from the scarp, but also its vulnerability to issues such as agricultural cultivation, quarrying, off-road driving, recreational car-parking, traffic and development "*immediately below the scarp*" that are likely to have a "*high impact on the enjoyment of views, unless very sensitively sited and screened*".

12.3.66 The AONB-LCA highlights the contribution use of local building materials makes to the character of the Kent Downs, such as flint, brick, timber (in the form of structural timbers and weather boarding), and in particular Kentish Ragstone from the greensand belt, and used most extensively "*along the scarp foot.*"

12.3.67 The AONB-LCA highlights the importance this area has played in the defence of the British Isles. It cites as evidence the remains of the Roman settlement on the scarp slopes of the Hythe escarpment just south of Lympne; the Saxon-shore fort of Lympne; the Martello Towers and Royal Military Canal around the edge of Romney Marsh; and remnants of defences, listening devices, airfields associated with the Battle of Britain in the Second World War.

Vulnerable landscapes

12.3.68 Whilst the AONB-LCA does not include any of LCAreas that are within the Study Area amongst those that it cites as containing '*vulnerable landscape*', some of the issues raised in the assessment of other LCAreas have associations with those surrounding the Site. One such issue is found along the valley of the River Medway. Here industrial development along the valley bottom is seen as particularly damaging because of the resultant indiscriminate loss of important "*features such as hedges, tress and shaws.*" The AONB-LCA highlights that "*such losses reduce the capacity of the landscape to absorb the visual impact of development.*"

Romney Marsh Landscape Character Assessment

12.3.69 A LCA for the area of Romney Marsh, the RM-LCA was prepared in 2016 for F&HDC (then SDC) and the Kent Wildlife Trust in association with the 5th Continent Landscape Partnership by Fiona Fyfe Associates. For F&HDC the assessment was commissioned to inform the FHDC-P&PLP

12.3.70 The RM-LCA took the LAK as a starting point and amended LCArea boundaries as appropriate to reflect changes that have taken place in the landscape since 2004. All of the LCAreas, and their characteristics, identified within the RM-LCA (where they fall with the administrative area of F&HDC) have been adopted into SDC-HLLA.

Site Specific LCA

12.3.71 The initial fieldwork and Site analysis undertaken in 2016/2017 in the preparation of this assessment concluded that sole reliance upon the existing LCA's in relation to the Site itself is too broad brush in nature to provide sufficient information to inform the Development's masterplan. For this reason, and on account of the size of the Site and the relative complexity of its landscape, a Site-specific LCA was considered appropriate.

12.3.72 The Site has been divided into 20 distinct LCAreas. Appendix 12-1 sets out the key characteristics of each in terms of land-use, topography, visual context, vegetative cover, perceptual aspects, and settlement pattern. It also identifies the condition of the LCAreas, their key sensitivities and actions arising from this that have been taken forward into the planning of the proposed Development.

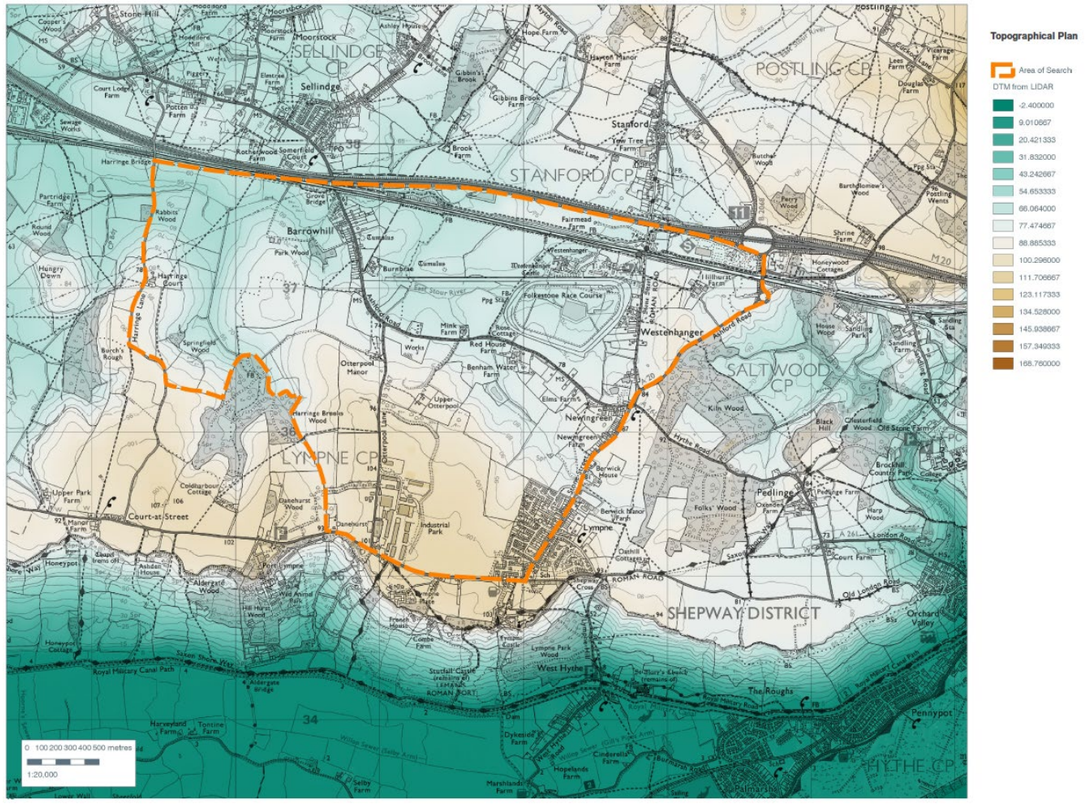
12.3.73 The paragraphs below set out a description of the overall Site and its surrounds in relation the landscape character and visual amenity issues, using references to the Site-specific LCA.

12.3.74 The Site covers an area of approximately 580ha upon the dip-slope of the Hythe (or sometimes Lympne) escarpment part of the greensand ridge. The area has a bedrock of predominantly Hythe, Sandgate and Folkestone Formations of calcareous sandstone and ragstone. To the west area Atherfield and Weald Clay have become exposed by hydrological flow. The major chalk landform of the North Downs emerges, at its closest point some 2.5km to the north. The broad valley between the greensand ridge and the escarpment of the North Downs within which the north of the Site lies within is known as the Vale of Holmesdale – a name applied the entire valley between the North Downs and the greensand ridge between Folkestone and Guildford, in Surrey.

12.3.75 As shown on Figure 12-10, taken from The *Technical Summary* of the initial placemaking proposals for Otterpool Park, the landscape of the greensand ridge dip-slope is incised by a number of minor watercourses that flow northwards to join the East Stour River.

12.3.76 Two such watercourses rise just south of Harringe Brooks Wood and join within this designated Ancient Woodland. The erosion of these has led to the formation of two distinct landforms – that of Lympne-Barrow Hill and that upon which lies Harringe Lane. Further east another watercourse rises just at the edge of Folks Wood (a designated Ancient Woodland) and cuts a course north-westwards to join the East Stour near to Westenhanger Castle, and in the process separating the Lympne landform from that of Newingreen and Hillhurst Farm.

Figure 12-10 extract from 'Otterpool Park – Garden Settlement – Technical Summary'



12.3.77 These hydrologically-borne undulations continue through the landscape to the west of the site of the Site until the landform of the greensand ridge disappears under the conurbation of Ashford

12.3.78 To the east of the Site the escarpment of the greensand ridge itself becomes sharply incised by watercourses, through Brockhill and Saltwood, that cut quick routes to the coast between Hythe and Folkestone.

12.3.79 Meanwhile the East Stour River, whose catchment the Site is predominantly within, and which rises at the foot of the North Downs scarp slope above Postling, takes a far long route. It winds its way westwards towards Ashford, before meeting the Great Stour and turning sharply northwards through a gap North Downs escarpment.

12.3.80 The Stour Gap forms a distinct break in the Downs, and forces the escarpment to turn inwards towards it. Between this gap and Capel-le-Ferme, where the North Downs become the 'white cliffs of Dover', the chalk landform is aligned north-west to south-east. In contrast to the relatively consistent stretches of the escarpment west of the Stour Gap, this section is unusually disrupted by a number of topographical intrusions. One clear basin exists around the village of Stowting and the other, visually more complex that this, lies around the settlement of Etchinghill. This later intrusion creates a set of deep coombes just north of Peene, and also the major chalk outlier of Tolsford Hill and the conical Summerhouse Hill.

12.3.81 The North Downs through the area surrounding the Site reaches a height of approximately 180m Above Ordnance Datum (AOD) (at Tolsford Hill and Brabourne Downs). In contrast the greensand ridge reaches a height of 108m AOD near Court-at-Street. Levels within the Site range from 57m AOD in the north-west to 107m AOD in the south (upon the site of the Lympne Airfield near to the Aldington Road)

12.3.82 In sharp relief to both the landforms of the North Downs and greensand ridge, is that of Romney Marsh to the south. This is a vast, flat, low-lying, wetland landscape with a comprehensive network of drainage ditches, protected from the sea by manmade coastal defences.

Land-use and Vegetation

12.3.83 Proportionally, the majority of the Site is farmed. There is however a very diverse range of other land-uses, in and around this, which include the:

- residential settlements of Westenhanger, Barrow Hill-Sellindge, Newingreen, Lympne and Sellindge;
- scattered dwellings such as Upper Otterpool, Otterpool Manor, Berwick House and Coldharbour;
- farmsteads of Hillhurst Farm, Somerfield Court Farm, Berwick Manor Farm, Benham Water Farm, Harringe Court, and Barrow Hill Farm;
- residential and commercial ribbon development along the A20 between Newingreen and Barrow Hill-Sellindge (including the Holiday Extra's office complex;
- visually distinct area Lympne Industrial Estate and its unfinished extensions;
- Westenhanger Railway Station and its car park;
- complex of Westenhanger Castle;
- complex of Lympne Castle;
- historic estate of Sandling Park
- The M20 Folkestone Service Station and Lorry Park
- distinctive form and buildings of the old Folkestone Racecourse;
- complex of visitor facilities, car parking, accommodation cabins and site of an annual music festival associated with Port Lympne Animal Park.

12.3.84 In addition, there are a range of historic land-uses associated with both rural and commercial/industrial activities have been present on the Site and its surrounds, and in most cases are still visible. These include the:

- Ancient barrows around the settlement of Barrow Hill-Sellindge
- the remnants of Otterpool Quarry, now partly a geological Site if Special Scientific Interest (SSSI), partly a lorry park;
- the remnants of the old Lympne Airfield, which was first a military and later civil airfield, ceasing operation in 1984; some limited hardstanding remains but the area is now predominantly a closely managed un-farmed grassland;
- a recently unearthed Roman villa between Otterpool Quarry and Mink Farm;
- The old Stanford windmill;
- The Royal Military Canal; and
- the deer parkland and pale of Westenhanger Castle

12.3.85 Away from the Site and its immediate environs, other major development influencing the character of this part of Kent includes:

- the Channel Tunnel Terminal, located on the northern edge of Folkestone;
- other transport infrastructure including the M20 motorway, the High Speed 1 and Ashford to Folkestone railway lines running along the base of the Vale of Holmesdale;
- major power infrastructure includes Dungeness Power Station, Little Cheyne Court Wind Farm, Partridge Farm Solar Fam (400m to the west of the Site), high voltage power transmission lines, and the Sellindge Convertor Station; and
- the Sellindge Sewage Treatment Works (500m to the north-west of the Site).

12.3.86 Most infrastructure and settlement through this area is largely concentrated between the greensand ridge and North Downs escarpment, as it is for much of the Vale of Holmesdale.

12.3.87 The farmland across the Site is predominantly in arable use, with medium-large scale fields bounded by a mixture of fencelines, mature and overgrown hedgerows, shaws and tree belts. Between Lympne and Barrow Hill-Sellindge the fields are also shaped on some sides by the well-treed watercourses that drain the area.

12.3.88 The woodland cover of the Site and its surrounds is as varied as its landform. As shown on Appendix 12-3 Figure 10 these two have a close connection. Those areas with steeper gradients and hence which are more challenging for cultivation, such as the scarp crests and coombes of the North Downs and greensand ridge, are often well-wooded. Harringe Brooks Wood is an example of this immediately adjacent to the Site.

12.3.89 Likewise, the crest of the Hythe escarpment is also well wooded. To the south of the Site this includes Aldergate Wood, Hill Hurst Wood and Lympne Park Wood. To the east of the Site the estate of Sandling Park retains much of its commercial and coppice woodlands – such as Kiln Wood (designated Ancient Woodland), Folks Wood and Chesterfield Wood. To the east there are major blocks of woodland between Aldington and Ham Street, skirting the northern edge of the comparatively treeless, open and exposed landscape of Romney Marsh.

12.3.90 The Site itself contains few woodlands of any noticeable size. Apart from Park Wood and the aptly named Springfield Wood other substantial areas of trees arise from the desire to integrate built development and infrastructure. Major planted belts exist around Lympne Industrial Estate, around parts of the old Lympne Airfield, along the M20 and HS1/Ashford to Folkestone railway line, and between the old Folkestone Racecourse and Westenhanger Castle. Most of the settlements across the Site, in particular Westenhanger and Barrow Hill-Sellindge have a strong vegetated form.

Built-Form and Settlement Pattern

12.3.91 Folkestone is the major settlement in the area – its centre lying 9.71km from the edge of the Site. Ashford lies 9.55km to the north-west. Between these, along the historic coaching routes to London, are the settlements of Mersham, Sellindge, and Hythe, and the ribbon development of Newingreen, Barrow Hill-Sellindge and sporadic development in-between. Other settlements such as Lympne, Westenhanger and Stanford lie upon Stone Street, the older transport routes to Canterbury.

12.3.92 As such the majority of settlements are predominantly linear in nature, relying upon a crossroads or another road junction to form their central cores. Whilst these settlements retain elements of their once rural setting most now rely on the transport opportunities that the strategic transport corridor through this area provides.

12.3.93 The settlements through the Site and its surrounds are mixed in their architectural styles and the materials used in their construction. The variety is most clearly shown in the village of Lympne where the strongly vernacular ragstone buildings and closely walled complex of Lympne Castle contrasts sharply with the winding cul-de-sac arrangement of amorphous brick late twentieth modern housing at the opposite end of the village. Whilst most other settlements show an equal disparity of styles and forms, one element that has some degree of consistency is the close frontage of properties onto the adjoining roads – such as along Stone Street and the A20. The few farmsteads that exist through the Site predominantly use brick at their main material. This includes Otterpool Manor, Hillhurst Farm, and Berwick.

12.3.94 Whilst the majority of buildings within and around the Site are domestic in size and scale, the Site is not unfamiliar with larger buildings. These include:

- The grandstand, hospitality buildings, and maintenance/storage sheds of Folkestone Racecourse;
- The main hall of the Folkestone Motorway Service Station;
- The salt sheds of the M20 maintenance yard;
- The Lympne and Sellindge village halls and school halls;
- The transformer structures of the Sellindge Electricity Convertor Station.
- The 14m high warehouse buildings within Lympne Industrial Estate; and

- The agricultural barns of Somerfield Court Farm, Harringe Court, Otterpool Manor, Barrow Hill Farm, Hillhurst Farm, and Berwick Farm.

12.3.95 The existing settlement and built development within and around the Site form a number of existing lighting sources that are visible from points throughout the study area. These include the:

- 24 hour road lighting around the elevated sections of the Junction 11 of the M20 and connections to the A20;
- 24 hour task, signage and safety lighting around car park, petrol station, lorry park and main building of the Folkestone motorway service station;
- 24 hour task lighting associated with the motorway maintenance yards;
- road lighting around the junctions of the A20 with stone Street / Hythe Road and with Otterpool Lane;
- street lighting and domestic lighting within the villages of Lympne, Barrow Hill-Sellindge, Westenhanger, Newingreen, and Sellindge;
- 24 hour security, task and signage lighting associated with Lympne Industrial Estate;
- Security and signage lighting of the airport café and Otterpool Quarry lorry park;
- Security and safety lighting associated with the business premises at Newingreen.

12.3.96 Also visible at points throughout the Study Area are the:

- road lighting along stretches the M20 and its junctions;
- vast array of task, safety and security lighting of the Channel Tunnel Terminal areas, platforms carparks and terminal buildings;
- street, trunk road, domestic and commercial lighting in and around the major built up areas of Ashford and Folkestone;
- street lighting and domestic lighting in and around the smaller settlements of, Hythe, Brabourne Lees, Stowting, Brabourne, Postling, Wye, Brook, Aldington, Mersham, and those along the coastal strip between Hythe and Dungeness;
- task, security and safety lighting associated with Dungeness Power Station.

12.3.97 Collectively, these light sources combine to create a corridor of relatively bright night lighting between the two conurbations of Folkestone and Ashford. This corridor broadens in width past the Site on account of the presence of a relatively high number of settlements, the Lympne Industrial Estate, junction 11 of the M20, and the motorway service station.

12.3.98 This occurrence is also observed by the recent mapping (see Figure 12-11) that the Campaign for the Protection of Rural England (CPRE) have released (Ref 12.33).

Figure 12-11 Extract from SDC-CS Figure 5.3 – Green Infrastructure Network

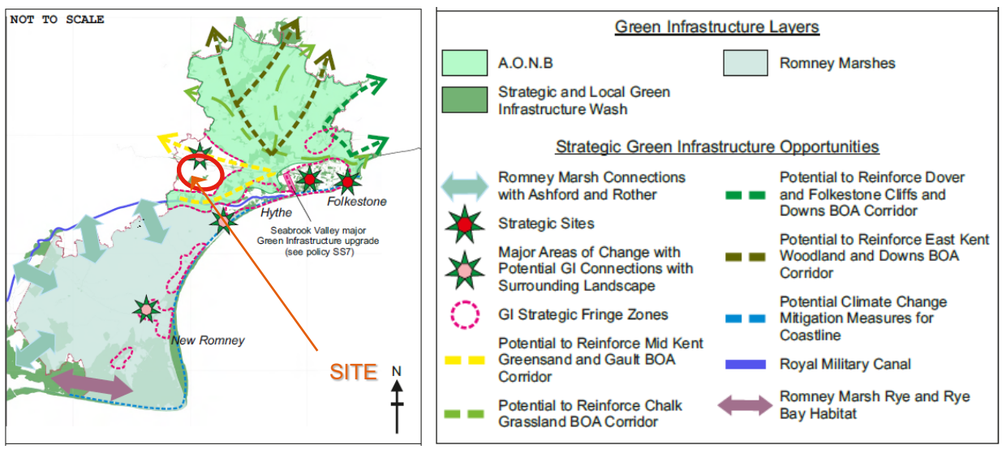
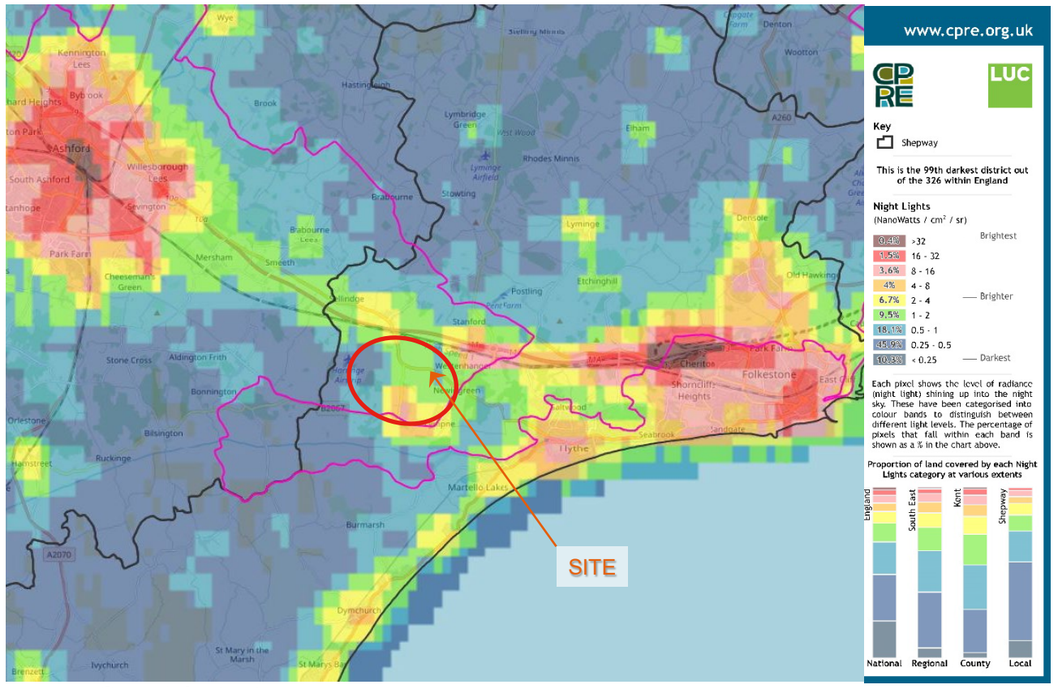


Figure 12-12 extract from CPRE's maps of England's light pollution and dark skies



Green Infrastructure

12.3.99 As well as being a strategic transport corridor the Site and its surrounds has been identified as being important to current and future strategic green infrastructure of the District.

12.3.100 Figure 12-12 and Figure 12-13 demonstrate that at adopted planning policy level, and at emerging planning policy level, the Site's boundary with the AONB is identified as a '*GI Strategic Fringe Zone*', where improvements are sought through developing "*corridors with the potential to better link greenspace and settlements.*" In addition, Harringe Brooks Woods and others are identified as being part of the '*Strategic and Local Green Infrastructure*', and the area just north of the Site, in Sellindge, is noted as a '*Major Area of Change with Potential GI Connections with Surrounding Landscape*'; and the Site itself is a '*strategic*' GI site.

Figure 12-13 Extract from F&HDC-CSR Figure 5.2– Green Infrastructure Network

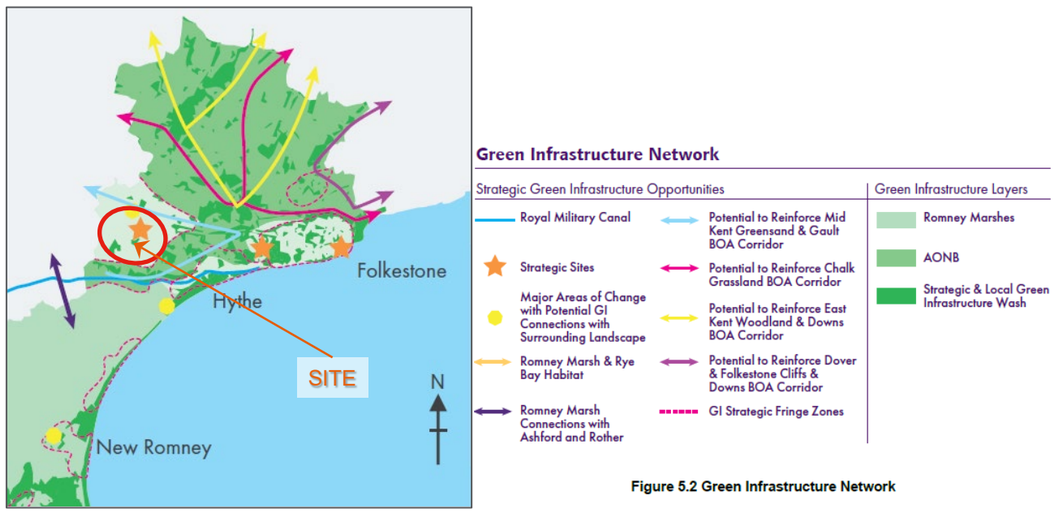


Figure 5.2 Green Infrastructure Network

Landscape Related Designations

Kent Downs AONB

12.3.101 Appendix 12-3 Figure 6 shows that the southern and eastern boundaries of the Site lie immediately adjacent to the AONB. To the north of the Site the AONB is separated from it by a distance of approximately between 1.2km and 1.45km, as the designation's boundary follows the north-west – south-east alignment of the North Downs escarpment. The escarpment itself lies approximately between 2.1km (at its closest point) and 5.5km north of the Site (when measured due north from the north west corner of the Site).

12.3.102 The AONB was designated in July 1968. It covers an area of 878sq.km (326 sq. miles), entirely in Kent, stretching from the Surrey/Greater London border to the Strait of Dover. Section 2.1.2 of the AONB-MP identifies that the Kent Downs are the "*eastern half of the North Downs ridge of chalk stretching from Farnham in Surrey to the English Channel. The western half of the chalk ridge lies within the Surrey Hills AONB, which adjoins the Kent Downs*" as shown in Figure 12-14.

12.3.103 The AONB's in both Kent and Surrey follow the alignment of the North Downs escarpment but also encapsulate areas of the valued adjoining landform. In the case of the AONB this includes Greensand Ridge south of Sevenoaks and the Lympne Escarpment. The AONB, unlike its sister designation in Surrey, also includes an extensive part of the dip-slope of the North Downs – i.e. between Rochester Canterbury and Dover.

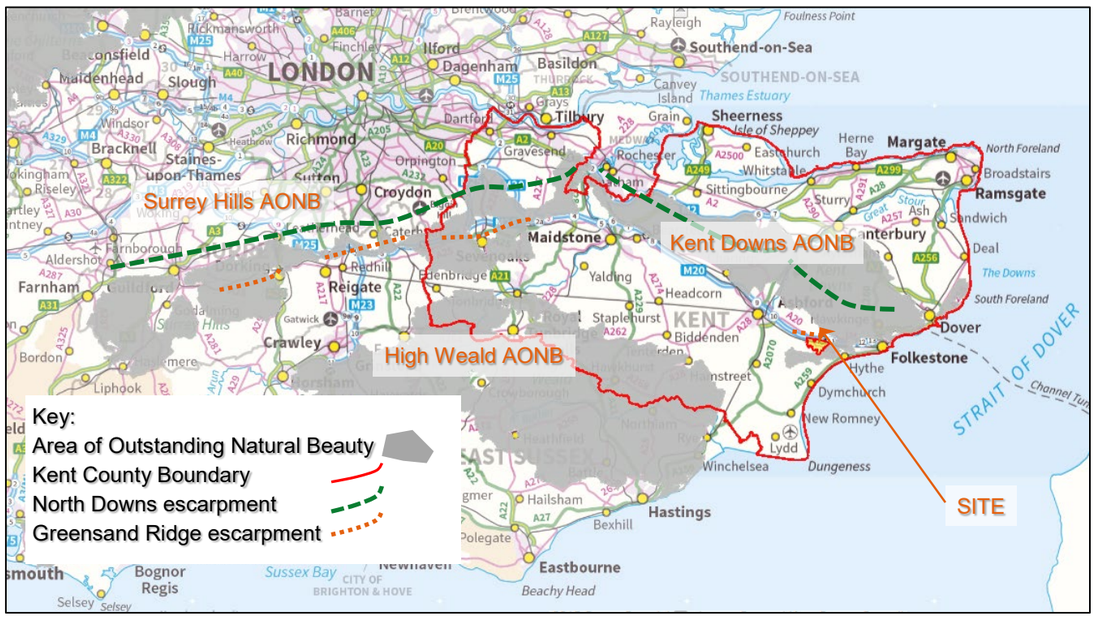
12.3.104 As outlined in Section 2.1.3 of the AONB-MP the term 'natural beauty' in relation to the designation is defined in section 92 of the CRoW Act 2000 as an area's "*flora, fauna, geological and physiographical features*". The AONB-MB, however also states that the term 'natural beauty' was "*always intended to embrace more than just the visual or scenic elements of the landscape and the definition has been updated and broadened to include historic and cultural heritage*". It cites government agency guidance specifically on AONBs (Ref 12.18) to demonstrate this point:

> "*Natural beauty is not just the look of the landscape, but includes landform and geology, plants and animals, landscape features and the rich history of human settlement over the centuries.*"

12.3.105 The AONB-MP concludes by stating:

> "*At the core of the secondary purpose of AONB designation is the understanding that the landscape is not just scenery, but it is the result of the historic and on-going interaction between people and place. Social and economic activity that contributes to the landscape.*"

Figure 12-14 Extract from Kent Landscape Information System - Interactive Map (Ref 12.34) showing extent of the AONB within Kent



Special Characteristics and Qualities

12.3.106 Section 1.2.1 of the AONB-MP identifies that the area's 'Special Characteristics and Qualities', "*which together distinguish it as a landscape of national and international importance and which are consistently identified and valued by the public, individuals, institutions, organisations and experts alike*", are:

- Dramatic landform and views;
- Biodiversity-rich habitats;
- Farmed landscape;
- Woodland and trees;
- A rich legacy of historic and cultural heritage;
- Geology and natural resources;
- Vibrant communities;
- Development pressures; and
- Access, enjoyment and understanding

12.3.107 Those '*Special Characteristics and Qualities*', and their descriptions as defined in the AONB-MP, that are relevant to this Site, the Development proposals and this assessment are set out below.

12.3.108 '*Dramatic landform and views*' (or 'landform and landscape character' in it is termed in section 4. of the AONB-MP) is described in the AONB-MP as:

> "*The Kent Downs dramatic and diverse topography is based on the underlying geology. These features comprise: impressive south-facing steep slopes (scarps) of chalk and greensand; scalloped and hidden dry valleys - these features are especially valued where they have a downland character; expansive open plateaux; broad, steep-sided river valleys, and the dramatic, iconic white cliffs and foreshore. Breath-taking, long-distance panoramas are offered across open countryside, estuaries, towns and the sea from the scarp, cliffs and plateaux; the dip slope dry valleys and river valleys provide more intimate and enclosed vistas. Overlying this landform are diverse natural and man-made features creating distinctiveness at a local level.*"

12.3.109 Of the six key elements of landform that, according to Section 4.3 AONB-MP, define this '*Special Characteristic and Quality*' only two are relevant to the Site and the Development proposals. These are the: '*The Chalk Ridge*'; '*The Greensand Ridge and Lympne escarpment*'.

12.3.110 *'The Chalk Ridge'*: is described, in the AONB-MP:

> "*The long arc of the North Downs chalk ridge is the most dominant element of the AONB, consisting of the steep, south-facing scarp slope rising above the Gault clay vale below, the open expansive plateau tops and gentle dip slopes traversed by many hidden, dry valleys. Spectacular views are offered along the chalk escarpment across the Vale of Holmesdale, Low Weald, the river valleys and the towns below making the setting important to the enjoyment and purposes of the AONB.*"

12.3.111 '*The Greensand Ridge and Lympne escarpment*': is described, in the AONB-MP:

> "*The undulating Greensand Ridge rises to one of the highest points in southeast England at 250 metres at Toy's Hill. The views from along the length of the Greensand Ridge are some of the best in southern England, and on a clear day, the High Weald and the South Downs beyond can be seen. In the east Kent Downs, the Lympne escarpment of calcareous Sandstone and Ragstone provides a spur of higher ground affording dramatic views across the near-level Romney Marsh and Hythe Bay.*"

12.3.112 The AONB-MP describes the 'woodland and trees' 'Special Characteristic and Quality':

> "*broadleaf and mixed woodland cover 23% of the Kent Downs and frame the upper slopes of the scarp and dry valleys and plateaux tops". Some large woodland blocks are present but many woodlands are small, fragmented and in disparate land ownership and management. … Large areas of sweet chestnut coppice are present throughout. Woodland management is critical to secure this resource and efforts to secure new markets for woodland products are beginning to effect resurgence in management. Tree disease and deer are now probably the greatest threats to this vital resource.*"

12.3.113 In describing the 'rich legacy of historic and cultural heritage' 'Special Characteristic and Quality' the AONB-MP states that:

> "*Millennia of human activity have created an outstanding cultural inheritance and strong 'time depth' to the Kent Downs. In the original designation the villages, churches and castles are particularly noted. There are the remains of Neolithic megalithic monuments, Bronze Age barrows, Iron Age hill-forts, Roman villas and towns, medieval villages focused on their churches, post-medieval stately homes with their parks and gardens and historic defence structures from Norman times to the twentieth century geology and natural resources; vibrant communities; development pressure; and access and enjoyment. Fields of varying shapes and sizes and ancient wood-banks and hedges, set within networks of droveways and sunken lanes have produced a rich historic mosaic, which is the rural landscape of today. Architectural distinctiveness is ever present in the scattered villages and farmsteads and oasthouses, barns and other agricultural buildings, churches and country houses. The diverse range of local materials used, which includes flint, chalk, Ragstone, timber and tile, contributes to the character and texture of the countryside.*"

12.3.114 In reference to the 'Geology and natural resources' 'Special Characteristic and Quality' the AONB-MP cites that the "*imposing landform and special characteristics of the Kent Downs is underpinned by its geology*" and that

> "*…. much of the AONB provides surprisingly tranquil and remote countryside – offering dark night skies and peace. These are much valued perceptual qualities of the AONB.*"

12.3.115 The AONB-MP cites the 'development pressures' that the designation is under from its position "close to London, mainland Europe, major urban centres and growth areas" as one of its 'Special Characteristics and Qualities':

> "*New transportation infrastructure including strategic trans-European highways, communications and housing, as well as the pressures of intensive agriculture and forestry, increased recreational use and illegal activities such as fly-tipping and off road driving can detract from this important landscape.*"

12.3.116 The AONB-MP however recognises such development and change as both a potential opportunity as well a potential threat. The document therefore encourages "*a positive exchange of goods and services between the Kent Downs and the surrounding urban areas."* It states that despite "*the intense pressure experienced in the Kent Downs, it is still true that the AONB has largely retained its character and community based projects have shown the real benefit of sustainable development approaches.*"

12.3.117 The final '*Special Characteristic and Quality*' – '*access, enjoyment and understanding*' recognises the "*considerable demand for access and recreation in the Kent Downs*" and the challenges associated with "*providing this in a way which supports the special characteristics of the AONB*". These include, for example, balancing the differing needs of those walking, cycling and horse riding on the network of PRoW (which according to the AONB-MP is "*four times as dense as the national average and there is a high relative density of bridleways and byways*"), including the North Downs Nay National Trail and Open Access Land.

Setting of the AONB

12.3.118 Whilst section 12.2 of this Chapter set out the planning policy position with regards to the '*setting*' of the AONB, using references from amongst others the NPPF, NPPG, F&HDC, ABC, and the AONB-Unit, this baseline section sets out what constitutes the '*setting*' with regards to the Site, proposed Development and this assessment.

12.3.119 It is accepted that, as stated in the AONB-MP the '*setting*' of the AONB is not defined or indicated on any map, and that its extents depend upon issues such as the size and nature of the development being considered, the distance from it to the AONB, and its potential incompatibility with its surroundings.

12.3.120 It is also accepted that, as stated in section 4.0 of the AONB-SPS, the AONB's setting "does not have a geographical border" but in most cases "*comprises land outside the AONB which is visible from the AONB and from which the AONB can be seen*". Further to this, in some cases "*the setting area will be compact and close to the AONB boundary, perhaps because of natural or human made barriers or because of the nature of the proposed change.*", whereas in others the setting maybe be "*substantial for example where there is a contrast in topography between higher and lower ground.*"

12.3.121 The AONB-SPS, in fact, lists locations where potential new development and changes to the landscape within the setting of the AONB "*may be more keenly felt*". Of the five listed in the AONB-SPS only one contains the Site: "*Scarp of the Kent Downs to the Vale of Holmesdale - the valley that lies at the foot of the North Downs and incorporates the A20/M20, M26 and M25 corridors, together with views from the Lympne escarpment to the Romney Marsh and from the Greensand Ridge.*"

12.3.122 Therefore, as it must be that the '*setting*' primarily relates to the visual experience and, after taking into account the aspects of distance, intervening barriers, topography, it can differ from place to place within the AONB, this assessment has separately considered each part of the designation within the Study Area (i.e. the North Downs escarpment, the North Downs Scarp Foot, the Hythe Escarpment and the Sandling Park edge) to establish its extent and sensitivities - in relation to the Site and the proposed Development.

North Downs Escarpment

12.3.123 The LCAs at national, county and local levels recognise that views from the escarpment of the North Downs can be long reaching. In addition, the AONB-SPS states that the "*Long distance panoramas are offered across open countryside, particularly from the scarp, primarily in a southerly direction.*" From the stretch of the escarpment within the Study Area they can, on a clear day, reach to the High Weald, the English Channel and even (from the area above Folkestone) to the coast of France.

12.3.124 It is accepted that there is clear association between geology of the scarp, the adjoining vale of Holmesdale and the greensand ridge, and that these should be 'read' together in order to gain an understanding of this one aspect of the natural beauty of the AONB.

12.3.125 It is also recognised, however, that the: orientation of parts of the North Downs escarpment; the wooded nature of much of its steep slopes and scarp top; the alignment of users of the North Downs Way National Trail (NDW-NT) in generally north-west to south east, and vice versa directions; and the vulnerability to landform of such elevation to climatic conditions such as low cloud, fog etc; all combine

to limit clear, unaffected views to the Site from significant stretches of the escarpment (see Appendix 12-3 Figure 8).

12.3.126 As shown in Appendix 12-3 Figure 8 the setting of the North Downs escarpment within the Study Area therefore comprises of:

- the land at the foot of the scarp slope which is most immediately apparent and visually clear for longest parts of the day and year (by virtue of its proximity), and which is looked on from the scarp when views are possible, almost from above, and in which the detail of villages, farmsteads, scattered settlement, gardens, mixed agriculture and minor roads, and even the Channel Tunnel Terminal (from the scarp above Folkestone) is all readily perceptible;
- the deep and broad open vista of land in the mid-ground, beyond the scarp foot, which forms the Vale of Holmesdale, and in which: occasional distinct landforms, such as Summerhouse Hill; the significant urban areas of Folkestone and Ashford; and the noise, movement and reflection of vehicles on the M20 (including the motorway services) and the railway line, all demand visual attention in views from the scarp;
- distinct landforms such as further parts of the North Downs escarpment to the east and west, and the greensand ridge of the Hythe escarpment in the distance. The wooded tops of these occasionally appear on the skyline in views from the scarp. In addition land-use patterns and settlement form is apparent, but the detail of these (apart from large or significant buildings, such as that in the Lympne Industrial Estate and the square tower of St Martin's Church, Aldington), given the distance (up to 10km from the scarp) is not so readily apparent as it is for areas closer to the escarpment, and whose visibility can often be compromised by low cloud, fog, glare from the low winter sun;
- the striking, sweeping line of the Romney Marsh and Dungeness Peninsula coasts, the flatlands of the Marsh itself beneath them, the mass of the power station structures, and the vertical white structures of the twenty six 115m tall turbines at Little Cheyne Court windfarm outside Lydd in the far distance in views from the scarp, when visibility is not affected by sea mist/fret, low sun or glare from the sun reflecting on the sea;
- further distant landforms such as the High Weald and further flung parts of the North Downs escarpment to the west, and the flat horizon formed by the English Channel, which, if the climatic conditions allow, all can form the skyline.

12.3.127 Whilst the 'setting' of this area of the North Downs escarpment could be affected by inappropriate built form upon the Site, it is considered this could be moderated through: careful planning of the density, height, scale and massing of structures and buildings; providing space for significant native tree planting around and between buildings; and use of appropriate materials and lighting.

12.3.128 The concerns raised within the AONB-SPS with regards to the negative consequences to the AONB of an abrupt change of character within its 'setting' are abated with regards to this part of the designation, on account of the buffer provided by, at its shortest, the 2km wide gap of predominantly agricultural land between the scarp and the Site.

12.3.129 This opinion is shared by the SDC-PTR. Paragraph 2.4 (page 2-65) states that

> "*On the landscape criterion, Area B* [predominantly encompassing the Site] *generally slopes downhill from south to north. This slope faces a number of vantage points from the Kent Downs AONB to the north, meaning it is within its setting, albeit with the effect mitigated by distance to some extent- the most prominent land is almost six kilometres from key viewpoints within the AONB. As such, although it is true that the higher land to the south of the area is visible from the AONB, the effect of distance lessens its impact, certainly compared to Area A* [land to the north of the M20]*, which comprises extensive flat land close to the AONB boundary and forming the foreground of views from it."*

12.3.130 In addition to the views from the scarp, views back to it from the Site and its surrounds are possible and equally valued. The following analysis of these also helps ascertain the extent of this part of the AONB's '*setting*'. As highlighted in the AONB-SPS, the "*upland nature of the scarp makes it a prominent feature in the wider landscape, particularly in views towards the scarp from the south.*" This is true for a number of areas within the Site. As shown on Appendix 12-3 Figure 8, and listed below these include:

- The slightly elevated area of land between the A20 Ashford Road and Stone Street, south of Hillhurst Farm, along PRoW HE281;
- Glimpsed views from the A20, south of the Racecourse;
- Views from Otterpool Lane heading north from outside of the entrance to the Lympne Industrial estate and also from the stretch north of Otterpool Manor;
- Views from HE316 as it crosses from Otterpool Lane to Harringe Brooks Wood;
- Views from B2067, Aldington Road when leaving and approaching Court-at-Street; and
- Views from Harringe Lane, and PRoW HE302 over Barrow Hill.

12.3.131 From such locations the North Downs escarpment forms the skyline to distant views northwards and contributes an important part to the visual orientation of users along those PRoW and public highways. The stretch of the escarpment past the Site appears as a consistent combination of gently rolling landform populated by mixed agriculture and woodland. In comparison to other stretches of the North Downs escarpment the only natural or man-made features along the escarpment that particularly draw the eye, and catch attention are the communications masts on Tolsford Hill and the more pronounced landform around them. In many areas of the Site greater visual attention is drawn by existing features in the foreground and middle distance such as prominent buildings, farmstead complexes and notable vegetation instead of the escarpment.

12.3.132 From many other areas within the Site views to the escarpment are constricted or halted by local landform, woodland, hedge and roadside scrub vegetation, buildings, and the embankments and fencing of the railway and M20.

12.3.133 It is considered that harm to views to the escarpment from the Site and its surrounds can be moderated by careful positioning, orientation and massing of new buildings and vegetation to allow frequent views to it.

North Downs Scarp Foot

12.3.134 The extent of the 'setting' of those areas within the AONB at the foot of the scarp are, on account of its: lower elevation when compared to the escarpment; the undulating landform of this area; and the ability for intervening vegetation to restrict views through it, much reduced.

12.3.135 From such areas the 'setting' at its shortest is restricted to the edge of a field, within certain views, and at its furthest to the top of the Hythe escarpment between Lympne and Aldington. The narrow glimpses of the upper sections of greensand ridge that appear in views above intervening vegetation and buildings from the scarp foot comprise a gently rising landform, whose crest is generally wooded or already settled around the Site, but which has decreasing tree cover towards Court-at-Street.

12.3.136 As with the North Downs escarpment, it is considered that there would not be an abrupt change of character within the 'setting' of scarp foot area of the AONB due to the buffer provided by, at its shortest, the 1.1km wide gap between this area and the Site.

12.3.137 It is considered that harm to the 'setting' of this area of the AONB could be moderated through: careful orientation, height, scale and massing of structures and buildings; providing space for significant tree planting around and between buildings; and use of appropriate materials and lighting to integrate it with its surroundings.

12.3.138 As such the setting of this part of the AONB in relation to the proposed Development is considered to be restricted to upper parts of the Site, south of the A20, but one that can be substantially protected.

East of A20- Stone Street to Hythe

12.3.139 The 'setting' of section of the AONB to the immediate east of the Site is also much reduced when compared to the 'setting' of the escarpment. The landform of this area is similar to that of the Site to its immediate west, the AONB here is substantially wooded (along the boundary between the Site and Sandling Park the expanse of Kiln Wood and Folks Wood restricts inter-visibility between the two adjoining areas), and they are separated from each other by the busy A20 trunk road, the railway, motorway junction and service station– which all also contribute to a lack of tranquillity.

12.3.140 There are however a few occasional views from PRoW and public highways from this area to the escarpment, across the triangular plot of agricultural land at the far north-eastern end of the Site. These include the views from PRoW HE313 and the A261 Hythe Road.

12.3.141 The immediacy of the Site to this part of the AONB means that there is also a risk of an abrupt change to the character within its 'setting'. It is considered, however that there are opportunities for new development in this area of the Site to: be set back from the edge of the AONB; contain space for

significant native tree planting around and between buildings; and use of appropriate materials and lighting to integrate it with its surroundings.

12.3.142 As such the setting of this part of the AONB in relation to the proposed Development is considered to be restricted to the area of land between Stone Street, A20 Ashford Road and Hillhouse Farm, but one that can be substantially protected.

Hythe Escarpment

12.3.143 Given the comparative narrowness of the greensand ridge scarp and dip-slops (when compared to those of the North Downs) the 'setting' of the Hythe escarpment in relation to the Site can feasibly be both southwards over Romney Marsh and northwards towards the North Downs, over the Vale of Holmesdale.

12.3.144 In reality, the wooded and (in part) settled nature of the top of the greensand ridge around the Site, and the gentler landform of the plateau found here means that there are few views from it towards the Downs or the Marsh. It is not until users are either west of Port Lympne Animal Park, or east of the village of Lympne does the landscape open up sufficiently to allow appreciation of its elevation. When views are experienced from this area the most dramatic of these are to the south, as they contain the contrasting landform of the Marsh and sight of the coastline. This is affirmed by the F&HDC P&PLP which states that "*In the east Kent Downs, the Lympne escarpment … provides a spur of higher ground affording dramatic views across the near-level Romney Marsh and Hythe Bay*". It does not mention views back to the North Downs.

12.3.145 As such the setting of this part of the AONB in relation to the proposed Development is considered to be restricted to the area of land between Stone Street, A20 Ashford Road and Hillhouse Farm.

12.3.146 The immediacy of the Site to this part of the AONB means that there is also a risk of an abrupt change to the character within its 'setting'. It is considered, however that there are opportunities for new development in this area of the Site to: be set back from the edge of the AONB; contain space for significant native tree planting around and between buildings; and use of appropriate materials and lighting to integrate it with its surroundings.

12.3.147 In conclusion it is recognised that the Site lies within the '*setting*' of the AONB. This too is recognised by adopted and emerging planning policy and planning policy guidance at national and local levels. The extent and vulnerability of the '*setting*' of the AONB, however, differs from area to area - from the North Downs scarp to its foot slopes, and from the Hythe escarpment to the Sandling Park – these last two areas being those which abut the Site.

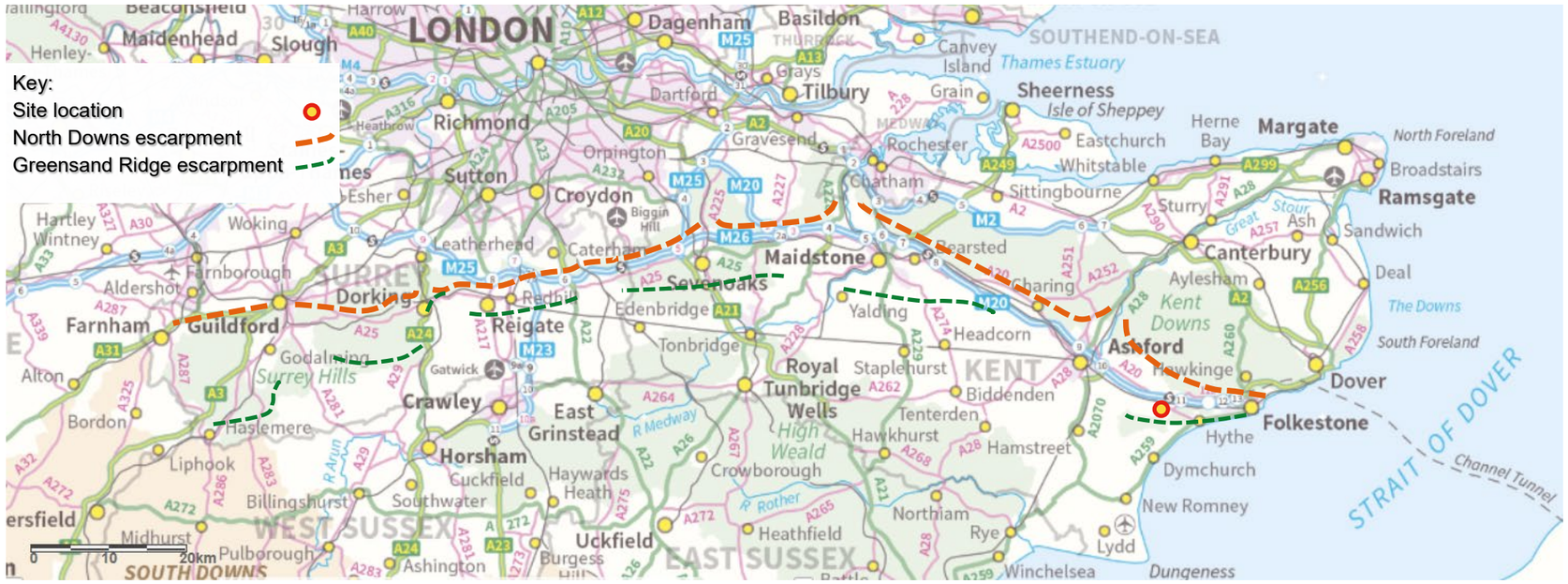
12.3.148 The most vulnerable part of the '*setting*' of the AONB within the Study Area, in relation to the Site and the proposed Development, is that of the North Downs scarp, given the elevated views from it. As demonstrated in the paragraphs above, however, the Site forms only one section of the mid-distant '*setting*' of this section of the AONB, and certainly not one that forms part of its immediate setting (a view as endorsed by section 2.3 page 2-45 of the SDC-PTR which states that *"broadly, land to the south and west of the A20 within Area B* [the Site] *appears within the distant background of views from the North Downs Ridge, which includes views from the North Downs Way National Trail*). Whilst there may be visual association between the scarp and the Site this is diminishes with: the distance they are apart, the proportion of the 'setting' the Site contributes to in the broad views from the scarp; and the variables associated with the weather and seasons that elevated land is more prone to.

12.3.149 There are also a few more individual and finer grained aspects of the AONB's '*setting*' that have a lesser importance, but which have been considered within the planning and assessment of the proposed Development, such as from the part of the AONB to the west of Newingreen, and parts of the scarp foot.

12.3.150 It is also evident, from the existing settlements within the '*setting*' of the AONB in this area (such as that of the villages of Brabourne Lees, Lympne and Sellindge) that successful integration of residential areas is achievable – albeit when controlled, planned, designed, implemented and manged, or allowed to evolve sensitively).

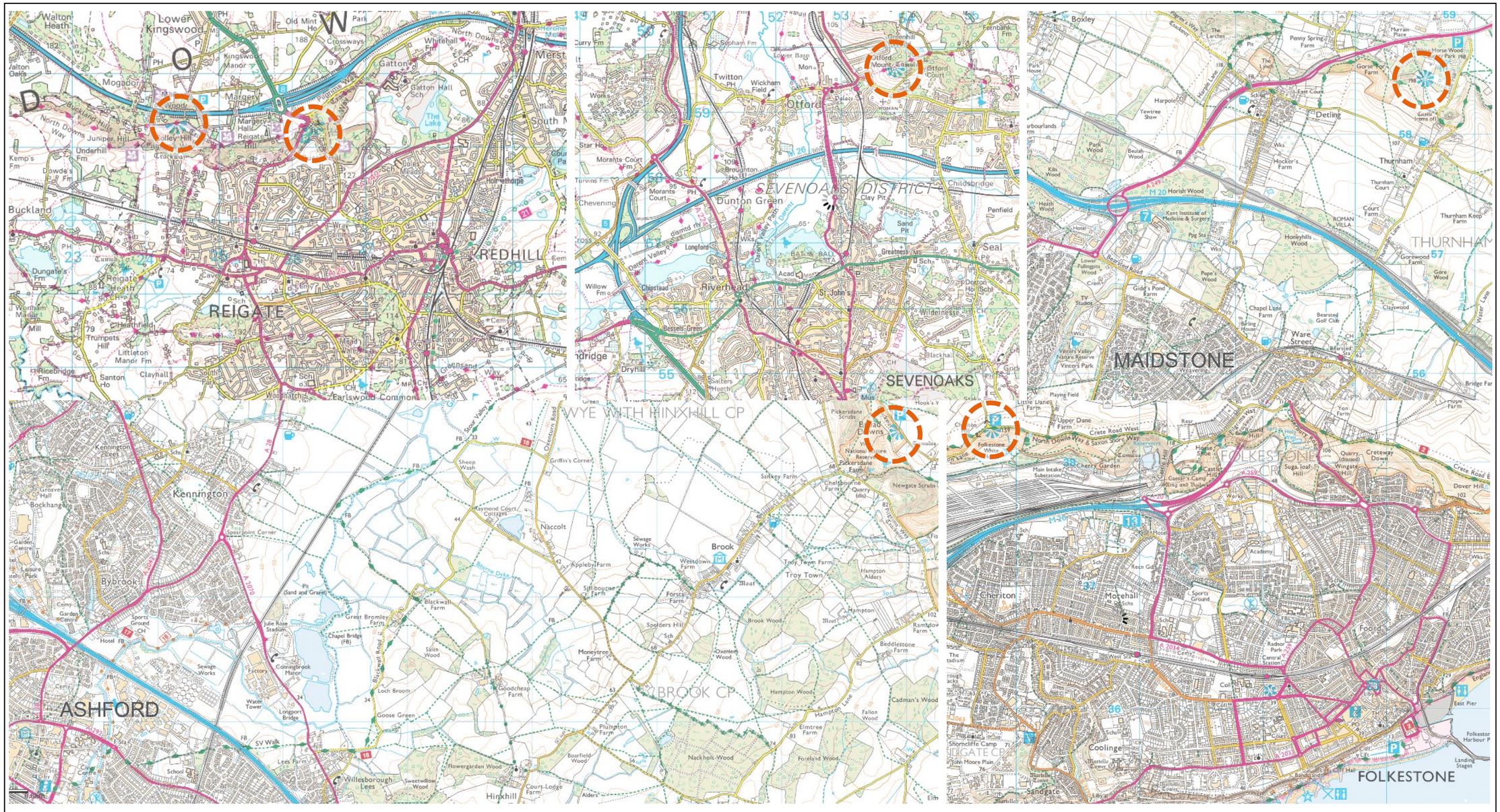
12.3.151 This is also the case when you consider other settlements in the 'setting' of the whole of the North Downs escarpment. Figure 12-15 shows the array of existing major settlements that have evolved overtime within the Vale of Holmesdale at the base of the North Downs, either at spring lines where the chalk and gault clay meet (such as Reigate, Bearsted, and Charing) or at the mouth of river 'gap's through the chalk escarpment (such as Guildford, Dorking, Sevenoaks, and Ashford). Many of the settlements (including Dorking, Reigate, Sevenoaks) have also take advantage of the elevation and stable ground of the greensand ridge, and sited their main streets, their churches, prime residential areas upon it.

Figure 12-15 North Downs Escarpment through south-east England



12.3.152 It is also noticeable how many of the valued established viewpoints along the North Downs escarpment are situated on the hill tops above these settlements, and orientated fully or partly towards them, where views to both the town, and the countryside are part of the enjoyment of the view. As shown on Figure 12-15 these include: Reigate Hill and Colley Hill, above Reigate; Otford Mount, above Sevenoaks; White Horse Wood Country Park, above Maidstone; Broad Down, above Ashford, and Cheriton Hill, above Folkestone. In addition, there is Box Hill, above Dorking. This demonstrates that there is a valued association between the North Downs and the towns at their base.

Figure 12-16 Location of established viewpoints upon Ordnance Survey mapping, in relation to towns along the Vale of Holmesdale



Special Landscape Areas

North Downs Special Landscape Area

12.3.153 The areas covered by the SLA designation within the Study Area are shown on Appendix 12-3 Figure 2 and Appendix 12-3 Figure 3. Within F&HDC this includes all areas covered by the AONB designation and a number of areas (totalling approximately 510ha) outside of this. Within the Site with includes the triangle of agricultural land to the west of Stone Street and east of the Sandling Park. The land between junction 11 of the M20 and the AONB boundary to the north, including the village of Stanford, and two further parcels to the north and north-west of Sellindge are also included in this designation.

12.3.154 Whilst planning policy CO4 of the SDC-LPR states that the SLA within the F&HDC administrative area is "*of countywide landscape significance*" and SDC-CS, at paragraph 5.51, implies that the SLA is "*significant to the setting of the Kent Downs, and the Romney Marsh*" no published document provides a further description of the key characteristics or special qualities that convey this level of protection.

12.3.155 The designation does not continue into the ABC administrative area for the reasons stated in the 'Ashford Landscape Character Assessment' (ALCA):

> "*Special Landscape Areas (SLAs) were identified under the Kent and Medway Structure Plan (KMSP 2006) and rolled forward as such in the Ashford Borough Local Plan (2000) which sought to place the protection and enhancement of these areas above other planning considerations. However the KMSP was formally superseded by the South East Plan in May 2009 which reinforced the shift to criteria based policies, as eluded to in Planning Policy Statement 7. The SLA has therefore, in effect, been removed from the Statutory Development Plan and carries little weight in planning terms. It is considered that the Landscape Character Assessment will provide a greater clarity and depth of detail in relation to the countryside and the key characteristics and features that lie within it. This should provide a more robust local level of detail based on each landscape character area, rather than a blanket coverage.*" (page 14)

Registered Parks and Gardens of Special Historic Interest -

Sandling Park

12.3.156 As shown on Appendix 12-3 Figure 3 Sandling Park lies immediately east the Site on the opposite side of the A20 between Junction 11 of the M20 and Newingreen. The Park is listed as a RPGHI of Grade II status. The park, house and gardens have remained in private ownership and are still a private residence. The grounds are opened for one day a year in aid of charity.

12.3.157 In total Sandling Park covers 177 hectares, of which, according to '*Appendix 1: Theme 9 - Parks, Gardens & Estates*' of the F&HDC *Heritage Strategy* (Ref 12.35) (F&HDC-HS) thirteen hectares are formal and ornamental gardens and the remaining are parkland, farmland and woodland. It is parts of the Park's farmland and woodland that abut the eastern edge of the Site. At its closest Sandling Park House and its ornamental gardens are 560m from the Site and separated from it by the 200m width of Home Wood and 360m of farmland. As such there is no inter-visibility between the two. This is confirmed by the ZTV (Appendix 12-3 Figure 10).

12.3.158 South of the farmland the area known as Kiln Woods forms the remainder of the boundary between the Site and the RPGHI. This is a densely treed, mature woodland that forms a robust buffer to the more designed parts of Sandling Park, and to the AONB in this area. The presence of the busy A20 trunk road along this boundary reinforces the separation between the Park and the Site.

Port Lympne

12.3.159 As shown on Appendix 12-3 Figure 3 the Grade II* RPGHI of Port Lympne lies at its closest point 300m to the south of the Site, on the opposite side of the B2607 Aldington Road. The designated area covers 23 hectares, and according to the F&HDC-HS, seventeen of these are woodland, which mostly border its boundaries – including that between it and the Site.

12.3.160 Port Lympne is open to the public as part of paid entry to *Port Lympne Animal Park*. The wider 'estate' of this 280ha recreational resource stretches far beyond the designated parkland, as shown on Appendix 12-3 Figure 3. The visitor carparking is located on the same side of the B2067 as the Site, and the reserve's main visitor vehicular entrance (for private cars and the bus service that delivers visitors there from Folkestone and Hythe) is accessed via of a tree lined avenue off Otterpool Lane. Visitors then use a footbridge to cross the B2067 and into to the park. There are numerous entrances for staff vehicle off the B2067 along the length of its boundary with animal park estate. The Park is reputed to receive 300,000 visitors a year.

12.3.161 The ornamental gardens around the main house of Port Lympne terrace down the slopes of the Hythe escarpment to maximise views across Romney Marsh. Numerous other maintenance buildings, lodges, cabins (for the overnight accommodation of guests) pepper the upper slopes of the estate.

12.3.162 As shown on Appendix 12-3 Figure 10 there is little inter-visibility between the designated RPGHI of Port Lympne and the main animal park area with the Site. The B2067 and its wooded fringes provide a buffer between them and land to the north. There are however views from the visitor entrance drive and car parking to the Site, given the openness of these areas and lack of intervening vegetation.

Hatch Park

12.3.163 As shown on Appendix 12-3 Figure 2 the Grade II RPGHI of Hatch Park lies 3.55km to the north-west of the Site. Its heavily wooded eastern boundary prevents inter-visibility between it and the Site Appendix 12-3 Figure 10.

Conservation Areas

Lympne

12.3.164 The Lympne conservation area, whose extent is shown on Appendix 12-3 Figure 3, lies at its closest point 40m to the south-east of the Site. The designated area primarily comprises of Lympne Castle, its outbuildings, St. Stephens Church, the '*County Members*' public house, and the dwellings along The Street, that leads into the conservation area (CA) from the B2067 Aldington Road .

12.3.165 An appraisal for the Lympne CA (Ref 12.36) published in 2007 by F&HDC (then SDC) identifies that the designated area "*enjoys a secluded setting back from the B2067*" (paragraph 14), and that its main outlook is the "*commanding views from the top of the escarpment over the Marshes below*" (paragraph 35). A view endorsed by those they consulted with in the preparation of the CA appraisal (within in the appendix of the CA appraisal) and by the F&HDC-P&PLP. This document states that the "*church and castle enjoy a secluded setting back from the B2067, occupying an impressive vantage point on top of a shallow gradient cliff known as the Hythe Roughs*".

12.3.166 The ZTV on Appendix 12-3 Figure 10 shows that there would be inter-visibility between the Site and the western edge of the CA, the small triangular green where The Street meets the B2067 In reality intervening hedgerows and tree belts along the Aldington Road and along the rear of the gardens of dwellings along The Street, which are not recorded upon the vegetation dataset used to compile the ZTV, substantially impede this.

Aldington Church

12.3.167 The Aldington Church CA, whose extent is shown on Appendix 12-3 Figure 3, lies at its closest point 2.0km to the west of the Site. The designation is located with the administrative area of ABC, but there is no currently available CA appraisal for this.

12.3.168 The CA contains the church of St Martin's, the churchyard, the site of a former Archbishop of Canterbury's palace the scattered dwellings along Church Lane to the north, and a group of fields to the east.

12.3.169 The ZTV on Appendix 12-3 Figure 10 shows that there is inter-visibility between the CA and the Site. In reality, the intervening hedgerows and tree belts surrounding the numerous fields between here and the Site, which are not recorded upon the vegetation dataset used to compile the ZTV, substantially impede this.

Brabourne

12.3.170 The Brabourne CA, whose extent is shown on Appendix 12-3 Figure 2, lies at its closest point 3.70km to the north-west of the Site. The designation is located with the administrative area of ABC, but there is no currently available CA appraisal for this.

12.3.171 The CA contains the church of St Mary's, the village centre and Penstock Hall the administrative office of the AONB-Unit.

12.3.172 The ZTV on Appendix 12-3 Figure 10shows that there is inter-visibility between the CA and the Site. In reality, the intervening hedgerows and tree belts surrounding the numerous fields between here and the Site, which are not recorded upon the vegetation dataset used to compile the ZTV, substantially impede this.

Other Conservation Area within the Study Area

12.3.173 Appendix 12-3 Figure 2 shows the location of the other CAs within the Study Area that have the potential of having views to the Site (those within the substantial built up areas of Ashford and Folkestone having been scoped out). The ZTV shown on Appendix 12-3 Figure 10 and fieldwork that has been undertaken to ground-truth this has confirmed that inter-visibility between the Site and these is substantially impeded by intervening vegetation and buildings.

Dark Skies Protection Area

12.3.174 The potential 'dark sky zone' referred to ABC-SLP policy ENV4 Light Pollution and Promoting Dark Skies lies within the "rural areas in the southern part of the borough" of Ashford and the "area around Woodchurch in particular" which lies approximately 10-14km to the east of the Site. The ZTV shown in Appendix 12-3 Figure 10 shows the large number of substantial woodland blocks that lie between Aldington and Woodchurch which inhibit inter-visibility between the potential 'dark sky zone' and the Site.

Landscape Character Receptors:

12.3.175 Given that this assessment forms part of an outline planning application, and that, should permission be granted, further 'reserved matter' or detailed planning applications are likely to be required before the proposed Development could be implemented, this assessment considers the effects to the overall landscape resource in terms of effects upon LCAreas as receptors (including their key landscape components, characteristics, and perceptual and aesthetic qualities) within the Study Area. An assessment of the effects on the finer grained physical landscape fabric of individual potential development plots of the Site and its surrounds (i.e. individual hedgerows, trees, fieldscapes) would form part of further studies that may accompany future 'reserved matter' or detailed planning applications.

12.3.176 In accordance with GLVIA3 those LCAreas used within the assessment as the landscape receptors should be those that are most up-to date, relevant (in their purpose), and detailed. As such, this assessment uses the geographic array, and identification of key landscape characteristics of those LCAreas identified within the SDC-HLLA and the ABC-LC SPD for its landscape receptors.

12.3.177 As the aim of the SDC-HLLA's was to identify "*the relative sensitivity of the landscapes within Shepway District to strategic level development*", and as: it was prepared in light of the GLVIA3 and the NE-ALCA; utilises the existing LCA at national and county levels in its findings; and engaged stakeholders in its preparation, its use is wholly appropriate in this assessment.

12.3.178 Use of the ABC-LC SPD in the development control process is supported ABC-SLP. This states at paragraph 5.314 that:

> "*All proposals coming forward should have regard to this SPD, and to the guidance on landscape characteristics that it provides, so as to ensure that new development does not compromise or damage landscape character… .*"

12.3.179 Paragraph 3.14 of the ABC-LC SPD states that the AONB character areas are to be used where their own coverage is deficient: "[for] *the purpose of implementing local landscape character policies, the areas of land designated as AONB in the Borough will be treated as separate landscape character areas and guidance material on these AONBs should be obtained from the relevant AONB Unit.*" - i.e. such as the AONB-KDL and AONB-MP.

12.3.180 Using the findings from our analysis of these LCA and the other published LCA at national, county and local levels, as well as the ZTV, and supplemented by our fieldwork and our Site-specific LCA, those LCAreas within the Study Area that have the potential to experience significant effects arising from the proposed Development, and which are therefore used in landscape assessment are listed below:

- SDC-HLLA LCArea:
  - SDC-05: Postling Vale
  - SDC-06: Stanford
  - SDC-07: Tolsford Hill
  - SDC-08: North Downs Ridge
  - SDC-09: Sellindge 10: M20 and HS1 Corridor
  - SDC-11: Lympne
  - SDC-12: Brockhill
  - SDC-13: Greensand Ridge
  - SDC-21: Romney Marsh Proper Farmlands
- ABC-LC SPD LCAreas
  - ABC-10: East Stour Valley
  - ABC-25: Aldington Ridgeline
  - ABC-29: Brabourne Lees Hilly Farmlands
  - ABC-30: Brabourne Arable Farmlands
  - ABC-31: Brabourne Farmlands
- AONB-KDL (in ABC)
  - ABC-AONB-01 Postling Vale - Stowting
  - ABC-AONB-03 East Kent Downs - Petham
  - ABC-AONB-04 Lympne - Aldington
  - ABC-AONB-05 Lympne - Hythe Escarpment
  - ABC-AONB-06 Lympne - Romney Marsh:

12.3.181 The location of these, in relation to each other is shown on Appendix 12-3 Figure 7.

12.3.182 As the methodology used to prepare the ABC-LC SPD, and the AONB-LCA differs from that of the SDC-HLLA (i.e. neither ABC-LC SPD or the AONB-KDL make judgements on the 'value' of each LCArea or explicitly define their 'susceptibility' to 'strategic scale development') a degree of moderation has been required. This involved using the key characteristics from each SDC-HLLA, ABC-LC SPD and AONB-LCA LCArea and applying the set of 'value' and 'susceptibility' criteria that is set out in the methodology to this assessment.

Visual Receptors

12.3.183 Analysis of the Site and its surrounds through desk-top and fieldwork (throughout different seasons and differing weather conditions between 2016 and 2019) has identified the following Visual Receptors to the proposed Development:

Users of National Trails

12.3.184 National Trails (NT) are defined in the glossary of the NPPF as "*Long distance routes for walking, cycling and horse riding.*" There are two NT with the Study Area; the North Downs Way (NDW-NT) and the England Coast Path.

England Coast Path

12.3.185 The ZTV identifies that there are few locations along the England Coast Path from which the proposed Development may be visible. In reality, the array intervening buildings, coastal defences, other structures and vegetation along the coast prevents any views to the Site. It is considered, therefore, that there is unlikely to be significant visual effects upon receptors using the path as a result of the proposed Development.

North Downs Way

12.3.186 The NDW-NT is a 153 mile path that starts in Farnham, in Surrey, and which follows the North Downs through the Surrey Hills AONB and into Kent, ending in Dover. Users of the NDW-NT have the potential to experience significant effects arising from the Development.

12.3.187 With regard to the frequency of the path's use, paragraph 12.2 of the AONB-MP states that research by the NDW-NT Team "*shows an estimated 250,000 visitors use the trail each year between May and October.*" The AONB-MP also states that "*user surveys show that the majority of use on the North Downs Way tends to be for shorter walks*".

12.3.188 Despite the preconception that the NDW-NT follows the scarp of the North Downs for its entire length, the route in fact drops down to the foot slopes (e.g. at Stowting within the Study Area), strays onto the dip-slope (e.g. for 3km between Broad Down and Brabourne Downs within the Study Area), and tracks across valley bottoms (such as that of the East Stour).

12.3.189 In addition, fieldwork in preparation for this assessment confirms that views to the Site, from the length of the NDW-NT within the Study Area, are restricted on numerous occasions by landform and the scarp-top woodlands and hedgerows (a characteristic feature along the scarp) that are located to the side of the route.

12.3.190 There are also occasions when the views from the NDW-NT through the Study Area are completely unhindered, and wide panoramas out from it are possible. On the clearest of days views from such locations through the Study Area can stretch up to 40km. Within these visual arrays, users of the trail have the potential to see as far as the High Weald ridges, the High Weald coast at Fairlight, the Dungeness peninsular, and further reaches of North Downs escarpment east and west.

12.3.191 The Site is also potentially visible in such views but, depending upon the distances between it and the NDW-NT (which vary between 2.45km at its closest point and 8.00km at its furthest within the Study Area), only it forms a small part of these both horizontally and vertically, and not all of the Site is visible in every view.

12.3.192 It is also evident from the research undertaken during the preparation of this assessment that generally beyond a distance of 5.0km upon the elevated ground of the North Downs a viewer's ability to distinguish the detail from a settlement is significantly compromised. Whilst awareness of the settlement is still clear from beyond 5.0km the distance causes the viewer to not a readily visually engage with it as they would should the conurbation be closer.

12.3.193 In addition, it must be noted, that given the NDW-NT's general north-west to south-east orientation, users' predominant visual experience, especially those on bicycles is angled along the line of the North Downs and not specifically towards the Site.

12.3.194 The kinetic visual experience of the NDW-NT through the Study Area, and of the whole trail for that matter isn't, however, just one of secluded areas and panoramas. The, almost, constant awareness of the greensand ridge to the south and the Vale of Holmesdale that is formed between the two, is complemented by the frequent appearance of settlements at the foot of the scarp (such as Brook, Wye, Brabourne, Stowting, Postling, Etchinghill, Penne, and Folkestone) and in the middle distance (such as Ashford, Sellindge, Stanford, Brabourne Lees, Mersham, Lympne and Folkestone), and the moving, reflective and audible, ribbon of the M20 and HS1/Ashford-Folkestone railway line (see Figure 12-15)

12.3.195 Analysis of the ZTV (Appendix 12-3 Figure 10) identifies which general locations along the NDW-NT afford views to the Site and proposed Development. Our own fieldwork to verify this has provided a more detailed understanding of the extent of the NDW-NT within the Study Area that the Site is clearly, or partially visible from – See Appendix 12-3 Figure 11. The descriptions below, moving north-west to south -east along the NDW-NT provide an analysis of those areas along it that do and do not have views to the Site.

12.3.196 At the western end of the NDW-NT within the Study Area the Site is visible, but only barely perceptible, in the wide panoramic, generally south-westerly views from Broad Downs (see representative VP01) – the scarp slope above the village of Brook and near to the area known as the Devil's Kneading Trough – a marked viewpoint on Ordnance Survey (OS) maps.

12.3.197 Between this area and Brabourne Downs the NDW-NT takes a route across the plateau and top of the dip-slope which, for approximately 3km, does not afford any views out across the Vale of Holmesdale, or to the Site. After this and following approximately 300m of scarp-top panorama along the road that leads up Brabourne Downs (see representative VP02), the NDW-NT drops down the slope and behind intermittently dense vegetation. As such views out across the landscape and to the Site are not possible for another 0.5km.

12.3.198 Views are then possible again along the stretch of the NDW-NT that follows the scarp-top directly above the village of Brabourne (see representative VP28). These views are then halted when the route drops down through woodland towards the village Stowting. There are a few glimpses to the Site from this lower level where gaps in hedgerow vegetation allow, such as between Highfield Farm and Field View Farm along Scots Lane (see representative VP03) – where the NDW-NT follows a public highway. Views are also possible for a short while upon the climb up Cobb's Hill, but for the majority of this approximate 3.0km section, until the route reaches the sharp bend in the B2068 Stone Street, between Cobb's Hill and Farthing Common, visibility is hindered by landform, buildings and vegetation.

12.3.199 The scarp-top path parallel to B2068 Stone Street through this area affords only vertically narrow views out across the Vale of Holmesdale to the Site on account of the path being positioned slightly back from the crest of the scarp. In addition, views are noticeably hindered by vegetation in the middle distance directly south of the OS marked viewpoint at Farthing Common car-park (see representative VP04). Between here and the Downs above Postling hedgerows and landform frustrate clear views to the Site from all but short lengths of the NDW-NT (see representative VP05) as the route drops up and down, and in and out of this undulating, and vertically and horizontally incised part of the scarp.

12.3.200 The NDW-NT drops down to cross the gap in the Downs between Postling and Lyminge, and it is not until the path gets close to the crest of Tolsford Hill that clear uninterrupted views to the Site are again possible (see representative VP06), due to landform and path side hedges. These views only last for a few hundred metres before the path moves away from the crest and drops down for approximately 2.5km through Etchinghill and across the Elham Valley Way.

12.3.201 The path continues through areas of visually impeding landform and vegetation for a further 1.6km and it is not until the path reaches the Peene Quarry Country Park that slightly lengthier clear interrupted views to the Site are possible (see representative VP07).

12.3.202 Beyond the almost ninety degrees turn that NDW-NT takes within the Peene Quarry Country Park views to the Site (some 5.5km from the Site) becomes difficult on account of intervening landform. The views at this point are dominated by the Channel Tunnel Terminal at the foot of the scarp slope, and the town of Folkestone between this and the English Channel.

Users of Long Distance Footpath

12.3.203 Appendix 12-3 Figure 2 shows that there are a number of Long Distance Paths (LDP) within the Study Area. These include the Saxon Shore Way (SSW-LDP), the Royal Military Canal Path, and the Elham Valley Way.

12.3.204 The ZTV (Appendix 12-3 Figure 10) indicates that there are no views to the Site and the proposed Development from the Royal Military Canal Path, and the Elham Valley Way. As such there are unlikely to be significant visual effects upon receptors using these paths as a result of the proposed Development

12.3.205 The ZTV shows that the inter-visibility of the Saxon Shore Way (SSW-LDP) with the Site and the proposed Development is very limited but that there is the potential for users of it to experience significant effects arising from the Development. The route of the SSW-LDP west to east through the Study Area (see Appendix 12-3 Figure 2) first follows the old shoreline along the northern edge of Romney Marsh, before cutting across the Vale of Holmesdale and climbing up Tolsford Hill. It then shares the path with the NDW-NT until this runs out east of Folkestone. All but the section of the path that it shares with the NDW-NT at Peene Quarry has few views to the Site on account of intervening landform, vegetation and buildings. Even where the SSW-LDP rises up to the top of the greensand ridge scarp slope and is at its closest point to the Site (approximately only 60m away), views between the two are screened by buildings and dense intervening tree, hedge and scrub vegetation (see representative VP29).

12.3.206 Further along its length, to the south-east the hedgerows along the Aldington Road and the dense vegetation of Folks Wood screen views from the SSW-LDP to the Site. To the west intervening vegetation and landform screen views to the Site from the SSW-LDP (see representative VP12).

Other Public Rights of Way

Public Rights of Way Within the Site

12.3.207 The ZTV (Appendix 12-3 Figure 10) demonstrates that users of every part of the PRoW within the Site (see Appendix 12-3 Figure 2) would have views to the proposed Development. As such, users of these paths have the potential to experience significant effects arising from the Development.

12.3.208 The visual experience that users of these paths (which are predominantly on foot, although there is one bridleway between Barrow Hill-Sellindge and the railway line) currently have varies, but in most instances it comprises: views across agricultural land, plus the farmsteads associated with these; the built-up edges to the settlements, and the domesticated paraphernalia of Westenhanger, Newingreen, Lympne, Barrow Hill-Sellindge, Sellindge and Stanford; scattered dwellings; tree belts, woodland hedgerows and shaws; and the local road network.

12.3.209 Users of nearly all the PRoW within the Site also experience views to significant elements of infrastructure and non-settlement/non-agricultural-related built form. This includes: the large scale and tall buildings, fencing, non-native and coniferous vegetation, artificial landforms, communications mast, and associated paraphernalia of Lympne Industrial Estate; the assorted buildings, fencing and distinctive landscape form of the redundant Folkestone Racecourse; the vehicle movement, embankments, heavily engineered bridges, lighting, overhead cables, signage, acoustic fencing and other infrastructure associated with the M20 and HS1/Ashford to Folkestone railway; the large scale buildings, extensive car parking, movement, lighting, signage, and access roads associated with the motorway services and Westenhanger Railway Station; the signage, access road, ornamental tree and shrub planting, extensive carparking and other infrastructure associated with the Port Lympne Animal Park and the high-voltage electricity pylons that march across the north-west corner of the Site.

12.3.210 In addition to this:

- PRoW HE316 (between Harringe Brooks Wood and Otterpool Lane) (see representative VP17), HE302 (between Harringe Court and the East Stour River), and those PRoW around Hillhurst Farm (see representative VP09) also experience clear views to the escarpment on the North Downs in the middle to long distance;
- Only users of PRoW HE227 and HE275 (see representative VP21) experience clear views to Westenhanger Castle. The vegetation and racecourse buildings around the Castle prevent views from other PRoWs to it;
- The dense network of woodland, tree belts and hedgerow vegetation that exists along the Aldington Road past the Site and further east and west along this road, along with the existing buildings of the Lympne Industrial Estate and Lympne village prevent views from the Site's existing network of PRoW to the south;
- Harringe Brooks Wood, Springfield Wood and the minor north-south ridge between Court-at-Street and Harringe Court prevent views from PRoWs within the Site from extending beyond these to the west; and
- Likewise, Kiln Wood (within Sandling Park) and Folks Wood, along with the linear settlements of Lympne and Newingreen, that collectively stretch between the Aldington Road and the A20 prevent more than near distance views from PRoW within the Site to the east.

12.3.211 Apart from the views to the North Downs escarpment from PRoW within the Site highlighted in paragraph 12.3.212 of this assessment, other views northwards are restricted by: the buildings and mature vegetation around the built-up area of Folkestone Racecourse, around the Westenhanger Castle complex and around the settlement of Barrow Hill-Sellindge; and the extensive embankments of the M20 and HS1/Ashford-Folkestone railway, and the vegetation and acoustic fencing along them.

12.3.212 It is notable that many of the PRoW through and immediately surrounding the Site end abruptly at roads, are without onward connections to other paths or settlements (such as HE275, HE281, HE281A, HE303, HE315 and HE316), or have historically been severed by the Ashford-Folkestone railway. Such routes do not so readily form circular walks, or satisfactorily long trails for users, and hence our assumption that they receive relatively little use, compared to other PRoW in the Study Area

12.3.213 Overall, it is notable that, in comparison to equivalent areas of land upon the greensand ridge, such as that around Aldington (see Appendix 12-3 Figure 2 and Appendix 12-3 Figure 3) that there is distinct scarcity of PRoW within and around the Site.

Public Rights of Way Outside of the Site

12.3.214 Those PRoW beyond the Site can be categorised as those that are:

- localised/ close range i.e. 0-2km from the Site boundary;
- intermediate/ medium range i.e. 2-5km from the Site boundary; or
- wide/ long range i.e. beyond 5km from the Site boundary.

12.3.215 Views from localised PRoWs to the south of the Site (including footpaths HE318 and HE20, and bridleway HE317) are substantially restricted by vegetation and built development along the Aldington Road (as highlighted in paragraph 12.3.207□), and the landform and wooded nature of much of the Hythe escarpment. These factors, also prevent views from PRoW in the intermediate range of the Site – i.e. through Romney Marsh. Medium range views from those PRoW that align with the slithers of visibility shown on Appendix 12-3 Figure 10, further south within the Marsh, are screened by existing vegetation on the Hythe escarpment and between fields within the Marsh itself that has not shown up on the ZTV. This too applies to those areas of visibility that have apparent longer-range views to the Site through the Marsh. It is therefore considered that there is unlikely to be significant visual effects upon receptors using PRoW through this area as a result of the proposed Development.

12.3.216 To the west of the Site there are occasional localised views to it from: parts of PRoW HE316 (between Aldington Road and Harringe Brooks Wood) and the other two PRoWs (HE330 and HE329) that emerge from the slope of the Hythe escarpment on to the B2046 (see representative VP11); the very northern end of HE325 (see representative VP14); and HE302 between Harringe Lane and Harringe Court. Views from these locations are of the western most areas of the Site only.

12.3.217 Further west, beyond these locations views to the Site and the proposed Development from PRoW in the medium and long range from this direction are thwarted by the undulating nature of this part of the greensand ridge dip-slope, which gradually diminishes in elevation towards Ashford, and the pattern of large woodland blocks (such as Burch's Rough, a designated Ancient Woodland, Backhouse Wood, Stockhills Wood and Poulton Wood), combined with an increasing numeracy of tree belts, shaws, hedgerows, and hedgerow trees. Representative views have recorded from some of the higher and more sensitive locations through this area – see VP's 12 and 13.

12.3.218 To the immediate north of the Site the extensive embankments of the M20 and the HS1/Ashford-Folkestone railway, the vegetation and acoustic fencing along them, and the ridge of higher land that lies between them, all combine to prevent views from the most localised of PRoW.

12.3.219 Further north from here, the localised PRoW between the villages of Sellindge and Stanford (including footpaths HE220, HE226, HE262, HE 270 and parts of bridleway HE271) have views to the Site, albeit these are restricted in verticality by the screening properties M20/railway zone. The landscape here is more open in nature (see VP27) so allowing views to the majority of the east-west breadth of the Site. The large scale, bright white buildings within the Lympne Industrial Estate are nearly always visible, as is the movement, embankments, heavily engineered bridges, lighting, overhead cables, signage, acoustic fencing and other infrastructure associated with the M20 and the HS1/Ashford to Folkestone railway and the high-voltage electricity pylons that span across this area. On occasions the buildings of the redundant Folkestone Racecourse, the large-scale buildings, extensive car parking, movement, lighting, signage, and access roads associated with the motorway services are also clearly visible.

12.3.220 Between the villages of Sellindge and Brabourne Lees views from PRoW become far less numerous (see Appendix 12-3 Figure 10) and more glimpsed (see VP25). The landscape through this area becomes more incised, there is greater level of tree cover and the settlement pattern includes more numerous scattered dwellings, which combine to restrict visibility from this area to the Site.

12.3.221 Between the villages of Brabourne and Postling there are glimpsed intermediate views of parts of the Site (see VP27) from PRoW as the land rises gradually to the foot of the North Downs Scarp slope. Lengthier and clearer views are not possible because of the increasing undulations in the landforms, the larger blocks of woodland, and the numeracy of tree belts and hedgerows through this area.

12.3.222 Within the Study Area, north of the Site, the face of the escarpment of the North Downs itself has relatively few PRoWs. Some of those that do exist climb straight up the steep scarp face – such as those at Brabourne Downs, whilst others use the initially gentler slopes of the combes – such as to the east of Etchinghill. As such, the length of general outward views across the adjoining landscape from these paths varies considerably, as does, consequently the ability to observe the Site. Clear visibility is also impeded by the fact that the lower slopes of the North Downs scarp are generally divided into

medium to small fields surrounded by shaws and overgrown hedges. Views of the Site that are gained are of intermediate and long range. And whilst, on occasions a wide breadth of the Site may be possible, it only constitutes a narrow vertical part of such views at such a distance.

12.3.223 Along the crest and top of the escarpment there are also relatively few PRoWs other than the NDW-NT itself. The views to the Site are, expectedly, similar to those described in paragraph 12.3.188.

12.3.224 As shown on Appendix 12-3 Figure 10 views from PRoW to the east of the Site are substantially restricted by the large blocks of woodland within Sandling Park, the vegetation between the Park and Pedlinge, and by the landform falling away to Saltwood and Hythe.

12.3.225 The conurbation of Lympne, that stretches from the crest of the Hythe escarpment to the bottom of the valley, and which almost conjoins with that of Newingreen, prevents clear views into the site from the south-east. The buildings and relatively dense garden vegetation combine to make this stretch of Stone Street a strong visual edge to the Site from the countryside to the east.

12.3.226 Despite this, three PRoWs are located at close range to the Site's eastern boundary. These are: PRoW HE281 which emerges from the woodland of Sandling Park, halfway between Junction 11 of the M20 and Newingreen, and then continues over the landform of Hillhurst Farm to Westenhanger (see VP09); PRoW HE313 that heads north from the escarpment crest at Shepway Cross and terminates at Newingreen (see VP10); and HE293 that skirts around the northern edge of Lympne and emerges at Berwick Farm, before entering the site and cutting across to the A20 at the western end of Newingreen (See VP 19).

12.3.227 It is therefore considered that: users of localised/close range PRoW, within 2km to the north, south and west of Site; users of localised/close range PRoW, within 2km to the north and east of the Site; and users of intermediate/medium range PRoW, between 2-5km to the west and north of the Site have the potential to experience significant effects arising from the Development.

<u>Areas of Recreation</u>

Open Access Land

12.3.228 Appendix 12-3 Figure 2 shows the location *Open Access Land* (designated as part of the CRoW Act 2000) within the Study Area. The closest of these – Gibbin's Brook, which lies 650m to the north of the Site, is predominantly wooded and so affords very few clear views to the Site. It is considered therefore that there is unlikely to be significant visual effects upon receptors using this land as a result of the proposed Development

12.3.229 The remainder of *Open Access Land* within the Study Area that have views to the Site are all located upon the scarp slopes of the North Downs (apart from the large expanses of woodland upon the dip-slope of the North Downs that Appendix 12-3 Figure 10 shows are outside of the ZTV, and are therefore scoped out of the assessment). This includes locations such as Broad Downs, Brabourne Downs, the downland north-west of Postling parts of Tolsford Hill, and Peene Quarry Country Park. Given the open nature of much of these area views to the Site are possible (see VP02 and VP05). Users of these area have the potential to experience significant effects arising from the Development.

Country Parks

12.3.230 As highlighted in paragraph 12.3.231, views to the Site are possible from Peene Quarry Country Park, which at its closest point lies 5.09km to the north-east of the Site (see VP07). As such, users of this area have the potential to experience significant effects arising from the Development. The only other Country Park within the Study Area is Brockhill, which lies 1.37km to the east. Given its location within the incised valleys around Saltwood there would be no inter-visibility between this area and the Site, as affirmed upon the ZTV - Appendix 12-3 Figure 10. As such, users of this area are considered not have the potential to experience significant effects arising from the Development.

Sandling Park

12.3.231 As described in paragraph 12.3.158, Sandling Park is only publicly accessible for one day a year. It is expected that one such occasions users predominantly visit the ornamental gardens surrounding the main house that has no views to the Site, and hence would not view the proposed Development. It is considered, therefore, that there is unlikely to be significant visual effects upon receptors using the Park as a result of the proposed Development.

Lympne Recreation Ground

12.3.232 Whilst Appendix 12-3 Figure 10 indicates that there is visibility to the Site and potentially the proposed Development from Lympne Recreation Ground, the intervening buildings of this upper part of the village, and the vegetation around them, that hasn't been taken into account on the ZTV, prevents this. It is considered, therefore, that there is unlikely to be significant visual effects upon receptors using the area as a result of the proposed Development.

Port Lympne Animal Park

12.3.233 As described at paragraph 12.3.162 visitors to Lympne Animal Park arriving by car or by public transport do so off Otterpool Lane, along the south-eastern edge of the Site (see VP17). The vegetation along the sinuous entrance drive to the car parking areas of the Animal Park is relatively sparse so clear views over the southern-most parcels of the Site, between Harringe Brooks Wood and the Lympne Industrial Estate are possible. As such, users of this area have the potential to experience significant effects arising from the Development.

Westenhanger Castle

12.3.234 Westenhanger Castle lies just outside the northern boundary of the Site. The 14th century manor house and complex of stone and brick outbuildings is privately owned but is hired for weddings and events and occasional tours.

12.3.235 Views out from the complex are substantially constrained by dense tree belts and mature trees in the ground of the castle to the south and east. The vegetated embankment of the Ashford-Folkestone railway forms an incongruous boundary approximately 150m to the north. Views out from the east of the castle complex are less constrained by vegetation but a number of Racecourse buildings lies just outside of its boundary which currently restrict views.

12.3.236 The Castle buildings are visible from parts of PRoW HE275 (see VP21) that runs from the A20 Ashford Road to the railway, approximately 180m to the west of the complex. This PRoW joins up with PRoW HE277 that runs parallel to the Ashford-Folkestone railway. This too has views to the castle for parts of its length. The views of the Castle from these paths are short in range and constrained at their rear by the dense vegetation that surrounds the buildings. As such the Castle currently has a sense of being visually cut-off from the immediate and wider landscape that surrounds it.

12.3.237 As such, users of Westenhanger Castle have the potential to experience significant effects arising from the Development.

Folkestone Racecourse

12.3.238 Folkestone Racecourse has been redundant as a horseracing venue since 2012. It has hosted a series of '*war and peace time*' revival annual events since this – the last in 2016. The Racecourse's buildings and facilities would be demolished to make way for the proposed Development. It is considered, therefore, that there is unlikely to be significant visual effects upon receptors using the Racecourse as a result of the proposed Development.

Lympne Castle & St. Stephen's Church

12.3.239 Together with a number of outbuildings and private dwellings constructed from the same ragstone, the complex of Lympne Castle and St Stephens form a distinct area of the village, and are part of the Lympne CA. The publicly accessible graveyard of the church (in which two PRoWs terminate) has spectacular long distance views over Romney Marsh. The Castle, which is adjacent to the church, is a privately owned 13th century manor house that opens its doors for weddings, events and occasional tours. Its outbuildings also contain a café and a local produce shop.

12.3.240 As described in paragraphs 12.3.166 to 12.3.168, inter-visibility between this part of the village and the Site is prevent by numerous buildings, walls and areas of vegetation that characterise this area. It is considered, therefore, that there is unlikely to be significant visual effects upon receptors using this area as a result of the proposed Development.

Lympne Airfield

12.3.241 The land immediately to the west of Lympne, along with the plot upon which the Lympne Industrial Estate now sits, once formed Lympne Airfield. The open space between these two built-up areas, upon

the brow of the greensand ridge's dip slope, contained amongst other things, the airfield's concrete runway. Aligned north-west to south-east its route is currently marked by the scrub vegetation that has grown up between the cracks in the concrete and which has consequently avoided the mowing of the grass areas surrounding it.

12.3.242 The wide expanse of grass either side of the runway is currently neither farmed or apparently used for any other particular purpose. Whist this area is privately owned, access to it for pedestrians has been made at its south-eastern corner. As such the area has become well used by dog walkers.

12.3.243 The Industrial Estate and the village of Lympne visually contains this area to the west and east, respectively, and the dense vegetation either side of Aldington Road prevents views out to the south. Views northwards over Newingreen, the Racecourse, the M20 and to the North Downs escarpment are possible, but occasionally impeded by vegetation or by the 6m high earth bund that lies east-west along the northern edge of the old Airfield (see VP18). As such, users of this area are considered to have the potential to experience significant effects arising from the Development.

Existing Settlements

Lympne

12.3.244 The village of Lympne lies upon the dip slope and crest of the greensand ridge. Its built-up area is generally centred around the old Roman road of Stone Street, with the majority of dwellings on the western side of this, and around the junction with the ridge-top Aldington Road. It is a settlement of around 1,500 inhabitants that contains a village hall, a convenience store/post office, a hairdresser and a pub.

12.3.245 The village is relatively compact and densely built-up with a predominance of low-built houses set in mature gardens. This substantially confines publicly accessible views out from most parts of the village to the countryside beyond to just its edges and the occasional glimpsed view along those north-south aligned roads through the settlement. As such, residents and users of Lympne are considered to have the potential to experience significant effects arising from the Development.

Newingreen

12.3.246 The settlement of Newingreen lies at the bottom of the greensand ridge dip-slope and is centred along the roads emanating from the junction of Stone Street with the A20 Ashford Road. The settlement's dwellings solely lie along these roads. The large business premises of Holiday Extras is set back from the village's northern edge within maturely vegetated grounds, which prevents views northwards from the core of the village.

12.3.247 There are views out from the edges of the settlement to the countryside beyond, including across the old Racecourse site, and across the triangular plot of Hillhurst Farm. The scattered housing along the A20 Ashford Road to the west of Newingreen would make way for part of the proposed Development. As such, residents and users of this settlement are considered to have the potential to experience significant effects arising from the Development.

Westenhanger

12.3.248 The settlement of Westenhanger, like Lympne, is centred along the old Roman road of Stone Street.

12.3.249 The small number of properties that exist here are predominantly situated upon the western edge of the road (only three properties lie on the eastern side of Stone Street) and face the tall over-mature, but narrow hedgerow that borders the Site in front of them. As such there are glimpsed views from this built-up edge across the Hillhurst Farm triangle part of the Site (see VP20).

12.3.250 Most of the dwellings that front immediately onto Stone Street are densely assembled, so along with the mature vegetation contained in their rear gardens, which stretch out to the edge of the boundary with the old Folkestone Racecourse, this visually contains views outward from the settlement to the west. There is, however, a small collection of houses along Meadow Close that lie back from Stone Street. Whilst most of these dwellings have mature vegetated gardens that help to visually contain this edge of the settlement, a few have more open aspects to the west, across the old Racecourse.

12.3.251 A more open aspect, with views east and west into the Site, occurs at the very northern edge of this linear settlement, where house become more sporadic, the Racecourse frontage opens up, and the bounding hedgerows are less mature, dense and tall. As such, residents and users of this settlement are considered to have the potential to experience significant effects arising from the Development.

Barrow Hill-Sellindge

12.3.252 The settlement of Barrow Hill-Sellindge comprises the linear group of dwellings that lie along the A20 Ashford Road between its junction with Otterpool Lane in the south, to the overbridges of the M20 and HS1/Ashford–Folkestone railway line in the north.

12.3.253 The settlement's dwellings are tightly assembled, which, along with the mature vegetation within their rear gardens (especially those on the east side of the A20) prevents clear views out east and west to the Site from the centre of the settlement. The northern end the A20 through Barrow Hill-Sellindge falls in elevation to the East Stour River and Grove Bridge. The visually constraining properties of the vegetation around the river through this northern part of the settlement are compounded by the tall vegetated embankments of the railway and motorway to prevent views out to the Site on either side.

12.3.254 At the southern end of Barrow Hill-Sellindge, where properties only lie on the western edge of the A20, there is a more open aspect to the countryside. Views, of intermediate length, from the Ashford Road span across the open landscape and the flat straight chute of the old Racecourse. Long distance, and vertically narrow views to the escarpment of the North Downs are also possible (see VP16). Views to the south, from this part of the settlement, are relatively more constrained. The large layby here is used regularly by lorries, and the property at the very southern end of the settlement is surrounded by a woodland and thick tree belts. Where views are possible they stretch up to near the brow of the greensand ridge between Harringe Brooks Wood and the woodland immediately north of the unfinished extension to the Lympne Industrial Estate.

12.3.255 As such, residents and users of this settlement are considered to have the potential to experience significant effects arising from the Development.

Sellindge

12.3.256 On the north side of the M20 and railway overbridges lies the village of Sellindge. It is a settlement of around 1,400 inhabitants that has a convenience store/post office, a village hall, a pub and a few shops.

12.3.257 As with Barrow Hill-Sellindge and Newingreen, it is predominantly shaped by the main road that runs through it. Dwellings sporadically stretch for almost 2km from the motorway crossing at its south-eastern end to Stone Hill and the village church of St Mary's at the far west of the village. A further, more dense area of houses exists on the north side of the A20 around Swan Road.

12.3.258 Whilst the ZTV on Appendix 12-3 Figure 10 indicates that much of the village has views to the Site and potentially to the proposed Development, this does not take into account the visually constraining properties of the embankments, fencing and vegetation that line the motorway and railway. Along with mature trees and hedges that line the A20 through the village, these combine to prevent views to the Site from the majority of the settlement.

12.3.259 There are, however, occasional views to parts of the site from PRoW HE273 that emerge from its south-eastern edge of the village (see VP25). As such, residents and users of this settlement are considered to have the potential to experience significant effects arising from the Development.

Stanford

12.3.260 The village of Stanford lies directly upon the opposite side of the M20 and HS1/Ashford-Folkestone railway from the settlement of Westenhanger. Like its neighbour, this village is predominantly formed around Stone Street, that runs almost due north through the settlement.

12.3.261 Whilst the ZTV (Appendix 12-3 Figure 10) indicates that much of the village has views to the Site and potentially to the proposed Development, this does not take into account the visually constraining properties of the embankments, fencing and vegetation that line the motorway and the railway. Along with the mature trees and hedges that exist along the rear of most of Stanford's dwellings, particularly around those at its southern end, these combine to prevent views to the Site from the majority of the village.

12.3.262 Along Kennett Lane (where the Stanford windmill is located), and along the numerous PRoW heading west from the settlement (see VP27) views to the Site, in particular the dip-slope of the greensand

ridge, become substantially clearer. As such, residents and users of this settlement are considered to have the potential to experience significant effects arising from the Development.

Court-at-Street

12.3.263 Court- at-Street is a settlement of around twenty dwellings lying approximately 1.3km to the south-west of the Site along the B2067 Aldington Road. Its position upon the crest of the Hythe escarpment affords it spectacular, albeit glimpsed views (through intervening vegetation) across Romney Marsh.

12.3.264 The settlement's elevation also give rise to possible views to the southern and western portions of the Site – as indicated upon the ZTV (Appendix 12-3 Figure 10). The layers of intervening vegetation surrounding properties within the settlement and between it and the Site, as well as the hedgerows that abound local roads (such as Harringe Lane) in reality substantially restrict these (See VP11). As such, residents and users of this settlement are considered to have the potential to experience significant effects arising from the Development.

Aldington

12.3.265 The main settlement of Aldington lies approximately 3.25km to the west of the Site. The smaller area of dwellings, separate from the main village, around St Martin's Church is approximately 2.15km away. The visual setting of this is discussed in paragraph 12.3.169. As such, residents and users of this settlement are considered to have the potential to experience significant effects arising from the Development.

12.3.266 Whilst the ZTV (Appendix 12-3 Figure 10) indicates that some parts of the main village have views to the Site and potentially to the proposed Development, this does not take into account the visually constraining properties of the mature trees and hedges that exist through the settlement. It does not also take into consideration the intervening hedgerows and tree belts surrounding the numerous fields between here and the Site, which are not recorded upon the vegetation dataset used to compile the ZTV, but combine to prevent views occurring. It is considered, therefore, that there is unlikely to be significant visual effects upon receptors within the village as a result of the proposed Development.

Brabourne

12.3.267 The inter-visibility between the Site and the village of Brabourne is discussed in paragraphs 12.3.172 to 12.3.174. Whilst the ZTV (Appendix 12-3 Figure 10) shows that there is inter-visibility between the CA and the Site. In reality, the intervening woodland, hedgerows and tree belts surrounding the numerous fields between here and the Site, which are not recorded upon the vegetation dataset used to compile the ZTV, substantially impede this. The few public views that are possible are at least 3.70km away. As such, residents and users of this settlement are considered to have the potential to experience significant effects arising from the Development.

Postling

12.3.268 The ZTV (Appendix 12-3 Figure 10) indicates that there is a degree of inter-visibility between the village of Postling and the Site. This does not, however, take into account the visually constraining properties of the mature trees and hedges that exist around the dwellings the village, which combine with the intervening hedgerows and tree belts between the settlement and the Site that prevent clear views between the two. It is considered, therefore, that there is unlikely to be significant visual effects upon receptors in the village as a result of the proposed Development.

Hythe

12.3.269 As indicated on the ZTV (Appendix 12-3 Figure 10) there is very little inter-visibility between Hythe and the site. The town's position at the coastal level, and the wooded incised valleys surrounding it, prevents views between the two. It is considered, therefore, that there is unlikely to be significant visual effects upon receptors in the town as a result of the proposed Development.

Individual Residential Properties

12.3.270 Individual properties, outside of the main settlements, in the environs of the Site boundary which have to potential to experience significant effect as a result of the Scheme include: Twin Chimneys and Little Greys on Stone Street near Westenhanger; Little Berwick, Berwick House and Berwick Manor on Stone Street, near Lympne; Nowell Cottage, Old Mill Cottage, The Lodge on the Aldington Road between Lympne and Court-at-Street; Otterpool Manor; Upper Otterpool; Barrow Hill Farm; Harringe Court; and Harringe Court Cottages.

<u>Highways</u>

M20

12.3.271 The M20 runs generally parallel with the northern boundary of the Site. Along its length through this area the carriageway graduates between cutting and embankment. When located upon an embankment, such as between Sellindge and Barrow Hill-Sellindge, there is the potential for views into the Site. Whilst there are occasional glimpses in winter months from here to the upper part of the greensand ridge dip slope, the majority of views are restricted by the tall roadside acoustic fencing, and either by vegetation along the embankment or by vegetation along the railway lines, that lies between the M20 and the Site. It is considered, therefore, that there is unlikely to be significant visual effects upon the receptors using the M20 as a result of the proposed Development.

12.3.272 Users of Junction 11 of the M20 are provided with an occasional more elevated view to the Site from the interchange above the main carriageways, where breaks in the roadside vegetation allows. From here it is possible to gain vertically narrow occasional glimpses across Hillhurst Farm to the top of the triangular area it sits within, and above this to the wooded crest of the greensand ridge.

12.3.273 Users of the Folkestone Service station, that lies between the M20 and the HS1/Ashford-Folkestone Railway Line, also have occasional views to Hillhurst Farm, and this north-eastern most part of the Site. As such, users of this area and the Junction are considered to have the potential to experience significant effects arising from the Development.

A20 Ashford Road

12.3.274 The A20, which stretches from Dover to south-east London, cuts through the centre of the Site – beginning at its north-east corner, then through Newingreen and Barrow Hill-Sellindge, to its exit at Sellindge.

12.3.275 Open views across the triangular parcel of land containing Hillhurst Farm are possible from the eastern stretch the road, between the M20 and Newingreen (see VP11). The landform of the Hillhurst area, the vegetated edges of Sandling Park and Westenhanger, and the greensand ridge constrain longer distance views. When heading north-east along this part of the A20 the escarpment of the North Downs is visible on the horizon.

12.3.276 Between Newingreen and Barrow Hill-Sellindge views southwards from the road are generally constrained by the sporadic settlement along it, whilst lengthier open views exist to the north (see VP22). From here views to the buildings of the old Folkestone Racecourse and its the white fenced gallops, as well as the farmland between it and Barrow Hill-Sellindge are possible. The escarpment of the North Downs forms the horizon above these views. As such, users of this road are considered to have the potential to experience significant effects arising from the Development.

Stone Street,

12.3.277 As described in paragraph 12.3.246, 12.3.251 and 12.3.263 the views from Stone Street are generally confined when the road runs through the villages of Lympne, Westenhanger and Stanford.

12.3.278 For the short stretch between Lympne and Newingreen there are glimpsed views into the Site, which lies immediately beyond the hedgerow to its west. From here views to Lympne Industrial Estate, and the land rising up between this and the village of Lympne, are possible (see VP19). As such, users of this road are considered to have the potential to experience significant effects arising from the Development.

Otterpool Lane

12.3.279 Otterpool Lane cuts a north-south line through the central-southern portion of the Site. When heading northward on this road and when users of it are beside the entrance to Port Lympne Animal Park, with the mass of the Lympne Industrial Estate to the immediate east, views are possible over the south-eastern corner of the Site. In the distance is the wooded backdrop of Harringe Brooks Wood and the North Downs escarpment (see VP17).

12.3.280 As the road drops down the dip-slope of the greensand ridge views out from it are constrained by the small cutting the road sits within, and by the roadside vegetation abounding it. Facing north at the road's junction with the A20 Ashford Road (see VP24) there are clear views over the intervening farmland to the HS1/Ashford-Folkestone railway and M20 corridor, with the escarpment of the North Downs above. As such, users of this road are considered to have the potential to experience significant effects arising from the Development.

B2067 Aldington Road

12.3.281 The B2067 Aldington Road is the old Roman road which runs along the crest of the Hythe escarpment between Hythe and Ashford.

12.3.282 Views from it to the Site are generally only possible from the short stretch between the western edge of Lympne and the Lympne Industrial Estate. As described in paragraphs 12.3.266 to 12.3.269 intervening landform, tree belts, settlement along the road and hedgerows restrict all other views.

12.3.283 Where the road passes the Site a sporadically dense hedgerow exists to the north which restricts views into this closest parcel. Those views that are gained comprise the grassed expanse of the old airfield, the built-up and partially vegetated edges of Lympne and the Lympne industrial Estate, and a narrow slither of the North Downs escarpment 5.3km in the distance (see VP18). As such, users of this road are considered to have the potential to experience significant effects arising from the Development.

Harringe Lane

12.3.284 Harringe Lane runs between Court-at-Street and Sellindge. It passes by the north-western boundary of the Site between Harringe Court and the East Stour River.

12.3.285 As users of this narrow hedge-lined lane head northwards glimpses over the surrounding landscape, including the western parts of the Site (such as Barrow Hill-Sellindge and the land between Harringe Brooks Wood and the Lympne Industrial Estate) are possible where the hedge thins or where there are field entrances. In the background to these views is the escarpment of the North Downs.

12.3.286 At the point where the road passes directly alongside the Site, and from just south of its crossing over the HS1/Ashford-Folkestone railway, there are occasional clear views in gaps between hedgerows of the most westerly part of the Site, and glimpses of the Barrow Hill area. As such, users of this road are considered to have the potential to experience significant effects arising from the Development.

A261 Hythe Road

12.3.287 The A261 Hythe Road approaches the Site from the south-east and joins the A20 Ashford Road at Newingreen. From the approximately last 250m of this road, as it emerges from Kiln Wood and Folks Wood there are open views to the south-west across to the built-up area of Newingreen and that of Lympne, and the open field of the old airfield above these. To the north between mature field-Oaks in the adjacent field to the road there are views across to the triangular parcel of land containing Hillhurst Farm, with the escarpment of the North Downs forming the horizon above this (see VP10). As such, users of this road are considered to have the potential to experience significant effects arising from the Development.

Kennett Lane

12.3.288 As described in paragraphs 12.3.221 and 12.3.265 the Site is apparent in views from the relatively open, and gently rising landscape between Stanford and Sellindge in which Kennett Lane, and then Hayton Road to the north of this, cut through (see VP27). As such, users of this road are considered to have the potential to experience significant effects arising from the Development.

Railway Line

12.3.289 The HS1/Ashford-Folkestone railway runs generally along the northern boundary of the Site. Along its length through this area the route is either upon an embankment, and so elevated above the height of the adjacent land, or level with it. The exception is the stretch between Westenhanger Station and the north-eastern corner of the site where the route is set within a minor cutting.

12.3.290 Areas of the track which are elevated or are level with the Site have occasional clear views into it where gaps in the lineside vegetation allow. Such views extend across the landscape either site of the East Stour River and up to the upper part of the greensand ridge dip slope. The areas that are more visually screened by lineside vegetation are around Westenhanger Castle and Barrow Hill-Sellindge.

12.3.291 As most users of the railway past the Site will be travelling at speeds at which it is not possible to clearly discern the detail of the landscape (particularly those using the HS1 line), and because the primary purpose of the clear majority of its users' is one of travel between two places disconnected with the Site, it is considered that there is unlikely to be significant visual effects upon receptors of the route as a result of the proposed Development.

Places of employment

12.3.292 As noted in paragraph 12.3.249 the settlement of Newingreen contains an area of employment. The headquarters of Holiday Extras, and the offices of Oak Creative Advertising and Design are located to the immediate north of the A20 Ashford Road. Views between these and the Site are restricted by the mature vegetation that surrounds the Holiday Extras site. As such it is considered that there is unlikely to be significant visual effects upon those receptors using this area as a result of the proposed Development.

12.3.293 The Lympne Industrial Estate, which borders the site on its northern, eastern and part of its western edges, is home to a number of employers. The Estate is bounded on the north and east by planted earth bunds. Whilst the rooflines of the buildings within the Estate remain visible from within the Site, these bunds prevent lower level views out of the area. Along its western boundary with the Site the Estate has a densely planted hedge and narrow tree belt, which also prevents view out at a lower level. As such it is considered that there is unlikely to be significant visual effects upon those receptors using this area as a result of the proposed Development.

Representative Viewpoints

12.3.294 During the field studies, which were undertaken from December 2016 through to January 2019, a photographic record (taken from publicly accessible locations) was made of the range of potential views from the receptors described above towards the Site. Photographs were taken in both during summer (best-case scenario) and winter months (worst-case scenario) from each, and from certain sensitive locations at night. The photographs used to illustrate the assessment have been 'stitched' together using digital imaging software to provide a 'panorama image', thus providing a truer visual context to the overall view.

12.3.295 After analysis of the overall visual amenity context of the site and its surrounds, and identification of those visual receptors upon which there is the potential for significant effects resulting from the proposed Development, a set of representative viewpoint locations were determined. The list of the receptors and the representative photo-viewpoints used to assist in the impact assessment of the potential changes to their visual experience is set out in Table 12-19. The location of the photo-viewpoints is shown on Appendix 12-3 Figure 11.

12.3.296 The precise location of each representative photo-viewpoints has been agreed with the F&HDC Landscape & Urban Design Officer, the ABC Planning Policy Officer, the AONB Unit (in relation to the North Downs Way National Trail), and with officers from NE during discussion and site visits.

12.3.297 Many of these viewpoints have been chosen to represent different types of visual receptor (e.g. users of a PRoW and users of a public Highway, users of a PRoW and users of Open Access Land, or users of a recreation ground and those using an existing settlement). A far as reasonably possible the locations reflect the visual receptors at the distance and direction in which they are located and reflect the receptor type(s) that would be present at that location.

12.3.298 These have been included to reflect the locations which represent the range of views available to the receptor and which are typically representative of views that may have the potential to incur significant visual effects. In most cases, however, the location for the representative viewpoints has been chosen because it demonstrates the most open examples on which to base judgements of the scale of effects on visual receptors. Some of the viewpoints have been selected as they represent the location where the greatest effects would be anticipated; though some may be selected outside of that zone – either to demonstrate the reduction of effects with distance; or to specifically ensure the representation of a particularly sensitive receptor.

Table 12-19 Visual Receptors & their Photo-Viewpoint Numbers that are Representative of them

Visual Receptor	Representative Photo-viewpoint number(s)
Users of PRoW through the Site	15, 16, 17, 19, 20, 21, 22, 23
Users of localised/close range PRoW, within 2km to the south of Site	29
Users of localised/close range PRoW, within 2km to the west of the Site	11, 14
Users of localised/close range PRoW, within 2km to the north of the Site	25, 27
Users of localised/close range PRoW, within 2km to the east of the Site	8, 9, 10
Users of intermediate/medium range PRoW, between 2-5km to the west of the Site	12, 13
Users of intermediate/medium range PRoW, between 2-5km to the north of the Site	3, 4, 5, 6, 26
Users of the North Downs Way, National Trail	1, 2, 3, 4, 5, 6, 7, 28
Users of the Saxon Shore Way, Long Distance Path	12, 29
Users of Open Access Land upon the North Downs scarp slopes within medium range	5
Users of Open Access Land (including Peene Country Park) upon the North Downs scarp slopes within long range	1, 2
Users of Lympne Airfield	18
Users of Westenhanger Castle	9
Users of Port Lympne Animal Park	17
Users and residents of Lympne	18
Users and residents of Westenhanger	20
Users and residents of Newingreen	19, 10
Users and residents of Barrow Hill	16
Users and residents of Stanford	27
Users and residents of Court-at-Street	11
Users and residents of Aldington Church	13
Users and residents of Brabourne	26
Users and residents of Sellindge	25
Individual Properties in the environs of the site, outside of the identified settlements (paragraph 12.3.273)	-
Users of Junction 11 of the M20 and the adjacent Service Station	8
Users of roads through the Site including the A20, Stone Street and Otterpool Lane	17, 24
Users of roads within 0-2km of the Site including Hythe Road, Stone Street, Aldington Road, Harringe Lane, Kennet Lane	8, 11, 14, 29,18

Landscape Related Designations

Designations Scoped In

12.3.299 In addition to the effects upon landscape character and visual receptors, the impact upon the following landscape-relevant designations has been considered within section 12.1 of this assessment:

Kent Downs AONB

12.3.300 Given the scale of the development and proximity to the AONB, this assessment has included a consideration of both the direct and indirect impacts of the proposed Development on the 'special characteristics and qualities' of the designation and its setting, the purpose of its designation i.e. the conservation and enhancement of natural beauty as well as the policies of the AONB Management Plan and in the development plans of F&HDC and ABC.

Special Landscape Area – North Downs

12.3.301 Given that the Site incorporates part of the SLA designation and that it lies in close proximity to other parts this assessment has included consideration of both the direct and indirect impacts upon these. The consideration is limited to those SLAs within F&HDC's administrative area as the ABC-LC SPD, at page 14, states that the designation has "*been removed from the Statutory Development Plan and carries little weight in planning terms*" and that the ABC-LC SPD "*will provide a greater clarity and depth of detail in relation to the countryside and the key characteristics and features that lie within it.*"

Open Access Land

12.3.302 The effects upon users of Open Access Land are included within the visual assessment.

Country Parks

12.3.303 The effects upon users of Peene Quarry Country Park are included within the visual assessment, but the users of Brockhill Country Park have been scoped out due to the lack of inter-visibility between here and the Site.

Designations Scoped Out

Dark Skies Protection Area

12.3.304 The potential Dark Skies protection area around Woodchurch in the ABC administrative area has been scoped out on account of the 10-14km distance between the Site and this area and the substantial intervening woodland blocks that would combine to bring about a significant landscape of visual effect on this.

Conservation Areas

12.3.305 Whilst the presence of CA contributes to the sensitivity of Landscape Receptors within this assessment, direct and indirect effects upon these designated areas has been assessed within Chapter 09 Cultural Heritage, and so has been scoped out of this assessment.

Registered Parks and Gardens of Historic Interest

12.3.306 Whilst the presence of RPGHI contributes to the sensitivity of Landscape Receptors within this assessment, direct and indirect effects upon these designated areas has been assessed within Chapter 09 Cultural Heritage, and so has been scoped out of this assessment.

Future Baseline

12.3.307 The proposed Development is expected to be constructed in phases, with the proposed Development for 8,500 homes built out by 2044. Base case environmental conditions over this relatively long period would be expected to vary from the present-day baseline described.

12.3.308 This section describes of the potential environmental changes and new developments within the Study Area (see Appendix 12-3 Figure 1) that have a likelihood to alter the future baseline scenarios of this assessment over this period regardless of the proposed Development.

Committed Development

Extant Planning Permissions within the Application Site Boundary

Link Park Industrial Estate

12.3.309 Outline planning permission (ref: F&HDC: Y15/0880/SH) exists (as well as a site allocation and SPD (Ref 12.37)) for the development of up to 52,000 square metres of commercial buildings up to 14m high, forming an extension of the Lympne Industrial Estate, but construction has not yet commenced.

12.3.310 The proposed Development would displace this current permission, so it has not been included in the cumulative assessment.

Land Adjoining Enterprise Way Enterprise Way Link Park Lympne

12.3.311 Permission was granted in September 2017 to extend the planning consent for the development of up to 30,668sqm of employment development, together with internal access (off recently constructed and adopted spine road) with parking, servicing and structural landscaping, but construction has not yet commenced.

12.3.312 The proposed Development would displace this current permission, so it has not been included in the cumulative assessment.

Otterpool Quarry Waste and Anaerobic Digestion Facility

12.3.313 Permission was granted by KCC in March 2011 for the development of a 12.5m high waste transfer station, and 7.9m high anaerobic digestion plant, a 10m high silo, and a 6.5m high office building across the 2.5ha. Otterpool Quarry site, but construction has not yet commenced.

12.3.314 The proposed Development would displace this current permission, so it has not been included in the cumulative assessment.

Extant Planning Permissions within the Vicinity of the Site

Folkestone & Hythe District Council

Land Adjacent to the Surgery, Main Road Sellindge (south of the A20)

12.3.315 A Hybrid planning permission was granted in January 2016 (Y14/0873/SH) for the development of up to 250 new homes, a local mixed-use centre including new parish council offices, and associated commercial floorspace together with access from the A20 on land between the A20 and M20 at Sellindge. The first phase of 50 dwelling is currently under construction a reserved matters application has been submitted for the second and final phase. For the purpose of this assessment it is anticipated that the entire scheme would be completed by 2025.

12.3.316 The potential for 'In combination', and 'in sequence' landscape character and visual amenity cumulative effects, given the relative size of this development, its location within the vicinity of the Site and its ability to be observed in agreed viewpoint locations, and so forms part of the cumulative assessment, as well as the main assessment.

12.3.317 The cumulative impact of this has been assessed against the following landscape character receptors: SDC-05, 06, 07, 08, 09 and 11, and 12; ABC-10, 26, 29, 30 and 31; and AONB-01, 02, 03 and 04, and against the following visual receptors: Users of localised/close range PRoW, within 2km to the north of the Site; Users of localised/close range PRoW, within 2km to the west of the Site; Users of intermediate/medium range PRoW, between 2-5km to the north of the Site; Users of the North Downs Way, National Trail; Users of Open Access Land upon the North Downs scarp slopes within medium range; Users of Open Access Land (including Peene Country Park) upon the North Downs scarp slopes within long range; Users and residents of Barrow Hill; Users and residents of Stanford; Users and residents of Brabourne.

Land rear of Rhodes House, Main Road, Sellindge (north of the A20)

12.3.318 An outline planning permission was granted in September 2017 for up to 162 houses, up to 929 square metres Class B1 business floorspace, allotments, recreational ground, multi-use games area, and nature reserve, on land north of the A20 at the south-eastern end of Sellindge, but construction has not yet commenced. For the purpose of this assessment it is anticipated that the entire scheme would be completed by 2027.

12.3.319 There is the potential for 'In combination', and 'in sequence' landscape character and visual amenity cumulative effects, given the relative size of this development, its location within the vicinity of the Site and its ability to be observed in agreed viewpoint locations, and so forms part of the cumulative assessment.

12.3.320 The cumulative impact of this has been assessed against the following landscape character receptors: SDC-05, 06, 07, 08, 09 and 11, and 12; ABC-01, 26, 29, 30 and 31; and AONB-10, 02, 03 and 04, and against the following visual receptors: Users of localised/close range PRoW, within 2km to the north of the Site; Users of localised/close range PRoW, within 2km to the west of the Site; Users of intermediate/medium range PRoW, between 2-5km to the north of the Site; Users of the North Downs Way, National Trail; Users of Open Access Land upon the North Downs scarp slopes within medium range; Users of Open Access Land (including Peene Country Park) upon the North Downs scarp slopes within long range; Users and residents of Barrow Hill; Users and residents of Stanford; Users and residents of Brabourne.

Nickolls Quarry Dymchurch Road Hythe

12.3.321 Outline application (Y06/1079/SH) for mixed use development comprising 1,050 new homes, employment space, community centre, public open space. The development was granted permission in 2010. The reserved matters for Phase 1 (Y15/0094/SH) have been approved and construction has commenced on site.

12.3.322 The ZTV shown on Appendix 12-3 Figure 10 indicates that there is unlikely to be any inter-visibility between this site and the proposed Development. Neither is it considered that the scheme and the proposed Development are located upon a recognised access route. As such this scheme has been scoped out of the cumulative assessment.

Ashford Borough Council

Land on The North Side of Highfield Lane, Sevington

12.3.323 Planning permission (14/00906/AS) was granted in September 2017 for development of an employment led mixed use scheme, including construction of new commercial buildings and structures of up to 157,600 square metres. For the purpose of this assessment it is anticipated that the entire scheme would be completed by 2025.

12.3.324 Despite being located approximately 6.00km for the Site, there is the potential for 'in sequence' landscape character and visual amenity cumulative effects, given the relative size of this development, and its ability to be observed in agreed viewpoint locations from the North Downs, and so forms part of the cumulative assessment.

12.3.325 The cumulative impact of this has been assessed against the following landscape character receptors: SDC-05, 07, 11, 13 and 21; ABC-10, 25, 26, 29, 30 and 31; and AONB-01, 02, 03 and 04, and against the following visual receptors: Users of localised/close range PRoW, within 2km to the west of the Site; Users of intermediate/medium range PRoW, between 2-5km to the north of the Site; Users of intermediate/medium range PRoW, between 2-5km to the west of the Site; Users of the North Downs Way, National Trail; Users of Open Access Land upon the North Downs scarp slopes within medium range; Users of Open Access Land (including Peene Country Park) upon the North Downs scarp slopes within long range; Users and residents of Brabourne.

Cheesemans Green

12.3.326 Outline planning permission was granted in January 2006 (02/00278/AS, as amended by 11/00473/AS) for up to 1100 new dwellings and 70,000 square metres of business floorspace together with mixed use community facilities, access roads, footpaths, cycle routes, landscaping & public open space. A small

number of parcels within this have received detailed permission and are under construction. For the purpose of this assessment it is anticipated that the entire scheme would be completed by 2030.

12.3.327 Despite being located approximately 6.50km for the Site, there is the potential for 'in sequence' landscape character and visual amenity cumulative effects, given the relative size of this development, and its ability to be observed in agreed viewpoint locations from the North Downs, and so forms part of the cumulative assessment.

12.3.328 The cumulative impact of this has been assessed against the following landscape character receptors: SDC-05, 07, 11, 13 and 21; ABC-10, 25, 26, 29, 30 and 31; and AONB-01, 02, 03 and 04, and against the following visual receptors: Users of localised/close range PRoW, within 2km to the west of the Site; Users of intermediate/medium range PRoW, between 2-5km to the north of the Site; Users of intermediate/medium range PRoW, between 2-5km to the west of the Site; Users of the North Downs Way, National Trail; Users of Open Access Land upon the North Downs scarp slopes within medium range; Users of Open Access Land (including Peene Country Park) upon the North Downs scarp slopes within long range; Users and residents of Brabourne.

Other Committed Development in the Vicinity of the Site

Folkestone & Hythe District Council

12.3.329 F&HDC-P&PLP identifies specific draft development allocations that are relevant to the Site and this assessment. These are described below.

Lympne Airfield

12.3.330 Policy ND6 allocates 125 new dwellings upon the land between the existing Lympne Industrial Estate and Lympne village, with the remaining area being left open (and accessible to the public) to prevent their coalescence.

12.3.331 The proposed Development would displace this current permission, so it has not been included in the cumulative assessment.

The Otterpool Park Framework Masterplan

12.3.332 The Otterpool Framework Masterplan Area (OFMA) which once fully developed will provide an additional 1,500 homes (to those within the proposed Development) and potentially an additional primary school and green infrastructure, so forming the overall Garden Town at Otterpool Park has. The additional approximate 185 hectares of land, beyond that covered by this outline application, required to complete the full OFMA development is identified on Appendix 12-3 Figure 61. This would be built out by 2046.

12.3.333 There is the potential for 'In combination', and 'in sequence' landscape character and visual amenity cumulative effects, given the relative size of this development, its location within the vicinity of the Site and its ability to be observed in agreed viewpoint locations, and so forms part of the cumulative assessment.

12.3.334 The cumulative impact of this has been assessed against the following landscape character receptors: SDC-05, 07, 11, 13 and 21; ABC-10, 25, 26, 29, 30 and 31; and AONB-01, 02, 03 and 04, and against the following visual receptors: Users of localised/close range PRoW, within 2km to the west of the Site; Users of intermediate/medium range PRoW, between 2-5km to the north of the Site; Users of intermediate/medium range PRoW, between 2-5km to the west of the Site; Users of the North Downs Way, National Trail; Users of Open Access Land upon the North Downs scarp slopes within medium range; Users of Open Access Land (including Peene Country Park) upon the North Downs scarp slopes within long range; Users and residents of Brabourne.

Ashford Borough Council

12.3.335 The ABC-SLP proposes allocation of a number of sites for development around the edge of Ashford over the plan period. Those that are strategic in nature (over 50 dwellings, and or 1Ha of business use) and are likely to be discernible from the agreed assessment viewpoint locations, and hence which may give rise to potential for 'in sequence' landscape character and visual amenity cumulative effects, are listed in Table 12-20.

Table 12-20 List of ABC-SLP Allocated Sites for inclusion within the Cumulative assessment

ABC-SLP Code & Name	Nature of the Development	Likely Development Period	Approximate Distance from the Site
S14 - Park Farm South East	Residential - 250 units.	2018/19 - 2022/23	7.4km
S15 - Finberry North West	Mixed - 300 dwellings, 8,500sqm B1-B8	2026/27 - 2029/30	7.3km
S16 – Waterbrook	Mixed - 350 dwellings, 22ha commercial	2021/22 - 2025/26	6.5km
S17 - Willesborough Lees	Residential - 200 units	2017/18 - 2021/22	6.6km
S19 - Conningbrook Phase 2	Residential - 120 units	2024/25 - 2026/27	8.7km
S45 - Land South of Brockman's Lane, Bridgefield	Residential - 100 units	To be delivered after site ref S14.	7.5km
U22 – Conningbrook2	Residential - 300 units	2018/19 - 2024/2	8.6km

12.3.336 The cumulative impact of this has been assessed against the following landscape character receptors: SDC-05, 07, 08, 11, 13 and 21; ABC-10 and 25; and AONB-01, 02, 03, 04 and 05, and against the following visual receptors: Users of localised/close range PRoW, within 2km to the west of the Site; Users of localised/close range PRoW, within 2km to the south of the Site; Usersof the Saxon Shore Way, Long Distance Path; Users of intermediate/medium range PRoW, between 2-5km to the west of the Site; Users of the North Downs Way, National Trail; Users of Open Access Land upon the North Downs scarp slopes within medium range; Users of Open Access Land (including Peene Country Park) upon the North Downs scarp slopes within long range; Users and residents of Lympne; Users and residents of Court-at-Street; and Users and residents of Aldington Church.

Key Environmental Changes

Ash dieback

12.3.337 The impact of *Ash Dieback* is having an increasing effect on the tree cover within existing woodlands, tree belts and hedgerows in the UK. As this has a subsequent effect upon their visual screening properties it is an environmental change which has informed the future baseline.

12.3.338 Eastern counties, such as Kent, who were one of the first to identify the disease in their woodland, are considered by the Joint Nature Conservation Committee (JNCC) to be sufficiently affected to declare this an *Important Ash Area*.

12.3.339 The AONB-Unit, in response to this, and to their identification that the ash tree is the most common tree species in the AONB, have partnered with organisations such as KCC, the Woodland Trust and the Forestry Commission to form the *Ash Project*, in order to disseminate information about the disease locally and record this major change to the landscape.

12.3.340 The website that supports this project (Ref 12.38) states that the disease, caused by the fungal pathogen Hymenoscyphus fraxineus, and also known as Chalara dieback of ash is characterised by leaf loss and crown dieback in infected trees and is currently untreatable

12.3.341 The Ash Project cites Forestry Commission research which states that 9% of all of the woodland in South East England is made up of ash and that 90-98% of these are likely to be affected over the next

decade. More area specific research has been carried out by KCC (Ref 12.39) which shows in 'north Folkestone' approximately 40% of ash trees in the survey they made showed signs of *ash dieback*. Unless these trees are considered at risk of falling on populated places these won't be felled but simply left to see if they survive or not.

12.3.342 The F&HDC P&PLP at paragraph 14.14, reaffirms the effect this could have this:

> "*Both in the woodlands and hedgerows ash forms a prominent and important part of the landscape. Kent Downs woodlands were one of the first areas in Britain to experience widespread infection from Ash Dieback and the landscape implications are thought to be serious with the expected death and weakening of the ash population.*"

12.3.343 In response the Ash Project, in their article about potential re-planting versus natural regeneration, considers that where:

> "*less than 10% of the canopy of a woodland is made up of ash that the existing trees will just expand to fill in the gap left by ash trees when they die. As the number of trees lost increases the gaps in the canopy will become large enough for new trees [the fast growing [Sycamore is considered to be initially the most likely] to take the place of ash. In South East England over 30% of woods have more than 20% ash in their canopies so this natural regeneration will make up for the loss of ash trees*."

12.3.344 The Forestry Commission (Ref 12.39) on their own webpage regarding the disease state that whist "*the disease has potential to cause significant damage to the UK's ash population*" they however "don't yet know what the full impact of Chalara will be in Britain," and cite "evidence from continental Europe [that] suggests that older, mature ash trees can survive infection and continue to provide their landscape and wildlife benefits for some time".

12.3.345 With regards to areas where replanting is necessary, a JNCC report on '*The Potential Ecological Impact of Ash Dieback*' (Ref 12.40) recommended a palette of eleven tree species whose planting in place of Ash could support approximately three quarters of the other flora and fauna species currently supported by ash. The species are field maple, birch, hawthorn, aspen, oak, small leaved lime, sycamore, hazel, beech, cherry and goat willow. These would be taken forward into the planting palette of the proposed Development.

12.4 Design and Mitigation

Scheme Proposals

12.4.1 The Scheme proposals are set out in Chapter 04 - *The Site and the Proposed Development* of this ES. In essence, they comprise new garden settlement of up to 8,500 dwellings and other uses including commercial, retail, education, health, community and leisure facilities, parking, infiltration areas, a waste water treatment plant, an energy centre, landscaping and public open space. The network of public open space comprises formal and informal open space, parks, wooded areas, green-routes and pitches for sport, recreation and leisure use.

12.4.2 A more detailed description of the Development is also set out across other documents that constitute the outline planning application package. Those documents, which contain information relevant to the embedded design and mitigation measures which would act to prevent and/or reduce significant adverse effects upon landscape character and visual amenity through the construction and operation of the scheme are:

- Development Specification: this document defines and describe the principal components of the Development, as well as the parameters that will guide future design codes and detailed applications to be submitted under reserved matters.
- Parameter Plans: these identify those elements of the proposed Development which are to be controlled as part of the planning permission, and they set boundaries within which details of future reserved matters must be prepared. Those relevant to this assessment are: 1- 'Buildings to be removed and retained' (drawing OPM(P)1018), 2- 'Green infrastructure and open space' (drawing OPM(P)1008), 3- 'Movement and access' (drawing OPM(P)1010), 4- 'Landscape Buffers' (drawing OPM(P)1011), 5- 'Building heights' (drawing OPM(P)1013), 6-'Development areas and land-use framework' (drawing OPM(P)1016)
- Illustrative Plans: These documents that are in support of the planning application illustrate: existing levels; trees and hedgerows to be removed and retained; landscape open space in terms of sports, burial grounds, allotments; movement and access in terms of primary roads, bus routes, bridleways and cycleways; housing density; character areas; Neighbourhood centres; development zones; and the town centre masterplan.
- DAS: this document explains the evolutionary process of the Development's design and how consultation has informed the proposals. Using an illustrative masterplan, the document describes the proposed green and blue infrastructure strategies, the form of the key open spaces across the Site, and the proposed character, density, scale and materiality of built form. Whilst this is not a planning document that can be enforced by planning permission conditions, the intention is that it should be reviewed and understood as a matter of good practice by any future reserved matters applicant.
- Indicative Phasing Plans: these documents, that are for approval within the planning application, illustrate when areas of the Development are likely to come forward within the proposed 25 year construction period.
- Community Facilities Delivery Statement: that sets out the proposed long-term management, stewardship and governance of all infrastructure of community benefit, such as areas of strategic public open space and GI.

12.4.3 As highlighted in the Development Specification, the planning application is submitted in outline to provide the necessary flexibility for the detailed design of the scheme to be approved later through the preparation of 'design codes' and the subsequent submission of reserved matters applications. The design aspects, related to this assessment that are reserved for approval are: layout, scale, appearance, landscaping and means of access.

12.4.4 In terms of 'Layout', the way in which the potential buildings and routes within the Development, and the open spaces between them are situated and orientated in relation to each other is reserved. As set out on all of the Parameter Plans, however, this outline planning application seeks approval of the actual location of the proposed built development, the key open spaces and primary routes, as well as the demolition of eighty four buildings. This assessment has considered these factors, and the aspects of housing density as described within the DAS, when assessing the overall effects of the development upon landscape character and visual amenity.

12.4.5 In terms of 'Scale', the height, width and length of each potential building in relation to its surroundings is reserved. Parameters for the maximum height of proposed buildings above existing ground levels for the different parts of the Development, however, are set out on Parameter Plan 04 'Building heights'. Whilst this plan also indicates a minimum and average height to buildings, this assessment has adopted a 'worst-case' scenario whereby it considers the potential maximum building height when assessing the overall effects of the development upon landscape character and visual amenity.

12.4.6 In terms of 'appearance', those aspects of a potential building or place which determine the visual impression they impart, including their external built form, their architecture, materials, decoration, lighting, colour, and texture are all reserved. The outline planning application seeks approval, however, of a set of strategic 'design guidelines' in the DAS, which establish design principles to be applied at the 'design code' and reserved matters stages. This assessment has considered the implementation of such design principles within the proposed Scheme when assessing the overall effects of the Development upon landscape character and visual amenity.

12.4.7 In terms of 'landscaping', any potential treatment of land for the purpose of enhancing or protecting the amenities of the site and the area in which it is situated, including hard and soft landscaping, planting, screening, surface materials, etc. is reserved. The outline planning application, however, seeks approval of: a series of landscape related 'design guidelines' as set out in the DAS; green infrastructure proposals as set out on the Parameter Plan 02; landscape buffers as set out on Parameter Plan 05; and vegetation retention and removal as set out on Parameter Plan 07. This assessment has considered these factors to in place within the Scheme when assessing the overall effects of the Development upon landscape character and visual amenity.

12.4.8 In terms of 'means of access', the accessibility to and within the site for vehicles, cycles and pedestrians in terms of the positioning and treatment of access and circulation routes and how they fit into the surrounding network is reserved. Parameters for certain access arrangements are set out on Parameter Plans 03- 'Movement and access' for approval. This assessment has considered these factors in place within the scheme when assessing the overall effects of the Development upon landscape character and visual amenity. Off-site highway works do not form part of this parameter plan

but are expected to be achieved through s.106/s.278 legal agreements. These include the upgrading of junction 11 of the M20 and re-organisation of the A20/A261 junction at Newingreen. These too have been considered within the assessment.

12.4.9 Parameter Plan 06 'Development areas and land-use framework' shows the different land-uses proposed for different areas of the Site. This includes indications of the location of proposed residential, commercial, leisure, retail and education use, as well as the location of the town centre and local centres, and the location of key infrastructure. This assessment takes into account the location of these within the Scheme when assessing the overall effects of the Development upon landscape character and visual amenity.

12.4.10 This assessment has therefore been informed by the Development Specification, the Parameter Plans, and the Phasing Plans, and supported by Illustrative Plans, and the 'design guidelines' contained within the DAS. The assessment has also been cognisant to the level of detail shown within these and the planning status they have. Given the outline nature of the proposed Development, mitigation measures for the Scheme have relied upon the likely commitments that would be made at the potential 'design code' and detailed design (reserved matters applications) stages of the project insofar as they are outlined in the documents included with this planning application.

Mitigation of Effects

12.4.11 The details of the embedded design and mitigation measures that are set out in the outline application documents which would act to prevent and/or reduce significant adverse effects upon landscape character and visual amenity through the construction and operation of the scheme are summarised below.

Construction Approach and Mitigation of Construction Effects

12.4.12 A qualitative assessment of the effects on landscape character and visual amenity resulting from construction of the proposed Development has been undertaken. This has considered the types of construction activities involved, the geographic scale, extent and duration of activities and their proximity to receptors. When assigning magnitude to the impacts identified, in accordance with Table 12-9 and Table 12-12 the following Site-wide embedded design and mitigation measures have been assumed to be in place.

12.4.13 To avoid or prevent significant adverse effects occurring, or to reduce their significance upon landscape character and visual amenity receptors during the construction period a Code of Construction Practice (CoCP) would be secured by way of a planning condition. This would document best practice construction methodologies and describe procedures for the management of environmental impacts during construction. This would include a 'landscape and visual implementation plan', to safeguard the visual amenity of visual receptors identified in this assessment during the construction phase.

12.4.14 Chapter 04 - *The Site and the Proposed Development* sets out an outline construction methodology. The best practice measures that would be incorporated into this which are particular to this assessment, include:

- appropriate designs of construction fencing and hoarding surrounding construction areas;
- measures to limit construction site lighting to that required for the activity, its extent and its duration only (meeting health and safety requirements), including horizontal cut-off optics and zero floodlight tilt angles to prevent light spill, and avoiding the location and direction of lighting near to and towards existing residential properties where possible;
- avoidance of earth/spoil stockpiles over 6m in height;
- location of site compounds, material stockpiles, construction related parking and other visually obtrusive activities away from sensitive receptors; and
- implementation of advance planting proposals surrounding areas of current of future construction.

12.4.15 The proposed phased construction indicates that peak construction would be in 2029, ten years following commencement, and that the full construction would be complete by 2044.

Advance Planting

12.4.16 'Advance planting' refers to the implementation of 'structural planting' (i.e. native tree, shrub, hedge and scrub stock planted to form woodland or belts of vegetation) in advance of the completion of the development. This would allow the structural planting to establish and mature, and perform its visual integration and mitigation functions, earlier (i.e. during the construction phase) than it would if it was implemented once the rest of the development was completed. The other objectives for this as set out in the F&HDC-CSR policy SS7 (New Garden Settlement – Place Shaping Principles) are to: prevent the coalescence of the new settlement with Lympne; to separate neighbourhoods within the settlement itself; and to provide distance buffers between the M20/railway transport corridor for noise and air quality mitigation purposes.

12.4.17 In considering the growth rates of structural planting GLVIA3 states that: "*Assumptions about plant growth or other changes over time should be realistic and not over optimistic. The design concept for the mitigation has to have a good chance of being achieved in practice to be taken seriously by the competent authority.*" Table 12-21, therefore, sets out the anticipated heights that structural planting would be expected to have grown to by the assessment scenarios set out in 12.2.264 should particular areas be planted: at the commencement of construction on site; during the peak construction period (ten years after this); or once the overall development is complete. The heights given are based upon the following assumptions:

- The growth rates are based upon those outlined in IEMA – Knowledge Centre paper: '*Predicting tree and hedge growth*' (Ref 12.41), personal professional experience, and familiarity with the Site over a number of years that indicates: that plant stock of greater maturity takes longer (up to 5 years) to overcome the shock of being re-planted; that once they are through this initial period plants go through a phase of maximum extension growth; that plant growth slows towards maturity; and that recent planting in and around the Site (particularly around the Lympne Industrial Estate) shows better growth when planted into 'natural' ground as opposed to upon bunds – as such artificial landforms: are likely to contain a thinner amount of growing medium in which the plants can establish and thrive; are likely to contain a more compacted subsoil layer; being sloped, prevent proper irrigation; and, again being sloped, create more difficult maintenance conditions.
- Recent planting such as that around the Lympne Industrial Estate appears to have grown at a faster rate within open ground as opposed to upon man-made bunds, where there is increased water runoff, the cohesive fill can sometimes prevent heathy plant growth, maintenance is harder.
- Planting areas would contain native species based upon those for the greensand ridge and Posting Vale areas outlined in the AONB-LDH, and containing a 75% / 25% ratio of deciduous and evergreen species.
- Plant stock used would have local provenance.
- Planting areas would include a mixture of transplants (on average 0.75m high above ground level at time of planting) and feathered trees (on average 2.00m high above ground level at time of planting) in order to provide some diversity in habitat structure and to provide some initial screening.
- Plant growth is expected to be:
  - *Transplants*: 0.3m/year for years 0-5, and 0.5m/year for years 5-10, 0.5m/year for years 10-25, 0.4m/year for years 25-40.
  - *Feathered*: 0.2m/year for years 0-5, and 0.5m/year for years 5-10, 0.5m/year for years 10-25, 0.4m/year for years 25-40.
- Faster growing, more densely planted 'nurse' tree/scrub species are used at the edges of planting areas to provide shelter for slower, but more area-appropriate tree/scrub species which may suffer from supressed growth if not protected.
- Most soils across the Site are considered to be friable, deeply ploughed, loamy, arable soils.
- All stock, until fully established, is suitably protected from browsing mammals with appropriate fencing and individual plant shelters.
- A landscape management and maintenance regime would be implemented until the planting area is fully established which includes: replanting dead/dying/diseased/defective plant stock, thinning of planting stock to promote growth, watering in times of drought; ensuring a 1.0m diameter weed-free zone around each plant.

Table 12-21 Anticipated Structural Planting Heights

Assessment scenario	Height of Structural Planting (mix of transplants and feathered trees)		
	Vegetation planted during Phase 0-5 years of construction	Vegetation planted during Phase 5-10 years of construction	Vegetation planted by final year of construction
Year 5: of Construction	0.75m – 2.00m	-	-
Assessment scenario 1: Year 10: Peak construction year	2.25m – 3.00m	0.75m - 2.00m	-
Assessment scenario 2: Year 25: Construction completed / Operation of Site begins	9.75m – 10.50m	7.25m – 8.00m	0.75m - 2.00m
Assessment scenario 3: Year 40: Operation - end of 15-year establishment period	17.25m – 18.00m	14.5m – 15.00m	7.25m – 8.0m

12.4.18 The location of the proposed areas of structural planting, and the year in which they would be planted (i.e. in the 1st year of construction, in the peak construction year, or in the final year of construction) are shown on the Phasing Plans (drawing OPM(P)1011). The DAS sets out how these areas contribute to the wider proposed GI strategy of the Scheme and describes the aspects of biodiversity and SuDS that their design would also accommodate.

Scheme Design and Mitigation of Operational Effects

12.4.19 A qualitative assessment of the effects on landscape character and visual amenity resulting from operation of the proposed Development has been undertaken. This has considered the types of effects that are likely to occur, the scale, extent and duration of these, and their proximity to receptors. When assigning magnitude to the impacts identified, in accordance with Table 12-9 and Table 12-12 the following Site-wide and area specific embedded design and mitigation measures have been assumed to be in place.

Site Wide Embedded Design and Mitigation Measures

12.4.20 Details of the Site-wide embedded design and mitigation measures, that were developed through the landscape-led iterative design process, and that would act to avoid or prevent significant adverse effects occurring, or would act to reduce the significance of the effect upon landscape character and visual amenity receptors through the operation of the scheme, are summarised below:

Landform

12.4.21 No major changes are required to the existing landform. The natural undulating topography of the Site has been a key driver in the development of a settlement layout which fits the local landscape context

12.4.22 There would, however, be cutting and embankments created with realignment, and dualling of the A20 between junction 11 of the M20 and Newingreen. The measures to reduce the landscape character and visual amenity effects of this are set out in Table 12-22.

12.4.23 Where excavations are required for the accommodation of surface and storm water assets, such as swales, storm water basins and ponds, these have been designed alongside the GI strategy for the Development so that they are appropriately integrate into the landscape of the completed Scheme. As such, for example, the landscape design principles set out that the sides of swales would be vegetated with trees, as part of the structural planting and habitat creation proposals, and that storm water basins would form ponds with naturalised edges to them.

Tree and Hedge Removal

12.4.24 To assist in reducing adverse effects upon the landscape character of the Site and its surrounds and the visual amenity of receptors identified the majority of existing trees, hedgerows within the Site have been retained – see Supporting Plan OPM(P)1007, and where possible integrated into the proposed Scheme. Those that are proposed for removal are confined to those locations where proposed access roads cross them.

Built Development Layout, Density and Character

12.4.25 To assist in reducing adverse effects upon the landscape character of the Site and its surrounds and the visual amenity of those receptors identified the nature of the proposed Scheme has been carefully considered.

12.4.26 Critical to the successful integration of the Scheme within its landscape context is its visual legibility as a town, rather than simply an extension to existing built up areas. This planned legibility has brought about the thorough consideration of the Scheme's: composition and hierarchy of land-uses and layout; hierarchy of residential densities and building heights; harmony with local urban and rural character; and the differentiation of townscape and landscape character within the overall settlement.

Land-uses and Layout

12.4.27 As set out in the DAS the Development proposes the arrangement of a distinct town centre surrounded by local centres (and as shown on Parameter Plan OPM(P)1016 'Development Areas'). The town centre would appear as a distinct central focus to the settlement. As well as a higher density of dwellings being apparent, this would visually contain the quantity of shops, business spaces, community centres (including a multi-faith facility), health and recreation facilities (through mixed use ground floor frontages) that are visually expected in such a location. The centre would contain key buildings of greater visual distinction and height to assist in the settlement's overall legibility, and the creation of varied roofscapes, when viewed from both locations within the town and from afar.

12.4.28 As shown on Illustrative Plan OPM(P)1015 'Neighbourhood Centres', five local centres would be located across the scheme. As well as containing a higher density of housing than the areas surrounding them they would contain, at street front level, shops with business space above, community buildings and health facilities, with schools and public open spaces nearby. The DAS highlights that the scale of buildings will be two to three storeys and a width and sequence of typical Kent villages.

12.4.29 To further assist in reducing adverse effects upon the landscape character of the Site and its surrounds and the visual amenity of those receptors identified the proposed layout has incorporated space for long-range views to the North Downs escarpment, and local views to areas within the site of visual interest such as Westenhanger Castle, the landform Barrow Hill, and along the East Stour River, as well as to the town centre and local centres.

12.4.30 In addition, the proposed Development blocks have generally been planned between retained existing hedgerows and field boundaries, which themselves would be reinforced with further structural planting. In areas where such an intimate division of the landscape does not already exist new planted breaks between development block have been proposed.

12.4.31 The layout of the Scheme proposes the creation of robust 'defensible edges' and 'strategic buffers' along the boundaries of the settlement (and other sensitive areas) to check sprawl, and to conserve the individual identity of existing neighbouring settlements and the rural character surrounding them and the new town.

Density

12.4.32 The overall urban residential density of the Scheme, based upon the proposed 8,500 dwellings across 580 hectares (including all connecting roads, non-residential uses, schools and employment uses, amenity landscape and wider areas of suds and flood mitigation, proposed woodland and landscape habitat buffers, proposed sports pitches and wider area of publicly accessible natural landscape), would be 15 dwellings per hectare (dph). The DAS highlights that this is comparable to the nearby settlements of Tenterden at 12.5 dph, and Hythe at 16 dph.

12.4.33 As shown on Illustrative Plan OPM(P)1012 'Housing Density' the proposed net density of residential parcels across the Development (which includes roads within the site, private gardens, car parking areas, amenity landscape and the SuDS within development areas, but excludes non-residential uses, wider areas of SuDS and flood mitigation, proposed woodland and landscape habitat buffers, schools and sports pitches, and wider area of publicly accessible open landscape) would vary from 20-65 dph.

12.4.34 A further way that the embedded design has sought to reduce the adverse effects upon the landscape character of the Site and its surrounds and the visual amenity of those receptors identified is through the application of this proposed range of residential densities, based upon the following assessment -related design principles:

- Use density to help create a visually legible hierarchy, gradation and distinction between the different places and neighbourhoods across the Scheme, with highest densities in the town centre and local centres.
- The outer edges of development blocks, fronting sensitive open spaces (such as the new park created between Westenhanger Castle and the A20) would be of a lower density to create more permeable edges and less of a sharp contrast in character.
- High density areas (55-65 dph net / 35-45 dph gross) would comprise linear blocks of flats above ground floor commercial frontages fronting the high street and market square, rear mews courtyards with flats above car parking, or streets fronted with terraced town houses with gardens and some flats with ground floor commercial frontages at key intersections.
- High to medium density areas (47–55 dph net / 32-40 dph gross) would comprise mid-town houses, mainly short terraces and semidetached dwellings with generous gardens and on-plot parking, and some mews courts and flats above.
- Medium density areas (40–47 dph net / 28-35 dph gross) would comprise predominantly residential homes of a relatively consistent scale with a permeable network of streets and some mixed use at ground floor on key intersections;
- Medium to lower density areas (30–40 dph net / 25-30 dph gross) would comprise mainly semidetached dwellings, some short terraces and some detached houses with very generous gardens, with on-plot or frontage parking.
- Lower density areas (20–30 dph net / 15–25 dph gross) would mainly comprise mainly detached dwellings with very generous gardens fronting the surrounding open spaces, with on-plot parking, with some semidetached house and short terraces with gardens clustered in courts.
- Towards the rural edges of the Scheme the housing density will be scaled down to detached and small terraces of homes some grouped as loose courts and some fronting areas of open landscape.

Building Heights

12.4.35 The proposed building heights (in metres from existing levels Above Ordnance Datum (AOD)) are shown on Parameter Plan OPM(P)1013 - 'Building Heights'. This provides an average, minimum and maximum height of proposed buildings across every development block. Those preparing detailed designs, as part of future reserved matters applications, would apply the following assessment -related design principles in interpreting this range in heights:

- Create visual variety in roofscape heights between, and within different areas of the proposed Scheme to aid visual legibility of the town centre and local centres, and to prevent a homogenous form to the settlement when seen in views from both within and outside of it.
- Use buildings at the upper end of the range given, particularly in the town centre and local centres, to create more visually distinct elements of built form to assist in the visual legible of the overall settlement, appreciation of the hierarchy of different areas, and the distinction between the different places of character.
- Plan built development of a height that avoids breaking the skyline in views from the North Downs escarpment, and/or which is considered overbearing in relation to existing dwellings outside of the Site.

Character

12.4.36 The legibility of the Development as a town has also been proposed in terms of the character of built-form and open spaces. The DAS firstly establishes the design principle of the character of the settlement being distinguishable from others of equivalent size and form in the surrounding area, whilst being respectful of the local vernacular of the greensand ridge, the Vale of Holmesdale and the North Downs through Kent. The assessment -related design principles associated with this are:

- use of local materials such as Kentish Ragstone (as used in parts of Lympne, Aldington and Westenhanger), brick (as used in local farmsteads of Hillhurst, Otterpool Manor, and in the Victorian railway terraces of Barrow Hill and Sellindge) clay and slate tiles, render, and timber cladding;
- supplement this with contemporary materials such as engineered timber finishes combined with zinc roofing;
- the establishment of a suitable colour palette for walls and roofs that take their lead from the dark black/grey, red brown, to light pastel colours used locally; and
- use of vegetated green roofs and walls, as well as solar panelling.

12.4.37 In addition, the DAS, along with the Development Specification and Illustrative Plans, establishes the design principle of using more detailed Scheme Character Areas. The layout of these has been founded on the Site-specific existing LCA, that has been prepared as part of this assessment process (see APPENDIX 12-1 - Site Specific Landscape Character Assessment).

12.4.38 Key aspects of the Site-specific LCA, such as identification of the lower lying land at the head of the East Stour River, the previously developed and built-up land around the old racecourse, the potential of an improved setting to Westenhanger Castle as an identity-building and visual focus for the town, has led to the placing of the settlement's centre between the A20 and Westenhanger Station, and then an array of local centres around this. The landscape character value of the sinuous route of the East Stour River, the landform of Barrow Hill, and the greater visible prominence of the upper parts of the greensand ridge that were identified in the Site-specific LCA helped inform the placement of local centres, the distinct character of these and the outward transition to lower densities and lower building heights.

12.4.39 The embedded design aspects of the proposed Scheme Character Areas (shown on Illustrative Plan OPM(P)1014 'Character Areas'), that have been included to avoid or prevent significant adverse effects occurring, or would act to reduce the significance of the effect upon landscape character and visual amenity receptors through the operation of the scheme, are summarised below:

- Town Centre, High Street & Lanes:
  - The new high street will provide active ground level frontages, containing differing sizes of retail premises, businesses, health, education and community facilities and will create strong pedestrian priority and shared public spaces, with new housing will be integrated throughout.
  - Street widths typical to Kent towns, and suitable for a high proportion of street trees.
  - Car parking in rear mews courtyards or at lower ground levels, to create a predominantly pedestrian shared surface streetscape
- Gateway:
  - Retention and re-use of existing buildings such as the distinctive brick buildings of Hillhurst Farm and the Victorian Station building and key points of focus.
  - The creation of suitable space between buildings for a high proportion of street trees.
- Westenhanger Castle
  - The character of this area would be generated by the creation of a 'town park' between Westenhanger Castle and the A20 – utilising the existing valued riverine, landscape and heritage assets to provide a character-rich space at the centre of the scheme, and which affirms the Castle's importance as part of Otterpool Park's identity.

    The character would be shaped by 27 hectares of parkland, the restoration of a causeway to the Castle from the A20, retained views to the North Downs escarpment along this, the retained Racecourse lake, wide approaches into the built up areas surrounding it.

- Riverside
  - An area of residential, community and employment land-use whose development blocks and urban pattern are shaped by the sinuosity of East Stour River and its tributaries, and the subtle landforms they have created.
  - Views to the broad river valley, to the Town Park, the upper slopes of the greensand ridge and the North Downs escarpment between development blocks, are encouraged through the proposed layout.
  - A strong multifunctional GI grid of tree-lined streets leading to the central linear riverside parkland containing a variety of habitats from wet-woodland to reed beds.
- Hillside:
  - An area of medium-low to low residential height and density, community and small-scale retail land-use whose development blocks and urban pattern are shaped by the landform of Barrow Hill and the establishment of a community green at its centre.
  - A distinct neighbourhood, at a village scale, with housing up to two and a half storeys, surrounded on all sides but the south by a robust open space and vegetated buffers, and whose development blocks are separated by retained or created field boundaries formed into green corridors of structural vegetation.
- Otterpool Slopes
  - An area of generally medium to low height and density residential, community and small-scale retail land-use that would be an apparent transition between the more densely inhabited riverside and town centre areas and the more sparsely populated Woodland character area.
  - The development blocks in the eastern half of this area are shaped by the north-south field boundary pattern and the tributaries of the East Stour River. These would be reinforced and formed into green corridors of structural vegetation.
  - Elsewhere a mosaic of ponds, woodland blocks, tree belts and shaws would create a richer landscape character pattern than currently exists.
  - In the centre the proposed Country Park, containing the geological SSSI and the remains of the Roman Villa, as well as the historic buildings of Upper Otterpool and Otterpool Manor would impart a strong character to this area
- Woodland:
  - An area of generally medium-low to low height and density residential, community and small-scale retail land-use that would provide houses in separated, farmstead courtyard clusters, and edge facing groups.
  - Housing of up to two and half storeys, would be separated by broad areas of woodland and open landscape and strongly linked to surroundings with footpaths and cycle ways.
- Valley & Woodland Edges.
  - Low density housing with more detached dwellings, dominated by landscape setting

Streetscape Design

12.4.40 The DAS sets out design principles for the design of the hierarchy of proposed streets, road and lanes across the Scheme. The aspects of their embedded design that are relevant to this assessment are summarised below.

12.4.41 Strategic Streets are the main distributor roads of A20 and link to the M20. The A20 and the bypassing to the north of Newingreen would have two single vehicular lanes and paths for pedestrians and cyclists segregated by verge of trees. The streetscape would have built development fronting on to it. The A20 link to Junction 11 of the M20 will have two double lanes with planted buffers of structural vegetation either side of it.

12.4.42 Primary Streets would be local distributor roads through mixed-use and residential areas with active frontages encouraging high levels of footfall. The two single lanes of traffic would be segregated from pedestrian paths and cycle lanes on both sides with 5m wide verges with street trees on both sides.

12.4.43 Secondary Streets are routes with predominantly residential character with a narrower street width where verges provide for street trees and SuDS components on opposite sides.

12.4.44 Tertiary Streets are narrower residential streets with a footpath with a planted verge on one side, and a SuDS component on the other.

12.4.45 Residential Mews & 'Homezones' provide shared surfaces with occasional street tree planting.

12.4.46 Greenways are a narrow, shared surface with open edges on one side

Lighting

12.4.47 To assist in reducing adverse effects upon the landscape character of the Site and its surrounds and the visual amenity of receptors identified, the Scheme has been planned to minimise impact at night from lighting.

12.4.48 The DAS recognises that the detailed assessment and design of lighting through the future reserved matters applications stages of the scheme should comply with the criteria for those Environmental Zones that are to be agreed with the local planning authority, as set out in the Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light (Ref 12.16) with regards to light spill, glare and sky glow.

12.4.49 The DAS establishes the following design principles to ensure that the impact of lighting is minimised:

- The quantity and illumination of the lighting proposed would the minimum necessary.
- All lighting is positioned and directed only to where it is required so as to minimise glare, light spillage and sky glow from the site by avoiding lighting near or above the horizontal and utilising low light pollution lanterns with flat glass lenses, horizontally mounted asymmetric luminaires / floodlights and full horizontal cut off optics / luminaries, where possible, i.e. no direct upward light.
- The lighting design shall comply with the lighting levels, uniformity and other parameters of current and relevant lighting standards and higher than recommended lighting levels should be avoided.
- Where possible and appropriate, consideration should be given to proposing timed lighting units and part-night lighting switching-off at quiet times, or a curfew which extinguishes all non-essential lighting after an agreed time, to ensure safety but minimise night disturbance.
- Use of physical barriers e.g. proposed buildings, existing areas of substantial vegetation or new structural planting to obscure or reduce the effects of installed artificial light sources on sensitive receptors.

Green Infrastructure

12.4.50 To assist in reducing adverse effects upon the landscape character of the Site and its surrounds and the visual amenity of receptors identified a GI strategy has been adopted and applied throughout the proposed Scheme design.

12.4.51 Approximately 40% of the Site has been designated as strategic GI, without accounting for any incidental areas within the designated housing areas. With regard to this assessment implementation of the GI strategy (set out in greater detail within the DAS and on Parameter Plan OPM(P)1008) in essence would reduce adverse effects on landscape character and visual amenity by:

- use of locally appropriate native species (e.g. hornbeam and oak where the clay soils across the Site occur, and oak, birch and beech on the areas of free draining sand) to create new locally characteristic vegetative forms i.e. woodland blocks, tree belts, shelter belts, shaws, field corner clumps and copses, wet woodland, hedgerows, etc. (as outlined in locally adopted guidance documents such as the AONB-LDH and AONB-MP) to integrate new and existing development;
- reinforcing existing or lost field boundaries, existing watercourses, existing areas of structural vegetation with further native planting, and so creating a stronger, richer landscape structure, with a more wooded character throughout the area, similar in vegetative form of the landscape further west around Aldington;
- reinforcing and creating defensible boundaries to the edges of the Development;
- providing space for formal and informal recreation (such as parks, recreational woodland, sport pitches, allotments, traffic-free 'green routes', different grades of play spaces), and the ease of access to these, to reduce the potential community's reliance on offsite areas of recreation;
- conserving and enhancing the setting of existing places, buildings and characteristics within and surrounding the Site of particular landscape value, such as Westenhanger Castle, retained farmsteads, views to the North Downs escarpment, remnants of the Lympne Airfield, visitors' arrival at Port Lympne Animal Park, the individual identity of existing settlements, the East Stour River corridor, the wooded crest of the greensand ridge, and the Site's distinctive landforms; and
- linking with areas of key green infrastructure off site.

- utilising the natural topography and existing and historic landscape features to maintain local landscape distinctiveness.
- Restore and Reinforce and Create a stronger and richer landscape structure across the site, with areas of woodland, tree belts and river meadow;

Blue Infrastructure

12.4.52 The blue infrastructure proposals within the Water Cycle Strategy, submitted as part of the package of application documents, have also been designed to reduce the likelihood of adverse effects on landscape character and visual amenity by:

- conserving and reinforcing the landscape character of the East Stour River and its tributaries through the Site, by retaining their sinuous nature, broadening their floodplains, and retaining existing riparian and marginal vegetation; and
- using local appropriate, visually inconspicuous measures to convey and hold back surface water and storm water as necessary, such as swales (shallow linear vegetated depressions which carry occasional water over the surface of the land to a water storage or discharge system), wet woodland, small-medium naturally shaped ponds, and ditches with adjoining hedgerows with trees.

Long Term Management and Stewardship of Strategic Green Infrastructure

12.4.53 The DAS and the Governance Strategy for Otterpool Park set out strategy for the long-term management and governance of all infrastructure of community benefit, including the strategic public open space and GI.

12.4.54 The strategy proposes the creation of a "Community Trust or new elected body" to manage and maintain the GI (including those areas of structural planting), potentially alongside existing parish councils who may take on some spaces. Consequently, this assessment, when assessing the overall effects of the Development upon landscape character and visual amenity, takes into account the ability of this organisation to maintain and manage the proposed areas of structural planting so they properly establish and perform their intended function of assisting in the visual integration of the Scheme.

Area-specific Embedded Design and Mitigation Measures

12.4.55 The embedded design and mitigation measures set out in Table 12-22 are those specific to the LCAreas identified in the Site-Specific Landscape Character Assessment (Appendix 12-1). As with the Site-wide measures these have been developed through the iterative design process, and would act to avoid or prevent significant adverse effects occurring, or would act to reduce the significance of the effect upon landscape character and visual amenity receptors through the operation of the scheme.

Table 12-22 Embedded Design and Mitigation Measures associated with the Site-specific Landscape Character Assessment.

Otterpool Park Site Specific LCA LCArea	Summary of Development Proposals within the Site Specific LCArea	Embedded Design and Mitigation Measures associated with the LCArea	Receptor(s) upon which the significance of the effect would be reduced (or upon which a significant effect would be avoided or prevented, if indicated) by inclusion of the embedded design and mitigation measure
1. Lower East Stour River Corridor	*Proposed Land-use:* • recreation; nature conservation; potential waste water treatment; housing. *Building Height Range (above existing ground levels):* • three storey (12m) to one storey (7m) Proposed additional Built Infrastructure: • potential site of waste water treatment plant. *Proposed Green Infrastructure:* • sports pitches, informal recreational paths, allotments. • riparian habitat, woodland blocks, tree belts, shaws, wet woodland and hedgerow.	Proposed native species tree, scrub and marginal planting would be planted to conserve and reinforce the corridor of the East Stour River.	The landscape character of LCArea SDC-11
		Proposed substantial 25-75m wide scalloped-edged native species tree belts and woodland blocks would be planted along the Site's northern boundary within this LCArea to assist in visually integrating the development into its setting.	The visual amenity of the users of PRoW HE302 within the Site, users of PRoW within 2km and between 2-4km to the north of the Site, and residents of Sellindge.
			The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 07 and 08, ABC-AONB-01, 02 and 03
		Proposed substantial 20m-30m wide native species tree belts and woodland blocks would be planted along the Site's western boundary within this LCArea to assist in visually integrating the Development into its setting, to reinforce the existing defensible edge of Harringe Lane, and to provide a defensible edge along this side of the overall proposed Development.	The visual amenity of the users of PRoW HE302 within the Site, users of PRoW within 2km, and between 2-4km to the west of the Site, and local roads within 0-2km of the Site.
		Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation to assist in visually integrating the Development into its setting.	The landscape character of this LCArea: SDC-11.
		No floodlighting to the proposed sports pitches within this Site-specific LCArea.	The visual amenity at night of the: residents of Sellindge; residents of Harringe Court; users of PRoW HE302 within the Site; users of localised/close range PRoW within 2km to the south and west of the Site; users of the NDW-NT; users of intermediate/medium range PRoW between 2-5km to the north and west of the Site; users of Open Access Land upon the North Downs scarp slopes within medium range; and users of roads within 0-2km of the Site i.e. Harringe Lane.
			The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 07, 08 and 09; ABC-10, 29 and 25; and ABC-AONB-01, 02 and 03.
		A proposed 20-65m wide public open space, allotment and tree belt buffer would be created between the edge of the rear gardens of Barrow Hill-Sellindge and the nearest areas of proposed housing to assist in visually integrating the Development into its setting.	The visual amenity of the users of PRoW HE303 within the Site, and the residents and users of Barrow Hill-Sellindge.
			The Individual townscape identity of the settlement of Barrow Hill-Sellindge.

Otterpool Park Site Specific LCA LCArea	Summary of Development Proposals within the Site Specific LCArea	Embedded Design and Mitigation Measures associated with the LCArea	Receptor(s) upon which the significance of the effect would be reduced (or upon which a significant effect would be avoided or prevented, if indicated) by inclusion of the embedded design and mitigation measure
2. Harringe Open Farmland Slopes	*Proposed Land-use:* • recreation; nature conservation; housing. *Building Height Range (above existing ground levels):* • three storey (12m) to one storey (7m). Proposed additional Built Infrastructure: • tertiary roads *Proposed Green Infrastructure:* • sports pitches, informal recreational paths, area of woodland burial. • Woodland blocks, shaws, tree belts, wet woodland and hedgerow.	Proposed substantial 20-30m wide native species tree belts and woodland blocks would be planted along the western boundary of the Site through this Site-specific LCArea to assist in visually integrating the Development into its setting and to provide a defensible edge to it along its this edge.	The visual amenity of: the residents of Harringe Court, Court-at-Street and Aldington Church; users of localised/close range PRoW within 2km to the west of the Site; and users of roads within 0-2km of the Site i.e. Harringe Lane.
		Views to the North Downs escarpment from the upper areas of this Site-specific LCArea (outside of the Site boundary) over the top of proposed structural planting, particularly between Harringe Lane and Springfield Wood, from PRoW HE302 have been retained.	The visual amenity of: users of localised/close range PRoW within 2km to the west of the Site; and users of roads within 0-2km of the Site including Harringe Lane.
			The landscape character of this LCArea: SDC-11.
		Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation to assist in visually integrating the Development into its setting.	The landscape character of this LCArea: SDC-11.
		No floodlighting to the proposed sports pitches within this Site-specific LCArea.	The visual amenity at night of the: residents of Sellindge; residents of Harringe Court; users of PRoW HE302 within the Site; users of localised/close range PRoW within 2km to the south and west of the Site; users of the NDW-NT; users of intermediate/medium range PRoW between 2-5km to the north and west of the Site; users of Open Access Land upon the North Downs scarp slopes within medium range; and users of roads within 0-2km of the Site i.e. Harringe Lane.
			The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 07, 08 and 09; ABC-10, 29 and 25; and ABC-AONB-01, 02 and 03.
		10-15m wide proposed native species tree belts would be aligned north-south dividing the Development blocks in the adjacent Site-specific LCArea no.3. to assist in visually integrating them into its setting.	The visual amenity of the residents of Harringe Court, and users of localised/close range PRoW within 2km to the west of the Site; and users of roads within 0-2km of the Site i.e. Harringe Lane.
3. Somerfield Court Open Farmland Slopes	*Proposed Land-use:* • formal recreation; housing, education, local commercial centre, and community hall. *Building Height Range (above existing ground levels):* • five storey (18m) to one storey (7m). Proposed additional Built Infrastructure: • primary access roads. *Proposed Green Infrastructure:* • village green, school playing fields, areas of equipped and natural play. • riparian habitat, tree belts, hedgerows and street trees.	The arrangement of proposed development blocks, access roads and public open space across this Site-specific LCArea which reflects the distinctive shape of the underlying outlier/knoll landform and retain existing vegetated field boundaries.	The landscape character of this LCArea: SDC-11.
		The placement of the proposed tallest development blocks within this Site-specific LCArea on the lowest part of its eastern side, away from the western edge of the Site	The visual amenity of: users of localised/close range PRoW within 2km to the north and west of the Site; users of the NDW-NT; users of intermediate/medium range PRoW, between 2-5km to the north and west of the Site; and users of Open Access Land upon the North Downs scarp slopes within medium range.
			The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 07, 08 and 09; ABC-10, 25, and 29; and ABC-AONB-01, 02 and 03.
		The positioning of the proposed local centre upon the brow of Barrow Hill, making visually apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, and so that it is not visually perceived simply as 'sprawl'.	The visual amenity of: the residents of Barrow Hill-Sellindge and Harringe Court; users of localised/close range PRoW within 2km to the north, south and west of the Site; users of intermediate/medium range PRoW between 2-5km to the north and west of the Site; users of the NDW-NT; users of Open Access Land upon the North Downs scarp slopes within medium range; and users of roads within 0-2km of the Site i.e. Harringe Lane.
		Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in this Site-specific LCArea, to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern.	The visual amenity of: the residents and users of Barrow Hill-Sellindge, Court-at-Street, Aldington Church, Brabourne and Harringe Court; users of localised/close range PRoW within 2km to the north, south and west of the Site; users of intermediate/medium range PRoW between 2-5km to the north and west of the Site; users of the NDW-NT; users of Open Access Land upon the North Downs scarp slopes within medium range; and users of roads within 0-2km of the Site i.e. Harringe Lane.
			The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 07, 08 and 09; ABC-10, 25, 29, 30 and 31; and ABC-AONB-01, 02 and 03.
		A proposed 20-65m wide public open space, allotment and tree belt buffer would be created between the edge of the rear gardens of Barrow Hill-	The visual amenity of the users of PRoW HE303 within the Site, and the residents and users of Barrow Hill-Sellindge.

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		Sellindge and the nearest areas of proposed housing to assist in visually integrating the Development into its setting.	The Individual townscape identity of the settlement of Barrow Hill-Sellindge.
4. Harringe Brooks Woodland	*Proposed Land-use:* • n/a. *Building Height Range:* • n/a. Proposed additional Built Infrastructure: • n/a. *Proposed Green Infrastructure:* • areas of informal recreation within the buffer strip outside of the designated Ancient Woodland boundary.	A proposed 50-75m wide open space buffer would be created between the edge the woodland and the closest area of proposed built Development to maintain the integrity of the woodland and its visual distinctiveness in the surrounding landscape.	The landscape character of this LCAreas: SDC-11
5. Otterpool Manor Open Farmland Slopes	*Proposed Land-use:* • formal and informal recreation; housing, education, local commercial centre, allotments and community hall. *Building Height Range (above existing ground levels):* • four storey (16m) to one storey (7m). Proposed additional Built Infrastructure: • primary access roads. *Proposed Green Infrastructure:* • village green, school playing fields, areas of equipped and natural play. • tree belts, shaws, hedgerows and street trees.	A proposed 150m wide open space buffer around the residual estate of Otterpool Manor would be created to conserve the farmstead's immediate rural setting, and conserve publicly accessible views out from this area to the North Downs escarpment.	The visual amenity of users of PRoW HE315 (that runs through this farmstead) and of Otterpool Lane.
			The landscape character of this LCArea: SDC-11
		The placement of the proposed tallest development blocks within this Site-specific LCArea on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge.	The visual amenity of: users of localised/close range PRoW within 2km to the north, west and south of the Site; the residents and users of Court-at-Street and Aldington Church, Brabourne; users of the NDW-NT; users of intermediate/medium range PRoW, between 2-5km to the north and west of the Site; users of Open Access Land upon the North Downs scarp slopes within medium range; and users of the Port Lympne Animal Park (arriving and leaving along the entrance drive off Otterpool Lane).
			The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 07, 08 and 09; ABC-10, 25, 29, 30 and 31; and ABC-AONB-01, 02 and 03.
		Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation and 10-20m wide proposed tree belts would be planted through the centre and along parts of the eastern, western, northern, and north-eastern boundaries of the development blocks within this Site-specific LCArea to assist in: visually integrating them into their setting, ameliorating existing views to the Lympne Industrial Estate; and restoring a stronger landscape pattern throughout the Site Specific LCArea.	The visual amenity of: users of PRoW HE316 within the Site; the residents of Barrow Hill-Sellindge, Court-at-Street, Aldington Church, Brabourne, and Otterpool Manor; users of localised/close range PRoW within 2km to the north, south and west of the Site; users of intermediate/medium range PRoW between 2-4km to the north and west of the Site; users of the NDW-NT; users of Open Access Land upon the North Downs scarp slopes within medium and long range; and users of roads within 0-2km of the Site i.e. Otterpool Lane.
			The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 07, 08 and 09; ABC-10, 25, 29, 30 and 31; and ABC-AONB-01, 02 and 03.
		15-25m wide proposed tree belts would be planted along the southern edge of this Site-specific LCArea to assist in visually integrating the Development into its setting, and to create better definition between it and the parkland estate of Port Lympne Animal Park.	The visual amenity of users of the Port Lympne Animal Park (arriving and leaving along the entrance drive off Otterpool Lane) and users of roads within 0-2km of the Site i.e. Otterpool Lane.
6. Port Lympne Wooded Parkland	*Proposed Land-use:* • n/a. *Building Height Range:* • n/a. Proposed additional Built Infrastructure: • n/a. *Proposed Green Infrastructure:* • areas of structural planting within adjacent LCAreas.	15-25m wide proposed tree belts would be planted along the southern edge of this Site-specific LCArea to assist in visually integrating the Development into its setting, and to create better definition between it and the parkland estate of Port Lympne Animal Park.	The visual amenity of users of the Port Lympne Animal Park (arriving and leaving along the entrance drive off Otterpool Lane) and users of roads within 0-2km of the Site i.e. Otterpool Lane.
		The placement of the proposed tallest development blocks within this Site-specific LCArea on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge.	The visual amenity of users of the Port Lympne Animal Park (arriving and leaving along the entrance drive off Otterpool Lane).

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7. Barrow Hill-Sellindge Linear Settlement	*Proposed Land-use:* • n/a. *Building Height Range:* • n/a. Proposed additional Built Infrastructure: • n/a. *Proposed Green Infrastructure:* • areas of structural planting, allotment and parkland within adjacent LCAreas.	A proposed 20-65m wide public open space, allotment and tree belt buffer would be created between the edge of the rear gardens of Barrow Hill-Sellindge and the nearest areas of proposed housing to assist in visually integrating the Development into its setting, avoiding coalesce, and conserving the individual townscape identity of the settlement of Barrow Hill-Sellindge.	The visual amenity of the users of PRoW HE303 within the Site, and the residents and users of Barrow Hill-Sellindge. The landscape character of this LCArea: SDC-11.
		A proposed 15-20m tree belt along the east edge of Barrow Hill-Sellindge (where the existing residential properties her already have relatively long and well vegetated rear gardens) would be planted to assist in visually integrating the Development into its setting and conserving the Individual townscape identity of the settlement of Barrow Hill-Sellindge.	The visual amenity of the users of PRoW HE271A within the Site, and the residents and users of Barrow Hill-Sellindge. The landscape character of this LCArea: SDC-11.
		A proposed landscape of trees, sports pitches, and riverside parkland would be created along the south-east edge of Barrow Hill-Sellindge to assist in the retention of existing views from this part of settlement area across the open landscape and to the North Downs escarpment.	The visual amenity of the residents and users of Barrow Hill-Sellindge.
8. M20 / Railway Linear Infrastructure	*Proposed Land-use:* • n/a. *Building Height Range:* • n/a. Proposed additional Built Infrastructure: • n/a. *Proposed Green Infrastructure:* • areas of structural planting within adjacent LCAreas.	- n/a.	
9. Upper East Stour Open Farmlands	*Proposed Land-use:* • formal and informal recreation; housing, education, local commercial centre, business premises and community hall. *Building Height Range (above existing ground levels):* • five storey (18m) to two storey (9m). Proposed additional Built Infrastructure: • primary access roads. *Proposed Green Infrastructure:* • informal and semi-naturalised riverside park, sports pitches, school playing fields, areas of equipped and natural play. • riparian habitat, woodland blocks, shaws, tree belts, hedgerows and street trees.	The proposed conservation and reinforcement of the existing landscape pattern that the East Stour River, and its tributaries, have already created. The existing wavy edge field boundaries would be retained and strengthened with new tree and hedgerow planting, the floodplain would be broadened, and areas of diverse semi-natural landscape created.	The landscape character of this LCArea: SDC-11
		The placement of the proposed tallest development blocks within this Site-specific LCArea away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its setting.	The visual amenity of: users of localised/close range PRoW within 2km to the north of the Site; users of the NDW-NT; users of intermediate/medium range PRoW, between 2-5km to the north of the Site; users of Open Access Land upon the North Downs scarp slopes within medium range; users and residents Westenhanger Castle; and residents and users of Barrow Hill-Sellindge. The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 07, 08 and 09; and ABC-AONB-01, 02 and 03.
		The positioning of the proposed local centre upon the brow of higher land within this Site-specific LCArea making visually apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, and so that it is not visually perceived simply as ‘sprawl’.	The visual amenity of: users of PRoW HE271A, 275 and 227 within the Site; the residents and users of Barrow Hill-Sellindge, Sellindge and Stanford; users of localised/close range PRoW within 2km to the north of the Site; users of intermediate/medium range PRoW between 2-5km to the north of the Site; users of the NDW-NT; users of Open Access Land upon the North Downs scarp slopes within medium and long range; users of roads within the Site i.e. A20 Ashford Road; and users of roads 0-2km of the Site i.e. Kennett Lane.
		Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation and 10-20m wide proposed native species tree belts would be planted between development blocks through the centre, along either side of the planned riverside park, and along the northern	The visual amenity of: users of PRoW HE271A, 275 and 227 within the Site; the residents and users of Barrow Hill-Sellindge, Sellindge and Stanford; users of localised/close range PRoW within 2km to the north of the Site; users of intermediate/medium range PRoW between 2-5km to the north of the Site; users of the NDW-NT; users of Open Access Land upon the North Downs scarp slopes within medium and long range;

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		edge of the Site-specific LCArea to assist in visually integrating this part of the scheme into its setting. These belts would also restore a stronger landscape pattern throughout this Site-specific LCArea and reinforce the existing defensible edge created by the railway to the north.	users of roads within the Site i.e. Otterpool Lane and A20 Ashford Road; and users of roads 0-2km of the Site i.e. Kennett Lane.
			The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 06, 07, 08 and 09; and ABC-AONB-01, 02 and 03.
		A proposed landscape of trees, sports pitches, and riverside parkland would be created along the south-east edge of Barrow Hill-Sellindge to assist in the retention of existing views across the open landscape and to the North Downs escarpment.	The visual amenity of residents of Barrow Hill-Sellindge and users of PRoW HE315 and HE275 within the Site.
10. Upper Otterpool Enclosed Farmlands	*Proposed Land-use:* • formal and informal recreation; housing, education, local commercial centre, business premises and community hall. *Building Height Range (above existing ground levels):* • five storey (18m) to one storey (7m). Proposed additional Built Infrastructure: • primary access roads. *Proposed Green Infrastructure:* • informal and semi-naturalised country park around the geological SSSI, informal and semi-naturalised riverside parkland, sports pitches, school playing fields, areas of equipped and natural play, allotments. • riparian habitat, woodland blocks, shaws, tree belts, hedgerows, street trees.	Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation and 10-20m wide proposed native species tree belts would be planted between development blocks through the centre, alongside of the East Stour River tributary, to assist in visually integrating this part of the scheme into its setting. These belts would also restore a stronger landscape pattern throughout this Site-specific LCArea.	The visual amenity of: users of PRoW HE314 within the Site; the residents and users of Lympne, Newingreen, and Brabourne; users of localised/close range PRoW within 2km to the north of the Site; users of intermediate/medium range PRoW between 2-5km to the north of the Site; users of the NDW-NT; users of Open Access Land upon the North Downs scarp slopes within medium and long range; and users of roads within 0-2km of the Site i.e. Stone Street, Otterpool Lane and Kennett Lane.
			The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 06, 07, 08 and 09; ABC-30 and 31; and ABC-AONB-01, 02 and 03.
		An informal country park would be created with native tree, scrub and hedgerow planting, and tussocky grasslands which conserves the setting of the geological SSSI and the recently discovered Roman villa, and which retains elements of this Site-specific LCArea's semi-naturalised character.	The landscape character of this LCArea: SDC-11
			The visual amenity of: users of PRoW HE315 within the Site; users of roads within 0-2km of the Site i.e. Ashford Road, Otterpool Lane; and residents of Upper Otterpool.
		The placement of the proposed tallest development blocks within this Site-specific LCArea away from the upper slopes of the greensand ridge, and its edges with Upper Otterpool, Newingreen and Lympne, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its setting and to avoid the introduction of development that would break the skyline in views to it from the North Downs escarpment.	The visual amenity of: users of localised/close range PRoW within 2km to the north of the Site; users of the NDW-NT; users of intermediate/medium range PRoW, between 2-5km to the north of the Site; users of Open Access Land upon the North Downs scarp slopes within medium range; users and residents Westenhanger Castle; residents and users of Barrow Hill-Sellindge.
			The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 07, 08 and 09; ABC-30; and ABC-AONB-01, 02 and 03.
		The proposed conservation and reinforcement of the existing landscape pattern that the tributary of the East Stour River have already created. The existing wavy edge field boundaries would be retained and strengthened with new tree and hedgerow planting, the floodplain would be broadened, and areas of diverse semi-natural landscape created.	The landscape character of this LCArea: SDC-11
		A proposed 450m wide public open space, woodland block, sports pitch, allotment and tree belt buffer would be created between the southern edge of Newingreen and the nearest areas of proposed housing to assist in visually integrating the Development into its setting, reinforcing the existing defensible edge created by the Stone Street to the east, and protecting the individual identity of the settlement (as well as that of Lympne) and its rural setting.	The visual amenity of: the residents and users of Newingreen and Lympne (including Berwick House); users of PRoW HE314 within the Site; users of localised/close range PRoW, within 2km to the east of the Site; and users of roads within 0-2km of the Site i.e. Stone Street.
			The landscape character of LCArea: SDC-12
		A proposed 180m minimum wide public open space, woodland block, allotment and tree belt buffer would be created between the edge of the built-up area of Lympne and the nearest areas of proposed housing to assist in visually integrating the Development into its setting, avoiding coalesce, and protecting individual identity of the village and its rural setting.	The visual amenity of the residents and users of Lympne.
11. Lympne Plateau Industry	*Proposed Land-use:* • Housing. *Building Height Range (above existing ground levels):*	The boundaries to this Site-specific LCArea (including at its entrance off Otterpool Lane) would be strengthened with woodland blocks, proposed native tree and hedgerow vegetation and 10-20m wide native species tree belts to assist in visually integrating this part of the scheme into its setting. These belts	The visual amenity of: users of PRoW HE316 within the Site; the residents of Lympne, Newingreen; users of localised/close range PRoW within 2km to the north and west of the Site; users of intermediate/medium range PRoW between 2-5km to the north and west of the Site; users of the NDW-NT; users of Open

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	• Three and a half storey (14m) to two storey (9m). Proposed additional Built Infrastructure: • primary access roads. *Proposed Green Infrastructure:* • informal recreational routes. • Woodland blocks, tree belts, hedgerows, street trees.	would also restore a stronger landscape pattern throughout this Site-specific LCArea and ameliorate existing views to the Lympne Industrial Estate.	Access Land upon the North Downs scarp slopes within medium and long range; and users of roads within the Site i.e. Otterpool Lane.
12. Lympne Plateau Open Grassland	*Proposed Land-use:* • informal recreation; housing, education, and local commercial centre. *Building Height Range (above existing ground levels):* • three and a half storey (14m) to one storey (7m). Proposed additional Built Infrastructure: • primary access roads. *Proposed Green Infrastructure:* • informal and semi-naturalised parkland, school playing fields, areas of equipped and natural play, allotments.	A proposed 180m minimum wide public open space, woodland block, and tree belt buffer would be created between the edge of the built-up area of Lympne and the nearest areas of proposed housing to assist in visually integrating the Development into its setting, avoiding coalescence with the village, protecting the individual identity of the settlement and its rural setting, creating a defensible edge to the Development, and allow retention of views out from here to the North Downs escarpment.	The visual amenity of the residents and users of Lympne. The landscape character of LCArea: SDC-11.
		A proposed 150m minimum wide public open space, allotment, woodland block, and tree belt buffer would be created between the B2067 Aldington Road and the nearest areas of proposed housing to assist in visually integrating the Development into its setting, creating a defensible edge to the Development, and allow retention of views out from here to the North Downs escarpment.	The visual amenity of: the residents of properties along Aldington Road; users of localised/close range PRoW within 2km to the south of the Site; and users of the SSW-LDP.
		The placement of the proposed tallest development blocks within this Site-specific LCArea away from the crest of the greensand ridge, the southern edge of the Site, and the its boundary with Lympne, to assist in visually integrating this part of the scheme into its setting, and to maintain a wooded crest to the greensand ridge in views from the North Downs escarpment. The proposed maximum height of buildings (14m) accords with the current planning permission, allocation and SPD for new residential and industrial development in this Site-specific LCArea.	The visual amenity of: users of the SSW-LDP; users of localised/close range PRoW within 2km to the north and south of the Site; users of the NDW-NT; users of intermediate/medium range PRoW, between 2-5km to the north of the Site; and users of Open Access Land upon the North Downs scarp slopes within medium and long range The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 07 and 08; and ABC-AONB-01, 02 and 03.
		10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within this LCArea to assist in: visually integrating them into their setting; ameliorating existing views to the Lympne Industrial Estate; and restoring a stronger landscape pattern throughout the Site Specific LCArea.	The visual amenity of: users of the SSW-LDP; users of localised/close range PRoW within 2km to the north and south of the Site; users of the NDW-NT; users of intermediate/medium range PRoW, between 2-5km to the north of the Site; and users of Open Access Land upon the North Downs scarp slopes within medium and long range. The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 07, 08 and 09; ABC-30; and ABC-AONB-01, 02 and 03.
13. Westenhanger Scattered Settlement	*Proposed Land-use:* • formal and informal recreation; housing, education, the main transport hub at Westenhanger Station, the main commercial centre, cultural facilities, business premises and community buildings. *Building Height Range (above existing ground levels):* • five storey (18m) to two storey (9m). Proposed additional Built Infrastructure:	The majority of the existing mature trees around the existing racecourse buildings would be retained and 10-20m wide proposed tree belts would be planted along the northern boundary of the Site (so reinforcing the existing defensible edge created by the railway to the north), along the edge with the settlement of Westenhanger, and through the centre of areas new built development within this Site-specific LCArea to assist in: visually integrating them into their setting and restoring a stronger landscape pattern throughout.	The visual amenity of: residents and users of Westenhanger and Stanford; users of the PRoW HE227; users of Stone Street; users of localised/close range PRoW within 2km to the north of the Site; users of intermediate/medium range PRoW, between 2-5km to the north of the Site; users of the NDW-NT; and users of Open Access Land upon the North Downs scarp slopes within medium and long range.
		The proposed conservation and reinforcement of the existing landscape pattern that the East Stour River, and its tributaries, have already created. The old Racecourse pond and the watercourse from here to the East Stour River would be retained and strengthened with new riparian, tree and hedgerow planting, the floodplain would be broadened, and areas of diverse semi-natural landscape created.	The landscape character of this LCArea: SDC-11

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	• primary access roads, including re-routing of the A20. • The main high street for the town. • Upgrading of the transport interchange at Westenhanger Station. *Proposed Green Infrastructure:* • informal and formal open space, town park between Westenhanger Castle and the A20 Ashford Road, school playing fields, areas of equipped and natural play, allotments. • riparian habitat, woodland blocks, shaws, tree belts, hedgerows, street trees.	The placement of the proposed tallest development blocks within this Site-specific LCArea away from its edges with Westenhanger Castle and Westenhanger to assist in visually integrating this part of the scheme into its setting.	The visual amenity of: users of the PRoW HE227; users and residents Westenhanger Castle; and residents and users of Westenhanger.
		The creation of a historically appropriate and publicly accessible parkland setting to Westenhanger Castle from its southerly edge to the A20 Ashford Road (on land that was previously part of the old Racecourse), including gardens, open parkland, and new non-vehicular drive upon the historic approach to the Castle, areas of play and formal/informal recreation.	The visual amenity of: users of the PRoW HE227 and HE275; and users and residents of Westenhanger Castle.
		The conservation of the character of Stone Street as an intimate lane and the individual identity of the settlement of Westenhanger along it.	The visual amenity of: users of the PRoW HE221A and HE281; and users and residents of Westenhanger.
14. Hillhurst Open Farmland	*Proposed Land-use:* • informal recreation; housing, main business centre, business premises. *Building Height Range (above existing ground levels):* • four storey (16m) to two storey (9m). Proposed additional Built Infrastructure: • primary access roads. • Re-routed A20 dual carriageway. *Proposed Green Infrastructure:* • informal open space, village green and new green-lane parallel with the line of the A20. • riparian habitat, woodland blocks, shaws, tree belts, hedgerows, street trees.	The majority of the existing mature trees around the existing Hillhurst Farm buildings would be retained and 15-25m wide proposed native tree belts would be planted along the northern and eastern boundaries of the Site (so reinforcing the existing defensible edge created by the railway to the north and Kiln Wood and Sandling Park to the east), along the edge with the settlement of Westenhanger, and through the centre of areas new built development within this Site-specific LCArea to assist in: visually integrating them into their setting; restoring a stronger landscape pattern throughout; and conserving the individual identity of Westenhanger.	The visual amenity of: users of PRoW HE281 and HE221A within the Site; the residents and users of Westenhanger (including the properties of Little Greys and Twin Chimneys), Stanford; users of localised/close range PRoW within 2km to the north and east of the Site; users of intermediate/medium range PRoW between 2-5km to the north of the Site; users of the NDW-NT; users of Open Access Land upon the North Downs scarp slopes within medium and long range; users of roads within the Site i.e. Stone Street and A20 Ashford Road; and users of roads 0-2km of the Site i.e. Kennett Lane; and Users of Junction 11 of the M20 and the adjacent Service Station
			The landscape character of LCArea SDC-11 and adjoining LCAreas: SDC-05, 06, 07, 08 and 12; and ABC-AONB-01, 02 and 03.
		The proposed dual-carriageway replacement of the A20 Ashford Road, between junction 11 of the M20 and Newingreen, would be set back from the eastern edge of the Site to allow for the creation of a 15-20m tree belt between it and the new road (including further planting around the current roundabout in the far north-east corner of the Site), to assist in: visually integrating the road and its potential earthworks into their setting, and reinforcing the defensible edge to the eastern side of the proposed Development. In addition, a 15m tree belt will be planted along its north-western side for the same reasons.	The visual amenity of: users of PRoW HE281 and users of localised/close range PRoW within 2km to the east of the Site.
			The landscape character of LCAreas 12.
		The placement of the proposed tallest development blocks within this Site-specific LCArea away from its edges with the existing residential areas of Stone Street to assist in visually integrating this part of the scheme into its setting.	The visual amenity of: the residents and users of Westenhanger (including the properties of Little Greys and Twin Chimneys).
		Placement of the main area of business premises along the northern edge of the Site adjacent to the railway line, junction 11 of the M20 and the motorway service station to assist in visually integrating this part of the scheme into its setting.	The visual amenity of: users of PRoW HE281, users of localised/close range PRoW within 2km to the north of the Site; users of the NDW-NT; users of intermediate/medium range PRoW, between 2-5km to the north of the Site; users of Open Access Land upon the North Downs scarp slopes within medium range; and residents and users of Westenhanger.
		Creation of village green at the southerly most section of this Site-specific LCArea to assist in the conservation of the views towards the North Downs escarpment from PRoW HE313 within adjacent Site Specific LCArea no.20, and from Hythe Road.	The visual amenity of: users of localised/close range PRoW within 2km to the west of the Site; and users of roads within 0-2km of the Site including Hythe Road.
			The landscape character of LCArea: SDC-12.
15. A20 Scattered Settlement	*Proposed Land-use:* • housing, education, the main commercial centre, cultural facilities,	The offsetting of new development blocks away from the edge of the A20 Ashford Road to create space for substantial tree planting along it in order to assist in: visually integrating the blocks into their setting and creating an improved cohesion to the landscape along the length the road.	The visual amenity of: users of PRoW HE275; users of the NDW-NT; users of intermediate/medium range PRoW, between 2-5km to the north of the Site; users of Open Access Land upon the North Downs scarp slopes within medium range; residents and users of Newingreen; users of the A20 Ashford Road.

Otterpool Park Site Specific LCA LCArea	Summary of Development Proposals within the Site Specific LCArea	Embedded Design and Mitigation Measures associated with the LCArea	Receptor(s) upon which the significance of the effect would be reduced (or upon which a significant effect would be avoided or prevented, if indicated) by inclusion of the embedded design and mitigation measure
	business premises and community buildings. *Building Height Range (above existing ground levels):* • five storey (18m) to three and a half storey (14m). Proposed additional Built Infrastructure: • primary access roads, including re-routing of the A20. • The main high street for the town. *Proposed Green Infrastructure:* • informal and formal open space, town park between Westenhanger Castle and the A20 Ashford Road, school playing fields, areas of equipped and natural play. • tree belts, hedgerows, street trees.	The creation of proposed wide openings between areas of proposed development blocks, including: the proposed non-vehicular drive along the historic approach to Westenhanger Castle; the public open space along the tributary to the East Stour River; and the open space leading to the site of the Roman Villa and geological SSSI. to reinforce the visual links from the road to the surrounding landscape and allowing views to Westenhanger Castle and the North Downs escarpment.	The visual amenity of: users of PRoW HE275; and users of the A20 Ashford Road
16. Newingreen Linear Settlement	*Proposed Land-use:* • n/a. *Building Height Range:* • n/a. Proposed additional Built Infrastructure: • n/a. *Proposed Green Infrastructure:* • areas of structural planting, allotment and parkland within adjacent LCAreas.	A proposed 450m wide public open space, woodland block, sports pitch, allotment and tree belt buffer would be created between the southern edge of Newingreen and the nearest areas of proposed housing to assist in visually integrating the Development into its setting and protecting the individual identity of the settlement and its rural setting.	The visual amenity of: the residents and users of Newingreen; users of PRoW HE314 within the Site; users of localised/close range PRoW, within 2km to the east of the Site; and users of roads within 0-2km of the Site, i.e. Stone Street.
17. Lympne Settlement Core	*Proposed Land-use:* • n/a. *Building Height Range:* • n/a. Proposed additional Built Infrastructure: • n/a. *Proposed Green Infrastructure:* • areas of structural planting, allotment and parkland within adjacent LCAreas.	A proposed 180m minimum wide public open space, woodland block, and tree belt buffer would be created within the adjoining Site-specific LCArea between the edge of the built-up area of Lympne and the nearest areas of proposed housing to assist in visually integrating the Development into its setting, protecting individual identity of the village and its rural setting.	The visual amenity of the residents and users of Lympne. The landscape character of LCArea: SDC-11.
18. Sandling Park Open Farmlands	*Proposed Land-use:* • n/a. *Building Height Range:* • n/a. Proposed additional Built Infrastructure: • n/a. *Proposed Green Infrastructure:*	The proposed dual-carriageway replacement of the A20 Ashford Road, between junction 11 of the M20 and Newingreen, would be set back from the eastern edge of the Site to allow for the creation of a 10-20m tree belt between it and the new road, to provide a defensible edge to the proposed development, assist in visually integrating it into its setting, and to maintain the rural identity of this Site-Specific LCArea	The visual amenity of: users of localised/close range PRoW within 2km to the east of the Site. The landscape character of LCAreas 12.

Otterpool Park Site Specific LCA LCArea	Summary of Development Proposals within the Site Specific LCArea	Embedded Design and Mitigation Measures associated with the LCArea	Receptor(s) upon which the significance of the effect would be reduced (or upon which a significant effect would be avoided or prevented, if indicated) by inclusion of the embedded design and mitigation measure
	• areas of structural planting within adjacent LCAreas.		
19. Sandling Wooded Parkland	*Proposed Land-use:* • n/a. *Building Height Range:* • n/a. Proposed additional Built Infrastructure: • n/a. *Proposed Green Infrastructure:* areas of structural planting, within adjacent LCAreas.	The proposed dual-carriageway replacement of the A20 Ashford Road, between junction 11 of the M20 and Newingreen, would be set back from the eastern edge of the Site to allow for the creation of a 15-20m tree belt between it and the new road, to provide a defensible edge to the proposed development, assist in visually integrating it into its setting, and to maintain the wooded identity of this Site-Specific LCArea	The visual amenity of: users of localised/close range PRoW within 2km to the east of the Site. The landscape character of LCAreas 12.
20. Berwick Enclosed Farmland	*Proposed Land-use:* • n/a. *Building Height Range:* • n/a. Proposed additional Built Infrastructure: • n/a. *Proposed Green Infrastructure:* areas of structural planting, within adjacent LCAreas.	Creation of village green at the southerly most section of adjacent Site-specific LCArea no.14 to assist in the conservation of the views towards the North Downs escarpment from PRoW HE313 and from Hythe Road.	The visual amenity of: users of localised/close range PRoW within 2km to the west of the Site; and users of roads within 0-2km of the Site, i.e. Hythe Road. The landscape character of LCArea: SDC-12.
		A proposed 450m wide public open space, woodland block, sports pitch, allotment and 110-5m wide tree belt buffer would be created between the western boundary of this Site-specific LCArea along Stone Street and the nearest areas of proposed housing to assist in visually integrating the Development into its setting and protecting the rural identity of this Site-Specific LCArea.	The visual amenity of: the residents and users of Stone Street (including Berwick House); users of PRoW; users of localised/close range PRoW, within 2km to the east of the Site; and users of roads within 0-2km of the Site i.e. Stone Street. The landscape character of LCArea: SDC-12

12.5 Assessment of Residual and Cumulative Effects

12.5.1 This section considers the likely effects of the proposed Development on landscape character, visual amenity both singularly and cumulatively.

Landscape Character Impact Assessment

12.5.2 The detailed landscape character impact assessment set out in Appendix 12-2 has considered the impact and significance of changes on the landscape character of those receptors identified in Section 3 of this assessment as having the potential to experience significant landscape effects arising from the proposed Development.

12.5.3 The receptors identified and used within this assessment are key characteristics, components, perceptual and aesthetic qualities, and overall character of the LCAreas set out in the SDC-HLLA and ABC LC-SPD, supplemented by appreciation of other published LCA, the Site-specific LCA, and our own fieldwork and desktop studies.

Landscape Character of the Site

12.5.4 The landscape character of the Site (LCArea SDC-HLLA no.11) is likely to experience adverse effects arising from the proposed Development. There would be a fundamental long-term and largely irreversible change to the make-up and balance of most of the receptor's key landscape characteristics and perceptual and aesthetic qualities across much of its geographic area. The Development would introduce a largely urban townscape character upon an area of chiefly current agricultural and open landscape character. The effect on this would therefore be '**significant**' and **adverse**.

12.5.5 Over time the significance of effects would reduce as the substantial green infrastructure proposals that form part of the embedded design and mitigation scheme establish and mature and form new positive attributes to the area's landscape and townscape character. These include:

- the restoration of a richer and more appropriately diverse landscape character to the corridors of the East Stour River and its tributaries;
- the creation of a more appropriate landscape character settings to key areas of heritage and geological value such as Westenhanger Castle and the Otterpool Quarry SSSI; and
- the creation of an expansive network of accessible open space comprising woodland, riverside meadow, informal and formal recreation, traffic-free greenways and parkland.

12.5.6 In line with recommendations made within the KCC-LAK for those of its LCAreas that cover the Site, these proposals also include the:

- restoration of a frequency of woodland on the lower slopes of the greensand ridge;
- creation of a new, stronger structural landscape framework of woodland, wet woodland, copses, shaws, tree belts, and hedgerows;
- conservation of open settings to farmsteads (i.e. Otterpool Manor, Upper Otterpool, Berwick Farm, and Barrow Hill Farm);
- conservation of the infrequency of built form visible upon the greensand ridge;
- conservation of open views across the landscape;
- creation landscape features to define linear settlements and transport corridors, and control visual detractors – such as Lympne Industrial Estate.

12.5.7 Acknowledging the change to the character of the Site that would be inevitable with a development of this nature, the proposals have also included the creation of new, or where required the reinforcement of existing robust defensible boundaries along the edges of the Scheme. These will assist in mitigating the sharp contrast in character with adjoining areas that may otherwise occur without them, and assist in defining a visually appreciable frame and limit to the settlement. Many of these would be planted at

the outset of the Scheme's overall construction and in advance of the construction of those areas of new built-form that they are intended to mitigate.

12.5.8 These defensible edges take the form of:

- the creation of substantial blocks of new native woodland belt planting around edges of the Site (that are not however simply linear belts, but vary in width to replicate the existing landscape pattern of shaws, copses, field corner clumps, and shelter belts);
- the reinforcement of existing defensible edges such as the Ashford-Folkestone railway line, the A20, and the wooded edge of Sandling Park with new native structural planting
- separation from key areas of sensitivity such as existing settlements, the crest of the greensand ridge and Harringe Brooks Wood.

Landscape Character outside of the Site

Adjoining Landscape Character Receptors

12.5.9 The 'defensible edges' described above also help to mitigate the effects of the Scheme upon the landscape character of adjoining areas outside of the Site. The detailed character impact assessment set out in Appendix 12-2 determines that the large degree of change felt within the Site diminishes very quickly beyond its boundaries. This is on account of the proposed retention and reinforcement of existing strong defensible boundaries, and the creation of new ones where these don't exist (both of which would be largely implemented early on in the construction period of the Scheme).

12.5.10 As such the character of those rural areas surrounding the Site would be maintained, and the individual townscape identity of the settlements that adjoin the Site boundary, such as Lympne, Newingreen Westenhanger and Barrow Hill would also be conserved.

12.5.11 In addition, it was found that because many of the adjoining LCAreas have an equivalent landform and topography to that containing the Site, and because of the greater frequency of woodlands, tree belts and hedgerows throughout these that only small portion of them would be impacted upon.

12.5.12 Consequently, it is considered that whilst the proposed Development would have some adverse impacts upon neighbouring character receptors, on account of an increase in built form, movement (particularly during construction) and lighting in views from these, that their fundamental nature and integral character would not alter. As such the effects on these LCAreas arising from the Development are considered **'not significant'**.

12.5.13 Over time the significance of effects would reduce as the substantial green infrastructure proposals that form part of the embedded design and mitigation scheme establish and mature and form new positive attributes to the character of the landscape surrounding the Site. These include:

- the visible creation of a stronger landscape framework in views towards the Site; and
- the amelioration of views to detracting elements such as the Lympne Industrial Estate.

Other Landscape Character Receptors

12.5.14 The effects of the Development upon the landscape character receptors away from the boundary of the Site, and the LCArea containing it, have also been assessed.

12.5.15 The detailed character impact assessment set out in Appendix 12-2 shows that only a few of the key characteristics and perceptual and aesthetic qualities of the LCAreas within the Study Area that were considered to be susceptible to significant effects arising from the Development, are likely to be impacted upon. These include: the far-reaching panoramic views out from, or back to the escarpments of the North Downs and the greensand ridge; the sense of remoteness, tranquillity and of a wild rugged landscape; and the strong rural nature of many of these LCAreas.

Far-Reaching Panoramic Views

12.5.16 The detailed assessment concluded that the Development would become a component in the far-reaching panoramic views from the North Downs.

12.5.17 It was found, however, that in most views the Scheme is only likely to constitute a horizontally narrow part given intervening landform, vegetation and buildings, and the distances such views are from the Site. Above the Scheme in such views would remain the wooded greensand ridge, the promontory of Romney Marsh and Dungeness (with its power station and windfarm on the horizon), the High Weald, and the English Channel. Below the Site would remain the broad expanse of the scarp foot-slopes and Vale of Holmesdale.

12.5.18 Likewise, in most views from these LCAreas the Scheme would only constitute a modest section of the broad panoramas that are experienced. These generally stretch not only to the escarpment of the North Downs in either direction, but in the case of some views (such as from Tolsford Hill) back into the dip-slope of the landform as well.

12.5.19 The views were found to already contain other elements of built-form. Some of which are similar in nature to the Development, and others of a clear detracting form (such as the Channel Tunnel terminal and the Lympne Industrial Estate) on account of the incongruous scale of their individual components and the lack of sensitivity displayed in their siting, materials and colour.

12.5.20 By contrast, the appearance of settlement (when controlled, planned, designed, implemented and manged, or allowed to evolve sensitively) in such views is a factor that contributes to the attractiveness of them. An opinion shared by the AONB-MP (see the extract contained within paragraph 12.3.110 of this assessment) which recognises settlement and towns as one of the constituents (along with open countryside, estuaries, and the sea) of views from the scarp.

12.5.21 The proposed new settlement would not only be apparent in such views, it would also, importantly, be legible as a town as well. The proposed siting of the town centre at the lowest point of the vale and near to other areas of activity (i.e. junction 11 of the M20, the railway station and service station), and the clear arrangement of sub-centres in other visually defined locations (such as upon Barrow Hill) would aid people's ability to 'read', understand, compute and subconsciously accept the settlement in the broad panoramic views from these LCAreas.

12.5.22 The proposed belts of native structural vegetation, which would be equally visually apparent in such views would not only reduce the amount of built-form visible, but they too would help in 'reading' and accepting the settlement. Their substantive nature would create a strong framework, based upon the current and historic field patterns of the area, within which parts of the town would visually appear to nestle. In such panoramic views they would also help to visually create clearly understood constraints around the edge of the settlement.

12.5.23 Whilst it is accepted that individual elements of the town (such as the larger of the community and commercial buildings) would be visible from some of the panoramic views within these LCAreas, from views over 5.0km such detail is far more difficult to distinguish.

12.5.24 As such it is considered that the small scale of change to the valued characteristic of far-reaching panoramic views from LCAreas away from the edge of the Site would not alter its fundamental nature and that it would only be felt across a moderately small proportion of these LCAreas. The receiving landscape is sufficiently robust in terms of strength of character to accept the Scheme without significant adverse consequences. Whilst the change would be mostly permanent and irreversible it would be felt less keenly with time as the proposed structural planting establishes.

Sense of Remoteness and Tranquillity

12.5.25 With regards to the characteristic of remoteness and tranquillity within the LCAreas away from the edge of the Site, the detailed character impact assessment, set out in Appendix 12-2, shows that there would be a diminishment in the degree of these as a result of the proposed Development (particularly during the construction period when the aspect of movement combines with those of built-form and lighting).

12.5.26 The scale of change however would be negligible to small, and as such would not be so extensive as to cause the loss of these characteristics from these LCAreas - given the: the broadness of panoramas (of which the Development would only be a part of); the distance from the LCAreas to the Scheme and the quieter, unhurried nature of the land in between; and the fact that the aspects of contrast, openness, natural beauty, and landform transcending built-form remain parts of the perceptual and aesthetic qualities of these LCAreas.

12.5.27 Whilst it is considered, therefore, that there are likely to be some adverse impacts upon the few characteristic and perceptual and aesthetic qualities of these receptors that are susceptible to change as a result of the Development, it has been determined that the fundamental integrity of each, and the

role they play in helping to define the character of such LCAreas would not alter. As such the effects on these LCAreas arising from the Development are considered **'not significant**'.

Visual Amenity Impact Assessment

Public Rights of Way through the Site

12.5.28 The detailed visual amenity impact assessment set out in Appendix 12-2 shows that users of the PRoWs within the Site are likely to experience adverse effects resulting from the proposed Development. The construction and operation of the Scheme is likely to bring about changes to the visual experience of by virtue of appreciating built form, construction activities, lighting and the paraphernalia of settlement at close range. Whilst this would diminish with time as the proposed green infrastructure strategy that the PRoW would sit within establishes and matures, the effect on the users of these is considered to be '**significant**' and **adverse**.

Public Rights of Way Outside of the Site

12.5.29 The detailed visual amenity impact assessment set out in Appendix 12-2 shows that there would be adverse effects to the visual amenity of users of PRoWs on all sides of the Site.

12.5.30 To the south, however the protection afforded by the dense wooded areas, tree belts, hedgerows, existing buildings and landform on the crest of the Hythe Escarpment prevents direct views to the Site by users of these. The assessment has found that whilst there may be a perception of increased lighting at night from PRoWs in this area it is negligible on account of the existing areas of lighting that exist (i.e. the Lympne Industrial Estate, Lympne village and the Port Lympne Animal Park). In addition, the substantial embedded design and mitigation measures included within the Scheme would ensure that such adverse impacts are small in nature and on balance the effect on users of these paths is **'not significant**'.

12.5.31 To the west of the Site there are a few localised PRoWs that would experience adverse effects as a result of the Scheme. The density of woodland blocks within 2km of the Site's west edge when coupled with the undulating landform, and the proposed substantial native planting is such that the effect on users of PRoW to the west of the Scheme is considered to be '**not significant'.**

12.5.32 The detailed visual amenity impact assessment set out in Appendix 12-2 shows that the effect on the users of the PRoWs to the north of the Scheme is considered to be '**not significant**'.

12.5.33 The detailed visual amenity impact assessment set out in Appendix 12-2 shows that the effect on the users of the PRoWs to the east of the Scheme is considered to be '**not significant**'.

National Trails and Long Distance Paths

North Downs Way National Trail

12.5.34 The detailed visual amenity impact assessment set out in Appendix 12-2 shows that there would be some adverse effects to the visual amenity of users of the NDW-NT. The Development would replace what is visually perceived as a substantial area of open agricultural land (albeit clearly containing a variety of other land uses), within a number views from the NDW-NT, with additional built-form, lighting and movement (particularly during the construction period).

12.5.35 The ZTV produced for this assessment (see Appendix 12-3 Figure 10) and the fieldwork that has been carried out reveals that there are, however, extensive proportions of the NDW-NT through the Study Area that the Scheme would not be visible from. In all, approximately only 5.5km of the 24.0km route of the NDW-NT through the Study Area would have clear or intermittent views to the Development (see Appendix 12-3 Figure 11). Views from the remaining lengths of the route would be obscured by landform, vegetation (woodland blocks are a common occurrence upon the crest of the scarp through this area) or buildings.

12.5.36 In addition, some stretches of the 5.5km of the NDW-NT that would have a view to the Scheme are beyond the 5.0km distance from Site boundary at it which it has been determined that detail of built-development ceases from visually clear. From the stretches of the NDW-NT with views to the Scheme beyond 5km (e.g. viewpoints 01 and 07), therefore, the Development would appear more assimilated with the surrounding landscape. It is also evident that users of the NDW-NT at those vantage points that have views to the Scheme from a distance of less than 5.0km from the Site boundary, would be beyond 5.0km from other visible large settlements (i.e. Folkestone, Hythe or Ashford).

12.5.37 The research undertaken along the NDW-NT within the Study Area in preparation of this assessment has identified that familiarity with built-form, particularly settlements, large and small, both in the foreground of views (i.e. at the base of the scarp such as Wye and Brabourne), in the middle distance (such as Brabourne Lees and Sellindge), and in the far-distance (such as Ashford) in which the Scheme would lie, is a common occurrence to users of the path. None of these existing settlements define the views from the NDW-NT, nor do they dominate or disturb, but are simply one of its constituent parts given the broadness of the panoramic views possible. It is strategic-scale development within the foreground, and not the midground or distance, of such views that the SDC-PTR considers to be inappropriate.

12.5.38 In addition, the key viewpoints along the NDW-NT that are recognised upon Ordnance Survey mapping (through the Study Area and elsewhere along its route) are often located where there are simultaneous views of both town and country. Whilst it is accepted that the value of such recognised viewpoints may, in part, be related to the ease at which many towns-people can access such views, what is apparent, from their popularity and notoriety is that users of them consider the sight of settlements to not diminish the enjoyment of such views. The combination of town and countryside is an aspect of the Vale of Holmesdale landscape that is also recognised within AONB-MP. Added to this, the visual character of the expansive areas of open agricultural land that would remain in the foreground and middle-distance of views along the NDW-NT through the Study Area are of sufficient in strength and robustness to repel a fundamental change in the balance of the visual experience arising from the introduction of the Development.

12.5.39 Where sight of the Scheme would be possible, from the relatively few vantage points that there are upon the NDW-NT, it would principally be seen within a broad panorama. As determined in the assessment of landscape character impact the Scheme would only constitute a modest part of such wide and expansive views. The Scheme would not break the skyline of such views or would it rise above the wooded crest of the greensand ridge. In addition, because of the north-west to south-east alignment of the scarp face through this area, a moderate proportion of views during users' kinetic experience of walking parts of the NDW-NT would be oblique, and only some would be direct.

12.5.40 The Scheme's proposed belts of native structural vegetation, which would be equally visually apparent as the proposed built-form in such views would not only reduce the amount of new buildings and structures visible, but would also help in 'reading' and accepting the settlement. Their substantive nature would create a strong framework, based upon the current and historic field patterns of the area, between which parts of the town would visually appear to nestle. In such panoramic views the substantive belts would also help to visually create clearly understood constraints around the edge of the settlement.

12.5.41 Overall, therefore, given: the moderately small proportion of the NDW-NT through the Study Area, and even smaller area within this that the Scheme would be clearly distinguishable from; the acceptance that when views are possible, that sight of settlement within them is not uncommon, or detrimental as a principle; the vertical visual narrowness that the Scheme would be within most views; the fact that the Scheme's siting would still allow views over the top of it to the wooded crest of the greensand ridge and to areas beyond; the proposed legibility of the proposed town, when clear and detailed views are possible; and the proposed embedded design mitigation measures that seek to further assimilate the Scheme within its setting, the effect on the users of the NDW-NT, both at static points along its route and as part of their kinetic experience along it, is considered to be '**not significant**'.

Saxon Shore Way – Long Distance Path

12.5.42 The detailed visual amenity impact assessment set out in Appendix 12-2 shows that the effect on the users of the SSW-LDP is considered to be '**not significant**'

Outdoor Recreational Areas

12.5.43 The detailed visual amenity impact assessment set out in Appendix 12-2 shows that the effect on the users of the outdoor recreation areas is considered to be '**not significant**'.

Existing Settlements

12.5.44 The detailed visual amenity impact assessment set out in Appendix 12-2 shows that the proposals were found to be noticeable from existing settlements but due to the distances from the nearest new built-development, the degree of conserved intervening vegetation, the proposed buffer zones, coupled with the proposed embedded design and mitigation measures there would be no overbearing impacts. As such the detailed visual amenity impact assessment set out in Appendix 12-2 shows that the effect on the users and residents of the existing settlements is considered to be '**not significant**'.

Individual Properties

12.5.45 The detailed visual amenity impact assessment set out in Appendix 12-2 shows that the proposals were found to be noticeable from existing individual dwellings but due to the distances from the nearest new built-development, the degree of conserved intervening vegetation, the proposed buffer zones, coupled with the proposed embedded design and mitigation measures there would be no overbearing impacts. As such the detailed visual amenity impact assessment set out in Appendix 12-2 shows that the effect on the users and residents of the existing settlements is considered to be '**not significant**'.

Highways & Associated Areas

12.5.46 The detailed visual amenity impact assessment set out in Appendix 12-2 shows that the effect on the users of the SSW-LDP is considered to be '**not significant**'

Landscape Related Designations

12.5.47 In order for the effects upon designated areas of be determined number of factors need to be considered. Firstly, the effects on the landscape character of the designated area must be assessed, then secondly the effects on views from within and towards it. These effects are then considered in light of the documented "special qualities", valued elements or characteristics, and the purposes of the designation in order to arrive at a judgement of the overall effect upon the designated landscape.

Kent Downs Area of Outstanding Natural Beauty

Landscape Character Effects

12.5.48 The effects upon the landscape character of the AONB have been assessed as part of the landscape character impact assessment carried out within this assessment. This used as its baseline the most up to date and detailed LCA data available (i.e. the SDC-HLLA and the ABC-LC SPD) and supplemented this with information within other known LCAs (i.e. the AONB-KDL and the KCC-LAK), field work and the Site-specific LCA that were carried out in preparation of this assessment.

12.5.49 The landscape character impact assessment considered that, whilst there were some adverse effects upon a few of the characteristics of those LCAreas that contain the AONB within the Study Area, on balance the effects were at worst of moderate/minor significance, and adverse, and therefore '**not significan**t' during construction or operation of the Development.

Visual Amenity effects

12.5.50 The visual amenity impact assessment considered that, whilst there were some adverse effects upon some of the users of publicly accessible areas within the AONB, on balance the effects were at worst of moderate/minor significance, and adverse, and therefore '**not significan**t' during construction or operation of the Development.

Effects on the Special Characteristics and Qualities

Dramatic Landform and Views

12.5.51 The landscape character impact assessment and the visual amenity impact assessment both considered that, whilst there were some adverse effects upon a few of views from the areas within the AONB, that on balance the effects were at worst of moderate/minor significance, and adverse, and therefore '**not significan**t' during construction or operation of the Development.

12.5.52 Settlements in the view from the AONB were found to by typical, and recognised by the AONB-MP. The proposed development would not hinder views to Romney Marsh and Hythe Bay from the greensand ridge and Hythe escarpment.

12.5.53 In respect of the 'setting' of the AONB it was determined that four distinct geographic areas to this occur. As shown on Appendix 12-3 Figure 8 these are: the area of the AONB to the east of the A20 and Stone Street, which directly abuts parts of the Site's eastern edge; the Hythe escarpment, which directly abuts parts of the Site's southern edge; the North Downs escarpment; and the land within the AONB at the foot of the scarp.

12.5.54 The Scheme is considered to adhere to the guidance set out in the AONB-SPS:

- Care has been taken over the site layout, height of proposed built-form to minimise impact when viewed from the AONB, and the Development would not have a significant impact on views in or out of the AONB;
- Sufficient densities of built-form have been set to allow for significant tree planting between buildings. In addition, over 40% of the Development would be green infrastructure;
- Consideration has taken place of the landscape character, land-uses and heritage assets within the environs of the Site to assimilate it into its setting, and assist the supporting surrounding green infrastructure assets around and beyond it;
- The design codes, that will assist in the detailed design if the Scheme will set out the use of colours, materials and non-reflective surfaces, as indicated in the DAS;
- The Scheme would adhere to the Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light, with regards to light spill, glare and sky glow.;
- The Scheme proposes the grouping of new structures and buildings close to existing structures of the railway station and service station to avoid new expanses of development that are visible and out of context; and
- The Scheme proposes substantial mitigation measures, including native landscaping that is locally appropriate.
- A Community Facilities Delivery Statement will set out the strategy for the long-term management and governance of all infrastructure of community benefit, including the strategic public open space and GI.
- The proposed substantial structural planting around the edge of the Scheme would ensure that an abrupt change of landscape character would not occur;

12.5.55 In addition, the Scheme would incorporate valued views back to the North Downs escarpment from within the Site and from areas that have a view to the scarp across the Site such as at viewpoint 10.

A Rich Legacy of Historic and Cultural Heritage

12.5.56 It is considered that there would be no adverse direct or indirect effects on this 'special characteristic and quality'. The Development would have a positive effect on the legacy of historic and cultural heritage within the Site and the connection of these to the surrounding landscape, including that contained within the AONB.

Geology and Natural Resources;

12.5.57 It is considered that there would be no adverse direct or indirect effects on this 'special characteristic and quality'. The Development would have a positive effect on the legacy of historic and cultural heritage within the Site and the connection of these to the surrounding landscape, including that contained within the AONB.

Development Pressures

12.5.58 It is considered that there would be no adverse direct or indirect effects on this 'special characteristic and quality'. The green infrastructure scheme has been designed to provide users and residents of the new town with sufficient diversity and quantity of accessible public open space to avoid recreational pressure on the AONB.

Access, Enjoyment and Understanding

12.5.59 It is considered that there would be no adverse direct or indirect effects on this 'special characteristic and quality'.

Effects on the Purpose of the Designation

12.5.60 The detailed landscape character and visual amenity assessments show that whilst there would be some adverse impacts on some of the key characteristics of, and views from areas contained within the AONB that these would not bring about significant effects.

12.5.61 In addition, the Scheme conserves key attributes of this part of the AONB such as: the outlook from the North Downs escarpment as one containing open countryside towns and the sea; the views back to the escarpment from within and through the Site; and the skyline of the wooded greensand ridge in views from the escarpment, with Romney Marsh, Hythe Bay and the High Weald beyond.

12.5.62 The Scheme would also enhance key elements such as: reinforcing the boundaries of the AONB with native woodland planting where the Site adjoins it; improving the visual assimilation of the existing roundabout to the south of Junction 11 of the M20 into the surrounding AONB landscape which lies immediately to its east; and ameliorating the current discordant views to the Lympne Industrial Estate in views from the North Downs escarpment and its foot-slopes.

12.5.63 As such the 'natural beauty' of the AONB– being the purpose of the original designation, and, as outlined by the Countryside Agency in their publication Areas of Outstanding Natural Beauty: A guide for AONB Partnership Members (Ref 12-18), defined as "*natural beauty is not just the look of the landscape, but includes landform and geology, plants and animals, landscape features and the rich history of human settlement over the centuries*", would not be significantly affected by the proposed Development.

The Special Landscape Area: North Downs

12.5.64 Within F&HDC the North Downs SLA (approximately 13,750ha) includes all areas covered by the AONB designation, and a few areas of land (totalling outside of this. The areas covered by the North Downs SLA designation (outside of the AONB) within the Study Area are shown on Appendix 12-3 Figure 2 and Appendix 12-3 Figure 3. The area covered and a number of areas (totalling approximately 510ha) outside of this. Within the Site with includes the approximately 40ha triangle of agricultural land to the west of Stone Street and east of the Sandling Park. The SLA within the administrative area of ABC was removed from their statutory development plan according to page 14 of the ABC-LC SPD and page 14 of the ALCA.

Landscape Character Effects

12.5.65 The direct effects upon the character of the singular area and small portion of the SLA designation within the far north eastern part of the Site were determined as part of the Landscape Character Assessment carried out within this assessment. This used as its baseline the most up to date and detailed LCA data available (i.e. the SDC-HLLA and the ABC-LC SPD) and supplemented this with information within other known LCAs (i.e. the AONB-KDL and the KCC-LAK), field work and the Site-specific LCA that were carried out in preparation of this assessment.

12.5.66 Our Site-specific LCA determined that this portion of agricultural land, had no remarkable characteristics, components, or aesthetic features above those of the adjoining field parcels within the Site. It was noted that the area contains a few dwellings, including the distinctive red brick buildings of Hillhurst Farm and the attractive triple Victorian terrace of Little Greys, but that its perceptual qualities are strongly influenced by the built form, movement and noise of the surrounding land uses (the railway, the elevated motorway junction, the motorway service station, and A20). The area is visually constrained by the woodland vegetation along the edge of Sandling Park to the east, but has more open views across the shallow valley of the East Stour River over the dense vegetation through Westenhanger. In addition, there are views out to the North Downs escarpment from above the structures, vegetation and paraphernalia of the railway, and the motorway junction and service station.

12.5.67 The changes that would occur to this portion of the SLA are the direct replacement of its current rural land use (albeit one surrounded on two sides by built development i.e. the settlement of Westenhanger to the west, and the railway line, railway station, M20, its service station, and elevated M20 junction to the north), with an area of residential, commercial and infrastructure development, including the dualling and realignment of the A20.

12.5.68 The Landscape Character Impact Assessment concluded that there would be a fundamental change to the character of the LCArea that covers this portion of the North Downs SLA. The key landscape components, characteristics, and perceptual and aesthetic qualities, (after taking into account the proposed changes, as well as the embedded design, mitigation and enhancement measures) would shift from one that is rural, to one that is urban. Overall the effect of landscape character was judged to be of moderate / major significance, and adverse, and therefore 'significant'.

12.5.69 It was considered, however that the degree of significance would reduce with time as impacts of the embedded design and mitigation proposals (which include substantial native tree belts around the edge and through the central areas of the land parcel, as part of the overall proposed Green Infrastructure strategy) establish and mature.

12.5.70 The direct and indirect effects upon the landscape character of the remaining approximately 470ha of the North Downs SLA designation (outside of the Site) within F&HDC that have potential to experience significant effects arising from the Development were also been assessed within the Landscape Character Impact Assessment. The effect upon the LCAreas that these areas are part of was judged to be at worst moderate/minor and adverse, and therefore 'not significant'.

Visual Amenity Effects

12.5.71 The effects upon the visual amenity of receptors in and around this portion of the North Downs SLA were considered as part of the Visual Amenity Impact Assessment. There was found to be an initial moderate and adverse significance of effect upon users of the PRoWs that cross through whole Development Site during the construction of the Development. Whilst this effect was determined to be 'not significant' for the Site as a whole, it is considered that it would be 'significant' for those that use the PRoWs that cross this portion of the SLA because this is one of the first phases of construction, and because of the fundamental change to the outlook from these.

12.5.72 The effect on users of the PRoWs upon completion of the Scheme was considered to be moderate / major and adverse, and therefore also 'significant'. Following establishment of the green infrastructure related embedded design and mitigation measures (including protection of the PRoW through this portion of land within 15-30m wide structurally planted greenways, and the enclosure of the new A20 dual-carriageway within planted tree belts) the significance of the effect would reduce to moderate and adverse, and on balance 'not significant'.

12.5.73 In addition to those PRoWs within the Site, a number of PRoWs outside of the Site were also found to be impacted upon by proposed Development within this portion of the SLA. It was considered that Development here would contribute to the adverse effects upon users of the PRoW to the north, east and south of it. The effect on these users would be the addition of further built form in what are predominantly rural outlooks but which also contain awareness of existing built development (i.e. the settlement of Westenhanger to the west, and the railway line, railway station, M20, its service station, and elevated M20 junction to the north). The significance of the visual effects of the whole Development on the users of these PRoWs was found to be worst moderate adverse, but on balance 'not significant'.

12.5.74 The visual effect of the Development upon the users and residents of Westenhanger, along Stone Street who have a view across this portion of the SLA was found to be initially moderate and adverse, and then decreasing to moderate/minor, but was not considered to be overbearing or dominant and therefore 'not significant'.

12.5.75 The effects of the proposed Development as a whole on the visual receptors within the areas of the North Downs SLA outside of the Site has also been assessed. This determined that the significance of these effects upon users of the PRoW through these areas was at worst moderate and adverse, but on balance 'not significant'.

Effects on the Special Characteristics and Qualities

12.5.76 Whilst planning policy CO4 of the SDC-LPR states that the SLA within the F&HDC administrative area is "*of countywide landscape significance*" and SDC-CS, at paragraph 5.51, implies that the SLA is "*significant to the setting of the Kent Downs, and the Romney Marsh*" no published document provides a further description of the key characteristics or special qualities that convey this level of protection.

12.5.77 Th the absence of these the findings of the Landscape Character Impact Assessment within this assessment are relied upon.

Effects on the Purpose of the Designation

12.5.78 From consideration of the current and emerging F&HDC development plans the purpose of the North Downs SLA designation within the District is to protect or enhance the natural beauty of this landscape of 'county-wide' significance which is "*significant to the setting of the Kent Downs"* (SDC-CS, paragraph 5.51), "*unless the need to secure economic and social wellbeing outweighs the need to protect*" them (SDC-LPR policy CO4 and F&HDC-P&PLP policy NE3), noting that the preamble to SDC-LPR policy CO4 states that development within the SLA should be "*kept to a minimum and where acceptable, should be designed and constructed so that the visual impact on the landscape is minimised and it makes a positive contribution to the attractiveness of the area*."

12.5.79 Our Site-specific LCA determined that this portion of land had no remarkable characteristics, components, or valued perceptual or aesthetic features above those of the adjoining field parcels within the Site. Its character was also found to be shaped by the surrounding land uses and planning context, most notably the paraphernalia of the transport corridor to the north and the presence of the AONB directly to the east.

12.5.80 As with the other sections of the North Downs SLA designation that lie outside of the AONB and to the north of the Site (see Appendix 12-3 Figure 3), this land appears to geographically provide a buffer to this designation.

12.5.81 As such the Scheme proposes the realignment of the A20 (albeit as a dual-carriageway) away from the eastern boundary with the AONB, and the early establishment of a substantial structural native tree belt between the two. This would both visually protect this part of the AONB and provide a robust defensible edge between it and the proposed Development.

12.5.82 In addition, the distinctive red brick buildings of Hillhurst Farm and the attractive triple Victorian terrace of Little Greys that lie within the parcel of land would be retained and the further stages of the Scheme's planning would ensure that they are sensitively incorporated into the detailed layout of the Scheme. The proposed green infrastructure strategy ensures that the new buildings are set back from the Site's boundary with the existing dwellings of Westenhanger along Stone Street and from the very southern edge of the area to protect views from outside the Site towards the North Downs escarpment, and the route of the existing PRoWs are infolded within wide tree belts.

12.5.83 Whilst there would be harm to the North Downs SLA designation on account of the change of this portion of it from one with a fundamentally rural character to urban form, within the wider context it amounts to a small degree of change – some 8% of the North Downs SLA outside of the AONB, or 0.3% of the overall North Downs SLA within the District. The landscape character, and the visual amenity of users of the remaining areas of the designation outside of the Site would not experience significant effects arising from the Development.

12.6 Assessment Summary

Table 12-23 Landscape Character Impact Assessment Summary

Definitions:
AS1 = Assessment scenario 1: Peak Construction Year
AS2 = Assessment scenario 2: Year 0 following completion
AS2 = Assessment scenario 2: Year 15 following completion
LCArea = Landscape Character Area
KCC-LAK = Kent County Council, Landscape Assessment of Kent, 2004
SDC-HLLA = Shepway District Council: High Level Landscape Appraisal, 2017
ABC- LC SPD = Ashford Borough Council, Landscape Character Supplementary Planning Document, 2011
AONB-KDL = Countryside Commission, The Kent Downs Landscape, 1994
OPFM = Otterpool Park Framework Masterplan (additional to the application boundary)

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
LCArea: SDC-05: Postling Vale	*Construction:* Direct effects upon the key characteristics of: attractive views from the North Downs scarp; and sense of remoteness arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development. *Operation:* Direct effects upon the key characteristics of: attractive views from the North Downs scarp; and sense of remoteness arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development	To assist in visually integrating the development into its setting, beyond the site to the north and reducing effects on tranquility the following measures are proposed: - substantial 25-75m wide scalloped-edged native species tree belts and woodland blocks would be planted along the Site's northern boundary within Site-Specific LCArea 1. 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09. - the placement of the proposed tallest development blocks: within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site; within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge; within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge; within Site-specific LCArea 10 away from the upper slopes of the greensand ridge, and its edges with Upper Otterpool, Newingreen and Lympne. - existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03, 05, 09 and 10. - 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate/high sensitivity remain fundamentally unchanged, despite (after taking into account the embedded design, mitigation and enhancement measures) some experiencing a small magnitude of adverse and predominantly irreversible change.
LCArea: SDC-06: Stanford	*Construction:* Direct effects upon the key characteristic of: open views to the south arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development. *Operation:* Direct effects upon the key characteristic of: open views to the south arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development.	- Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting beyond the Site to the north, and to reinforce the existing defensible edge created by the railway between the Development and the village. - The placement of the proposed tallest development blocks: within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its wider setting beyond the Site to the north. - 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12 to assist in visually integrating them into their wider setting beyond the Site to the north, and reducing effects on tranquility. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate sensitivity remain unchanged, despite (after taking into account the embedded design, mitigation and enhancement measures) one experiencing a small magnitude of adverse and largely irreversible change.
SDC-07: Tolsford Hill	*Construction:* Direct effects upon the key characteristics of: far-reaching panoramic views from the North Downs scarp; and indirect effects upon the	- Proposed substantial 25-75m wide scalloped-edged native species tree belts and woodland blocks would be planted along the Site's northern boundary within Site-Specific LCArea 1. to assist in visually integrating the development into its setting. - The placement of the proposed tallest development blocks: within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site; within Site-specific LCArea	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT**

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
	sense of wildness and ruggedness arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development. *Operation:* Direct effects upon the key characteristics of: far-reaching panoramic views from the North Downs scarp; and indirect effects upon the sense of wildness and ruggedness arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development.	05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge; within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its setting; within Site-specific LCArea 10 away from the upper slopes of the greensand ridge, and its edges with Upper Otterpool, Newingreen and Lympne. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03, 05, 09 and 10 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting and to reinforce the existing defensible edge created by the railway. - 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12 to assist in visually integrating them into their wider setting beyond the Site to the north, and reducing effects on tranquility. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate/high sensitivity remain unaltered, despite (after taking into account the embedded design, mitigation and enhancement measures) some experiencing a small magnitude of adverse and largely irreversible change.
SDC-08: North Downs Ridge	*Construction:* Direct effects upon the key characteristics of: far-reaching panoramic views from the North Downs scarp; and indirect effects upon the sense of wildness and ruggedness arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development. *Operation:* Direct effects upon the key characteristics of: far-reaching panoramic views from the North Downs scarp; and indirect effects upon the sense of wildness and ruggedness associated from the introduction of new built form, lighting, movement and green infrastructure proposals arising from the Development.	- Proposed substantial 25-75m wide scalloped-edged native species tree belts and woodland blocks would be planted along the Site's northern boundary within Site-Specific LCArea 1. to assist in visually integrating the development into its setting. - The placement of the proposed tallest development blocks: within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site; within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge; within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its setting; within Site-specific LCArea 10 away from the upper slopes of the greensand ridge, and its edges with Upper Otterpool, Newingreen and Lympne. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03, 05, 09 and 10 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting and to reinforce the existing defensible edge created by the railway. - 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12 to assist in visually integrating them into their wider setting beyond the Site to the north, and reducing effects on tranquility. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate/high sensitivity remain unaltered, despite (after taking into account the embedded design, mitigation and enhancement measures) some experiencing a small magnitude of adverse and largely irreversible change
SDC-09: Sellindge	*Construction:* Direct effects on the already low-tranquillity of this area arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development.	- The placement of the proposed tallest development blocks within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site, within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge, within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its setting. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to	**AS1** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** **AS2** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT**

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
	Operation: Direct effects on the already low-tranquillity of this area arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development.	divide Development blocks in Site-specific LCArea 03, 05, 09, and 10 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting and to reinforce the existing defensible edge created by the railway. - 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12 to assist in visually integrating them into their wider setting beyond the Site to the north. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS3** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate/low sensitivity remain unaltered, despite (after taking into account the embedded design, mitigation and enhancement measures) some experiencing a small magnitude of adverse and largely irreversible change.
SDC-11: Lympne	*Construction:* Direct effect of a fundamental change to the rural character of much of this LCArea arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development. *Operation:* Direct effect of a fundamental change to the rural character of much of this LCArea arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development.	- Proposed native species tree, scrub and marginal planting would be planted to conserve and reinforce the corridor of the East Stour River. - Proposed substantial 25-75m wide scalloped-edged native species tree belts and woodland blocks would be planted along the Site's northern boundary within Site-Specific LCArea 1. to assist in visually integrating the development into its setting. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03, 05, 09 and 10 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - No floodlighting to the proposed sports pitches within Site-specific LCArea 01. - Views to the North Downs escarpment from the upper areas of Site-specific LCArea 02 (outside of the Site boundary) over the top of proposed structural planting, particularly between Harringe Lane and Springfield Wood, from PRoW HE302 have been retained. - The arrangement of proposed development blocks, access roads and public open space across Site-specific LCArea 03 which reflects the distinctive shape of the underlying outlier/knoll landform and retain existing vegetated field boundaries. - A proposed 50-75m wide open space buffer would be created between the edge the woodland and the closest area of proposed built Development to maintain the integrity of the woodland and its visual distinctiveness in the surrounding landscape. - A proposed 150m wide open space buffer around the residual estate of Otterpool Manor would be created to conserve the farmstead's immediate rural setting, and conserve publicly accessible views out from this area to the North Downs escarpment. - The placement of the proposed tallest development blocks: within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site; within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge; within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its setting; within Site-specific LCArea 10 away from the upper slopes of the greensand ridge, and its edges with Upper Otterpool, Newingreen and Lympne. - The proposed conservation and reinforcement of the existing landscape pattern that the East Stour River, and its tributaries, have already created. The existing wavy edge field boundaries would be retained and strengthened with new tree and hedgerow planting, the floodplain would be broadened, and areas of diverse semi-natural landscape created. - Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting and to reinforce the existing defensible edge created by the railway.	**AS1** = **Moderate / Major, adverse**: a large magnitude of change to a landscape receptor of moderate sensitivity. **SIGNIFICANT** **AS2** = **Moderate / Major, adverse**: a large magnitude of change to a landscape receptor of moderate sensitivity. **SIGNIFICANT** **AS3** = **Moderate, adverse**: a moderate magnitude of change to a landscape receptor of moderate sensitivity. **SIGNIFICANT** There would be a fundamental shift in much the LCArea's existing key landscape components, characteristics, and perceptual and aesthetic qualities, (after taking into account the embedded design, mitigation and enhancement measures). In addition, some of the attributes that raise the value of this LCArea to Moderate would experience change as a result of the Development proposals. Over time the effects would reduce as the proposed Green Infrastructure establishes and matures.

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
		- Throughout Site-specific LCArea 10 10-20m wide proposed native species tree belts would be planted between development blocks through the centre to assist in visually integrating this part of the scheme into its setting. - The proposed conservation and reinforcement of the existing landscape pattern that the tributary of the East Stour River has already created. The existing wavy edge field boundaries would be retained and strengthened with new tree and hedgerow planting, the floodplain would be broadened, and areas of diverse semi-natural landscape created. - An informal country park would be created with native tree, scrub and hedgerow planting, and tussocky grasslands which conserves the setting of the geological SSSI and the recently discovered Roman villa, and which retains elements of Site-specific LCArea' 10's semi-naturalised character. - A proposed 180m minimum wide public open space, woodland block, and tree belt buffer would be created between the edge of the built-up area of Lympne and the nearest areas of proposed housing to assist in visually integrating the Development into its setting, avoiding coalescence with the village, protecting the individual identity of the settlement and its rural setting, creating a defensible edge to the Development, and allow retention of views out from here to the North Downs escarpment. - 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12 to assist in: visually integrating them into their setting; and restoring a stronger landscape pattern throughout the Site Specific LCArea. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	
SDC-12: Brockhill	*Construction:* Direct effects upon the tranquil perceptual quality of this LCArea arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development. *Operation:* Direct effects upon the tranquil perceptual quality of this LCArea arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development.	- Throughout Site-specific LCArea 10 10-20m wide proposed native species tree belts would be planted between development blocks through the centre and alongside of the East Stour River tributary, to assist in visually integrating this part of the scheme into views from outside of the Site to the east. - A proposed 450m wide public open space, woodland block, sports pitch, allotment and tree belt buffer would be created between the southern edge of Newingreen and the nearest areas of proposed housing to assist in visually integrating the Development into its setting, reinforcing the existing defensible edge created by the Stone Street to the east. - 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12 to assist in visually integrating them into their wider setting beyond the Site to the east, and reducing effects on tranquility. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate/high sensitivity remain unaltered, despite (after taking into account the embedded design, mitigation and enhancement measures) one experiencing a small magnitude of adverse and largely irreversible change, which diminishes with time.
SDC-13: Greensand Ridge	*Construction:* Indirect effects upon the tranquil and remote perceptual qualities of this LCArea arising from the introduction new built form, lighting, movement and green infrastructure proposals associated from the Development. *Operation:* Indirect effects upon the tranquil perceptual quality of this LCArea arising from the introduction of new built form, lighting, movement and green	- 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12 to assist in visually integrating them into their wider setting beyond the Site to the south, and reducing effects on tranquility. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT**

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
	infrastructure proposals associated from the Development.		The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate/high sensitivity remain unaltered, despite (after taking into account the embedded design, mitigation and enhancement measures) one experiencing a small magnitude of adverse and largely irreversible change, which diminishes with time.
SDC-21: Romney Marsh Proper Farmlands	*Construction:* Direct effects upon the key characteristics of: attractive views to the greensand ridge scarp; and the sense of tranquillity and remoteness arising from the introduction lighting associated from the Development. *Operation:* Direct effects upon the key characteristics of: attractive views to the greensand ridge scarp; and the sense of tranquillity and remoteness arising from the introduction lighting associated from the Development.	- 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12 to assist in visually integrating them into their wider setting beyond the Site to the north, and mitigating any effects on tranquility. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate/high sensitivity remain unaltered, despite (after taking into account the embedded design, mitigation and enhancement measures) one experiencing a small magnitude of adverse and largely irreversible change, which diminishes with time.
ABC-LC SPD LCAreas			
ABC-10: East Stour Valley	*Construction:* Direct effects upon the tranquil perceptual quality of this LCArea arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development. *Operation:* Direct effects upon the tranquil perceptual quality of this LCArea arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development.	- No floodlighting to the proposed sports pitches within Site-specific LCArea 01. - The placement of the proposed tallest development blocks within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site, and within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03, and 05 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor/ Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate sensitivity remain unaltered, despite (after taking into account the embedded design, mitigation and enhancement measures) one experiencing a very small / small magnitude of adverse and largely irreversible change, which diminishes with time.
ABC-25: Aldington Ridgeline	*Construction:* Direct effects upon LCArea's strong visual connection to the North Downs arising from the introduction of new built form and lighting associated from the Development. *Operation:* Direct effects upon LCArea's strong visual connection to the North Downs arising from the introduction of new built form and lighting associated from the Development.	- No floodlighting to the proposed sports pitches within Site-specific LCArea 01. - The placement of the proposed tallest development blocks within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site, and within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03 and 05 to assist in visually integrating them into their setting. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**S1** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor/ Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT**

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
			The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate sensitivity remain unaltered, despite (after taking into account the embedded design, mitigation and enhancement measures) one experiencing a very small / small magnitude of adverse and largely irreversible change, which diminishes with time.
ABC-29: Evegate Mixed Farmlands	*Construction:* Direct effects upon the perceptual tranquil quality of this LCArea arising from the introduction of lighting associated from the Development. *Operation:* Direct effects upon the perceptual tranquil quality of this LCArea arising from the introduction of lighting associated from the Development.	- No floodlighting to the proposed sports pitches within Site-specific LCArea 01. - The placement of the proposed tallest development blocks within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site, and within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03 and 05 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Minor, adverse**: a very small magnitude of change to a landscape receptor of low sensitivity. **NOT SIGNIFICANT** **AS2** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of low sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor, adverse**: a very small magnitude of change to a landscape receptor of low sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its area of low sensitivity remain unaltered, despite (after taking into account the embedded design, mitigation and enhancement measures) one experiencing a very small / small magnitude of adverse and largely irreversible change, which diminishes with time.
ABC-30: Brabourne Arable Farmlands	*Construction:* Indirect effects upon LCArea's strong un-settled character and direct effect on open views arising from the introduction of new built form and lighting associated from the Development. *Construction:* Indirect effects upon LCArea's strong un-settled character and direct effect on open views arising from the introduction of new built form and lighting associated from the Development.	- The placement of the proposed tallest development blocks: within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge; within Site-specific LCArea 10 away from the upper slopes of the greensand ridge, and its edges with Upper Otterpool, Newingreen and Lympne. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03 and 05 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of moderate / low sensitivity. **NOT SIGNIFICANT** **AS2** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of moderate / low sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor, adverse**: a very small magnitude of change to a landscape receptor of moderate / low sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its area of moderate/low sensitivity remain unaltered, despite (after taking into account the embedded design, mitigation and enhancement measures) some experiencing a very small / small magnitude of adverse and largely irreversible change, which diminishes with time.
ABC-31: Brabourne Farmlands	*Construction:* Indirect effects upon LCArea's strong rural character arising from the introduction of new built form and lighting associated from the Development. *Construction:* Indirect effects upon LCArea's strong rural character arising from the introduction of new built form and lighting associated from the Development.	- The placement of the proposed tallest development blocks within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03 and 05 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**S1** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS2** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its area of moderate sensitivity remain unaltered, despite (after taking into account the embedded design,

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
			mitigation and enhancement measures) one experiencing a very small magnitude of adverse and largely irreversible change, which diminishes with time.
AONB-KDL (in ABC)			
ABC-AONB-01 Postling Vale - Stowting	*Construction:* Direct effects upon the key characteristics of: high-visibility over the open landscape from the North Downs scarp; and indirect effects upon the open rural character associated from the introduction of new built form, lighting, movement and green infrastructure proposals arising from the Development. *Operation:* Direct effects upon the key characteristics of: high-visibility over the open landscape from the North Downs scarp; and indirect effects upon the open rural character arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development.	- Proposed substantial 25-75m wide scalloped-edged native species tree belts and woodland blocks would be planted along the Site's northern boundary within Site-Specific LCArea 01 to assist in visually integrating the development into its setting. - The placement of the proposed tallest development blocks: within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site; within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge; within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its setting; within Site-specific LCArea 10 away from the upper slopes of the greensand ridge, and its edges with Upper Otterpool, Newingreen and Lympne. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03, 05, 09, 10, 12 and 14 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting and to reinforce the existing defensible edge created by the railway. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate/high sensitivity remain unchanged, despite (after taking into account the embedded design, mitigation and enhancement measures) some experiencing a small magnitude of adverse and predominantly irreversible change.
ABC-AONB-02 East Kent Downs - Petham	*Construction:* Direct effects upon the sense of remoteness arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development. *Operation:* Direct effects upon the sense of remoteness arising from the introduction of new built form, lighting, movement and green infrastructure proposals associated from the Development.	- Proposed substantial 25-75m wide scalloped-edged native species tree belts and woodland blocks would be planted along the Site's northern boundary within Site-Specific LCArea 01 to assist in visually integrating the development into its setting. - The placement of the proposed tallest development blocks: within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site; within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge; within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its setting; within Site-specific LCArea 10 away from the upper slopes of the greensand ridge, and its edges with Upper Otterpool, Newingreen and Lympne. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03, 05, 09, 10, 12, and 14 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting and to reinforce the existing defensible edge created by the railway. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate/high sensitivity remain unchanged, despite (after taking into account the embedded design, mitigation and enhancement measures) some experiencing a small magnitude of adverse and predominantly irreversible change.
ABC-AONB-03 Lympne - Aldington	*Construction:* Indirect effects upon the rural aspect of this LCArea arising from the introduction of lighting associated from the Development.	- The placement of the proposed tallest development blocks within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Moderate / Minor, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity.

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
	Operation: Indirect effects upon the rural aspect of this LCArea arising from the introduction of lighting associated from the Development.		**NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate/high sensitivity remain unchanged, despite (after taking into account the embedded design, mitigation and enhancement measures) one experiencing a very small magnitude of adverse and predominantly irreversible change.
ABC-AONB-04 Lympne - Hythe Escarpment	*Construction:* Indirect effects upon the bleak and wild character of this LCArea arising from the introduction of lighting associated from the Development. *Operation:* Indirect effects upon the bleak and wild character of this LCArea arising from the introduction of lighting associated from the Development.	- The placement of the proposed tallest development blocks within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate/high sensitivity remain unaltered, despite (after taking into account the embedded design, mitigation and enhancement measures) one experiencing a small magnitude of adverse and largely irreversible change, which diminishes with time.
ABC-AONB-05 Lympne - Romney Marsh	*Construction:* Direct effects upon the key characteristics of: views to the greensand ridge; and the rural remoteness arising from the introduction lighting associated from the Development. *Operation:* Direct effects upon the key characteristics of: views to the greensand ridge; and the rural remoteness arising from the introduction lighting associated from the Development.	- The placement of the proposed tallest development blocks within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge. - Adherence to the Institution of *Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light*, with regards to light spill, glare and sky glow.	**AS1** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate adverse**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** The LCArea's overall integral character is maintained. Most of the components, characteristics, and perceptual and aesthetic qualities that shape its moderate sensitivity remain unaltered, despite (after taking into account the embedded design, mitigation and enhancement measures) experiencing a small / very small magnitude of adverse and largely irreversible change, which diminishes with time.

Table 12-24 Visual Amenity Character Impact Assessment Summary

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
Users of PRoW through the Site	*Construction:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways through the Site arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views along these routes. *Operation:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways through the Site arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views along these routes.	- Proposed substantial 25-75m wide scalloped-edged native species tree belts and woodland blocks would be planted along the Site's northern boundary within Site-Specific LCArea 01 to assist in visually integrating the development into its setting. - Proposed substantial 20-30m wide native species tree belts and woodland blocks would be planted along the Site's western boundary within Site-specific LCArea 01 and 02 to assist in visually integrating the Development into its setting, to reinforce the existing defensible edge of Harringe Lane, and to provide a defensible edge along this side of the overall proposed Development. - A proposed 20-65m wide public open space, allotment and tree belt buffer would be created between the edge of the rear gardens of Barrow Hill-Sellindge and the nearest areas of proposed housing to assist in visually integrating the Development into its setting. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation and 10-20m wide proposed tree belts would be planted through the centre and along parts of the eastern, western, northern, and north-eastern boundaries of the development blocks within Site-specific LCArea 05 to assist in: visually integrating them into their setting. - A proposed 15-20m tree belt along the east edge of Barrow Hill-Sellindge (where the existing residential properties her already have relatively long and well vegetated rear gardens) would be planted to assist in visually integrating the Development into its setting and conserving the Individual townscape identity of the settlement of Barrow Hill-Sellindge. - The positioning of the proposed local centre upon the brow of higher land within Site-specific LCArea 03 and 09 making visually apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, and so that it is not visually perceived simply as 'sprawl'. - Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting and to reinforce the existing defensible edge created by the railway. - A proposed landscape of trees, sports pitches, and riverside parkland would be created along the south-east edge of Barrow Hill-Sellindge to assist in the retention of existing views across the open landscape and to the North Downs escarpment. - Throughout Site-specific LCArea 10 10-20m wide proposed native species tree belts would be planted between development blocks through the centre and alongside of the East Stour River tributary, to assist in visually integrating this part of the scheme into its setting and restoring a stronger landscape pattern. - An informal country park would be created with native tree, scrub and hedgerow planting, and tussocky grasslands which conserves the setting of the geological SSSI and the recently discovered Roman villa, and which retains elements of Site-specific LCArea' 10's semi-naturalised character. - The boundaries to Site-specific LCArea 11 (including at its entrance off Otterpool Lane) would be strengthened with woodland blocks, proposed native tree and hedgerow vegetation and 20m wide native species tree belts to reduce visual effect on users of PRoW HE316 and ameliorate existing views from this to the Lympne Industrial Estate. The placement of the proposed tallest development blocks within this Site-specific LCArea away from its edges with Westenhanger Castle and Westenhanger to reduce the visual effect on PRoW HE227. - The creation of a historically appropriate and publicly accessible parkland setting to Westenhanger Castle from its southerly edge to the A20 Ashford Road (on land that was previously part of the old Racecourse), including gardens, open parkland, and new on-vehicular drive upon the historic approach to the Castle, areas of play and formal/informal recreation to reduce the visual effect of the overall Development on users of PRoWs HE227 and HE275.	**AS1** = **Moderate, adverse**: a moderate magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Major, adverse**: a large magnitude of change to a landscape receptor of moderate/high sensitivity. **SIGNIFICANT** **AS3** = **Moderate, neutral**: a moderate magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The users of these PRoWs have a moderate/high sensitivity to the likely construction and operational impacts. The effect experienced by users as a whole would, through the construction period, be moderate in nature, but not significant insofar that the Development would not become the defining element across these. At scheme completion the Development would alter the overall balance and make-up of the visual experience, and therefore is considered significant. As the last sections of the Scheme's embedded green infrastructure design and mitigation measures become established the previous impacts would have reduced and the visual experience for users would be one of new landscape of public open spaces, naturalised areas and woodland. A residual moderate effect would occur, but one that is in neutral in nature, and not significant.

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
Users of localised/close range PRoW, within 2km to the south of Site	*Construction:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site along these routes. *Operation:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site along these routes.	- The placement of the proposed tallest development blocks within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge. - A proposed 150m minimum wide public open space, allotment, woodland block, and 15-25m wide tree belt buffer would be created between the B2067 Aldington Road and the nearest areas of proposed housing.	**AS1** = **Minor, adverse**: a negligible magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The receptors on these PRoWs have a moderate/high sensitivity but are unlikely to experience more than a very small magnitude of change when taking into account the embedded green infrastructure design and mitigation measures.
Users of localised/close range PRoW, within 2km to the west of the Site	*Construction:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site along these routes. *Operation:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site along these routes.	- Proposed substantial 20-30m wide native species tree belts and woodland blocks would be planted along the Site's western boundary within Site-specific LCArea 01 and 02 to assist in visually integrating the Development into its setting, to reinforce the existing defensible edge of Harringe Lane, and to provide a defensible edge along this side of the overall proposed Development. - Views to the North Downs escarpment from the upper areas of Site-specific LCArea 02 (outside of the Site boundary) over the top of proposed structural planting, particularly between Harringe Lane and Springfield Wood, from PRoW HE302 have been retained. - 10-20m wide proposed native species tree belts would be aligned north-south dividing the Development blocks within Site-specific LCArea no.3. to assist in visually integrating them into its setting. - The placement of the proposed tallest development blocks within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site, within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge, within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its setting. - The positioning of the proposed local centre upon the brow of Barrow Hill, making visually apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, and so that it is not visually perceived simply as 'sprawl'. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03 and 05 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern.	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate, adverse**: a moderate magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The receptors on these PRoWs have a moderate/high sensitivity to the impacts that are likely arise from the proposed Development. The change experienced by them as a whole would, through the construction period, be small in magnitude, given the limited visibility of the Site, the proposed phasing of the Scheme, the small extent of it visible and the embedded design and mitigation measures. By scheme completion the Development would be distinct, but not the defining element in the visual experience of users of these PRoWs as a whole, and therefore is considered not significant. The extent and scale of the Scheme in views from these PRoWs would reduce further once the final embedded green infrastructure design and mitigation measures become established, and as such the Scheme would not markedly change the overall balance and make-up of the visual experience from these receptors as a whole.
Users of localised/close range PRoW, within 2km to the north of the Site	*Construction:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within	- Proposed substantial 25-75m wide scalloped-edged native species tree belts and woodland blocks would be planted along the Site's northern boundary within Site-Specific LCArea 01 to assist in visually integrating the development into its setting. - The placement of the proposed tallest development blocks: within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site; within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate, adverse**: a moderate magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT**

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
	views towards the Site along these routes. *Operation:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site along these routes.	the upper slopes of the greensand ridge; within Site-specific LCArea 10 away from the upper slopes of the greensand ridge, and its edges with Upper Otterpool, Newingreen and Lympne, - The positioning of the proposed local centre upon the brow of Barrow Hill within Site-specific LCArea 03, and upon the brow of higher land within Site-specific LCArea 09 making visually apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, and so that it is not visually perceived simply as 'sprawl'. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03 05 and 09to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting and to reinforce the existing defensible edge created by the railway. - Throughout Site-specific LCArea 10 10-20m wide proposed native species tree belts would be planted between development blocks through the centre and alongside of the East Stour River tributary, to assist in visually integrating this part of the scheme into its setting. - 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12 to assist in reducing the visual effect on users of PRoWs to the north. - The majority of the existing mature trees around the existing racecourse buildings would be retained and a 10-20m wide proposed tree belt would be planted along the northern boundary of the Site through Site-specific LCArea 13 to assist in visually integrating this part of the scheme into its setting, beyond the Site to the north, and to reinforce the existing defensible edge created by the railway between the Development and Stanford.	**AS3** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The receptors on these PRoWs have a moderate/high sensitivity to the impacts that are likely arise from the proposed Development. The change experienced by them as a whole would, through the construction period, be small in magnitude, given the limited extent of the Site and hence the extent of the Scheme visible, the proposed phasing of the scheme, and the embedded design and mitigation measures. By scheme completion the Development would be distinct, but not the defining element in the visual experience given other elements within the views through this area, and therefore is considered not significant. The extent and scale of the Scheme in views from these PRoWs would reduce further once the final embedded green infrastructure design and mitigation measures become established, and as such the Scheme would not markedly change the overall balance and make-up of the visual experience from these receptors, as a whole, given other elements within the views through this area, and therefore is considered not significant.
Users of localised/close range PRoW, within 2km to the east of the Site	*Construction:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site along these routes. *Operation:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site along these routes.	- Throughout Site-specific LCArea 10 10-20m wide proposed native species tree belts would be planted between development blocks through the centre and alongside of the East Stour River tributary, to assist in visually integrating this part of the scheme into its setting. - A proposed 450m wide public open space, woodland block, sports pitch, allotment and tree belt buffer would be created between the southern edge of Newingreen and the nearest areas of proposed housing to assist in visually integrating the Development into its setting, reinforcing the existing defensible edge created by the Stone Street to the east.	**AS1** = **Moderate, adverse**: a moderate magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The receptors on these PRoWs have a moderate/high sensitivity to the impacts that are likely arise from the proposed Development. The change experienced by them as a whole through t is area would, through the construction period, be moderate in magnitude, given the proposed phasing of the scheme and the construction of the A20 dual-carriageway along the eastern edge, but balanced by the embedded design and mitigation measures. It would not however be the defining element in the visual experience through this area and would not markedly change the overall balance and make-up of the visual experience, as a whole, given other elements within the views through this area and the lack of general visibility, and therefore is considered not significant. By scheme completion the extent and scale of the Scheme in views from these PRoWs would be markedly reduced given the establishment of the structural planting by this point. Following this the Development would still be apparent but become less distinct.

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
Users of intermediate/medium range PRoW, between 2-5km to the west of the Site	*Construction:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site along these routes. *Operation:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site along these routes.	- Proposed substantial 20-30m wide native species tree belts and woodland blocks would be planted along the Site's western boundary within Site-specific LCArea 01 to assist in visually integrating the Development into its setting, to reinforce the existing defensible edge of Harringe Lane, and to provide a defensible edge along this side of the overall proposed Development. - The placement of the proposed tallest development blocks within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site, within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge, within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its setting. - The positioning of the proposed local centre upon the brow of Barrow Hill within Site-specific LCArea 03, and upon the brow of higher land within Site-specific LCArea 09 making visually apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, and so that it is not visually perceived simply as 'sprawl'. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03 and 05 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern.	**AS1** = **Minor, adverse**: a negligible magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The receptors on these PRoWs have a moderate/high sensitivity to the impacts that are likely arise from the proposed Development. The change experienced by them as a whole would, through the construction period, be very small in magnitude, given the very limited visibility of the Site, the proposed phasing of the Scheme, the small extent of it visible and the embedded design and mitigation measures. By scheme completion the Development would not the defining element in the visual experience of users of these PRoWs as a whole, and therefore is considered not significant. The extent and scale of the Scheme in views from these PRoWs would reduce further once the final embedded green infrastructure design and mitigation measures become established, and as such the Scheme would not markedly change the overall balance and make-up of the visual experience from these receptors as a whole.
Users of intermediate/medium range PRoW, between 2-5km to the north of the Site	*Construction:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site along these routes. *Operation:* Direct effects upon the visual experience of users of the Public Footpaths and Public Bridleways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site along these routes.	- Proposed substantial 25-75m wide scalloped-edged native species tree belts and woodland blocks would be planted along the Site's northern boundary within Site-Specific LCArea 01 to assist in visually integrating the development into its setting. - The placement of the proposed tallest development blocks: within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site; within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge; within Site-specific LCArea 10 away from the upper slopes of the greensand ridge, and its edges with Upper Otterpool, Newingreen and Lympne, - The positioning of the proposed local centre upon the brow of Barrow Hill, making visually apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, and so that it is not visually perceived simply as 'sprawl'. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03, 05, 09 and 10 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting and to reinforce the existing defensible edge created by the railway. - Throughout Site-specific LCArea 10 10-20m wide proposed native species tree belts would be planted between development blocks through the centre and alongside of the East Stour River tributary, to assist in visually integrating this part of the scheme into its setting. - 20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12 to assist in reducing the visual effect on users of PRoWs to the north.	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate, adverse**: a moderate magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The receptors on these PRoWs have a moderate/high sensitivity to the impacts that are likely arise from the proposed Development. The change experienced by them as a whole would, through the construction period, be small in magnitude, given the limited extent of the Site and hence the extent of the Scheme visible from some of these, the distances it would be viewed from, the proposed phasing of the scheme, and the embedded design and mitigation measures. By scheme completion the Development would be distinct, and bring about differing levels of change to views across this area, but would not become the defining element in the visual experience given other elements within the panoramic views from the scarp slope and those within the more restricted views from the lower-lying parts of this area, and therefore is considered not significant. The extent and scale of the Scheme in views from these PRoWs would reduce further once the final embedded green infrastructure design and mitigation measures become established, and as such the Scheme would not markedly change the overall balance and make-up of the visual experience from these receptors, as a whole, given other elements within the views through this area, and therefore is considered not significant.

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
Users of the North Downs Way, National Trail	*Construction:* Direct effects upon the visual experience of users of the North Downs Way- National Trail arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site along this route through the Study Area. *Operation:* Direct effects upon the visual experience of users of the North Downs Way- National Trail arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site along this route through the Study Area.	The following measures are proposed to assist in reducing the visual effect on users of the NDW-NT: - The placement of the proposed tallest development blocks: within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site; within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge; within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge; within Site-specific LCArea 10 away from the upper slopes of the greensand ridge, and its edges with Upper Otterpool, Newingreen and Lympne, - The positioning of the proposed local centre upon the brow of Barrow Hill within Site-specific LCArea 03, and upon the brow of higher land within Site-specific LCArea 09 making visually apparent the planned pattern of nucleated local centres so that a clear understanding of their purpose is possible, and so that the overall Development is not visually perceived simply as 'sprawl'. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCAreas 03, 05, 09, 10, 12, 13 and 14 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCAreas 09, 13 and 14 to assist in visually integrating this part of the scheme into its setting, beyond the Site to the North. - Throughout Site-specific LCArea 10 10-20m wide proposed native species tree belts would be planted between development blocks through the centre and alongside of the East Stour River tributary. - 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12. - The majority of the existing mature trees around the existing racecourse buildings would be retained and 10-20m wide proposed tree belts would be planted along the northern boundary of the Site through Site-specific LCArea 13.	AS1 = Moderate / Minor, adverse: a very small magnitude of change to a landscape receptor of high sensitivity. NOT SIGNIFICANT AS2 = Moderate, adverse: a small magnitude of change to a landscape receptor of high sensitivity. NOT SIGNIFICANT AS3 = Moderate / Minor, adverse: a very small magnitude of change to a landscape receptor of high sensitivity. NOT SIGNIFICANT The users of the NDW-NT have a high sensitivity to the impacts that are likely arise from the proposed Development. The change experienced by them as a whole would, through the construction period, be small in magnitude, given: the limited extent of the Site, and hence the extent of the Scheme visible from some of these, the distances it would be viewed from, the proposed phasing of the scheme, and the embedded design and mitigation measures. By scheme completion the Development would be distinct and bring about differing levels of change to views along the NDW-NT but would not become the defining element in the visual experience given: other elements within the panoramic views from the scarp slope; that the development would generally form only a narrow vertical area of most views; , and therefore is considered not significant. The extent and scale of the Scheme in views from the NDW-NT would reduce further once the final embedded green infrastructure design and mitigation measures become established, and as such the Scheme would not markedly change the overall balance and make-up of the visual experience from the receptors using the NDW-NT at static point or as part of a kinetic experience, as a whole, given other elements within the views through this area, and therefore is considered not significant.
Users of the Saxon Shore Way, Long Distance Path	*Construction:* Direct effects upon the visual experience of users of the Saxon Shore Way arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site from along this route through the Study Area *Operation:* Direct effects upon the visual experience of users of the Saxon Shore Way arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site from along this route through the Study Area	- A proposed 150m minimum wide public open space, allotment, woodland block, and tree belt buffer would be created between the B2067 Aldington Road and the nearest areas of proposed housing to assist in reducing the visual effect on users of the Saxon Shore Way where is rises to the crest of the greensand ridge near Lympne Animal Park, to the south of the Site. - 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within site-specific LCArea 12 to assist in reducing visual effects on users of the Saxon Shore Way where is rises to the crest of the greensand ridge near Lympne Animal Park, to the south of the Site.	**AS1** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of high sensitivity. **NOT SIGNIFICANT** **AS2** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of high sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a negligible magnitude of change to a landscape receptor of high sensitivity. **NOT SIGNIFICANT** The users of the SSW-LDP have a high sensitivity to the likely construction and operational impacts. The change experienced by users as a whole would, through the construction period, be very small in nature, and adverse, so minor/moderate in effect, and not significant. At scheme completion the operation of the Development would have very little change to the overall balance and make-up of the visual experience, and therefore is also considered not significant.

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
			As the Scheme's embedded green infrastructure design and mitigation measures fully establish and mature the change becomes negligible, and therefore continues to be not significant.
Users of Open Access Land (OAL) upon the North Downs scarp slopes within intermediate/medium range	*Construction:* Direct effects upon the visual experience of users of this area arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of users of this area arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	- The placement of the proposed tallest development blocks: within Site-specific LCArea 03 on the lowest part of its eastern side, away from the western edge of the Site; within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge; within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its setting; within Site-specific LCArea 10 away from the upper slopes of the greensand ridge, and its edges with Upper Otterpool, Newingreen and Lympne, - The positioning of the proposed local centre upon the brow of Barrow Hill within Site-specific LCArea 03, and upon the brow of higher land within Site-specific LCArea 09 making visually apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, and so that it is not visually perceived simply as 'sprawl'. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03, 05, 09 and 10 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting and to reinforce the existing defensible edge created by the railway. - 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12 to assist in reducing the visual effect on users of OAL to the north.	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate, adverse**: a small/moderate magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The users of the OAL though this part of the Study Area have a moderate/high sensitivity to the likely construction and operational impacts. The change experienced by users as a whole would, through the construction period, be small in magnitude, and adverse, so minor/moderate in effect, and not significant. At scheme completion the operation of the Development would have small/moderate change to the overall balance and make-up of the visual experience, and therefore is also considered not significant. As the Scheme's embedded green infrastructure design and mitigation measures fully establish and mature the change reduces, and therefore continues to be not significant.
Users of Open Access Land (OAL) (including Peene Country Park) upon the North Downs scarp slopes within long range	*Construction:* Direct effects upon the visual experience of users of this area arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of users of this area arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	- Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting and to reinforce the existing defensible edge created by the railway. - Throughout Site-specific LCArea 10 10-20m wide proposed native species tree belts would be planted between development blocks through the centre and alongside of the East Stour River tributary, to assist in visually integrating this part of the scheme into its setting. - 10-20m wide proposed tree belts would be planted along the edges and through the centre (including alongside the line of the old airfield runway) of areas new built development within Site-specific LCArea 12 to assist in reducing the visual effect on users of OAL to the north and Peene Country Park.	**AS1** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The users of the OAL though this part of the Study Area have a moderate/high sensitivity to the likely construction and operational impacts. The change experienced by users as a whole would, through the construction period, be very small in magnitude, and adverse, so minor/moderate in effect, and not significant. At scheme completion the operation of the Development would have small change to the overall balance and make-up of the visual experience, and therefore is also considered not significant. As the Scheme's embedded green infrastructure design and mitigation measures fully establish and mature the change reduces, and therefore continues to be not significant.
Users of Lympne Airfield	*Construction:* Direct effects upon the visual experience of users of this area	- Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation and 10-20m wide proposed native species tree belts would be planted between development blocks through the centre, alongside of the East Stour River tributary, to	**AS1** = **Moderate, adverse**: a moderate magnitude of change to a landscape receptor of moderate sensitivity.

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
	arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views through the Site. *Operation:* Direct effects upon the visual experience of users of this area arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views through the Site.	assist in visually integrating this part of the scheme into its setting. These belts would also restore a stronger landscape pattern throughout Site-specific LCArea 10.	**NOT SIGNIFICANT** **AS2** = **Moderate, adverse**: a moderate magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** The users of the Lympne Airfield area have a moderate sensitivity to the likely construction and operational impacts. The change experienced by users as a whole would, through the construction and operation periods, be moderate in magnitude, and adverse. The Scheme would not, however be the defining element in the receptors' visual experience taking into account the embedded design, mitigation and enhancement measures (many of which would be in place prior to construction in this area) and considering that the land is not officially publicly accessible or is not widely frequented. As such the effect is considered not-significant.
Users of Westenhanger Castle	*Construction:* Direct effects upon the visual experience of residents and users of this property arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of residents and users of this property arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	- The placement of the proposed tallest development blocks within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its setting. - The placement of the proposed tallest development blocks within Site-specific LCArea 13 away from its edges with Westenhanger Castle to reduce the visual effect on users of the property. - The creation of a historically appropriate and publicly accessible parkland setting to Westenhanger Castle from its southerly edge to the A20 Ashford Road (on land that was previously part of the old Racecourse), including gardens, open parkland, and new on-vehicular drive upon the historic approach to the Castle, areas of play and formal/informal recreation to reduce the overall visual effect of the Development upon users of the property.	**AS1** = **Moderate, adverse**: a moderate magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate, neutral**: a moderate magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate, beneficial**: a moderate magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** The users of Westenhanger Castle have a moderate sensitivity to the likely construction and operational impacts of the Scheme. The change experienced by users as a whole would, through the construction and operation periods, be moderate in magnitude. There would be beneficial visual impacts to users from the Castle arising from the removal of the current discordant Racecourse buildings and creation of new parkland. There would be adverse impacts arising from the placement of new built-form in views to the east and west. These would be tempered, however, by the planned structural planting between them and the Castle (much of which would be in place prior to operation). The built-form of the Scheme would not, therefore become the defining element in the receptors' visual experience. As such the effect is considered not-significant.
Users of Port Lympne Animal Park	*Construction:* Direct effects upon the visual experience of users of this recreational resource arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of users of this recreational	- The placement of the proposed tallest development blocks within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge. - 15-25m wide proposed tree belts would be planted along the southern edge of this Site-specific LCArea to assist in visually integrating the Development into its setting, and to create better definition between it and the parkland estate of Port Lympne Animal Park.	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor , adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT**

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
	resource arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.		The users of the Port Lympne Animal Park area have a moderate sensitivity to the likely construction and operational impacts. The change experienced by users as a whole would, through the construction and operation periods, be small to very-small in magnitude, and adverse. Given that such as small part of the Park would encounter change, and taking into account the embedded design, mitigation and enhancement measures (many of which would be in place prior to construction in this area) the Scheme would not become the defining element in the receptors' visual experience. As such the effect is considered not-significant.
Users and residents of Lympne	*Construction:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	- Existing field boundaries throughout Site-specific LCArea 10 would be strengthened with proposed native tree and hedgerow vegetation and 10-20m wide proposed native species tree belts would be planted between development blocks through the centre, alongside of the East Stour River tributary, to assist in visually integrating this part of the scheme into its setting. These belts would also restore a stronger landscape pattern throughout Site-specific LCArea 10. - A proposed 450m wide public open space, woodland block, sports pitch, allotment and tree belt buffer would be created between the southern edge of Newingreen and the nearest areas of proposed housing to assist in visually integrating the Development into its setting, reinforcing the existing defensible edge created by the Stone Street to the east, and protecting the individual identity of the settlement and its rural setting. - A proposed 180m minimum wide public open space, woodland block, allotment and tree belt buffer would be created between the edge of the built-up area of Lympne and the nearest areas of proposed housing to assist in reducing the visual effect on residents, avoiding coalesce with the village, and protecting individual identity of the village within a rural setting.	**AS1** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The users and residents of Lympne have a moderate sensitivity to the likely construction and operational impacts of the Scheme. The change experienced by users and residents as a whole would, through the construction and operation periods, be, at most, small in magnitude. There would be adverse impacts arising from the placement of new built-form in views to west only. These would be tempered, however, by the substantial separation and planned structural planting between them and the village. The built-form of the Scheme would not, therefore become the defining element in the receptors' visual experience. As such the effect is considered not-significant.
Users and residents of Westenhanger	*Construction:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	- The majority of the existing mature trees around the existing racecourse buildings would be retained and 10-20m wide proposed tree belts would be planted along the edge with the settlement of Westenhanger, to form a robust defensible boundary, and through the centre of areas new built development within Site-specific LCArea 13 to assist in: visually integrating the setting of the settlement. - The placement of the proposed tallest development blocks within this Site-specific LCArea away from its edges with Westenhanger to reduce the visual effect on residents. - The conservation of the character of Stone Street as an intimate lane and the planting of a 10m wide planted belt along its eastern edge to protect the induvial identity of the settlement of Westenhanger and reduce the visual effect of the overall Development on residents.	**AS1** = **Moderate, adverse**: a large magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate, adverse**: a large magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a moderate magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** The users and residents of Westenhanger have a moderate/low sensitivity to the likely construction and operational impacts of the Scheme. The change experienced by users and residents as a whole would, through the construction and initial operation periods, be moderate in magnitude. There would be adverse impacts arising from construction activities but these would be tempered by sensitive construction methods and proposed structural planting. The built-form of the Scheme would be immediately apparent and prominent during its operation but not, the defining element in the receptors' visual experience given its residential nature and the continuing enclosure of the settlement by vegetation. As such the effect is considered not -significant.

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
Users and residents of Newingreen	*Construction:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	- Existing field boundaries throughout Site-specific LCArea 10 would be strengthened with proposed native tree and hedgerow vegetation and 10-20m wide proposed native species tree belts would be planted between development blocks through the centre, alongside of the East Stour River tributary, to assist in visually integrating this part of the scheme into its setting. These belts would also restore a stronger landscape pattern throughout Site-specific LCArea 10. - A proposed 450m wide public open space, woodland block, sports pitch, allotment and tree belt buffer would be created between the southern edge of Newingreen and the nearest areas of proposed housing to assist in visually integrating the Development into its setting, reinforcing the existing defensible edge created by the Stone Street to the east, and protecting the individual identity of the settlement and its rural setting.	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** The users and residents of Newingreen have a moderate sensitivity to the likely construction and operational impacts of the Scheme. The change experienced by users and residents as a whole would, through the construction and initial operation periods, be small to very-small in magnitude. There would be adverse impacts arising from construction activities, but these would be tempered by sensitive construction methods and proposed separation and structural planting. The built-form of the Scheme would be visible during its operation but would not alter the balance and make-up of the visual experience as a whole or become the defining element in views given their residential nature and the maintenance of an open and un-developed outlook in the majority of these. As such the effect is considered not -significant.
Users and residents of Barrow Hill-Sellindge	*Construction:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	- A proposed 20-65m wide public open space, allotment and tree belt buffer would be created between the edge of the rear gardens of Barrow Hill-Sellindge and the nearest areas of proposed housing to assist in visually integrating the Development into its setting. - The positioning of the proposed local centre upon the brow of Barrow Hill within Site-specific LCArea 03, and upon the brow of higher land within Site-specific LCArea 09 making visually apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, and so that it is not visually perceived simply as 'sprawl'. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03, 05, and 09 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - A proposed 15-20m tree belt along the east edge of Barrow Hill-Sellindge (where the existing residential properties here already have relatively long and well vegetated rear gardens) would be planted to assist in visually integrating the Development into its setting and conserving the Individual townscape identity of the settlement of Barrow Hill-Sellindge. - The placement of the proposed tallest development blocks within Site-specific LCArea 09 away from its edges with Westenhanger Castle, the northern edge of the Site, and Barrow Hill-Sellindge to assist in visually integrating this part of the scheme into its setting. - A proposed landscape of trees, sports pitches, and riverside parkland would be created along the south-east edge of Barrow Hill-Sellindge to assist in the retention of existing views across the open landscape.	**AS1** = **Minor, adverse**: a very small magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a moderate magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** The users and residents of Barrow Hill have a moderate/low sensitivity to the likely construction and operational impacts of the Scheme. The change experienced by users and residents as a whole would, through the construction and operation periods, be, at most, moderate in magnitude. There would be adverse impacts arising from the placement of new built-form in views to east and west. These would be tempered, however, by the substantial separation and planned structural planting between them and the settlement. The built-form of the Scheme would not, therefore become the defining element in the receptors' visual experience. As such the effect is considered not-significant.
Users and residents of Stanford	*Construction:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure	- The positioning of the proposed local centre upon the brow of higher land within Site-specific LCArea 09, making visually apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, from Stanford and so that it is not visually perceived simply as 'sprawl'. - Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting beyond the Site to the	**AS1** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT**

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
	proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	north, and to reinforce the existing defensible edge created by the railway between the Development and Stanford - The majority of the existing mature trees around the existing racecourse buildings would be retained and 10-20m wide proposed tree belts would be planted along the northern boundary of the Site through Site-specific LCArea 13 to assist in visually integrating this part of the scheme into its setting, beyond the Site to the north, and to reinforce the existing defensible edge created by the railway between the Development and Stanford.	**AS3** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** The users and residents of Stanford have a moderate sensitivity to the likely construction and operational impacts of the Scheme. The change experienced by users and residents as a whole would, through the construction and initial operation periods, be small to very-small in magnitude. There would be adverse impacts arising from construction activities, but these would be tempered by sensitive construction methods and proposed separation and structural planting. The built-form of the Scheme would be visible during its operation but would not alter the balance and make-up of the visual experience as a whole or become the defining element in views given their existing residential nature and the maintenance of an open and un-developed outlook in the majority of these. As such the effect is considered not-significant.
Users and residents of Court-at-Street	*Construction:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	- Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03 and 05 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. The placement of the proposed tallest development blocks within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge.	**AS1** = **Minor, adverse**: a negligible magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS2** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** The users and residents of Court-at-Street have a moderate sensitivity to the likely construction and operational impacts of the Scheme. The change experienced by users and residents as a whole would, through the construction and initial operation periods, be negligible to very-small in magnitude. There would be adverse impacts arising from construction activities, but these would be tempered by sensitive construction methods and proposed separation and structural planting. The ambient lighting emitting from Scheme would be visible from Court-at-Street in views to the north and west during its operation but this would not alter the balance and make-up of the visual experience as a whole or become the defining element in views given the maintenance of an open and un-developed outlook in the majority of these. As such the effect is considered not-significant.
Users and residents of Aldington Church	*Construction:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure	- Proposed substantial 20-30m wide native species tree belts and woodland blocks would be planted along the western boundary of the Site through Site-specific LCArea 02 to assist in visually integrating the Development into its setting and to provide a defensible edge to it along its this edge. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03 and 05 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - The placement of the proposed tallest development blocks within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge.	**AS1** = **Minor / Moderate, adverse**: a negligible magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The users and residents of Aldington Church have a moderate/high sensitivity to the likely construction and operational impacts of the Scheme. The change experienced by users and residents as a whole would, through the construction and initial operation periods, be negligible to very-small in magnitude.

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
	proposals within views towards the Site.		There would be few adverse impacts arising from construction activities, and any that are apparent would be mitigated by sensitive construction methods and by the proposed structural planting. The ambient lighting emitting from the operation of the Scheme would be visible in one direction from Aldington Church but this would not alter the balance and make-up of the visual experience as a whole or become the defining element in views given the maintenance of an open and un-developed outlook in the majority of these. As such the effect is considered not-significant.
Users and residents of Brabourne	*Construction:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	- Proposed substantial 25-75m wide scalloped-edged native species tree belts and woodland blocks would be planted along the Site's northern boundary within Site-Specific LCArea 01 to assist in visually integrating the development into its setting. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - The placement of the proposed tallest development blocks within Site-specific LCArea 05 on the lowest part of its northern side, away from the southern boundary of the Site and from the upper slopes of the greensand ridge.	**AS1** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS2** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate/high sensitivity. **NOT SIGNIFICANT** The users and residents of Brabourne have a moderate sensitivity to the likely construction and operational impacts of the Scheme. The change experienced by users and residents as a whole would, through the construction and initial operation periods, be small to very-small in magnitude. There would be adverse impacts arising from construction activities, but these would be tempered by sensitive construction methods and proposed separation and structural planting. The built-form of the Scheme would be visible during its operation but would not alter the balance and make-up of the visual experience as a whole or become the defining element in views given the small proportion of this affected. Views from the settlement would on the whole retain their open and un-developed outlook. As such the effect is considered not-significant.
Users and residents of Sellindge	*Construction:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of residents and users of this settlement arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	- Proposed substantial 25-75m wide scalloped-edged native species tree belts and woodland blocks would be planted along the Site's northern boundary within Site-Specific LCArea 01 to assist in visually integrating the development into its setting. - The positioning of the proposed local centre upon the brow of higher land within Site-specific LCArea 09 making visually apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, and so that it is not visually perceived simply as 'sprawl'. Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting and to reinforce the existing defensible edge created by the railway.	**AS1** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** The users and residents of Sellindge have a moderate/low sensitivity to the likely construction and operational impacts of the Scheme. The change experienced by users and residents as a whole would, through the construction and initial operation periods, be small to very-small in magnitude. There would be adverse impacts arising from construction activities, but these would be tempered by sensitive construction methods and proposed separation and structural planting. The built-form of the Scheme would be visible during its operation but would not alter the balance and make-up of the visual experience as a whole or become the defining element in views given their existing residential nature and the maintenance of an open and un-developed outlook in the majority of these. As such the effect is considered not-significant.

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
Individual Properties in the environs of the site, outside of the identified settlements (paragraph 12.3.273)	*Construction:* Direct effects upon the visual experience of residents these properties arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of residents these properties arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	- Proposed substantial 20-30m wide native species tree belts and woodland blocks would be planted along the western boundary of the Site through Site-specific LCArea 02 to assist in protecting the amenity of Harringe Court and Harringe Cottages. - 10-20m wide proposed native species tree belts would be aligned north-south dividing the Development blocks within Site-specific LCArea no.3. to assist in protecting the amenity of Harringe Court and Harringe Cottages A proposed 150m wide open space buffer around the residual estate of Otterpool Manor would be created to conserve the farmstead's immediate rural setting. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCAreas 03, 05 and 09 to assist in protecting the amenity of the individual properties of Otterpool Manor, Upper Otterpool, Barrow Hill Farm, Little Greys and Twin Chimneys. - An informal country park would be created with native tree, scrub and hedgerow planting, and tussocky grasslands which conserves the outlook from Upper Otterpool, and which retains elements of Site-specific LCArea' 10's semi-naturalised character. - A proposed 450m wide public open space, woodland block, sports pitch, allotment and tree belt buffer would be created between the southern edge of Newingreen and the nearest areas of proposed housing to assist in visually integrating the Development into its setting, reinforcing the existing defensible edge created by the Stone Street to the east and protecting the outlook from Berwick House.	**AS1** = **Moderate / Minor, adverse**: a moderate magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate, adverse**: a moderate/large magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** **AS3** = **Moderate / Minor, adverse**: a moderate magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** The residents of the individual properties identified have a moderate/low sensitivity to the likely construction and operational impacts. The effect experienced by residents as a whole would, through the construction period, be moderate in nature, but not significant insofar that the Development would not become the defining element across these, and any change would be temporary. At scheme completion the Development would moderately alter the overall balance and make-up of the visual experience, but no change would be overbearing or dominant. The effect would therefore be not significant. As the last sections of the Scheme's embedded green infrastructure design and mitigation measures become established the previous impacts would have reduced. A residual moderate/minor effect would occur, but one that is in neutral in nature, and not significant.
Users of Junction 11 of the M20 and the adjacent Service Station	*Construction:* Direct effects upon the visual experience of users of this highway and associated service area arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual experience of users of this highway and associated service area arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	- The positioning of the proposed local centre upon the brow of higher land within Site-specific LCArea 09, making visually apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, from Stanford and so that it is not visually perceived simply as 'sprawl'. - Planting of a 10-20m wide belt of native planting along the northern edge of Site-specific LCArea 09 to assist in visually integrating this part of the scheme into its setting beyond the Site to the north, and to reinforce the existing defensible edge created by the railway between the Development and Stanford - The majority of the existing mature trees around the existing racecourse buildings would be retained and 10-20m wide proposed tree belts would be planted along the northern boundary of the Site through Site-specific LCArea 13 to assist in visually integrating this part of the scheme into its setting, beyond the Site to the north, and to reinforce the existing defensible edge created by the railway between the Development and the Service Station.	**AS1** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a moderate of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, adverse**: a small magnitude of change to a landscape receptor of moderate/low sensitivity. **NOT SIGNIFICANT** The users of unction 11 of the M20 and the adjacent Service Station have a moderate/low sensitivity to the likely construction and operational impacts of the Scheme. The change experienced by users as a whole would, through the construction and initial operation periods, be small to moderate in magnitude. There would be adverse impacts arising from construction activities, but these would be tempered by sensitive construction methods and structural planting. The built-form of the Scheme would be visible during its operation but would only moderately alter the balance and make-up of the visual experience as a whole. It would not become the defining element in views from this area given the existing built-form and infrastructure in the outlook in the majority of these. As such the effect is considered not-significant.
Users of roads through the Site including the A20, Stone Street and Otterpool Lane	*Construction:* Direct effects upon the visual experience of users of these highways arising from the introduction of new built form, lighting, movement and	- A proposed 150m wide open space buffer around the residual estate of Otterpool Manor would be created to conserve the farmstead's immediate rural setting, and conserve publicly accessible views out from this area to the North Downs escarpment. - The positioning of the proposed local centre upon the brow of Barrow Hill within Site-specific LCArea 03, and upon the brow of higher land within Site-specific LCArea 09 making visually	**AS1** = **Moderate, adverse**: a moderate magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Major, adverse**: a large of change to a landscape receptor of moderate sensitivity.

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
	green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual Direct effects upon the visual experience of users of these highways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, and so that it is not visually perceived simply as 'sprawl'. - 15-25m wide proposed tree belts would be planted along the southern edge of this Site-specific LCArea to assist in visually integrating the Development into its setting, and to create better definition between it and the parkland estate of Port Lympne Animal Park. - 10-20m wide proposed native species tree belts would be aligned north-south dividing the Development blocks within Site-specific LCArea no.3. to assist in visually integrating them into its setting. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03, 05 and 09 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - The conservation of the character of Stone Street through Westenhanger as an intimate lane and the planting of a 10m wide planted belt along its eastern edge to reduce the visual effect of the overall Development upon users of the road	**SIGNIFICANT** **AS3** = **Moderate, adverse**: a moderate magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** The users of these routes have a moderate sensitivity to the likely construction and operational impacts. The effect experienced by users as a whole would, through the construction period, be moderate in nature, but not significant insofar that the Development would not become the defining element across these. By scheme completion the Development would substantially alter the overall balance and make-up of the visual experience, and therefore is considered significant. As the last sections of the Scheme's embedded green infrastructure design and mitigation measures become established the previous changes would have reduced in nature and the visual experience for users would be one of new landscape-lined routes overlooking a mixture of open spaces, naturalised areas, woodland and built form. A residual moderate adverse effect from the Development would occur, but not one that is defining or dominating, and there not-significant.
Users of roads within 0-2km of the Site including Hythe Road, Stone Street, Aldington Road, Harringe Lane, Kennet Lane	*Construction:* Direct effects upon the visual experience of users of these highways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site. *Operation:* Direct effects upon the visual Direct effects upon the visual experience of users of these highways arising from the introduction of new built form, lighting, movement and green infrastructure proposals within views towards the Site.	- Proposed substantial 20-30m wide native species tree belts and woodland blocks would be planted along the Site's western boundary within Site-specific LCAreas 01, 02 to assist in visually integrating the Development into its setting, to reinforce the existing defensible edge of Harringe Lane, and to provide a defensible edge along this side of the overall proposed Development. - Views to the North Downs escarpment from the upper areas of Site-specific LCArea 02 (outside of the Site boundary) over the top of proposed structural planting, particularly between Harringe Lane and Springfield Wood, from PRoW HE302 have been retained. - 10-20m wide proposed native species tree belts would be aligned north-south dividing the Development blocks within Site-specific LCArea no.3. to assist in visually integrating them into its setting. - The positioning of the proposed local centre upon the brow of Barrow Hill within Site-specific LCArea 03, and upon the brow of higher land within Site-specific LCArea 09 making visually apparent the planned pattern of a nucleated settlement so that a clear understanding of its purpose is possible, and so that it is not visually perceived simply as 'sprawl'. - Existing field boundaries throughout would be strengthened with proposed native tree and hedgerow vegetation, and 10-20m wide proposed native species tree belts would be planted to divide Development blocks in Site-specific LCArea 03, 05, 09 and 10 to assist in visually integrating them into their setting, and which also restores a stronger landscape pattern. - Throughout Site-specific LCArea 10 10-20m wide proposed native species tree belts would be planted between development blocks through the centre and alongside of the East Stour River tributary, to assist in visually integrating this part of the scheme into its setting. - A proposed 450m wide public open space, woodland block, sports pitch, allotment and tree belt buffer would be created between the southern edge of Newingreen and the nearest areas of proposed housing to assist in visually integrating the Development into its setting, reinforcing the existing defensible edge created by the Stone Street to the east. - The boundaries to Site-specific LCArea 11 (including at its entrance off Otterpool Lane) would be strengthened with woodland blocks, proposed native tree and hedgerow vegetation and 20m wide native species tree belts to assist in visually integrating this part of the scheme into its setting. These belts would also restore a stronger landscape pattern throughout this Site-specific LCArea and ameliorate existing views to the Lympne Industrial Estate. - A proposed 150m minimum wide public open space, allotment, woodland block, and tree belt buffer would be created between the B2067 Aldington Road and the nearest areas of proposed	**AS1** = **Minor / Moderate, adverse**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS2** = **Moderate / Minor, adverse**: a small of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** **AS3** = **Minor / Moderate, neutral**: a very small magnitude of change to a landscape receptor of moderate sensitivity. **NOT SIGNIFICANT** The users of these routes have a moderate sensitivity to the likely construction and operational impacts. The effect experienced by users as a whole would, through the construction period, be very small in nature, would not become the defining element in the overall visual experience and therefore a judge to be not-significant. By scheme completion the Development would be more apparent but would not alter the overall balance and make-up of the visual experience as a whole, would not become the defining element in the overall visual experience and therefore is considered significant. As the last sections of the Scheme's embedded green infrastructure design and mitigation measures become established the previous impacts would have reduced. A residual minor/moderate effect would occur, which is judged to be not significant.

Receptor	Potential Significant Effect	Embedded Design & Mitigation Measures	Residual Effect Significance
		housing to assist in reducing the visual effect on users of the road where it passes to the south of the Site.	

12.1 References

Reference	Title
Ref 12.1	Landscape Institute and the Institute of Environmental Assessment and Management (2013), *Guidelines for Landscape and Visual Impact Assessment (Third Edition)*, Routledge, London
Ref 12.2	HMSO. (2012); *European Landscape Convention;* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/236096/8413.pdf; Accessed on 13 Dec 2018
Ref 12.3	Folkstone and Hythe District Council (2019), Submission Draft (Regulation 19) Core Strategy Review, Folkstone and Hythe District Council
Ref 12.4	Aecom (2017); *Shepway District High Level Landscape Appraisal*
Ref 12.5	Ashford Borough Council (2014); *Local Plan Saved Policies – Updated June 2014*, Ashford Borough Council
Ref 12.6	Ashford Borough Council (2017); *Ashford Submission Local Plan 2030 (December 2017)*, Ashford Borough Council
Ref 12.7	Ministry of Housing, Communities & Local Government; *Planning Practice Guidance*; https://www.gov.uk/government/collections/planning-practice-guidance; Accessed: 13th December 2018
Ref 12.8	Landscape Institute; GLVIA3 – Statements of clarification; https://www.landscapeinstitute.org/technical-resource/glvia3-clarifications/; Accessed: 13th December 2018
Ref 12.9	Natural England (2014): *An Approach to Landscape Character Assessment*
Ref 12.10	Kent County Council (2005/6 & 2007); *The Kent Design Guide*
Ref 12.11	Kent Downs AONB Unit (2003); *Kent Downs Landscape Design Handbook*
Ref 12.12	Kent Downs AONB Joint Advisory Committee (2014); *Kent Downs Area of Outstanding Natural Beauty Management Plan (2014-2019)*
Ref 12.13	Countryside Commission (1995); *Landscape Assessment of the Kent Downs AONB (CCP479)*
Ref 12.14	Shepway District Council (2011); *Shepway Green Infrastructure Report*
Ref 12.15	Fiona Fyfe Associates Ltd. (2016): *Romney Marsh Local Character Assessment*
Ref 12.16	Institution of Lighting Professionals (2011); *Guidance Notes for the Reduction of Obtrusive Light GN01:2011*
Ref 12.17	Halcrow Group Ltd. & Hamilton-Baillie Associates (2009); *Kent Downs AONB Rural Streets and Lanes Design Handbook*, Kent Dows AONB Unit
Ref 12.18	Countryside Agency (2001); Areas of Outstanding Natural Beauty: A guide for AONB Partnership members (CA24)
Ref 12.19	Kent Downs AONB Joint Advisory Committee (2018); *Kent Downs Area of Outstanding Natural Beauty Setting Position Statement*
Ref 12.20	Aecom (2016); *Shepway District Growth Options Study: High Level Options Report*
Ref 12.21	Aecom (2016); *Shepway Strategic Growth Options Report, 2017 'Phase Two Report'*
Ref 12.22	Ashford Borough Council (2011); *Landscape Character*, Ashford Borough Council
Ref 12.22	Ashford Borough Council (2014); *Dark Skies SPD*, Ashford Borough Council
Ref 12.23	Forestry Commission (2016), National Forest Inventory Woodland England 2016 Interim; https://data.gov.uk/dataset/2aee3f8b-9a01-4a8e-be6d-282c7d295060/national-forest-inventory-woodland-england-2016-int; Accessed: 13th December 2018
Ref 12.24	Landscape Institute (2011); *Practice Advice Note, Photography and photomontage in Landscape and Visual Impact Assessment. Advice Note 01/11*
Ref 12.25	Landscape Institute (2018), Photography and Photomontage in Landscape and Visual Impact Assessment Technical Guidance Note Public Consultation Draft 2018-06-01, https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2018/06/draft-tin-2018-XX-photography-photomontage-lvia.pdf, Accessed 13th December 2018
Ref 12.26	Landscape Institute (2017); *Visual Representation of Development Proposals - Technical Guidance Note 02/17 (31 March 2017) https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2016/01/02-17-Visual-Representation.pdf,* accessed 13th December 2018
Ref 12.27	Natural England (2014), *National Character Area Profiles*: '*NCA 120: Wealden Greensand*'; '*NCA 119: North Downs*'; and '*NCA 123: Romney Marshes*'
Ref 12.28	Oxford Archaeological Unit (2001), *Kent Historic Landscape Characterisation*, Kent County Council & English Heritage
Ref 12.29	Folkestone & Hythe District Council (2018); https://www.folkestone-hythe.gov.uk/planning-policy/local-plan/places-policies/evidence
Ref 12.30	Studio Engleback (2005), *Ashford Landscape Character Study*, Ashford Borough Council
Ref 12.31	Jacobs (2009), *Ashford Landscape Character Assessment*, Ashford Borough Council
Ref 12.32	Countryside Commission (1995), *The Kent Downs Landscape, CCP 479*, Kent County Council and Countryside Commission
Ref 12.33	Campaign for the Protection of Rural England: http://nightblight.cpre.org.uk/maps/; accessed 13th December 2018
Ref 12.34	Kent County Council; *Kent Landscape Information System – Interactive Map*; http://webapps.kent.gov.uk/KCC.KLIS.Web.Sites.Public/ViewMap.aspx; Accessed: 13th December 2018
Ref 12.35	Folkestone & Hythe District Council (2018), Heritage Strategy, https://www.folkestone-hythe.gov.uk/planning-policy/local-plan/places-policies/evidence
Ref 12.36	Conservation Architecture & Planning (2006), *Conservation Area Appraisal*, Shepway District Council
Ref 12.37	https://www.folkestone-hythe.gov.uk/media/3115/Link-Park-SPD/pdf/Link_Park_SPD.pdf
Ref 12.38	The Ash Project; https://www.theashproject.org.uk/ (accessed on 13th December 2018)
Ref 12.39	Kent County Council; https://www.kent.gov.uk/__data/assets/pdf_file/0003/75801/Ash-Dieback-survey-data.pdf, (accessed on 13th December 2018)
Ref 12.40	Joint Nature Conservation Council (2013); '*The Potential Ecological Impact of Ash Dieback*'

13 Noise and Vibration

13.1 Introduction

13.1.1 This Section of the ES assesses the potential impacts associated with the construction and operation of the proposed Development with regard to noise and vibration. The section outlines the regulatory and planning policy frameworks used to consider impacts and feasibility, the methodologies used to assess effects, the baseline noise and vibration conditions both current and future, along with proposed mitigation measures that could be implemented and any resulting residual noise and vibration effects.

13.1.2 The assessments undertaken within the scope of this section will consider the following aspects of the Development:

- The potential noise and vibration impacts that may occur during the construction phase of the Development;
- The potential operational phase noise and vibration impacts that the proposed Development may have upon existing noise sensitive receptors within the area, including changes in road traffic noise and alignment (realignment of the A20) on the wider road network off the site; and,
- The potential Operational Phase noise and vibration impacts of the prevailing noise climate of the area upon sensitive aspects of the proposed Development.

Relevant Aspects of the Proposed Development

13.1.3 The proposed Development would include the following land use types across the site, with further details presented within Section 4.

- Residential Land Use;
- Employment and Retail Land Uses;
- Educational facilities;
- Allotments and public green space;
- Health facilities;
- Transport Interchange and access provision, and;
- Associated new and improved road links.

13.1.4 The proposed Development as contained in the Outline Planning Application comprises 8,500 homes and associated uses. In addition, the Framework Masterplan comprises a total of 10,000 homes. The Development comprises the creation of a garden town with significant green amenity space with the concept created with the guiding principles set-out in the Otterpool Charter. Included in the project are sensitive receptors in the form of residential dwellings, schools, medical centres, community facilities, hotel and conference provision. Each of these types of sensitive receptors have varying requirements for protection from noise and vibration impacts. As such there are specific technical guidance, standards and local and national standards that are applicable to each and have been considered in this assessment.

13.1.5 Moreover, within the proposed development are facilities with the potential to create adverse noise effects upon existing and new noise receptors surrounding the site which are predominantly residential in nature; these include the new business park uses which form part of the proposed Development and are considered in this assessment.

Legislation, Policy and Guidance

13.1.6 The likely significant effects of the proposed Development have been considered in accordance with relevant UK legislation, policy and guidance with regard to noise and vibration as listed below; further details regarding the content of each listed document is presented in Appendix 13.1.

Legislation

13.1.7 The applicable legislative framework for this Section is listed as follows:

- The Town & Country Planning (Environmental Impact Assessment) Regulations 2017;
- The Control of Pollution Act 1974
- The Environmental Protection Act 1990
- The Noise Insulation Regulations 1975
- The Building Regulations 2010

National Policy

13.1.8 The national policy documents relevant to this Section are listed as follows:

- National Planning Policy Framework (NPPF), 2018;
- Noise Policy Statement for England (NPSE), 2010, and;
- National Planning Practice Guidance: Noise (PPG) 2014.

Local Policy

13.1.9 Specific local policies relating noise and vibration within this area of Kent, which falls under the jurisdiction of Folkestone and Hythe District Council (FHDC), are contained within the Emerging Core Strategy Review (2019) and are presented as follows:

- **Policy SS7**: Folkestone and Hythe District Council Core Strategy Review (2018) - New Garden Settlement – Place Shaping Principles (1) A landscape-led approach

  i) planting and habitat creation should also be used to provide distance buffers between the M20/High Speed transport corridor for noise and air quality mitigation purposes.

- **Policy SS8:** Folkestone and Hythe District Council Core Strategy Review (2018) - New Garden Settlement - Sustainability and Healthy New Town Principles (2) A Healthy New Town

  ii) noise and air pollution mitigation measures such as distance buffers between the M20/High Speed 1 transport corridor and the development, incorporating landscaping within the buffers designed to integrate with the wider green infrastructure network.

Technical Guidance

13.1.10 The following is a list of the relevant technical guidance which has been referenced during the consideration of noise and vibration impacts associated with the proposed Development.

- Guideline for Environmental Noise Impact Assessment, Institute of Environmental Management and Assessment (IEMA)
- World Health Organisation (WHO): Guidelines for Community Noise 2000;
- World Health Organisation (WHO) Night Noise Guidelines for Europe 2009;
- BS 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures;
- BS 7445-2:1991 Description and measurement of environmental noise. Guide to the acquisition of data pertinent to land use;
- BS 8233:2014: Guidance on sound insulation and noise reduction for buildings;
- BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites; Part 1 Noise;
- BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites; Part 2 Vibration;

- Calculation of Road Traffic Noise (CRTN) 1988;
- Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 7 Noise and Vibration (HD213/11);
- BS 7385-2:1993 Evaluation and measurement for vibration in buildings. Guide to damage levels from ground borne vibration;
- BS 6472-1:2008: Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting;
- BS 4142:2014 Methods for rating and assessing industrial and commercial sound;
- Professional Practice Guidance on Planning and Noise – New Residential Development (ProPG) 2017;
- Building Bulletin 93 (BB93) Acoustic Design of Schools – Performance Standards; and,
- Health Technical Memorandum 08-01 (HTM08-01): Acoustics.

Consultation and Scoping

Consultation

13.1.11 As outlined in Section 4, a Scoping Report was submitted to a range of key statutory and non-statutory bodies, including Folkestone & Hythe District Council.

13.1.12 This was supplemented with further consultation undertaken by the Arcadis Acoustics team, specifically with the Environmental Protection Department of the Local Planning Authority, Folkestone & Hythe District Council (FHDC), between November 2016 and September 2018, with regard to noise and vibration issues.

13.1.13 Table 13-1 provides a summary of consultation undertaken to date that has informed this Section of the ES and how this has been addressed.

Table 13-1 Summary of Consultation

Consultee/Contact/Date	Summary of Consultee Issue	How Addressed?
Mr Wai Tse, FHDC EHO 14.07.17	FHDC confirmed acceptance for the timetable for the surveys and agreed that the holiday period would not significantly affect the surveys.	Survey scheduled with option of elements being carried out during the school holidays if necessary * (In the event this was not required and all surveys were undertaken outside of school holiday periods)
Mr Wai Tse, FHDC EHO 12.07.17	FHDC contacted by email regarding the timetable for the proposed noise and vibration surveys. Specifically, it was proposed by Arcadis noise team that the surveys would extend into the school holiday period at which time it was considered that the holidays would have little influence upon the baseline surveys.	-
Mr Wai Tse, FHDC EHO 26.05.17	FHDC confirmed his agreement with the proposed methodology and monitoring points.	-
Mr Wai Tse, FHDC EHO 25.05.17	FHDC contacted by email seeking agreement for the proposed methodology for a baseline noise and vibration survey provided with a plan showing proposed monitoring positions containing minor revisions following minor changes to the scheme Masterplan and accommodating FHDC request to have a monitoring location in proximity to the Lympne industrial estate that will be included in the assessment.	
Mr Wai Tse, FHDC EHO 19.12.16	FHDC confirmed agreement with the proposed methodology and monitoring points but raised an issue in relation to the Lympne industrial estate located to the south of the proposed Development and requested that consideration should be given to this aspect in the assessment.	Survey methodology amended to take account of EHO comments.
Mr Wai Tse, FHDC EHO 22.11.16	FHDC contacted by email seeking agreement for the proposed methodology for a baseline noise and vibration survey and provided with a plan showing proposed monitoring positions.	-

Scoping

13.1.14 In addition to the direct consultation with FHDC Table 13-2 provides a summary of consultee responses specific to noise and vibration contained within the formal Scoping Opinion, and the corresponding location in the ES where they are addressed.

Table 13-2 Summary of EIA Scoping Opinion

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
Mr Wai Tse, FHDC EHO 20.09.18	Although the noise and vibration monitoring schedule was agreed with the EHO prior to production of the scoping request, the formal council response considered that there were insufficient noise monitoring locations across the development Site. FHDC confirmed acceptance of subsequent proposals from Arcadis to undertake additional baseline noise monitoring. FHDC agreed that the number of additional monitoring locations and durations proposed were acceptable.	The revised noise monitoring survey with additional monitoring locations are as described in Section 13.2.

The Study Area

13.1.15 For the purposes of this assessment, the study area has been defined to include identified sensitive receptors that are located up to 600m from the proposed Development.

13.1.16 For the assessment and consideration of site suitability for residential, educational, open space and commercial elements (sensitive uses) as indicated on the framework Masterplan, the study area has been defined to include the development site itself along with identified existing sensitive receptors located both within and beyond the Development Site within the area shown on the Figure in Appendix 13.2.

13.1.17 For the assessment of noise resulting from the primary road link, and changes to traffic flows and patterns in the area resulting from the proposed development, the road network considered has been specified by the traffic data provided covering the main road links in the area, defined by the traffic team in accordance with appropriate DMRB guidance.

Methodology for Establishing Baseline Conditions

13.1.18 The establishment of baseline noise and vibration conditions has been based upon Standards and Technical Guidance identified above and the following:

- Initial desktop studies and consideration of mapping of the local area;

- Consultation with FHDC relating to locations, durations, scope and methodology, and;
- Quantification of the baseline and ambient noise and vibration climate in the vicinity of the proposed development by means of site surveys for current conditions and computer modelling for future scenarios post development.

Forecasting the Future Baseline

13.1.19 The establishment of future baseline noise conditions have been based upon the prediction procedures as detailed within the Standards and Technical Guidance identified above.

13.1.20 The approach adopted for the forecasting of the future baseline considers the following aspects of the project:

- Construction phase;
- Operational phase – noise levels variations due to traffic flow changes;
- Operational phase – new development noise sources.

13.1.21 For each of the above, noise and vibration baseline assessments have been completed based upon the location of both existing sensitive receptors and new sensitive receptors introduced as part of the Development.

13.1.22 With regards to the traffic assessment in the operational phase; an assessment has been based upon traffic flows for 2046. This is the completion year for the whole 10,000 homes of the Framework Masterplan, with 2044 being the completion year for the proposed Development which forms the basis of this Application. As such, the maximum amount of development associated with Otterpool Park has been assessed in this Section, providing a worst case. Additionally, interim years are also considered, which include 2023 after an initial phase of residential dwellings are scheduled for construction and 2029 when construction reaches its peak alongside occupation of the early phases of the Development.

Defining the Importance/Sensitivity of Resource

13.1.23 Receptors in and around the site have been classified according to their sensitivity into high, medium and low categories prior to the assessment of noise and vibration impacts. The impact assessment for noise and vibration has considered the likely effects upon existing sensitive receptors in the vicinity of the proposed Development up to a position away from the development at which point any potential impacts are determined to be negligible.

13.1.24 Table13-3 below presents the methodology for assessing the sensitivity of receptors

Table 13-3 Methodology for determining receptor sensitivity

Sensitivity	Examples of Receptor / Resource	Type of receptor
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character	Hospices, places of worship, historic buildings, residential dwellings and schools, medical facilities
Moderate	The receptor/resource has moderate capacity to absorb change without significantly altering its present character or is of high importance.	Residential dwellings, schools, hospitals and recreational areas, bars/cafes/restaurants where external noise may be intrusive
Low	The receptor/resource is tolerant of change without detriment to its character	Commercial uses with existing high noise levels, night clubs

13.1.25 Key high sensitivity receptors to noise and vibration include residential properties, hospitals and schools. The nearest such receptors are present either within or close to the site boundary at Lympne, Sellindge, Newingreen, Westenhanger; along with individual dwellings and farms within and around the development site area.

13.1.26 These and other nearby receptors would be considered as well as newly created receptors within the proposed Development.

Methodology for Assessing Impacts

Impact Characterisation

13.1.27 The methodology for assessing noise and vibration impacts as a result of the proposed Development has been based upon the Standards and Technical Guidance identified above.

13.1.28 The assessment of impact is based on the following procedure:

- Consideration of construction noise and vibration impacts;
- Consideration of the suitability with regard to noise of the areas identified for Sensitive Land Uses (residential, hotel, educational and healthcare);
- Consideration of appropriate noise controls with regard to areas of the site identified as having the potential to adversely affect the noise climate of the area including commercial, community, retail and industry land uses;
- Consideration of the potential changes in road traffic noise in the wider area as a result of changes in traffic flow resulting from the proposed Development;
- Consideration of mitigation measures where necessary and appropriate; and,
- Consideration and assessment of residual effects.

13.1.29 In addition, consideration has been given to the potential cumulative effects of noise associated with other committed schemes and developments in the area, and how this could affect the noise profile of the area. This has included increases in traffic flows around the area as a result of permitted developments.

13.1.30 Each of these potential aspects of the proposed Development are considered and assessed separately within the scope of this Section.

Assessing Significance

13.1.31 This section of the Section defines significance criteria associated with the assessment and consideration of noise and vibration associated with the different facets of the overall Development as proposed.

13.1.32 The consideration of noise and vibration impacts and how they affect a particular development/receptor is contained within the NPPF, NPSE and PPG. This is supported by a suite of technical guidance and British Standard documents which relate specifically to noise and vibration.

13.1.33 Under the NPPF (and in line with the NPSE), planning policies and decisions should aim to:

- Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
- Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;
- Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established.
- Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

13.1.34 The NPSE serves to provide policy on the need to avoid and mitigate adverse noise effects on health arising from and impacting on new development.

13.1.35 The NPSE attends to three types of noise:

- ‘Environmental noise’ which includes noise from transportation sources

- ‘Neighbour noise’ which includes noise from inside and outside people’s homes
- ‘Neighbourhood noise’ which includes noise arising from within the community such as industrial and entertainment premises, trade and business premises, construction sites and noise in the street.

13.1.36 As a result of the nature and complexity of this development proposal, including the multi-faceted nature of the scheme both Environmental noise and Neighbourhood noise could be apparent.

13.1.37 In line with the aims determined in the NPPF, the NPSE determines three overarching objectives;

- an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
- a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities’ health, social and cultural well-being; and
- an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

13.1.38 The explanatory note to the NPSE introduces three concepts relating to the adverse impacts of noise:

- ‘NOEL – No Observed Effect Level: This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to noise.’
- ‘LOAEL – Lowest Observed Adverse Effect Level: This is the level above which adverse effects on health and quality of life can be detected.’
- ‘SOAEL – Significant Observed Adverse Effect Level: This is the level above which significant adverse effects on health and quality of life occur.’

13.1.39 The NPSE acknowledges that the values for NOEL, LOAEL and SOAEL are likely to vary depending on the noise source and environment; and that at present there are no defined numerical values to allow flexibility within the policy until further evidence and guidance is presented.

13.1.40 PPG: Noise summarises the NOEL, LOAEL and SOAEL concepts introduced by means of a noise exposure hierarchy, based on the likely average response to noise, as set out in below:

Table 13-4 Hierarchy of Noise Exposure Responses

Perception	Examples of Outcomes	Effect Level	Action
No Observed Effect Level (NOEL)			
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

13.1.41 None of the aforementioned policy documents go as far as to specify appropriate noise limits/acceptable noise levels for given development types. The NPSE states on this subject that the vision of the Policy seeks to ‘Promote good health and good quality of life’ with regard to noise, qualifying that the ‘use of “promote” and “good” [in said statement] recognises that it is not possible to have single objective noise-based measure that is mandatory and applicable to all sources of noise in all situations’. The Policy advocates a method that specifies ‘specific local limits for specific developments’.

13.1.42 Therefore, it is necessary for representation to be made with regard to noise levels/limits that are applicable to any specific development type and situation. Reference is therefore made to the Policy objectives whilst relating this to an appropriate assessment mechanism allowing decisions and conclusions to be made with regard to potential effects and perception of noise, ultimately concluding the impact this would have and the necessity for mitigation.

13.1.43 Significant impacts are therefore deemed to occur if the following conditions are met/breached for each of the given phases of the development.

Construction Noise

13.1.44 Significant effects are deemed to occur if noise generated by construction operations exceeds the calculated noise limits for the locality based upon the example criteria of BS5228-1 2009(+A1:2014).

13.1.45 For the construction noise assessment, an approach commonly used within the UK has been considered with regard to the setting of LOAEL and SOAEL values for construction noise at residential properties. This is presented within the table below.

Table 13-5 Levels of LOAEL and SOAEL assumed for construction noise

Time period	LOAEL $L_{Aeq,T}$ dB	SOAEL $L_{Aeq,T}$ dB
Daytime (07:00 – 19:00 Monday to Friday and Saturdays 07:00 – 13:00)	60	75
Evening and Weekends (19:00 – 23:00 Weekdays, 13:00 – 23:00 Saturday and 07:00 – 23:00 Sunday)	55	65
Night (23:00 – 07:00 Monday to Sunday)	45	55

13.1.46 Where the existing ambient noise level already exceeds the level specified to represent a SOAEL as stated in the table above, then a significant effect would be derived on the basis that construction noise should not increase the ambient noise climate by more than 3dB. A SOAEL is therefore taken to be equivalent to the existing ambient noise level.

Construction Vibration

13.1.47 Significant effects are deemed to occur if Peak Particle Velocity (PPV) levels exceed 10mms^{-1} as stated within BS 5228 as the level at which 'Vibration is likely to be intolerable for any more than a very brief exposure to this level'.

13.1.48 For the construction vibration assessment, the following has been considered with regard to the setting of LOAEL and SOAEL values for construction generated vibration at residential properties.

Table 13-6 Construction vibration significance thresholds

Vibration Level (PPV)	Effect	Significance	Observed Adverse Effect Level
Vibration less than 0.3mms^{-1}	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.	Neutral	NOEL
Vibration between 0.3 and 1.0mms^{-1}	Vibration might be just perceptible in residential environments	Neutral/Slight adverse	
Vibration between 1.0 and 10.0mms^{-1}	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.	Moderate adverse	LOAEL
Vibration greater than 10mms-1	Vibration is likely to be intolerable for any more than a very brief exposure to this level.	Large Adverse	SOAEL

Operational Traffic Noise

13.1.49 Typically, within the UK, noise associated with road traffic sources is calculated in accordance with the methodology of CRTN, and then assessed in accordance with the Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 7 'Noise and Vibration' (HD213/11).

13.1.50 The DMRB provides classification for the magnitude of changes in road traffic noise in terms of:

- The short term; the perception of the immediate change in noise upon opening of the scheme; and,
- The long term; the perception of the change in noise in the years following the opening of the scheme, accounting for habituation to noise.

13.1.51 The DMRB defines the smallest perceptible changes in noise (Threshold Values) to be 1dB(A) in the short term, increasing to 3dB(A) in the long term as a result of the afore mentioned habituation effects. Further to this, changes in road traffic noise are referenced to a semantic rating scheme within the DMRB to conclude the potential for resulting impacts. This semantic rating scheme is presented below for both short and long-term comparisons.

Table 13-7 Construction vibration significance thresholds

Short term impact classification	Change, road traffic noise level	Long term impact classification
No Change	0dB	No Change
Negligible	> 0dB and < 1dB	Negligible
Minor	≥ 1dB and < 3dB	

Short term impact classification	Change, road traffic noise level	Long term impact classification
Moderate	≥ 3dB and < 5dB	Minor
Major	≥ 5dB and < 10dB	Moderate
	≥ 10dB	Major

13.1.52 In addition, the significance of an environmental effect is determined by the interaction of the magnitude of the impacts and the sensitivity of the receptors. The methodology for assessing the magnitude of the impacts has been presented in the table above. The Effect Significance Matrix is set out in the Table below.

Table 13-8 Effects Significance Matrix

Magnitude	Sensitivity		
	High (Residential)	Moderate (Commercial/retail)	Low (industrial)
Major	Major Adverse/Beneficial	Major – Moderate Adverse/Beneficial	Moderate – Minor Adverse/Beneficial
Moderate	Major-Moderate Adverse/Beneficial	Moderate – Minor Adverse/Beneficial	Minor Adverse/Beneficial
Minor	Moderate – Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor - Negligible
Negligible/No Change	Negligible/No Change	Negligible/No Change	Negligible/No Change

13.1.53 For the purposes of this assessment, daytime noise levels of a SOAEL and LOAEL relative to road traffic noise have been based upon the guidance provided in the Defra commissioned report *Possible Options for the Identification of SOAEL and LOAEL in Support of the NPSE*. The definitions of LOAEL and SOAEL used in the operational traffic noise assessment are presented below and are relative to the noise levels at sensitive receptors.

Table 13-9 Levels of LOAEL and SOAEL assumed for road and rail traffic noise

Time Period	Adverse effect level	L_{Aeq} noise level (dB)	L_{A10} noise level (dB)
Day	LOAEL	50	54*
	SOAEL	65	38*
Night	LOAEL	40	n/a
	SOAEL	55	n/a

*4dB correction to $L_{A1}0$ based on L_{Aeq} to L_{A10} of +2dB from BS8233:2014 *Guidance on sound insulation and noise reduction for buildings* and façade correction of +2.5dB rounded down.

**Aligned with Noise Insulation Regulations

13.1.54 This effect significance criteria for traffic noise forms the basis of the noise assessment presented within this Section for the off-site traffic noise changes attributable to the Development.

Operational Noise: Commercial, Industrial and Retail

13.1.55 Significant effects are deemed to occur if the mitigated operational BS4142:2014 'Rating' levels described in BS4142:2014 Methods for rating and assessing industrial and commercial sound exceeds the measured background noise level (L_{A90}) by more than +5dB.

13.1.56 For the operational noise assessment associated with the noise generating aspects of the development, the following has been considered with regard to the setting of NOEL, LOAEL and SOAEL values at noise sensitive residential receptors.

Table 13-10 Operational noise significance thresholds (noise generating aspects)

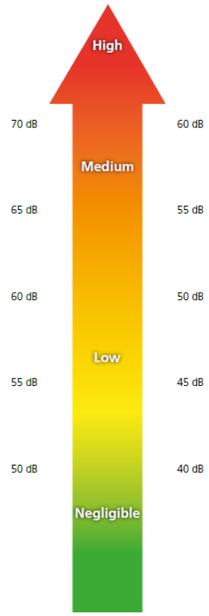
BS4142:2014 Assessment	Example Outcome	Noise Policy Statement England	Actions
Greater than L_{A90} – 10dB	No effect – not noticeable	NOEL	No specific measures required
Rating level of between L_{A90}-10dB and L_{A90} +/- 0dB	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.		
Rating level of between L_{A90} +/- 0dB and L_{A90} + 5dB	Noise can be heard and causes small changes in behaviour and/or attitude. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	LOAEL	Mitigate and reduce to a minimum
Rating Level of between L_{A90} + 5dB and L_{A90} + 10dB	The noise causes a material change in behaviour and/or attitude. Quality of life diminished due to change in the acoustic character of the area.	LOAEL	Mitigate and reduce to a minimum
Rating level of greater than L_{A90} + 10dB	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects.	SOAEL	Mitigate and reduce to a minimum

Operational Noise: Residential (including Hotel) Site Suitability

13.1.57 Significant effects are deemed to have occurred if the noise levels within the land parcels identified for residential end use exceed the following criteria based upon the NPPF, NPSE, ProPG, BS8233 and the World Health Organisation's Guidelines for Community Noise.

13.1.58 The table below presents a matrix assigning noise levels to Policy derived impacts. These levels can then be used for the assessment and consideration of residential suitability.

Table 13-11 Significance criteria – residential suitability

Noise Policy Statement England	Planning Practice Guidance - Noise	Assigned Noise Levels/Limits		Mitigation Strategy
		External Noise	Internal Noise	
SOAEL	Noticeable and very disruptive		Increasing scale of negative impact with increase in noise levels above the BS8233 internal design criteria values	Detailed mitigation required. Mitigate to a minimum
LOAEL	Noticeable and intrusive			Significant mitigation required. Mitigate to a minimum
	Noticeable and disruptive			
NOEL	Not noticeable		BS8233/WHO internal design criteria met	None required

13.1.59 Significant vibration effects are deemed to have occurred where vibration levels within residential portions of the Development are above the threshold values for a SOAEL for day and night-time periods as set-out in Table 13-12 below.

Table 13-12 BS6472 Vibration Dose Value Thresholds

Building/Location	Period	Threshold (mm/s$^{-1.75}$)	BS6472 Guidance	Significance of Effect
Residential Building	Day-time	≤ 0.2	Below threshold of low probability of Adverse Comment	NOEL
Residential Building	Night-time	≤ 0.1		
Residential Building	Day-time	0.2 to 0.4	Low probability of Adverse Comment	LOAEL
Residential Building	Night-time	0.1 to 0.2		
Residential Building	Day-time	0.4 to 0.8	Adverse Comment Possible	SOAEL
Residential Building	Night-time	0.2 to 0.4		
Residential Building	Day-time	0.8 to 1.6	Adverse Comment Probable	
Residential Building	Night-time	0.4 to 0.8		

NOTE – For offices and workshops, multiplying factors of 2 and 4 respectively should be applied to the above vibration dose value ranges for a 16-hour day.

Operational Noise: Public Open Spaces

13.1.60 Levels of LOAEL and a SOAEL should only be defined at residential receptors and therefore no such values have been defined for Public Open Spaces. Assessment and consideration of noise associated with areas of public open space would be considered in accordance with the external guidance of both the WHO and BS8233. Within BS8233 a level of between 50dB $L_{Aeq,\ T}$ and 55dB $L_{Aeq,T}$ is considered to be acceptable for external amenity depending on the local noise environment.

Operational Noise: Education Buildings Site Suitability

13.1.61 Again, as LOAEL and a SOAEL are concepts defined primarily for residential amenity, these are not specified relative to Educational Provision.

13.1.62 Significant effects are therefore deemed to have occurred where noise levels within the areas identified for educational provision have the potential to result in the exceedance of the room usage criteria for indoor ambient noise levels detailed within Building Bulletin 93: Acoustic Performance Standards for Schools.

Operational Noise: Healthcare Buildings Site Suitability

13.1.63 Again, as LOAEL and a SOAEL are concepts defined primarily for residential amenity, these are not specified relative to Healthcare Provision.

13.1.64 Significant effects are deemed to have occurred where noise levels within the areas identified for healthcare provision have the potential to result in the exceedance of the room usage criteria within Health Technical Memorandum 08-01 (HTM08-01): Acoustics.

Limitations and Assumptions

13.1.65 The limitations and assumptions applicable to the noise and vibration assessment of the proposed Development are presented and discussed below.

13.1.66 The baseline surveys were completed around the site between September 2017 and October 2018. Whilst fully agreed with Local Planning Authority prior to undertaking and utilising both short and longer term (up to five days) surveys the noise and vibration levels quantified can only ever represent a 'snapshot' in time of the noise and vibration climate during the specific periods monitored. However, it is considered the industry norm to assess and consider noise and vibration in this way for the purposes of assessment; and as comprehensive as possible baseline survey has been undertaken at the site to represent the noise climate as robustly as possible. Although it is qualified that any changes to the noise climate between the 2017/2018 survey dates and the publication of this ES will not be captured.

13.1.67 The noise assessment is based upon development areas identified on the Parameter Plans, and as such screening effects of the proposed building structures within the Development cannot be represented or considered. As such the assessment considers the absolute worst case of uninhibited noise propagation across all aspects of the site. The implementation of the massing of the proposed building structures would aid to arrest the passage of sound reducing noise into the central portions of the site much quicker than represented within the scope of this report. As such the assessment of site suitability is concluded to represent a worst-case consideration.

13.1.68 There are inherent limitations to the accuracy of the noise model created. The model assumes positive wind vectors and is reliant upon the accuracy of the data entered into the model including topographical details, noise levels of noise sources, traffic flow data etc. However, the information used is as accurate as was possible to reasonably source.

13.1.69 With regard to the proposed commercial, retail and industrial areas of the proposed Development the limitations of the study are presented below:

- At this early stage of the development process only indicative areas are identified within the regulatory plans for commercial and industrial end uses; end users and consequentially the noise profiles of these users have not been identified;

- Only areas have been identified on the Parameter Plans and no specific layouts proposed within these areas are available as this would depend upon user interest, requirements and uptake which cannot be determined at this time;
- The use classes proposed (such as Class A1 Shops and retail, A3 Food and drink, B1 Business, B2 General Industrial Use etc.) cover a myriad of potential users and as such noise generation profiles of end users cannot be assumed or concluded at this time.
- Assumptions have had to be made with regard to the future use of the local rail line and High Speed 1 line during the next 30 years in terms of locomotives and rolling stock, as well as the frequency of services provided. For the purposes of this assessment it is assumed that would be no louder than those operating at the time of the surveys and the frequency of services would also be similar to those currently offered.

13.1.70 With regards to the traffic assessment in the operational phase an assessment has been based upon traffic flows for 2046. This is the completion year for the whole 10,000 homes of the Framework Masterplan, with 2044 being the completion year for the proposed Development which forms the basis of this Application. As such, the maximum amount of development associated with Otterpool Park has been assessed in this Section, providing a worst case.

13.1.71 With regard to these limitations and assumptions, it is only possible to identify design criteria based upon acoustic guidance which could be attached to the proposed Development through suitably worded planning conditions. This would ensure that noise (and vibration) is considered as a key issue of the detailed design of the proposed Development once end users become identified.

13.2 Baseline

Existing Baseline

13.2.1 The following section outlines the baseline information obtained through desk studies, consultation and site surveys.

Noise Monitoring Survey

13.2.2 A desktop study relative to the proposed Masterplan indicated that the existing noise sources in the area of the Development site are anticipated to be associated with:

- Noise from road traffic using the M20 motorway just to the north of the Development site;
- Trains using the high-speed electrified rail line that connects London with continental rail networks via the Channel Tunnel (HS1). This railway lines crosses the northern part of the Development;
- The Lympne Industrial Estate located towards the southern part of the Development is likely to dominate the baseline noise environment within this part of the site.
- In addition to these specifically identified features, there is a general noise environment across the site that is influenced by road traffic on the local road network and general human activities such as farming and residential noise sources.

13.2.3 Following the desktop study of the area and potential sources, and in consultation with the Local Planning Authority EHO, a baseline noise survey regime was derived comprising of 16 number monitoring positions studies of both an unattended longer term and attended short term basis. This was completed to determine the existing noise climate across the proposed Development area, and to capture the likely dominant noise sources referred to above.

13.2.4 The noise monitoring locations for the survey are provided in Appendix 13.3 and account for the additional survey requirements agreed following the receipt of the formal Scoping Response from FHDC. The noise monitoring locations and durations were determined in consultation with the Environmental Health Officer (EHO) at Folkestone & Hythe District Council. The monitoring was planned on the basis of the following method:

- Longer term unattended surveys would be undertaken over a minimum period of five days to cover both the weekday and weekend periods. In total six number locations were considered in this manner; and
- Shorter term attended monitoring would be undertaken on the basis of a rotational attended 24hr weekday monitoring surveys. The principle of this would be that for a full 24hr period a selection of monitoring locations would be considered, changing location every 30 – 60 minutes. In total ten number of locations were considered in this manner over two separate 24hr periods.

13.2.5 Noise measurements have been completed using BS EN 61672-1 Class 1 compliant sound level analysers and baseline noise surveys have been completed in accordance with BS7455-1: 2003 '*Description and measurement of environmental noise - Part 1: Guide to quantities and procedures*' and BS7455-2: 1991 '*Description and measurement of environmental noise - Part 2: Guide to the acquisition of data pertinent to land use'*.

13.2.6 This dataset has been used to form the basis of the noise and vibration assessments to consider the suitability of the site for the proposed end use.

Noise Monitoring Results

13.2.7 The following suite of tables summarise the monitoring survey results for both the short-term and long-term survey locations, separated into daytime and night-time periods. It is reiterated that the survey positions are presented in Appendix 13.3. In addition, the full short term monitoring datasets are also available in Appendix 13.4. Longer-term data can be provided on request.

13.2.8 Within the presentation of the longer-term data, the typical 24hr daytime period has been divided into two discrete periods for assessment purposes, as outlined below:

- 16hr Daytime period: 07:00 to 23:00 hours; and,
- 8 hr Night-time period: 23:00 to 07:00 hours.

13.2.9 Within the information in the following tables "S" denotes a short-term measurement position and "L" a long term one. The location numbers quoted relate directly to those presented in Appendix 13.3.

Table *13-13 Short-term manned measurement: Summary levels NML1S Stone Street North*

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML1S	15th May 2018	12:55 – 13:55	59.9	75.5	60.7	55.2
	15th May 2018	16:40 – 17:40	59.5	67.5	60.8	57.4
	15th May 2018	21:00 – 22:00	55.6	67.6	57.5	52.5
	16th May 2018	00:50 – 1:50	54.4	79.5	56.6	47.3

Table 13-14 Short-term manned measurement: Summary levels NML2S Ashford Road

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML2S	15th May 2018	11:45 – 12:45	61.6	79.3	64.3	55.4
	15th May 2018	15:30 – 16:30	61.9	84.0	64.5	55.3
	15th May 2018	19:50 – 20:50	59.2	77.5	63.0	50.1
	16th May 2018	23:35 – 00:00	54.4	67.1	58.6	45.2
	16th May 2018	00:00 – 00:35	53.0	69.3	55.4	44.7

Table 13-15 Short-term manned measurement: Summary levels NML3S Folkes Wood Way

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML3S	15th May 2018	10:30 – 11:30	54.9	75.4	55.5	49.0
	15th May 2018	14:10 – 15:10	58.8	79.9	61.8	51.1
	15th May 2018	18:35 – 19:35	53.2	73.7	53.7	46.2
	15th May 2018	22:20 – 23:20	46.9	67.7	49.0	42.9
	16th May 2018	02:05 – 03:05	44.8	62.8	46.1	42.0

Table 13-16 Short-term manned measurement: Summary levels NML4S Somerfield Farm

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML4S (Daytime)	13th June 2018	12:15 – 13:15	47.3	63.3	48.6	43.0
	13th June 2018	15:20 – 16:20	48.6	62.9	50.8	43.0
	13th June 2018	18:30 – 19:30	49.5	66.2	51.5	42.5
NML4S* (After dark)	13th June 2018	21:40 – 22:40	45.1	51.5	46.8	42.1
	14th June 2018	01:00 – 02:00	38.3	50.8	39.5	35.1
	14th June 2018	04:15 – 05:15	48.4	61.0	50.7	41.2
NML4S	14th June 2018	07:20 – 08:20	51.5	63.9	52.1	48.4
	14th June 2018	10:20 – 11:20	52.6	64.9	54.6	49.0

*Survey location NML4S was different for the daytime and after dark survey periods. This was due to safety concerns in unlit areas, and to prevent headlight and noise disturbance to local residents by avoiding driving past the farm repeatedly after darkness had fallen. The location used after dark was considered to be entirely representative.

Table 13-17 Short-term manned measurement: Summary levels NML5S Harringe Brooks Wood

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML5S	13th June 2018	11:30 – 23:00	42.3	69.9	43.5	33.5
	13th June 2018	23:00 – 00:00	35.2	47.9	38.4	28.7
	14th June 2018	00:00 – 03:30	30.4	49.6	32.6	26.9
	14th June 2018	03:45 – 07:00*	48.9	74.1	45.9	33.6
	14th June 2018	07:00 – 11:45	45.6	72.5	47.4	38.1

*elevated noise levels recorded due to dawn chorus

Table 13-18 Short-term manned measurement: Summary levels NML6S East of Lympne Industrial Estate

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML6S	13th June 2018	14:00 – 15:00	44.0	59.0	46.9	37.4
	13th June 2018	16:40 – 17:40	43.9	55.1	47.0	37.6
	13th June 2018	19:50 – 20:50	41.8	55.4	44.5	34.0
	13th June 2018	23:05 – 00:00	34.3	56.3	36.4	28.0
	14th June 2018	00:00 – 00:05	34.0	47.0	33.4	28.0
	14th June 2018	02:25 – 03:25	38.6	60.9	37.2	26.6
	14th June 2018	05:30 – 06:30	42.5	61.6	44.8	34.6
	14th June 2018	09:00 – 10:00	52.1	74.2	52.7	46.5

Table 13-19 Short-term manned measurement: Summary levels NML7S Otterpool Lane (Opposite Industrial Estate Entrance)

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML7S	13th June 2018	18:00 – 18:10	66.4	79.6	71.2	46.6
	13th June 2018	21:15 – 21:25	61.7	86.3	58.0	39.6
	14th June 2018	00:25 – 00:35	35.2	46.5	36.4	32.6
	14th June 2018	03:45 – 03:55	53.9	78.4	53.6	35.4
	14th June 2018	06:55 – 07:05	62.3	79.6	62.8	46.0

Table 13-20 Short-term manned measurement: Summary levels NML8S North of Lympne

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML8S	2nd Oct 2018	08:15 – 09:15	46.8	63.1	47.9	44.6
	2nd Oct 2018	12:57 – 13:57	45.2	61.8	46.4	42.1
	2nd Oct 2018	17:00 – 18:00	45.3	56.3	46.6	43.4
	2nd Oct 2018	20:53 – 21:53	42.9	56.3	44.3	40.3
	3rd Oct 2018	00:55 – 01:55	37.9	46.1	39.8	34.5
	3rd Oct 2018	05:00 – 06:00	44.7	52.1	46.5	41.9

Table 13-21 Short-term manned measurement: Summary levels NML9S West of Westenhanger

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML9S	2nd Oct 2018	09:55 – 10:55	53.1	60.9	54.6	50.8
	2nd Oct 2018	14:19 – 15:19	54.9	68.4	56.3	52.4
	2nd Oct 2018	18:20 – 19:20	52.5	61.6	53.9	50.0
	2nd Oct 2018	22:15 – 23:15	49.1	55.2	51.2	45.8
	3rd Oct 2018	02:20 – 03:20	49.2	58.7	51.9	44.3
	3rd Oct 2018	06:20 – 07:20	57.1	64.7	58.6	54.8

Table 13-22 Short-term manned measurement: Summary levels NML10S East of Westenhanger

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML10S	2nd Oct 2018	11:16 – 12:16	48.7	68.5	49.5	43.6
	2nd Oct 2018	15:40 – 16:40	50.7	69.0	52.3	46.7
	2nd Oct 2018	19:34 – 20:34	49.1	67.0	49.4	44.6
	2nd Oct 2018	23:35 – 00:00	41.7	64.6	42.4	36.8
	3rd Oct 2018	00:00 – 00:35	44.0	66.3	44.0	37.0
	3rd Oct 2018	03:40 – 04:40	47.3	63.6	49.5	42.6
	3rd Oct 2018	07:35 – 08:35	52.3	67.9	54.0	47.2

Table 13-23 Long-term measurements: Summary levels NML1L A20

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML1L	20th Sept 2017	Daytime (14:30 – 23:00)	66.8	77.1 - 89.0	69.0	44.1
		Night (23:00 – 07:00)	59.5	72.2 - 85.1	54.8	43.6
	21st Sept 2017	Daytime (07:00 – 23:00)	66.7	77.5 - 86.2	70.6	47.1
		Night (23:00 – 07:00)	59.5	72.1 - 85.1	54.5	46.8
	22nd Sept 2017	Daytime (07:00 – 23:00)	67.8	78.8 - 94.8	72.2	46.5
		Night (23:00 – 07:00)	58.1	53.7 - 86.1	50.5	38.7
	23rd Sept 2017	Daytime (07:00 – 23:00)	67.8	78.9 - 93.3	72.4	49.3
		Night (23:00 – 07:00)	60.7	51.4 - 85.8	54.8	41.3
	24th Sept 2017	Daytime (07:00 – 23:00)	67.5	77.0 - 96.9	69.6	49.3
		Night (23:00 – 07:00)	59.0	51.4 - 84.9	51.8	42.8
	25th Sept 2017	Daytime (07:00 – 23:00)	66.7	76.8 - 96.0	70.1	51.0
		Night (23:00 – 07:00)	57.9	74.3 - 82.5	54.0	46.6
	26th Sept 2017	Daytime (07:00 – 23:00)	65.2	75.3 - 90.7	69.2	51.8
		Night (23:00 – 07:00)	58.0	54.3 - 85.1	54.7	46.5
	27th Sept 2017	Daytime (07:00 – 16:00)	65.8	77.0 - 92.4	70.7	50.5

Table 13-24 Long-term measurements: Summary levels NML2L West of Industrial Estate

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML2L	20th Sept 2017	Daytime (13:45 – 23:00)	45.4	51.1 - 82.7	45.4	36.9
		Night (23:00 – 07:00)	38.7	41.5 - 67.6	38.2	31.1
	21st Sept 2017	Daytime (07:00 – 23:00)	46.3	48.7 - 73.3	47.2	40.8
		Night (23:00 – 07:00)	44.3	46.9 - 67.5	45.2	39.1
	22nd Sept 2017	Daytime (07:00 – 23:00)	50.4	51.2 - 80.1	49.5	40.7
		Night (23:00 – 07:00)	39.3	40.9 - 64.3	39.7	35.2
	23rd Sept 2017	Daytime (07:00 – 23:00)	52.4	57.7 - 82.5	53.6	46.6
		Night (23:00 – 07:00)	50.4	41.9 - 85.5	45.2	36.9
	24th Sept 2017	Daytime (07:00 – 23:00)	46.4	54.1 - 70.2	48.4	37.8
		Night (23:00 – 07:00)	42.1	40.4 - 71.1	41.7	33.7
	25th Sept 2017	Daytime (07:00 – 23:00)	48.9	53.4 - 79.6	50.4	43.5
		Night (23:00 – 07:00)	44.1	43.8 - 73.5	44.5	38.4
	26th Sept 2017	Daytime (07:00 – 23:00)	50.4	55.0 - 76.7	51.4	44.6
		Night (23:00 – 07:00)	43.6	46.8 - 72.0	45.1	36.7
	27th Sept 2017	Daytime (07:00 – 15:45)	48.9	57.1 - 83.6	50.1	42.1

Table 13-25 Long-term measurements: Summary levels NML3L Northern boundary of proposed Development

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML3L	20th Sept 2017	Daytime (16:30 – 23:00)	59.8	55.1 - 85.9	54.2	49.8
		Night (23:00 – 07:00)	52.6	50.3 - 86.3	48.8	42.3
	21st Sept 2017	Daytime (07:00 – 23:00)	59.0	55.4 - 85.8	54.9	49.5
		Night (23:00 – 07:00)	56.2	56.8 - 85.3	55.3	48.7
	22nd Sept 2017	Daytime (07:00 – 23:00)	60.9	60.1 - 96.6	56.6	52.2
		Night (23:00 – 07:00)	56.4	58.4 - 88.5	56.5	50.8
	23rd Sept 2017	Daytime (07:00 – 23:00)	60.4	64.7 - 95.6	57.0	49.6
		Night (23:00 – 07:00)	50.9	53.9 - 76.9	52.6	44.4
	24th Sept 2017	Daytime (07:00 – 23:00)	60.4	60.0 - 89.4	57.6	51.2
		Night (23:00 – 07:00)	55.5	55.8 - 84.6	53.3	46.1
	25th Sept 2017	Daytime (07:00 – 23:00)	60.3	62.8 - 85.6	57.9	53.7
		Night (23:00 – 07:00)	55.4	56.0 - 84.3	54.8	47.7
	26th Sept 2017	Daytime (07:00 – 23:00)	60.1	59.5 - 87.6	57.7	53.7
		Night (23:00 – 07:00)	56.9	60.8 - 88.1	56.9	50.0
	27th Sept 2017	Daytime (07:00 – 17:45)	59.2	54.9 – 88.0	55.2	51.2

Table 13-26 Long-term measurements: Summary levels NML4L North of Industrial Estate

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML4L	28th Sept 2018	Daytime (15:30 – 23:00)	41.5	41.4 - 58.7	42.4	39.5
		Night (23:00 – 07:00)	37.1	34.6 - 64.3	37.6	33.1
	29th Sept 2018	Daytime (07:00 – 23:00)	40.0	37.5 - 65.1	40.5	33.4
		Night (23:00 – 07:00)	39.3	38.3 - 71.3	36.6	29.9
	30th Sept 2018	Daytime (07:00 – 23:00)	44.3	44.2 - 80.2	40.6	34.6
		Night (23:00 – 07:00)	39.4	41.4 - 70.1	39.8	35.1
	1st Oct 2018	Daytime (07:00 – 23:00)	42.2	46.2 - 74.1	43.5	37.7
		Night (23:00 – 07:00)	43.9	47.6 - 61.4	46.0	38.1
	2nd Oct 2018	Daytime (07:00 – 23:00)	45.1	47.5 - 64.0	46.8	39.4
		Night (23:00 – 07:00)	37.9	40.2 - 62.4	38.9	33.6
	3rd Oct 2018	Daytime (07:00 – 15:30)	42.3	46.7 - 68.7	43.9	35.8

Table 13-27 Long-term measurements: Summary levels NML5L West of Barrow Hill Cottages

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML5L	28th Sept 2018	Daytime (17:45 – 23:00)	56.3	57.1 - 70.1	57.6	54.0
		Night (23:00 – 07:00)	50.4	49.6 - 65.7	51.5	45.8
	29th Sept 2018	Daytime (07:00 – 23:00)	49.7	51.2 – 75.0	50.0	45.3
		Night (23:00 – 07:00)	50.6	54.6 - 64.5	53.2	43.7
	30th Sept 2018	Daytime (07:00 – 23:00)	53.2	55.0 - 73.6	54.7	49.7
		Night (23:00 – 07:00)	50.5	53.9 - 65.9	52.0	45.5
	1st Oct 2018	Daytime (07:00 – 23:00)	54.9	52.1 - 72.2	55.6	51.4
		Night (23:00 – 07:00)	47.7	50.0 - 68.3	48.7	42.7
	2nd Oct 2018	Daytime (07:00 – 23:00)	53.9	55.5 - 73.4	55.2	50.8
		Night (23:00 – 07:00)	50.8	52.8 - 62.5	52.1	44.9
	3rd Oct 2018	Daytime (07:00 – 17:30)	52.5	52.3 - 72.3	53.0	48.7

Table 13-28 Long-term measurements: Summary levels NML6L Otterpool Manor

Location	Date	Time Period	$L_{Aeq,T}$ dB	L_{Amax} dB	$L_{A10,T}$ dB	$L_{A90,T}$ dB
NML6L	28th Sept 2018	Daytime (17:45 – 23:00)	52.6	55.4 – 75.0	53.8	50.2
		Night (23:00 – 07:00)	48.9	50.2 - 68.8	50.3	45.7
	29th Sept 2018	Daytime (07:00 – 23:00)	50.2	54.5 - 73.6	51.8	46.0
		Night (23:00 – 07:00)	47.6	47.3 - 75.3	49.2	39.2
	30th Sept 2018	Daytime (07:00 – 23:00)	54.8	50.3 – 80.0	53.5	48.6
		Night (23:00 – 07:00)	48.9	48.9 - 78.5	48.4	44.8
	01st Oct 2018	Daytime (07:00 – 23:00)	51.4	47.2 - 74.1	51.2	47.0
		Night (23:00 – 07:00)	42.8	44.7 - 66.8	43.8	38.9
	02nd Oct 2018	Daytime (07:00 – 23:00)	48.7	49.2 - 80.1	49.5	45.3
		Night (23:00 – 07:00)	46.8	46.0 - 65.3	46.9	41.9
	03rd Oct 2018	Daytime (07:00 – 16:15)	53.8	51.7 – 75.0	53.0	42.9

Ground Borne Vibration (Train induced) Monitoring Survey

13.2.10 As a result of the proximity of the active local rail line and HS1 line adjacent to the northern part of the proposed Development site, a ground borne vibration survey has been completed to quantify the prevailing climate at the site and to allow the consideration of any vibration implications on the proposed scheme within this area of the Development site.

13.2.11 The local rail line and the High Speed 1 (HS1) railway line are located immediately beyond the northern boundary of the Development site. The railway broadly follows the alignment of the M20 Motorway, positioned to the south of the motorway running broadly east/west through this section.

13.2.12 The baseline ground borne vibration surveys were undertaken over a period of four days between Friday 5th October and Tuesday 9th October 2018 on areas of soft ground close to the northern boundary of the site.

13.2.13 The vibration monitoring has been undertaken within the application site boundary at two monitoring location as indicated in Appendix 13.3 on the basis of the following method:

- Continuous monitoring extending over a period of 4 days to cover the weekday and weekend periods at VML1. This location is to the West of Westenhanger station at National Grid Reference TR12728 37238. As trains pass close to VML1 some trains are under acceleration after stopping at Westenhanger Station, whilst others are through trains; and
- Short term attended monitoring over the period of 1 hour at VML2 (summarised in 5-minute intervals). On the southern side of Network Rail Bridge 946 – Barrow Hill Bridleway, National Grid Reference TR11143 37580. At this location the railway is elevated compared with the development site on an embankment. All trains are generally passing at speed through this section.

13.2.14 A short-term attended monitoring survey was undertaken at VML2 as no suitably representative secure location could be found within this area of the site. As such short-term attended monitoring was undertaken capturing pass-bys of the various trains using the railway line.

13.2.15 The monitoring of ground borne vibration was undertaken using a 01db ORION Smart Vibration Monitoring Terminal with an integrated tri-axial digital accelerometer. Measurements were recorded in three orthogonal planes (Longitudinal, Transverse and Vertical) continuously throughout the survey period quantifying both Vibration Dose Values (VDV) and Peak Particle Velocity (PPV) vibration levels for the consideration of human perception and damage potential respectively.

Vibration Monitoring Results

13.2.16 Table 13-29 to Table 13-31 below summarise the vibration monitoring survey results at the locations detailed above (VML 1 and VML2), and presented in Appendix 13.3. The full short term monitoring data is available in Appendix 13.4.

Table 13-29 Vibration baseline monitoring survey results VML1 (PPV – Peak Particle Velocity)

Location	Date	Time Period	PPV (X-axis) Lmax (mm/s^{-1})	PPV (Y-axis) Lmax (mm/s^{-1})	PPV (Z-axis) Lmax (mm/s^{-1})
VML1	5th Oct 2018	Daytime (11:15 – 23:00)	0.000516	0.000465	0.000405
		Night (23:00 – 07:00)	0.000419	0.000400	0.000338
	6th Oct 2018	Daytime (07:00 – 23:00)	0.028220	0.031600	0.029910
		Night (23:00 – 07:00)	0.000245	0.000333	0.000299
	7th Oct 2018	Daytime (07:00 – 23:00)	0.002721	0.001510	0.000411
		Night (23:00 – 07:00)	0.000288	0.000397	0.000377
	8th Oct 2018	Daytime (07:00 – 23:00)	0.006845	0.006845	0.006845
		Night (23:00 – 07:00)	0.000300	0.000421	0.000395
	9th Oct 2018	Daytime (07:00 – 11:15)	0.000294	0.000428	0.000384

Table 13-30 Vibration baseline monitoring survey results VML1 (VDV – Vibration Dose Value)

Location	Date	Time Period	VDV (X-axis) Lmax (mm/s$^{-1.75}$)	VDV (Y-axis) Lmax (mm/s$^{-1.75}$)	VDV (Z-axis) Lmax (mm/s$^{-1.75}$)
VML1	5th Oct 2018	Daytime (11:15 – 23:00)	0.005414	0.006979	0.038440
		Night (23:00 – 07:00)	0.004470	0.004412	0.026060
	6th Oct 2018	Daytime (07:00 – 23:00)	0.135300	0.175000	0.159000
		Night (23:00 – 07:00)	0.002866	0.003338	0.019830
	7th Oct 2018	Daytime (07:00 – 23:00)	0.014870	0.010410	0.026030

Location	Date	Time Period	VDV (X-axis) Lmax (mm/s$^{-1.75}$)	VDV (Y-axis) Lmax (mm/s$^{-1.75}$)	VDV (Z-axis) Lmax (mm/s$^{-1.75}$)
		Night (23:00 – 07:00)	0.003146	0.004067	0.026690
	8th Oct 2018	Daytime (07:00 – 23:00)	0.158400	0.158400	0.158600
		Night (23:00 – 07:00)	0.003774	0.004818	0.031440
	9th Oct 2018	Daytime (07:00 – 11:15)	0.005414	0.006979	0.038440

Table 13-31 Vibration baseline monitoring survey results VML2 (PPV – Peak Particle Velocity and VDV – Vibration Dose Level)

Date (Survey Period 11:00 to 12:00 10/05/18)	X Axis		Y Axis		Z Axis	
	PPV Lmax (mm/s^{-1})	VDV Lmax (mm/s$^{-1.75}$)	PPV Lmax (mm/s^{-1})	VDV Lmax (mm/s$^{-1.75}$)	PPV Lmax (mm/s^{-1})	VDV Lmax (mm/s$^{-1.75}$)
10/05/2018 11:07	0.00088	0.00778	0.00064	0.01023	0.00034	0.04430
10/05/2018 11:12	0.00041	0.00789	0.00005	0.01023	0.00009	0.04430
10/05/2018 11:17	0.00046	0.00807	0.00017	0.01023	0.00012	0.04430
10/05/2018 11:22	0.00051	0.00833	0.00055	0.01030	0.00029	0.04452
10/05/2018 11:27	0.00024	0.00835	0.00012	0.01030	0.00008	0.04453
10/05/2018 11:32	0.00019	0.00836	0.00009	0.01030	0.00006	0.04453
10/05/2018 11:37	0.00018	0.00836	0.00004	0.01030	0.00005	0.04453
10/05/2018 11:42	0.00033	0.00839	0.00042	0.01032	0.00036	0.04476
10/05/2018 11:47	0.00056	0.00864	0.00005	0.01032	0.00008	0.04476
10/05/2018 11:52	0.00013	0.00864	0.00004	0.01032	0.00005	0.04476
10/05/2018 11:57	0.00022	0.00865	0.00012	0.01032	0.00009	0.04476
10/05/2018 12:02	0.00088	0.00971	0.00011	0.01032	0.00010	0.04476

Future Baseline

13.2.17 Future baseline conditions have been considered in this part of the Section. As construction of the proposed Development progresses and the size of the Operational development grows over the construction period of 25 years, traffic on the surrounding road network is expected to increase. This growth in traffic has been assessed for future years as stated in paragraph 13.1.28 by calculation by the traffic team undertaking the Transport Assessment.

13.3 Design and Mitigation

Construction Approach and Mitigation of Construction Effects

13.3.1 In order to ensure that noise and vibration generated by the construction of the scheme is suitably controlled, a Construction Environmental Management Plan (CEMP), would be produced that would be required to be adhered to. Although not anticipated to be needed at this stage, the CEMP would include consideration of any requirement for an application for prior consent to work under Section 61 of the Control of Pollution Act (CoPA).

13.3.2 Taking account of the lengthy construction period, spanning 25 years, parts of the development completed in the early phases of the proposed development would become noise sensitive receptors to construction works scheduled for the latter phases of the project. As such these receptors would require to be taken into consideration within the scope of the CEMP.

13.3.3 Within the CEMP mitigation strategies would be presented and considered, formulated on the basis of "Best Practicable Means". These measures would be implemented where necessary to minimise noise and vibration impacts at source. The following bullet points identify measures which could be considered to reduce the impact of noise and vibration within construction works however, the list is not exhaustive of the measures available.

Plant and Equipment

- Modern, silenced and well-maintained plant would be used at all times, conforming to standards set out in EU Directives;
- Machinery, including vehicles, would be shut down or throttled back when not in use;
- Engine compartments would be closed when equipment is in use and the resonance of body panels and cover plates would be reduced by the addition of suitable dampening materials. Any rattling noise would be addressed by the tightening of loose parts or the addition of resilient materials;
- Semi-static and static equipment would be sited and orientated as far as is reasonably practicable away from noise-sensitive receptors and have localised screening if deemed necessary;
- Static plant known to generate significant vibration levels would be fitted with acoustic dampening;
- Generators and water pumps required for 24-hour operation would be super-silenced or screened as appropriate;
- Crane spindles, pulley wheels, telescopic sections and moving parts of working platforms would be adequately lubricated in order to prevent undue screeching and squealing; and
- Where possible mains electricity should be used rather than generators.

13.3.4 With regard to the potential increases in traffic flows due to construction activities, detailed information is not available at this stage upon which to base a quantitative assessment. However, as a result of the potential for disturbance, construction traffic and routing would be considered within the scope of the CEMP or as part of any CoPA S61 agreements made with the LPA.

13.3.5 With regard to ground borne vibration, the specifics of the construction programme or the requirements for vibration generating techniques to be employed within the development of the site are not currently known. It is therefore appropriate that ground borne vibration effects should also be considered and evaluated within the scope of the CEMP or CoPA S61 agreement when the main contractor has been appointed and detailed construction information becomes available.

Scheme Design and Mitigation of Operational Effects

13.3.6 The noise study undertaken within the scope of this Section is based upon an Outline Planning Application which sets out "key development areas" across the site in Parameter Plans rather than a detailed layout. As a result, it is not possible to specifically conclude mitigation or enhancement measures at the present time as these would specifically be related to the building/site layouts proposed in the detailed designs.

13.3.7 However, it is possible to identify typical measures that would need to be considered and included in the detailed design of the site to control noise. These measures would need to be further investigated in the detailed design of the site and this would require to be conditioned by the LPA to ensure that noise issues are suitably controlled going forward in the process. In addition, as a result of the duration of the development, 25 years from start to finish, heed would need to be taken, and wording incorporated to account for changing acoustic design advice.

13.3.8 Potential noise mitigation measures for each of the aspects of the development are discussed below.

Residential Land Parcels

13.3.9 The following mitigation measures would require to be considered though the detailed design of any residential areas of the site, especially those to the north within influencing distances of the M20 and HS1 routes, and to the south around the Lympne Business Park:

- appropriate façade mitigation measures (glazing and ventilation provision) to ensure that internal noise climates are acceptable.
- Layout considerations to ensure that noise is also controlled by layout design to avoid locating external sensitive areas in positions exposed to significant noise sources.
- Provision for acoustic screening where necessary either through optimum placement and design of intervening buildings (layout options) or specific acoustic fencing/bunding where necessary.

13.3.10 Consideration of these aspects would be specified and enforced through appropriate planning conditions controlling the residential aspects of the proposed Development. Acoustics would be considered as a key aspect of the detailed design to ensure that both internal and external noise levels are acceptable, and account would be required to be taken of changing acoustic design advice over the 25 year development period of the site.

Retail/Commercial/Industrial:

13.3.11 Noise associated with the retail/ commercial/ industrial activities proposed within the Development has the potential to result in adverse effects on sensitive receptors in the vicinity, either proposed or existing. Measures would require to be implemented where necessary and appropriate at the detailed design phase to control noise, these would include:

- The use of layout provision. Building massing and positioning can be used as effective screening for noise generating uses;
- Any external fixed plant would require, as far as possible, to be located on façades not facing directly onto any sensitive residential receptors either existing or proposed, and would require acoustic treatment where necessary to control noise emissions;
- Noise generating activities should be screened by suitably robust and detailed acoustic fencing provision where deemed necessary;
- The construction of the building shells should be appropriately specified to control noise breakout into the environment from noisy activities undertaken within;
- Consideration of access routes and the proximity of these to sensitive receptors both proposed and existing; and
- Consideration of the location of service yards, timings of deliveries, along with the use classifications/activities permissible in proximity to existing or proposed sensitive receptors.

13.3.12 As the Development is only at the Outline Planning stage, with development areas identified and only potential use classes nominated it is not possible to be specific about what the noise mitigation measure requirements would be. Therefore, a suitable noise limit based upon the prevailing noise climate should be specified within an appropriately worded planning permission to suitably control noise. This planning condition could be specified such to require a specific noise study be undertaken once an end user is

identified for a plot to ensure that noise does not result in adverse impacts at either proposed or existing sensitive receptors. Any such condition would be expected to reference the assessment methodology of *BS4142: 2014.*

Schools, Medical Facilities, Dentists, Community Buildings

13.3.13 The following mitigation measures would be considered though the detailed design of these various types of buildings proposed for the Site:

- Appropriate façade mitigation measures (glazing and ventilation provision) to ensure that internal noise climates are acceptable for the intended use of the building.
- Internal layout considerations of the building to ensure that noise is controlled by layout design to avoid locating external sensitive areas in positions exposed to noise sources.
- Provision for acoustic screening where necessary either through optimum placement and design of intervening buildings (layout options) or specific acoustic fencing/screening where necessary.

13.3.14 Consideration of these aspects would be specified and enforced through appropriate planning conditions controlling the provision of these aspects within the Development. Acoustics would be considered as a key aspect of the detailed design to ensure that both internal and external noise levels are acceptable.

13.3.15 There are specific acoustic design standards relating to these types of buildings: BB93: Acoustic Design of Schools – Performance Standards, provides details of good acoustic design practices for educational buildings. HTM 08 01: Acoustics similarly provides acoustic design standards for medical facilities and BS8233: 2014 Guidance on Sound Insulation and Noise Reduction for Buildings, provides acoustic design information for other buildings such as community facilities. At the detailed design stage, the design of these buildings would draw upon appropriate advice at the time and comply with guidance contained within these documents.

General Conclusion Scheme Design and Mitigation of Operational Effects

13.3.16 At this stage and given the outline nature of the application for planning permission detailed appraisal of the operational noise impacts is not feasible. However, given the nature of the noise exposure anticipated together with the mitigation measures that are available to be considered at the reserved matters stage it is anticipated that significant adverse impacts upon residential receptors, retail/commercial/industrial receptors educational, medical and community facilities are unlikely.

13.4 Assessment of Residual and Cumulative Effects

Introduction

13.4.1 Based upon noise and vibration data obtained from the baseline surveys, outline design plans of the Site and traffic data provided by the traffic team, assessments have been made of residual and cumulative effects for the Construction and Operational phases which are presented in the following sections.

Assessment of Construction Effects

13.4.2 The construction noise and vibration assessment considers the following:

- Impacts of noise generated within the construction phase on sensitive receptors within the area. This includes impacts to both existing residential dwellings and earlier phases of the proposed Development itself; and
- Impacts of ground borne vibration generated within the construction phase on sensitive receptors within the area. This includes impacts to both existing residential dwellings and earlier phases of the proposed Development.

13.4.3 Section 4, Description of the Development, identifies that construction works are expected to commence in 2020 with an assumed completion year of 2044. During this period the construction works hours would be typically;

- 08:00 – 18:00 – Monday to Friday
- 08:00 – 13:00 – Saturday
- Work on Sundays would only take place in exceptional circumstances and with the prior agreement of the LPA

13.4.4 Due to this being an early, Outline Planning, stage of the Development detailed programming and methodologies of the construction works necessary to develop the site are yet to be concluded. However, it is envisaged that the construction operations would potentially result in some degree of disturbance to the amenity of nearby sensitive receptors and potentially earlier completed phases of the development. However, as the site would be developed in a phased way it is likely that impacts to any specific receptor, or group of receptors are only likely to be short duration within the scope of the overall construction programme.

13.4.5 As a result of the ambiguities associated with the prediction of noise from construction activities and the lack of specific information available at this stage in the development process, a qualitative assessment of construction noise in line with the requirements of BS5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control Construction and Open Sites (Ref. 13.16) has been undertaken. The assessment has been undertaken on the basis of identifying potential noise limits and control measures that could be implemented to control noise and vibration at the closest residential properties (existing or proposed).

13.4.6 Based on current information potential worst-case noise levels are presented from a selection of the key construction plant that could be expected to undertake the tasks necessary to develop the site, and noise levels are calculated back to different distances which are considered to reflect noise levels at surrounding receptors.

13.4.7 Within the scope of this assessment consideration has been given to cumulative construction impacts of the proposed Development with other proposed development within the area. Other sites are smaller scale developments when compared to the Application Site and as such will have relatively short construction periods that are only likely to result in minor cumulative effects.

13.4.8 It is noted that the noise levels presented within Table 13-32 do not take into account any attenuation due to screening (land features, buildings or constructed areas of the site) and have been based upon hard reflective ground between the source and receiver (water, concrete, bituminous surfaces) as a worst case assumption. Given the nature of the existing ground cover in the area (a high percentage of soft ground) the predicted noise levels presented could therefore be slightly higher than those that would be experienced in practice. The figures presented are also based upon a 100% on-time which is unlikely for the majority of construction plant in practice. All predicted noise levels have primarily been based on typical plant noise levels taken from the Appendices of BS5228 (Ref. 13.16).

Table 13-32 General Plant Noise Levels

Plant	Sound Pressure Level in dB (A) at 10m	Sound Pressure Level (dB L_{Aeq})						
		20m	50m	100m	200m	300m	600m	1km
Tracked/wheeled 360 degree Excavators	85	79	71	65	59	55	49	45
Excavator mounted hydraulic breakers	92	86	78	72	66	62	56	52
Excavator mounted hydraulic crushers	82	76	68	62	56	52	46	42
Dumpers	79	73	65	59	53	49	43	39
Concrete Crushing Plant	90	84	76	70	64	60	54	50
Mobile Craneage/ Tower Cranes	78	72	64	58	52	48	42	38

Plant	Sound Pressure Level in dB (A) at 10m	Sound Pressure Level (dB L_{Aeq})						
		20m	50m	100m	200m	300m	600m	1km
Eight-wheeler trucks	80*	74*	66*	60*	54*	50*	44*	40*
Air Compressors	80	74	66	60	54	50	44	40
Diamond cutting tools / saws	80	74	66	60	54	50	44	40
Hand Held Tools including breakers (pneumatic and hydraulic)	83	77	69	63	57	53	47	43
Power Tools including percussion drills, cutting disks, pipe-threaders	79	73	65	59	53	49	43	39
Hand /power tools	79	73	65	59	53	49	43	39
Wheel Washing Plant	63	57	49	43	37	33	27	23
Scaffold	No noise associated							
Mobile access platforms	78	72	64	58	52	48	42	38
Delivery trucks (drive by)	80*	74*	66*	60*	54*	50*	44*	40*
Skips & Skip trucks**	79**	64**	56**	50**	44**	40**	34**	30**
Forklift trucks	80	74	66	60	54	50	44	40
Sheet Piling	94	82	76	70	62	56	50	42

Notes to Table 13-32

* Drive by maximum sound pressure level L_{pA} (Max), at speed in km/h as shown in BS5228.

** Empirical data established at 3.5m from skip loading vehicle.

Sensitive Receptors

13.4.9 The following sensitive receptors have been identified within close proximity to proposed construction activities. However, the duration of the works, or the actual works that would be necessary have not yet been derived due to the early stage of the Development process:

- Residential properties:
- In the village of Sellindge to the south of the M20 including Barrow Hill Farm;
- J Champneys residential property, B2067 Otterpool Lane;
- Dwelling at TN25 6DD, accessed from private lane leading off south side of A20 Ashford Lane;
- To the west side of Stone Street in Westenhanger
- To the west side of Stone Street in Newingreen;
- Newingreen on the south side of the A20 Ashford Road;
- West side of Lympne bordering the site;
- Dwelling on the south side of Aldington Road close to the southern boundary of the Development site;
- Dwelling: JJ Butcher, off east side of Harringe Lane; and
- Dwelling: R Price and Sons, off west side of Harringe Lane.
- Westenhanger Castle;
- Holiday Extras facility at Newingreen, close to the A20 Ashford Road and Stone Street junction;
- Residential properties in Newingreen on the south side of the A20 Ashford Road;
- Berwick Holdings Bed and Breakfast accommodation and residential properties on the east side of Stone Street, Lympne;
- Port Lympne Hotel and Wildlife Reserve;

13.4.10 Effects on specific identified receptors during the construction phase are expected to be relatively short-term in duration as a result of the changing operational areas as construction phasing progresses. However, the exact duration over which impacts might arise at any given receptor is not yet known and would not be concluded until detailed phasing of the construction program is produced. Any element of the construction works that may have a significant adverse effect would be identified and considered within the CEMP and CoPA S61 agreement at which time appropriate mitigation measures and best practice techniques would be proposed. Based upon information currently available and the implementation of appropriate mitigation strategies significant adverse effects are not considered likely.

Construction Noise Limits

13.4.11 Referencing the measured ambient noise levels quantified as part of this study, the information contained within Table 13-33 below details the threshold levels at which significant effects would be expected to occur due to construction noise. The noise limits have been calculated based on the ABC methodology described in BS5228 (Ref. 13.16). A breach of these limits would dictate a need to put in place mitigation to reduce noise back to within acceptable levels as covered within the CEMP/S61 Agreement.

13.4.12 Given the hours of construction expected for the proposed Development, it is considered that typical works during the construction phase would only be undertaken during daytime hours. As such only daytime levels are discussed and considered within Table 13-33 below.

Table 13-33 Plant Noise Levels Associated with General Construction Work

Assessment Location	Measurement Period	Average Measured $L_{Aeq, 1hr}$ of the Locality	$L_{Aeq, 1hr}$ Rounded to the nearest 5dB (BS5228 ABC Method only)	BS5228 Methodology
				"ABC Method"
NML1S	Daytime (08:00 – 18:00hrs)	59.7	60	65
NML2S	Daytime (08:00 – 18:00hrs)	61.8	60	65
NML3S	Daytime (08:00 – 18:00hrs)	56.9	55	65
NML4S	Daytime (08:00 – 18:00hrs)	50.0	50	65
NML5S	Daytime (08:00 – 18:00hrs)	44.0	45	65
NML6S	Daytime (08:00 – 18:00hrs)	46.7	45	65
NML7S	Daytime (08:00 – 18:00hrs)	66.4	65	70
NML8S	Daytime (08:00 – 18:00hrs)	45.8	45	65
NML9S	Daytime (08:00 – 18:00hrs)	54.0	55	65

Assessment Location	Measurement Period	Average Measured $L_{Aeq, 1hr}$ of the Locality	$L_{Aeq, 1hr}$ Rounded to the nearest 5dB (BS5228 ABC Method only)	BS5228 Methodology
				"ABC Method"
NML10S	Daytime (08:00 – 18:00hrs)	50.6	50	65
NML1L	Daytime (08:00 – 18:00hrs)	67.4	65	70
NML2L	Daytime (08:00 – 18:00hrs)	48.2	50	65
NML3L	Daytime (08:00 – 18:00hrs)	59.0	60	65
NML4L	Daytime (08:00 – 18:00hrs)	41.6	40	65
NML5L	Daytime (08:00 – 18:00hrs)	52.2	50	65
NML6L	Daytime (08:00 – 18:00hrs)	50.9	50	65

13.4.13 With reference to Table 13-33 above, due to the relatively low noise climate of the area, allowable construction noise limits calculated using BS5228 (Ref. 13.16) would, in the main, conform to the lower cut off limits of 65dB during the assumed construction hours.

13.4.14 In addition to the construction techniques anticipated for the general development of the site there are a number of existing properties that are scheduled for demolition located across the Development site. These are discussed further below.

13.4.15 Depending on the demolition techniques to be employed, the demolition work has the potential to create higher noise levels that may have a temporary adverse impact upon existing residents located close to these properties Table 13-34 provides an indication of levels that may occur during construction. Taking the size of the properties to be demolished and the fact that they are generally low rise buildings, with the exception of the racecourse grandstand which is removed from receptors, it is generally anticipated that each building can be demolished in one to two days during the daytime working hours.

Table 13-34 Plant Noise Levels Associated with Demolition Works

Plant	Sound Pressure Level in dB (A) at 10m	Sound Pressure Level (dB L_{Aeq})						
		20m	50m	100m	200m	300m	600m	1km
Tracked/wheeled 360 degree Excavators	85	79	71	65	59	55	49	45
Excavator mounted hydraulic breakers	92	86	78	72	66	62	56	52
Excavator mounted hydraulic crushers	82	76	68	62	56	52	46	42
Breaking up brick foundations – Breaker mounted on excavator	90	84	76	70	64	60	54	50
Dumping brick rubble – Tracked excavator (loading dump truck)	85	79	71	65	59	55	49	45
Breaking and spreading rubble – Tracked excavator	82	76	68	62	56	52	46	42
Breaking windows – Lump hammer	81	56	67	61	55	51	45	41
Dumpers	79	73	65	59	53	49	43	39
Skips & Skip trucks**	79**	64**	56**	50**	44**	40**	34**	30**

Sensitive Receptors to Demolition Works

13.4.16 Appendix 13.5, shows properties to be demolished and the nearest sensitive receptors to the activity. Until detailed demolition methods are developed by the contractor, and plant and machinery selected, the impact cannot be calculated. Sensitive receptors have been identified in Table 13-35 with their approximate distance from the demolition works. Although the table should not be regarded as including every existing property that may be subject to adverse effects, those identified should be considered as part of an assessment for inclusion in the CEMP to conclude any mitigation measures that may be necessary.

13.4.17 Whilst many of the properties to be demolished are isolated farms/buildings, which are located at a considerable distance any noise sensitive properties; there are some which have sensitive properties at closer distances and as such the demolition work would need to be considered carefully with regard to adverse noise impacts. Although the information currently available is limited it is considered likely that adverse significant effects can be avoided with the use of appropriate techniques and mitigation measures employed where necessary.

Table 13-35 Closest Noise sensitive premises to buildings to be demolished

Reference number of property(ies) to be demolished (Ref. App. E Fig. E1)	Closest noise sensitive property(ies) to building to be demolished	Approximate distance of closest building to be demolished (m)
1	Residential properties in Sellindge on the west side of Barrow Hill	298m
2	Westenhanger Castle	48m
3	Westenhanger Castle Residential properties on west side of Stone Street	97m 154m
4	Residential properties on west side of Stone Street	353m
5	J Champneys, Otterpool Lane	255m
6	J Champneys, Otterpool Lane	286m
7	J Champneys, Otterpool Lane	594m
8	Residential properties on west side of Stone Street Holiday Extras facilities	40m 47m 181m

Reference number of property(ies) to be demolished (Ref. App. E Fig. E1)	Closest noise sensitive property(ies) to building to be demolished	Approximate distance of closest building to be demolished (m)
	Residential properties on south side of A20	
9	Residential property to the east on A20 Ashford Road	39m

Assessment of Operational Effects

13.4.18 As detailed in the Introduction section 13.1 there are a number of facets to the proposed Development which have the potential to effect/be affected by noise in the vicinity of the Site. These are:

- Consideration of the potential changes in road traffic noise in the wider road network as a result of changes in traffic flow/composition resulting from the proposed Development.
- Assessment and consideration of the suitability of the Site with regard to noise for the areas identified for Sensitive Land Uses including:
- Residential provision, nursery, primary and secondary education, a multi-faith centre, hotel, and health centre/facilities; and
- Accessible Public Open Space (POS).
- Consideration of appropriate noise controls with regard to areas of the site identified as having the potential to adversely affect the noise climate of the area including: and
- Commercial, retail and industrial provision.

13.4.19 Each of these elements have been assessed and considered separately within this section of the Section.

Road Traffic Assessment of Existing Network

13.4.20 The main effects of the proposed Development on the wider area would be increases/ changes in road traffic noise as a result of changes in traffic flow characteristics and composition on road links in the area. It is considered pertinent to consider the potential for, and resulting impacts of, any such changes resulting directly from the proposed Development.

13.4.21 Calculations have been undertaken in accordance with the methodology of the Calculation of Road Traffic Noise (1998) to derive Basic Noise Levels (BNL) along identified road links for which data is available. The methodology utilises the total Annual Average Weekday Traffic (AAWT) flow numbers, the percentage of heavy vehicles (greater than 3.5 tonnes) and vehicle speeds over an 18hr period between 06:00 and 00:00 to predict an $L_{A10\ 18\text{-}hour}$ noise level for each link. Separate calculations are made for the "with Scheme" and "without Scheme" scenarios allowing the change in road traffic noise as a result of the proposed Development to be calculated.

13.4.22 With reference to the DMRB assessment scale for Short term immediate effects, the change in road traffic noise levels have been predicted for the following scenarios:

- 2022 Interim Year for 'Without Scheme (Do Minimum)' compared against 'With Scheme (Do Something)' scenario;
- 2029 Interim Year for' Without Scheme (Do Minimum)' compared against 'With Scheme (Do Something)' scenario; and,
- 2046 Completion Year for 'Without Scheme (Do Minimum)' compared against 'With Scheme (Do Something)' scenarios.

13.4.23 The DMRB impact classifications and the effects of the predicted changes in road traffic noise are assessed using significance criteria defined within Tables 13-7 and 13-8 of the Introduction Section 13.1 +of this Section. As a worst case the "short term" semantic scale has been used in the assessment.

13.4.24 The specific links considered within the assessment are based upon the available traffic flow information in the area supplied by the Traffic team. Their calculation methodology was agreed with Kent County Council, Folkestone & Hythe District Council and Highways England. The method is outlined in the Transport Assessment which accompanies the Outline Planning Application, but in summary involved the combination of TEMPro (v7.2), forecast development flow information and National Road Traffic Forecasts (for freight on the M20). TEMPro input information was updated to include the latest housing and employment forecasts for Folkestone & Hythe, Ashford and Canterbury.

- Growth rates derived from TEMPro for the Do Something (DS) scenarios assume that the housing and employment forecasts in each authority would be met in full.
- Growth rates derived from TEMPro for the Do Minimum (DM) scenarios assume that Folkestone & Hythe District Council would not meet their housing and employment forecasts if the Otterpool Park development did not go ahead.

13.4.25 The DS scenario therefore tests significantly greater household and job growth than the DM ('without the Otterpool Development') scenario. This assumption is understood to be consistent with the emerging Folkestone & Hythe District Council Core Strategy which means that the comparison between the 'With Scheme' and 'Without Scheme' traffic flows show an absolute worst case in terms of any increases in traffic flow. Traffic flow increases in the 'Without Scheme' scenario could be up to 15% greater on links in the Folkestone & Hythe area if the Folkestone & Hythe housing and employment forecasts are met without the Otterpool Park development as the traffic associated with the proposed Development, as a sustainable garden settlement with contained land uses, is anticipated to be lower than typical residential schemes of smaller scale.

13.4.26 Cumulative effects of committed developments that have an influence on the road network assessed are included in the traffic flows provided by the traffic team for the 2046 scenario, including the Framework Masterplan development.

13.4.27 The changes in road traffic noise levels calculated within the local road network for the assessment years of 2022, 2029 and 2046 are presented within Table 13-36. The Magnitude of Impacts based upon the DMRB Short Term Classifications are also presented as defined in accordance with the methodology outlined in Tables 13-7 and 13-8.

13.4.28 From the predictions presented in Table 13-36, the Assessment of Change in Road Traffic for DMRB Short-term Classification has determined that impacts are generally low. Adverse impacts range from Negligible adverse to Minor adverse in the short term. For some links No Change, Minor Beneficial and Moderate Beneficial impacts are expected as a result of the proposed changes to the network.

13.4.29 Further consideration has been given to the data, with long term comparisons undertaken which account for any habituation to noise. As such the DM in the 2022 has been compared to the DS in the subsequent years of 2029 and 2046.

Table 13-36 Assessment of Changes in Road Traffic for DMRB Short term Classification 2022, 2029 and 2040

Road Name	Link_ID	2022 DM v DS Change dB	DMRB Short Term Classification	2029 DM v DS Change dB	DMRB Short Term Classification	2046 DM v DS Change dB	DMRB Short Term Classification
A20	14776	-0.7	Negligible Beneficial	0.2	Negligible Adverse	0.5	Negligible Adverse
A20	12795	0.1	Negligible Adverse	0.8	Negligible Adverse	2.0	Minor Adverse
A20	12987	0.1	Negligible Adverse	0.8	Negligible Adverse	2.1	Minor Adverse
A20	13565	0.2	Negligible Adverse	0.9	Negligible Adverse	2.5	Minor Adverse
Aldington Road	14757	0.1	Negligible Adverse	0.9	Negligible Adverse	2.8	Minor Adverse
Aldington Road	14778	0.2	Negligible Adverse	1.0	Minor Adverse	3.0	Moderate Adverse
Aldington Road	14755	1.6	Minor Adverse	2.0	Minor Adverse	4.0	Moderate Adverse
Aldington Road	14756	1.5	Minor Adverse	2.1	Minor Adverse	4.2	Moderate Adverse
Ashford Road	13671	-4.7	Moderate Beneficial	-3.8	Moderate Beneficial	-1.5	Minor Beneficial
Ashford Road	13561	0.0	No Change	0.3	Negligible Adverse	0.2	Negligible Adverse
Ashford Road	600314	-0.2	Negligible Beneficial	0.2	Negligible Adverse	0.4	Negligible Adverse
Ashford Road	600313	-0.2	Negligible Beneficial	0.2	Negligible Adverse	0.4	Negligible Adverse
Ashford Road	600324	-0.2	Negligible Beneficial	0.2	Negligible Adverse	0.4	Negligible Adverse
Ashford Road	600323	-0.2	Negligible Beneficial	0.2	Negligible Adverse	0.4	Negligible Adverse
Ashford Road	600317	-0.2	Negligible Beneficial	0.3	Negligible Adverse	0.5	Negligible Adverse
Ashford Road	600319	-0.1	Negligible Beneficial	0.3	Negligible Adverse	0.6	Negligible Adverse
Ashford Road	600320	-0.1	Negligible Beneficial	0.3	Negligible Adverse	0.6	Negligible Adverse
Ashford Road	14799	-0.2	Negligible Beneficial	0.3	Negligible Adverse	0.6	Negligible Adverse
Ashford Road	600322	-0.2	Negligible Beneficial	0.3	Negligible Adverse	0.6	Negligible Adverse
Ashford Road	12997	0.1	Negligible Adverse	0.3	Negligible Adverse	0.8	Negligible Adverse
B2068	12975	0.0	No Change	0.1	Negligible Adverse	0.2	Negligible Adverse
Harman Avenue	6972	0.0	No Change	0.0	No Change	0.0	No Change
Hythe Road	14785	-0.2	Negligible Beneficial	0.3	Negligible Adverse	0.7	Negligible Adverse
Hythe Road	13431	0.0	No Change	0.1	Negligible Adverse	0.8	Negligible Adverse
Hythe Road	14786	-0.2	Negligible Beneficial	0.4	Negligible Adverse	1.0	Minor Adverse
Knoll Hill	14578	0.0	No Change	0.1	Negligible Adverse	0.1	Negligible Adverse
London Road	14781	0.0	No Change	0.2	Negligible Adverse	1.1	Minor Adverse

Road Name	Link_ID	2022 DM v DS Change dB	DMRB Short Term Classification	2029 DM v DS Change dB	DMRB Short Term Classification	2046 DM v DS Change dB	DMRB Short Term Classification
Lympne Hill	14780	0.1	Negligible Adverse	0.8	Negligible Adverse	2.6	Minor Adverse
M20	13504	0.0	No Change	0.0	No Change	0.0	No Change
M20	12173	0.0	No Change	0.0	No Change	0.0	No Change
M20	600301	0.0	No Change	0.1	Negligible Adverse	0.2	Negligible Adverse
M20	600299	0.0	No Change	0.1	Negligible Adverse	0.3	Negligible Adverse
M20	12162	0.0	No Change	0.2	Negligible Adverse	0.5	Negligible Adverse
M20	13526	0.0	No Change	0.2	Negligible Adverse	0.6	Negligible Adverse
Otterpool Lane	14802	-0.6	Negligible Beneficial	-0.1	Minor Beneficial	0.8	Negligible Adverse
Plain Road	14582	0.0	No Change	0.0	No Change	0.0	No Change
Sandling Road	14783	0.0	No Change	0.0	No Change	-0.5	Negligible Beneficial
Stone Street	14769	0.0	No Change	0.0	No Change	0.1	Negligible Adverse
Stone Street	14774	1.0	Minor Adverse	1.7	Minor Adverse	2.3	Minor Adverse
Stone Street	14775	1.1	Minor Adverse	1.7	Minor Adverse	2.4	Minor Adverse
Stone Street	6643	1.5	Minor Adverse	2.1	Minor Adverse	2.9	Minor Adverse
Swan Lane	14767	0.0	No Change	0.0	No Change	0.0	No Change
Swan Lane	14677	0.0	No Change	0.1	Negligible Adverse	0.2	Negligible Adverse

Table 13-37 Assessment of Changes in Road Traffic for DMRB for Long term Classification

Road Name	Link_ID	DM2022 vs DS2029 Change dB	DMRB Long Term Classification	DM2022 vs DS2046 Change dB	DMRB Long Term Classification
-	14698	0.2	Negligible Adverse	0.6	Negligible Adverse
-	12680	0.6	Negligible Adverse	1.7	Negligible Adverse
-	12982	0.5	Negligible Adverse	1.8	Negligible Adverse
-	12784	1.0	Negligible Adverse	2.7	Negligible Adverse
-	12685	1.1	Negligible Adverse	2.9	Negligible Adverse
-	13436	1.0	Negligible Adverse	3.0	Minor Adverse
A20	14776	0.3	Negligible Adverse	1.1	Negligible Adverse
A20	12795	0.9	Negligible Adverse	2.5	Negligible Adverse
A20	12987	1.0	Negligible Adverse	2.7	Negligible Adverse
A20	13565	1.0	Negligible Adverse	3.0	Minor Adverse
Aldington Road	14757	1.1	Negligible Adverse	3.1	Minor Adverse
Aldington Road	14778	1.1	Negligible Adverse	3.3	Minor Adverse
Aldington Road	14755	2.2	Negligible Adverse	4.1	Minor Adverse
Aldington Road	14756	2.2	Negligible Adverse	4.2	Minor Adverse
Ashford Road	13671	-3.6	Minor beneficial	-0.9	Negligible Beneficial
Ashford Road	13561	0.4	Negligible Adverse	0.7	Negligible Adverse
Ashford Road	600314	0.4	Negligible Adverse	0.9	Negligible Adverse
Ashford Road	600313	0.4	Negligible Adverse	0.9	Negligible Adverse
Ashford Road	600324	0.4	Negligible Adverse	0.9	Negligible Adverse
Ashford Road	600323	0.4	Negligible Adverse	1.0	Negligible Adverse
Ashford Road	600317	0.5	Negligible Adverse	1.0	Negligible Adverse
Ashford Road	600319	0.5	Negligible Adverse	1.1	Negligible Adverse
Ashford Road	600320	0.5	Negligible Adverse	1.1	Negligible Adverse
Ashford Road	14799	0.4	Negligible Adverse	1.1	Negligible Adverse
Ashford Road	600322	0.4	Negligible Adverse	1.2	Negligible Adverse
Ashford Road	12997	0.4	Negligible Adverse	1.2	Negligible Adverse

Road Name	Link_ID	DM2022 vs DS2029 Change dB	DMRB Long Term Classification	DM2022 vs DS2046 Change dB	DMRB Long Term Classification
B2068	12975	0.2	Negligible Adverse	0.6	Negligible Adverse
Harman Avenue	6972	0.1	Negligible Adverse	0.4	Negligible Adverse
Hythe Road	14785	0.5	Negligible Adverse	1.2	Negligible Adverse
Hythe Road	13431	0.3	Negligible Adverse	1.3	Negligible Adverse
Hythe Road	14786	0.5	Negligible Adverse	1.4	Negligible Adverse
Knoll Hill	14578	0.1	Negligible Adverse	0.5	Negligible Adverse
London Road	14781	0.4	Negligible Adverse	1.6	Negligible Adverse
Lympne Hill	14780	0.9	Negligible Adverse	2.8	Negligible Adverse
M20	13504	0.2	Negligible Adverse	0.6	Negligible Adverse
M20	12173	0.2	Negligible Adverse	0.7	Negligible Adverse
M20	600301	0.3	Negligible Adverse	0.9	Negligible Adverse
M20	600299	0.3	Negligible Adverse	0.9	Negligible Adverse
M20	12162	0.4	Negligible Adverse	1.1	Negligible Adverse
M20	13526	0.4	Negligible Adverse	1.1	Negligible Adverse
Otterpool Lane	14802	0.0	No Change	1.1	Negligible Adverse
Plain Road	14582	0.2	Negligible Adverse	0.7	Negligible Adverse
Sandling Road	14783	0.1	Negligible Adverse	-0.2	Negligible Beneficial
Stone Street	14769	0.2	Negligible Adverse	0.5	Negligible Adverse
Stone Street	14774	1.8	Negligible Adverse	3.1	Minor Adverse
Stone Street	14775	1.8	Negligible Adverse	3.1	Minor Adverse
Stone Street	6643	2.2	Negligible Adverse	3.6	Minor Adverse
Swan Lane	14767	0.1	Negligible Adverse	0.3	Negligible Adverse
Swan Lane	14677	0.1	Negligible Adverse	0.5	Negligible Adverse

13.4.30 With reference to Table 13-36 the DMRB assessment has found that many of the road links range between Negligible Adverse and Minor Adverse. For example, at Otterpool Lane No Change is predicted for the 2022 v 2029 comparison increasing to Negligible Adverse with the 2022 v 2026 comparison. There are generally Negligible Effects from increased traffic on the A20, Ashford Road, Stone Street and the M20 motorway. From the calculations presented in Table 13.36, **Moderate short term** impacts are expected along Aldington Road with the 2046DM and 2046DS scenario, however, in the long term when assessed over a longer time period these would be expected to reduce to **Minor adverse** as shown in Table 13.37. With the development, noise along this main access route would be typical of many busy roads of this type. Existing sensitive receptors comprise of just a few existing isolated residential dwellings along Aldington Road. Some of these are set back from the road at a distance greater than 10m and as such will have impacts slightly lower than those predicted. Scope for mitigation for the two dwellings close to Aldington Road is quite limited. For new dwellings mitigation options that can be considered as part of the detailed design includes off-setting new dwellings back from the road or the inclusion of enhanced glazing and ventilation strategy. Amenity space can be designed so that new dwellings provide screening from the road.

13.4.31 In summary the DMRB assessment for both the long and short-term assessments conclude that there are no major adverse noise effects as a result of changes in vehicle flows on the local network as a result of the proposed development during the interim years or the final completion date of 2046 including the Framework Masterplan development.

13.4.32 With reference to the guidance provided by the *NPPF* (Ref.9.1) it advises that the planning process should:

"Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established."

Assessment of Realigned Section of A20 Ashford Road

13.4.33 The development proposals include the realignment of a section of the A20 Ashford Road over a stretch of approximately 1.2km where it crosses Stone Street as shown in Appendix 13.6.

13.4.34 Consideration has been given to the impacts at the closest receptors in line with the Noise Insulation Regulations. The assessment has been undertaken to determine whether any residential properties within 300m of the realigned road are likely to meet the criteria provided in Appendix 13.1 to qualify for compensation. The three criteria that must all be met to qualify for compensation are:

- The building must be a residential dwelling, within 300m of the highway and occupied before the opening or first use of the new or altered highway.
- Within 15 years of the date of the new or altered highway being first opened will reach 68 dB LA10, 18 hour.
- Traffic noise in the 15 year period will be at least 1.0 dB(A) higher than before work on the new or altered highway began.
- When noise from the use of the new or altered highway is added to noise from other highways in the vicinity, the total noise level is increased by at least 1.0 dB(A) within the 15 year period.

13.4.35 The exact time the section of road is due for completion is not currently known but it is included in the early phasing of the development within the first five years. The Noise Insulation Regulations state that the assessment should be based upon the traffic conditions 15 years after opening. Due to the uncertainty of the precise year that the road would open an assessment has been based upon traffic data for the year 2046. Using traffic data for 2046 is likely to consider higher flows than one based upon 15 years after opening as stated in the Regulations. However, it provides an assessment based on the traffic data currently available and will provides a good indication of the likelihood of qualifying residential properties.

13.4.36 In Appendix 13.7, the figure shows a 300m buffer around the realigned section of road within which residential properties have been considered. Based upon this assessment it has been determined that no properties are likely to meet all three qualifying criteria as predicted noise levels in 2046 are below the 68 dB $L_{A10,\ 18\ hour}$ threshold. Therefore, no properties around the re alignment are anticipated to qualify for insulation/compensation.

13.4.37 With regards to new residential properties built within the 300m buffer zone it is assumed that the realigned road would be built prior to or at the same time as occupancy of the new dwellings and as such these dwellings would not meet the first criterion required for compensation.

Site Suitability – Noise Assessment

Site Suitability

13.4.38 This section considers the monitored noise levels in order to determine the suitability of the site for the proposed end uses, namely residential, employment areas, schools, business parks, retail, health centres, community and faith centres based upon the Parameter Plans and Framework Masterplan layout.

Residential Assessment

13.4.39 To assist in the understanding of any potential implications of noise on residential development at the site consideration has been given to the measured noise climate against the ProPG Stage 1 criteria. The impact of the measured indicative $L_{Aeq,T}$ daytime and night time levels have been assessed. Further consideration would be given to single noise events as described by the $L_{Amax,F}$ parameter at a later stage as part of more detailed assessments.

13.4.40 In Table 13-38 the summary day-time ambient ($L_{Aeq,T}$ dB) noise levels as measured around the site have been compared to the indicative noise risk assessment levels from the ProPG. This comparison provides an indication of noise risk in terms of potential for residential development.

Table 13-38 ProPG Stage 1 Risk Assessment for Measured Ambient Noise Levels in 2017/18

Monitoring Location	Daytime (07:00 – 23:00 hrs) $L_{Aeq,T,16hour}$ dB	ProPG, Risk Assessment Daytime (07:00 – 23:00 hrs)
NML 01L	75.9	High
NML 02L	58.3	Low
NML 03L	Not representative of Residential Provision	
NML 04L	50.7	Low
NML 05L	61.6	Medium
NML06L	60.2	Medium

13.4.41 In consideration of NML03L it is noted that this receptor is representative of Business Park provision within the northern part of the site adjacent to the northern boundary with HS1/M20; and is therefore not considered under the residential suitability assessment but considered further in the next section specifically assessing Business Parks.

13.4.42 The summary day-time ambient ($L_{Aeq,T,16hour}$ dB) noise levels as measured around the site have been adjusted to provide predicted levels for the interim assessment years of 2022, 2029 and the final opening year of 2046.

13.4.43 The levels have been balanced with the predicted noise levels derived from the traffic flow data for the same monitoring locations. The predicted traffic flow noise levels have been converted to an $L_{Aeq,T,16hour}$ value by subtracting 2dB as advised through Guidance. The two values were then combined at each

location by logarithmically adding them together. The final values were then compared to the indicative noise risk assessment levels from the ProPG as indicated in table 13-39. These comparisons provide an indication of noise risk in terms of potential for residential development as the project develops towards completion.

Table 13-39 ProPG Stage 1 Risk Assessment for Predicted Ambient Noise Levels for Interim Assessment and Completion Years

Monitoring Location	2022 Daytime (07:00 – 23:00 hrs) $L_{Aeq,T,16hour}$ dB	2022 ProPG, Risk Assessment Daytime (07:00 – 23:00 hrs)	2029 Daytime (07:00 – 23:00 hrs) $L_{Aeq,T,16hour}$ dB	2029 ProPG, Risk Assessment Daytime (07:00 – 23:00 hrs)	2046 Daytime (07:00 – 23:00 hrs) $L_{Aeq,T,16hour}$ dB	2046 ProPG, Risk Assessment Daytime (07:00 – 23:00 hrs)
NML 01L	77.5	High	77.7	High	78.1	High
NML 02L	58.6	Low	58.6	Low	60.5	Low/Medium
NML 03L	Not representative of Residential Provision					
NML 04L	52.9	Low	53.2	Low	54.2	Low
NML 05L	63.7	Medium	63.8	Medium	64.1	Medium
NML06L	62.1	Medium	62.3	Medium	62.6	Medium

13.4.44 Based upon the noise levels presented in table 13-39 derived from measured levels and predicted levels using traffic data, the ProPG assessment guidance suggests that a potential high-risk situation is possible in the vicinity of NML01L and NML03L. This could result in significant adverse effects for residents in the vicinity of the noise monitoring location stated if not suitably mitigated.

13.4.45 With regards to NML01L residential development and schools are proposed in the vicinity of NML01L however they would be set-back further from the A20 than the monitoring position which was at the back of the highway verge. Significant adverse effects upon future residents and those engaged in learning would be avoided by the implementation of an appropriate mitigation strategy, considered through the scope of an appropriate Acoustic Design Strategy (ADS). The ADS would require to present measures necessary to reduce noise levels to acceptable levels relative to appropriate guidance, but could include the following measures:

- The careful orientation of residential dwellings so that the buildings create a barrier so that gardens and other open amenity space is located on the opposite side from the road resulting in significantly lower ambient noise levels.
- Enhanced glazing for residential dwellings so that internal living spaces would not exceed noise limits set-out in BS8233.
- Provision of acoustic bunding/fencing.

13.4.46 In the vicinity of the other long-term monitoring locations the ProPG guidance suggests there is a medium to low risk with regard to both the measured current and future assessment year scenarios. It is concluded that an appropriate ADS would require to support the detailed design and planning of the site relating to residential provision. This ADS would require covering aspects such as consideration of the design and orientation of residential dwellings, the location of gardens and other open amenity spaces (such as balconies and shared open community space), and the adoption of enhanced glazing. With the correct and thorough consideration of these aspects through the detailed design of any residential provision at the site good acoustic living standards could be achieved for areas designated medium risk as well as those in low risk areas.

Potential Impacts from Existing Lympne Industrial Estate.

13.4.47 The Lympne Industrial Estate is an operating industrial site that is adjacent to part of the southern boundary of the proposed Development Site with some business units within it operating on a 24 hour

basis. There is an existing earth bund along the eastern border of the business park which is approximately two metres high and is to be retained.

13.4.48 Residential development is proposed as part of the Development within influencing distance of the Industrial Estate. Measurements obtained at monitoring location NML06S found the highest measured ambient noise levels to be around 52 $L_{Aeq,T}$ dB. This is below the 55 $L_{Aeq,T}$ ambient noise level recommended by the WHO Guidelines for Community Noise for outdoor amenity space such as gardens. However, in view of protection for both future residents in this area of the site, as well as for the protection of the businesses operating in the existing industrial estate any planning consideration for residential provision for this area of the site should reference BS4142; 2014 as an effective protection mechanism which accounts for specific aspects of the industrial noise prevalent which could result in loss of amenity to future residents in this areas of the Masterplan. This could be covered in the ADS for any applications in this area moving forward through detailed design.

13.4.49 Particular attention is recommended for the design of upper storeys of residential dwellings located close to the eastern boundary of the Lympne Industrial Estate where there would be little protection from the earth bund. Once the design and layout of the residential development is known appropriate mitigation is anticipated to include enhanced glazing and ventilation strategies for the residential dwellings.

Business Park Assessments

13.4.50 Two business parks are proposed in the northern part of the site as indicated on the Masterplan. It is anticipated that the business parks will comprise of a mix of B1a, B1b and B2 uses.

13.4.51 However, at the present time it is not possible to fully consider the potential for impacts from the commercial/industrial uses without understanding potential layouts and end user activities. Noise generated from B1 (light industrial) and B2 (general industry) can vary significantly with regard to the levels and types of noise generated and as such careful consideration will be necessary with regard to the provision of these uses in close proximity to proposed residential uses.

13.4.52 With respect to the feasibility of utilising the land, or aspects of the site, for commercial/light industrial uses there are two main issues that will need to be considered:

1. ***Suitability of the existing acoustic environment***.

13.4.53 NML03L monitoring location was situated on the northern boundary next to the adjacent local and HS1 railway lines and M20 beyond where noise levels were found to be high owing to these noise sources.

13.4.54 Business Parks are proposed along the northern border of the Development Site as indicated on the Masterplan. Development would be off-set from the boundary line and consequently be subject to a slightly lower noise level from that measured. Generally, commercial developments are much less sensitive to external noise levels than residential developments hence there is less specific guidance relating to the assessment of impacts for such land uses. BS 8233:2014 recommends appropriate internal noise levels for various types of commercial/ light industrial activities.

13.4.55 It is anticipated that the existing noise levels on the site would not generally be prohibitive to commercial development although should office-type developments be proposed then appropriate mitigation measures will need to be considered for locations closer to the northern site boundary where higher noise levels have been monitored (e.g. appropriate acoustic specifications for glazing/building facades, appropriate ventilation strategies to minimise break-in noise).

2. ***The control of impacts on new sensitive receptors.***

13.4.56 A secondary issue will be to ensure that noise from any new commercial/ light industrial development is controlled relating to noise associated with unit activities, service yards, HGV and vehicle activities, car parking and plant services. Noise associated with these aspects would need to be designed/controlled sufficiently so as not to adversely impact on new residential receptors proposed within the Development.

13.4.57 Impacts associated with the types of noise sources associated with commercial/ light industrial activities require to be considered and controlled in line with the methodology of BS 4142:2014 Methods for rating and assessing industrial and commercial sound. Noise associated with any commercial/ light industrial development at the site would need to be controlled as far as practically possible to a cumulative level which is no higher than (LA90 +/-0dB) the existing background noise climate at the nearest noise sensitive receptors (proposed) without the source under consideration.

13.4.58 It is recommended that good planning relating to the layout of the site will be imperative to controlling the noise impact of commercial land uses on nearby proposed residential receptors. Early input by an Acoustic Consultant during the detailed planning stages will be important to optimise acoustic attenuation achieved by the layout of the Business Parks.

13.4.59 Plant noise limits will need to be imposed on new commercial uses to control the noise impact on new sensitive receptors. Appropriate plant noise limits would need to be determined in consultation with the Local Planning Authority but would usually require noise from external plant/plant terminations to be controlled to a level no higher than that of the existing background level.

New Schools

13.4.60 Schools have a high sensitivity to noise and require a good acoustic noise environment to facilitate learning. Appropriate noise guidance for schools is contained within BB93 (2015) relative to internal noise environments conducive to learning and supported by external noise guidance contained within the accompanying document “Acoustics of Schools: A Design Guide”.

13.4.61 The external guidance of the document “Acoustics of Schools: A Design Guide” for new schools details a noise criteria of 60dB $L_{Aeq,\ 30min}$ as being the limit set at the boundary of any external premises used for formal and informal outdoor teaching, and recreational areas.

13.4.62 As no detailed design information is presented within the Outline Planning Application relating to the exact location, layout, or design of the proposed schools, mitigation measures would need to be incorporated into the design of the schools to ensure that the criteria of BB93 is achieved.

13.4.63 The worst-case location proposed for the schools is for the secondary school proposed to be located close to the new realigned section of the A20 on the north side as indicated on the masterplan. Measurements obtained from the short-term monitoring position NML02S at a similar nearby position found the highest noise levels to be around $L_{Aeq,T}$ 62dB.

13.4.64 Based upon the noise levels measured at the site and supported by the short term measurements in the Baseline Section it should be possible to achieve a noise level below the 60dB LAeq,16hours at the school site boundary with the use of acoustic barriers and screening if found to be necessary when assessing the detailed proposals for the school.

Health Centres

13.4.65 The precise locations of the health Centres are not presently known but is indicated to be in the Town Centre area of the Development Site.

13.4.66 As such it is not possible to fully consider the potential for impacts from ambient noise levels upon such facilities. The guidance document HTM08-01 Heath Technical Memorandum sets out design standards that should be adhered to enable the appropriate use of such facilities. Considering the ambient noise levels at monitoring locations NML09S and NML10S which represent the areas identified for health care facilities it is concluded that the design criteria in HTM08-01 can be achieved.

Site Suitability – Ground Borne (Train Induced) Vibration Assessment

13.4.67 As a result of the proximity of the railway lines to the northern part of the proposed Development, a ground borne vibration survey have been completed to quantify the potential for any vibration implications on the proposed scheme within this area of the proposed Development site.

13.4.68 At both monitoring locations the vibration survey captured pass-bys of the various trains that operate on the line including local commuter trains, HS1 high speed services with both Javelin trains linking Kent with London, and Eurostar services linking London to the Continent, along with freight services.

13.4.69 The assessment of vibration has been undertaken using following table from BS6472 which summarises the guidance contained with respect to human perception thresholds from this Standard. The Table which is summarised below presents values at which vibration from sources other than blasting are likely

to result in adverse comment from occupiers in terms of 16hr daytime (07:00 – 23:00) and 8hr night-time (23:00 – 07:00) Vibration Dose Values (VDV).

Table 13-40 BS6472 Vibration Dose Value Thresholds

Building/Location	Period	Threshold Criterion, in (mm/s$^{-1.75}$)		
		Low probability of Adverse Comment (mm/s$^{-1.75}$)	Adverse Comment Possible (mm/s$^{-1.75}$)	Adverse Comment Probable (mm/s$^{-1.75}$)
Residential Building	Day-time	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential Building	Night-time	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

NOTE – For offices and workshops, multiplying factors of 2 and 4 respectively should be applied to the above vibration dose value ranges for a 16-hour day.

Vibration Monitoring Assessment

13.4.70 The Table below summarises the vibration monitoring assessment in accordance with BS6472 for monitoring locations VML1 and VML2. Additionally, the table also indicates the effect level that corresponds to the measured vibration level.

Table 13-41 BS6472 Vibration Dose Value Thresholds

Location	Date	Time Period	VDV (X-axis) ($mm/s^{-1.75}$)	Below the Low probability threshold of Adverse Comment ($mm/s^{-1.75}$) 0.2 to 0.4 Day 0.1 to 0.2 Night YES / NO NOAEL	VDV (Y-axis) ($mm/s^{-1.75}$)	Below the Low probability threshold of Adverse Comment ($mm/s^{-1.75}$) 0.2 to 0.4 Day 0.1 to 0.2 Night YES / NO NOAEL	VDV (Z-axis) ($mm/s^{-1.75}$)	Below the Low probability threshold of Adverse Comment ($mm/s^{-1.75}$) 0.2 to 0.4 Day 0.1 to 0.2 Night YES / NO NOAEL
VML1	5th Oct 2018	Daytime (11:15 – 23:00)	0.005414	YES	0.006979	YES	0.038440	YES
		Night (23:00 – 07:00)	0.004470	YES	0.004412	YES	0.026060	YES
	6th Oct 2018	Daytime (07:00 – 23:00)	0.135300	YES	0.175000	YES	0.159000	YES
		Night (23:00 – 07:00)	0.002866	YES	0.003338	YES	0.019830	YES
	7th Oct 2018	Daytime (07:00 – 23:00)	0.014870	YES	0.010410	YES	0.026030	YES
		Night (23:00 – 07:00)	0.003146	YES	0.004067	YES	0.026690	YES
	8th Oct 2018	Daytime (07:00 – 23:00)	0.158400	YES	0.158400	YES	0.158600	YES
		Night (23:00 – 07:00)	0.003774	YES	0.004818	YES	0.031440	YES
	9th Oct 2018	Daytime (07:00 – 11:15)	0.005414	YES	0.006979	YES	0.038440	YES

Table 13-42 Vibration assessment for VML2 (VDV – Vibration Dose Value)

Date	VDV (X-axis) ($mm/s^{-1.75}$)	Below the Low probability threshold of Adverse Comment ($mm/s^{-1.75}$) 0.2 to 0.4 Day 0.1 to 0.2 Night YES / NO NOAEL	VDV (Y-axis) ($mm/s^{-1.75}$)	Below the Low probability threshold of Adverse Comment ($mm/s^{-1.75}$) 0.2 to 0.4 Day 0.1 to 0.2 Night YES / NO NOAEL	VDV (Z-axis) ($mm/s^{-1.75}$)	Below the Low probability threshold of Adverse Comment ($mm/s^{-1.75}$) 0.2 to 0.4 Day 0.1 to 0.2 Night YES / NO NOAEL
10/05/2018 11:07	0.00778	YES	0.01023	YES	0.04430	YES
10/05/2018 11:12	0.00789	YES	0.01023	YES	0.04430	YES
10/05/2018 11:17	0.00807	YES	0.01023	YES	0.04430	YES
10/05/2018 11:22	0.00833	YES	0.01030	YES	0.04452	YES
10/05/2018 11:27	0.00835	YES	0.01030	YES	0.04453	YES
10/05/2018 11:32	0.00836	YES	0.01030	YES	0.04453	YES
10/05/2018 11:37	0.00836	YES	0.01030	YES	0.04453	YES
10/05/2018 11:42	0.00839	YES	0.01032	YES	0.04476	YES
10/05/2018 11:47	0.00864	YES	0.01032	YES	0.04476	YES
10/05/2018 11:52	0.00864	YES	0.01032	YES	0.04476	YES
10/05/2018 11:57	0.00865	YES	0.01032	YES	0.04476	YES
10/05/2018 12:02	0.00971	YES	0.01032	YES	0.04476	YES

Table 13-43 Train passes and type during vibration baseline monitoring survey at VML2

Time	Type of train
11:07	Javelin HST
11:10	Commuter train
11:22	Javelin HST
11:23	Commuter train
11:30	Eurostar
11:31	Javelin HST
11:34	Eurostar
11:45	Freight
11:58	Eurostar
12:03	Eurostar

13.4.71 The measured vibration levels were found to be low, with all measurements not exceeding the lowest criteria relative to adverse comment from BS6474 during either the daytime or night-time periods.

13.4.72 The ground borne vibration assessment concludes that vibration levels created by passing trains are well below the levels at which there is a “low probability of adverse comment” due to vibration and based upon the effect levels specified in this Section would be below NOEL.

13.4.73 As such, the survey did not identify that ground borne vibration generated by the passage of trains on the HS1 line would be problematic at the site providing a similar stand-off distance to that used in the survey was maintained. Should this be the case once the detailed design is concluded then no specific mitigation measures for ground borne vibration are considered necessary. However, care will need to be taken in the detailed design of the buildings and the development to ensure that transfer effects are controlled between the substrate and the founding elements, along with measures to ensure that vibration levels are not amplified within buildings due to poor construction techniques and design.

Residual Effects from Construction

13.4.74 As a result of the outline nature of the application, and the level of information available within the regulatory plans upon which to base a detailed assessment, the consideration of residual effects cannot be concluded at this stage.

13.4.75 Specific consideration of residual noise effects requires the re-assessment of the noise impacts once construction methodologies have been determined, and to take account of the inclusion of the effects of any mitigation strategies proposed. As the application is in outline, detailing potential areas for development, the detailed level of information necessary to specifically conclude noise mitigation and residual impacts is not available. However, through the scope of this study, and inclusive of the effects of appropriate mitigation no significant adverse effects have been identified at this preliminary stage. Although the re-assessment of residual effects from construction would be carried out as part of the CEMP.

Residual Effects from Operation

13.4.76 The assessment of the operational stage of the proposed Development has determined that the noise climate of the area is demonstrated to not be prejudicial to the type of development proposed, and that with specific consideration of acoustic issues during the detailed design phase of each aspect, residual noise effects would be controlled to acceptable levels as the development progresses.

13.4.77 Therefore, it is concluded that with appropriate planning conditions in relation to the investigation and implementation of appropriate acoustic control measures within the detailed design of the proposed Development, acceptable residual impacts once the Site is operational would result. Significant effects at the operational stage are thus unlikely.

Cumulative Effects

13.4.78 Within the scope of this assessment consideration has been given to cumulative construction impacts of the proposed Development with other proposed development within the area. Other sites are smaller scale developments when compared to the Application Site and as such will have relatively short construction periods that are only likely to result in minor cumulative effects.

13.4.79 Consideration has also been given to cumulative effects with regards to the operational phase of the Development. As a result of the nature of the Development this has been limited to consideration within the off-site traffic noise assessment. The traffic data provided by the traffic team has been used for the 2046 scenario as the main assessment. This already includes all cumulative developments including the additional Otterpool Park development contained in the Framework Masterplan. The methodology for compiling traffic data and the determination of other developments to be included has been developed between the Arcadis traffic engineers and Folkestone and Hythe District Council as detailed in paragraph 13.4.24. In conclusion impacts during the operational phase resulting from changes in traffic which include cumulative effects are presented in 13.4.31 with anticipated effects ranging between **No Change** and **Minor Adverse** and as such adverse significant effects are not anticipated.

13.5 Assessment Summary

13.5.1 Table 13-44 provides a summary of the assessment with respect to potential Noise and Vibration effects and how they have been addressed. Whilst some of the temporary effects during the demolition and construction phase cannot be precisely quantified at this stage an indication of likely effects has been considered.

Table 13-44 Assessment Summary

Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
Existing residential properties within 300m of identified buildings to be demolished	Temporary adverse **noise** from demolition works	C	Working hours restricted to daytime working weekdays and Saturday morning at weekends Demolition work to be assessed and controlled through the CEMP and potential effects of various techniques to be carefully considered with regards to noise. Mitigation to be adopted as appropriate	Unlikely to be Significant
Existing residential buildings within 300m of construction work	Temporary adverse **noise** from construction works	C	Working hours restricted to daytime working weekdays and Saturday morning at weekends Construction work to be assessed and controlled through the CEMP and potential effects of various techniques to be carefully considered with regards to noise. Mitigation to be adopted as appropriate	Unlikely to be Significant
Existing residential buildings within 300m of construction work	Temporary adverse effects from **ground borne vibration** during construction phase	C	Working hours restricted to daytime working weekdays and Saturday morning at weekends Construction work to be assessed and controlled through the CEMP and potential effects of various techniques to be carefully considered with regards to noise. Alternative techniques / mitigation to be adopted as appropriate.	Unlikely to be Significant
New residential properties	Permanent adverse effects from noise created by the prevailing noise climate of the area and future changes as a result of the Development	O	Noise to be considered within the scope of an appropriate Acoustic Design Strategy (ADS) supporting the detailed design and applications for residential provision at the site. Issues to be covered include façade mitigation, layout considerations, acoustic screening (bunds/fences) and buffer zones	Not Significant
New residential properties	Permanent adverse effects from **ground borne vibration** created by trains using the railway lines.	O	Ground Borne vibration levels monitored to be low so none required	Not Significant
New residential properties	Permanent adverse effects from industrial activity/HGV movements at the Lympne Industrial Estate	O	Existing noise bund provides mitigation. Consideration of enhanced glazing to upper floors above ground level at the detailed design stage to achieve internal levels compliant with BS8233	Not Significant
Existing residential properties	Permanent adverse effects from traffic on the new section of realigned A20 Ashford Road in the vicinity of Stone Street	O	None required	Not Significant
New residential properties and existing residential properties	Permanent adverse effects from noise sources created by newly created businesses	O	Consideration of potential noise effects to be considered as a BS4142 assessment at the detailed design stage when premises layout and proximity of receptors is precisely known and mitigation in the form of site layout, barriers enhanced glazing considered as mitigation options.	Not anticipated to be Significant

13.6 References

Reference	Title
Ref 13.1	The Town & Country Planning (Environmental Impact Assessment) Regulations 2017
Ref 13.2	The Control of Pollution Act 1974
Ref 13.3	The Environmental Protection Act 1990
Ref 13.4	The Noise Insulation Regulations 1975
Ref 13.5	The Building Regulations 2010
Ref 13.6	Ministry of Housing, Communities & Local Government, National Planning Policy Framework 2018
Ref 13.7	Department for Environment, Food & Rural Affairs, Noise Policy Statement for England 2010
Ref 13.8	Department for Environment, Food & Rural Affairs, Planning Practice Guidance: Noise 2014
Ref 13.9	Folkestone and Hythe District Council (FHDC) Emerging Core Strategy Review 2018
Ref 13.10	Guideline for Environmental Noise Impact Assessment, Institute of Environmental Management and Assessment (IEMA) 2014
Ref 13.11	World Health Organisation (WHO): Guidelines for Community Noise 2000
Ref 13.12	World Health Organisation (WHO) Night Noise Guidelines for Europe 2009
Ref 13.13	BS 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures
Ref 13.14	BS 7445-2:1991 Description and measurement of environmental noise. Guide to the acquisition of data pertinent to land use
Ref 13.15	BS 8233:2014: Guidance on sound insulation and noise reduction for buildings
Ref 13.16	BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites; Part 1 Noise
Ref 13.17	BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites; Part 2 Vibration
Ref 13.18	Calculation of Road Traffic Noise (CRTN) 1988
Ref 13.19	Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 7 Noise and Vibration (HD213/11)
Ref 13.20	BS 7385-2:1993 Evaluation and measurement for vibration in buildings. Guide to damage levels from ground borne vibration
Ref 13.21	BS 6472-1:2008: Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting
Ref 13.22	BS 4142:2014 Methods for rating and assessing industrial and commercial sound
Ref 13.23	Professional Practice Guidance on Planning and Noise – New Residential Development (ProPG), Institute of Acoustics, Chartered Institute of Environmental Health and the Association of Noise Consultations 2017
Ref 13.24	Department for Education & the Education Funding Agency Building Bulletin 93 (BB93) Acoustic Design of Schools: Performance Standards 2015
Ref 13.25	Department of Health and Social Care Health Technical Memorandum 08-01 (HTM08-01): Acoustics 2013

14 Socio-Economics and Community

14.1 Introduction

14.1.1 This Section of the ES assesses the impact of construction and operation of the proposed Development with respect to socio-economic and community effects. The assessment incorporates relevant embedded design and other mitigation measures that would be implemented during both construction and operation phases. It also demonstrates the beneficial impacts associated with the creation of new employment opportunities, improvements to the range and availability of housing and the introduction of new community facilities in the district which will also be accessible to residents frome adjacent villages.

14.1.2 The assessment considers socio-economic and community effects under the following headings:

- Existing land-uses
- Population
- Housing
- Economy and employment
- Community services and infrastructure
- Open space and recreation.

14.1.3 The Section includes a review of the legislation, policies and guidance relevant to socio-economic and community issues. It also draws upon the Community Infrastructure Delivery Strategy that has been submitted alongside the ES with the planning application and should be read in conjunction with this Section.

Relevant Aspects of the Proposed Development

14.1.4 A full description of the proposed Development is given in Section 4. Specific aspects that relate to the socio-economics and community topic include the impacts of the delivery of up to 8,500 homes along with retail, commercial, leisure, education, health and community facilities, green infrastructure and public open space.

14.2 Assessment Methodology

Legislation, Policy and Guidance

Legislation

14.2.1 There is no legislation which specifically governs how socio-economic assessments are undertaken; the Planning Acts (which include the Town and Country Planning Act 1990 (Ref. 14.1) provide the framework within which planning applications are made in England. Other legislation of relevance to the topic of socio-economics includes the Localism Act 2011 (Ref. 14.2) which introduced legal provisions for local communities to develop neighbourhood plans; and the Housing and Regeneration Act 2016 (Ref. 14.3), written with the objectives of improving the supply and quality of housing, securing the regeneration or development of land and supporting the creation, regeneration and development of communities in England (for example through neighbourhood planning).

National Policy

14.2.2 A revised National Planning Policy Framework (NPPF) (Ref. 14.4) was published in July 2018 by the Ministry of Housing, Communities and Local Government, which implements around 85 reforms arising from the Housing White Paper (Ref. 14.5), the Planning for the Right Homes in the Right Places consultation proposals which supplemented the White Paper (Ref. 14.6), and the draft revised National Planning Policy Framework consultation.

14.2.3 The NPPF has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways:

- **an economic objective** – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
- **a social objective** – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
- **an environmental objective** – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

14.2.4 Paragraph 59 emphasises the Government objective of significantly boosting the supply of homes. It also explains that it is important that a sufficient amount and variety of land can come forward where it is needed, that the needs of groups with specific housing requirements are addressed and that land with planning permission is developed without unnecessary delay.

14.2.5 Paragraph 62 of the NPPF addresses planning policy for affordable housing. Where there is a need for affordable housing, planning policy should seek to ensure:

- off-site provision or an appropriate financial contribution in lieu can be robustly justified; and
- the agreed approach contributes to the objective of creating mixed and balanced communities.

14.2.6 Paragraph 80 of the NPPF highlights the required emphasis needed to support economic growth and productivity, taking into account both local business needs and wider opportunities for development. Planning policies should seek to encourage sustainable economic growth, identify strategic sites and increase local and inward investment, address barriers to investment such as infrastructure or services and be flexible enough to accommodate needs not anticipated.

14.2.7 Paragraph 82 states that planning policies and decisions should recognise and address the specific locational requirements of different sectors.

14.2.8 A Green Future: Our 25 Year Plan to Improve the Environment (2018) (Ref. 14.7) covers connecting people with the environment to improve health and wellbeing, focusing particularly on promoting health and wellbeing through the natural environment and encouraging children to be close to nature, in and out of school. Other sections relate to greening our towns and cities.

Local Policy

14.2.9 A summary of relevant local policy to the topic of socio-economics and community is provided in Table 14-1.

Table 14-1 Local Policy Summary

Policy Document	Summary of Relevant Policy	Policy Compliance
Shepway District Council Local Plan Review (2006) (Ref. 14.8)	Employment Policies E1, E2, E4 and E6a address the existing employment areas and any new opportunities in the area such as the Link Park in Lympne. Loss of land for commercial use should be avoided and policy seeks to protect small businesses. From a housing perspective, Policies HO1 and HO6 set the requirements for new residential development the housing needs in rural areas such as Otterpool. Policy SD1 in relation to Otterpool Park ensures that all development will contribute towards ensuring a better quality of life through the implementation of sustainable solutions. Nearby amenities will contribute to a more sustainable place including a local centre consisting of shops	The proposed Development is compliant with Policy E2 in that it will not adversely affect existing employment sites. New housing will be compliant where relevant with Policies HO1 and HO6.

	and pubs. The provision of new shopping facilities and or public house to improve the community will be supported by Policy S8. Policies LR3 to LR12 seek to ensure sport and recreation facilities, PRoW, open space and play areas are all sufficiently protected and provided for as part of any new development in the district. Sustainable movement is promoted in policies TR2, TR5 and TR6 through the provision of public transport links and cycling and walking routes within and surrounding the proposed development. Access to the highway network and car parking facilities are also considered within the policy compliance.	
Shepway Core Strategy (2013) (Ref. 14.9)	Development will be encouraged where jobs and services are maintained and improved. There will be a strong focus on Town and District Centres and provision of a number of uses that contribute to an improved local economy. These priority centres are supported as part of Policy SS4. The importance of green infrastructure to health is demonstrated in Policy CSD4. The policy seeks to expand the use of greenspaces such as public open space and outdoor sports facilities. Local place-shaping objectives set out in Policy SS3 seek to promote the creation of sustainable, vibrant and distinct communities with a preference of development on brownfield land. A balanced neighbourhood is fundamental in the provision of a strong sense of community. Policy CSD1 focusses on a balanced mix of housing for new development in the district. Residential development and new accommodation should be designed and located in line with the district needs. Policy CSD2 explains how housing supply will be managed and that half the new homes by 2026 will be three bedroom or larger dwellings. In terms of a housing and economic growth strategy, Policy SS2 describes the '*core long-term objective to ensure the delivery of a minimum of 350 dwellings (Class C3) per annum on average until 2030/31 (inclusive from 2006/7)'.*	The proposed Development is compliant with Policy SS4 in that development complies both with national policy and contributes to continued centre viability. The proposed Development will result in the creation of balanced neighbourhoods through high quality design and in line with requirements to meet needs of vulnerable groups as set out in policies CSD1 and CSD2.
Shepway District Council Places and Policies Local Plan (Submission Draft, February 2018) (Ref. 14.10)	The internal and external space standards for all dwelling sizes are set in policy HB3. Policy HB6 emphasises the importance of meeting housing need in rural areas. The development must be designed and available at a cost capable of meeting the identified local need. The development of new residential institutions need to be designed to national standards, in a sustainable location, has surrounding complimentary land uses and has sufficient open space and provision of services and access to public transport. Policy C1 seeks to ensure new development creates a sense of place. As a larger development, community cohesion methods and procedures such as landscaping, public art and water features can be phased into the proposal so that they impact a critical mass population. Health policies HW2, HW3 and HW4 seek to improve health and wellbeing of the local residents and reduce inequalities as part of any proposed development in the district. This includes encouraging active lifestyles and promoting active travel. This will be achieved through the implementation of landscape features, good design and layout of buildings and preventing the loss of agriculture land where possible. The protection and/or creation of cycle and walking routes surrounding and through the site will help improve accessibility.	New housing will be compliant with Policy HB3 (internal and external space standards) where relevant in addition to compliance with self-build policies as set out. The proposed Development will foster a sense of place through community led projects.
Folkestone & Hythe District Council Core Strategy Review (2018) (Ref. 14.11)	The document focusses on the spatial and delivery elements of the strategy. Policies SS2 and SS4 promote economic growth and priority areas for activity within Folkestone and Hythe. The housing policies fall within the core strategy delivery, addressing district residential needs (Policy CSD2). The wider community policies include SS3 on place shaping and CSD1 on balanced neighbourhoods. From a health perspective, green infrastructure is identified as a key driver for improving health and wellbeing in the district. The district seeks to maintain the Healthy New Town principles in Policy SS8. The policy sets out the criteria for 'A sustainable new town' and 'A healthy new town'.	The proposed Development is compliant with Policies SS2 and SS4 in terms of the employment opportunities provided, together with the creation of a vibrant town centre. In terms of housing, the proposed Development is compliant with Policy CSD1 in terms of local distinctiveness, the presentation of a broad range of tenues, and the provision of affordable housing / balanced neighbourhoods. The proposed Development has been developed on garden town principles in relation to new homes, self-build / custom build houses, employment development and community / educational facilities.
Affordable Housing Supplementary Planning Document (Shepway District	The purpose of the Supplementary Planning Document (SPD), is to provide more detailed advice for applicants for planning permission for new housing development, and also for the information	The proposed Development meets the requirements of the SPD in terms of the provision of a variety of tenure types which meet a variety of housing needs.

Council, 2008) (Ref. 14.12)	of the wider public, on how Shepway District Council will apply the policy. The SPG offers recommendations on tenure types, size and type of dwelling, financial viability and management and administration.	

Guidance

14.2.10 There are no specific guidelines or requirements for assessing socio-economic impacts as part of an Environmental Impact Assessment (EIA), although Volume 11, Section 3, Parts 3, 8 and 12 of the Design Manual for Roads and Bridges (Ref 14.13) does refer to guidance for assessing the impact on topics such as land use, community access and policies and plans respectively. Whilst this guidance has been produced in relation to proposed roads and bridges it nonetheless provides a useful reference tool for consideration of other development proposals.

14.2.11 The methodology used has also been informed by the fourth edition of the 'Additionality Guide' (Homes and Communities Agency, 2014) (Ref 14.14). The guide explains how to assess the additional impact of local economic growth and housing interventions and has been updated to include new information, research and guidance. The guide states that 'central to good appraisal is the need to assess whether the intervention concerned will bring additional benefits over and above what would have happened anyway in its absence'. The HCA provide particular guidance in relation to issues such as extent of study area and broad approach.

14.2.12 Detailed guidance relating to methodologies for the assessment of impacts on specific topics (for example employment and education) is provided within the Methodology section of this Section.

Consultation and Scoping

Consultation

14.2.13 Table 14-2 provides a summary of consultee issues raised with respect to socio-economic and community effects and how they have been addressed.

Table 14-2 Summary of Consultation

Consultee/Contact/Date	Summary of Consultee Issue	How Addressed?
Natural England / Kent Downs AONB	Need for an assessment of recreational impacts of the proposed Development on the Kent Downs AONB.	Baseline data regarding recreational use included, together with an assessment focusing on agreed areas where there may be capacity issues.
Kent County Council	Methodology to assess of level of demand for new education provision.	Assessment follows appropriate methodology as agreed by Local Education Authority.

Scoping

14.2.14 Table 14-3 provides a summary of consultee responses contained within the Scoping Opinion in relation to socio-economic and community effects, and the corresponding location in the ES where they are addressed.

Table 14-3 Summary of EIA Scoping Opinion

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
Natural England	Need for assessment of recreational impacts on the Kent Downs AONB, including potential impacts on access land, Public Rights of Way, and other routes in the vicinity of the proposed Development (for example the nearby North Downs Way National Trail).	Assessment of recreational impacts on the Kent Downs AONB and other areas is provided within the Assessment of Residual Effects for the operation phase.
Canterbury City Council	Delivery of employment development should be considered.	Consideration of the delivery of employment development is provided within the Assessment of Residual Effects section for both constructional operation phases.
Kent County Council	Development should be served by fibre broadband infrastructure. Consideration of nursing / dementia care home for older people and/or extra care housing land uses within the proposed Development to cater for social care needs. Consideration also to the incorporation of smaller units rather than an institutional care home for people with specific health needs. Level of demand for education within the development would need to be based on the forecast requirements of the Local Education Authority.	Consideration of the need for appropriate housing and care facilities has been given in the development of the Masterplan for Otterpool Park. A range of housing types, sizes and tenures have been identified and are assessed accordingly within the Assessment of Residual Effects section. The Assessment of Residual effects section considers the level of demand for education, based on forecast requirements of the Local Education Authority.
Kent Downs AONB	Necessary to assess the impacts of increased visitor pressure on the Kent Downs AONB.	The impacts of increased visitor pressure on the Kent Downs AONB is considered in the Assessment of Residual Effects section, as well as in the Habitats Regulation Assessment which forms Appendix to this ES.

The Study Area

14.2.15 The Additionality Guide provides information relating to the scale at which assessment can be undertaken most appropriately. The guidance notes that very few proposals should be assessed only at site level (i.e. in the immediate vicinity of a proposal) given that socio-economic costs and benefits are very rarely concentrated in the actual area of physical activity. The importance of assessing impacts at local/sub-regional levels is therefore stressed, relating to an approximate 10 to 15-mile radius from the site concerned. Precise delineation is acknowledged to depend on other factors including density of settlement patterns as well as the type and scale of the proposal.

14.2.16 The consideration of socio-economic and community effects for the proposed Development have therefore been concentrated on three spatial areas as follows:

- The Development site boundary for the project has been used to identify specific impacts relating for example to land-take and direct effects on receptors (for example loss of existing employment or effects on existing Public Rights of Way (PRoW) during construction;

- Folkestone & Hythe District has been used to consider effects relating to population, the local economy, housing and community infrastructure (the 'local study area');
- Kent and the wider south-east region have been used to consider wider socio-economic effects arising from the proposed Development (the 'wider study area').

Methodology for Establishing Baseline Conditions

14.2.17 A range of data sources has been used to inform the assessment, including:

- Data available from the Office for National Statistics, including 2011 Census data (Ref. 14.15) and annually produced population estimates (Ref. 14.16);
- Labour force activity information and data regarding the local economy accessed via Nomisweb and the Business Register and Employment Survey (BRES) (Ref. 14.17);
- In relation to education, school capacity data has been reviewed using Annual Schools Census data (2017) and Kent County Council published admissions numbers (Ref. 14.18);
- A desk-top review of key community facilities and infrastructure within the study area to help identify potential activity changes resulting from the proposed Development.

Forecasting the Future Baseline

14.2.18 The future baseline has utilised data sources including ONS population forecasts and the Strategic Housing Market Assessment (Shepway District Council 2017) (Ref. 14.19).

Defining the Importance/Sensitivity of resource

14.2.19 Resources are the assets and facilities which may be affected by the proposed Development; receptors are the users or beneficiaries of those resources. Table 14-4 summarises the resources and corresponding receptors that have been considered as part of this assessment.

Table 14-4 Resources and Receptors

Resource	Corresponding Receptor
Residential properties	Local residents
Commercial properties	Local businesses
Employment land and property	Local and wider economy
Community infrastructure (for example education, healthcare, community facilities)	Users of community infrastructure
Areas of open space, play areas, recreational routes	Users of these spaces and facilities

Methodology for Assessing Impacts

Impact Characterisation

14.2.20 The approach uses a combination of quantitative assessment where established formulae are available and professional judgement where a qualitative assessment of impacts has been required.

14.2.21 Sources of information that define the proposed Development have been reviewed, including information submitted to support the planning application. Study areas for the assessment of potential impacts have been defined and a baseline developed to provide a description of the current economic and social context for the area, including population, housing, economy and employment, community services and infrastructure, open space and recreation. Baseline information has been described quantitatively where possible, but also making use of qualitative information where necessary. The socio-economic conditions are assessed by comparing the baseline conditions within local, regional and national area levels. Following this, the Section analyses those impacts likely to result from the construction and operational phases of the proposed Development.

14.2.22 Impact magnitude has been assessed by consideration of the following factors:

- The magnitude of the predicted impact;
- The geographic extent of the impact;
- The duration and reversibility of the impact; and
- The capacity of the local economy or area to absorb or adjust to the impact.

14.2.23 Specific methodologies for assessing the functional effects of the proposed Development are as follows:

- **Employment** – employment generated during the construction phase is assessed using data provided by the Office for National Statistics (ONS) and Business Register and Employment Survey (BRES) data. Analysis of proposed land use and floor space provision to determine employment generation potential from the proposed Development, coupled with an assessment of the likely effect on the employment availability for the existing economically active population;
- **Population** – the new population generated as a result of the proposed Development will be estimated based on housing density figures identified in the 2011 Census;
- **Community facilities** – an audit of the existing community facilities (including education, healthcare and open space) has been undertaken as part of the baseline assessment. Potential level of demand arising from the proposed Development for community infrastructure is assessed as follows:
  - **Education**. Child yield has been estimated for pre-school, primary and secondary school-aged children arising from the proposed Development based on guidance presented in the Community Infrastructure Delivery Strategy (Quod 2018);
  - **Healthcare**. Current waiting list information has been accessed using available NHS data and information from specific GP surgeries relating to waiting lists. The Healthy Urban Development Unit (HUDU) (Ref. 14.20) benchmark of 1,800 registered patients per NHS GP has been used as part of the assessment of demand for healthcare facilities arising from the proposed Development;
  - **Open space**. Existing open space, play areas and sports facilities have been identified as part of baseline assessment.
- Mitigation measures are set out where appropriate, following which an assessment of residual effects following implementation of such measures is undertaken.

Assessing Significance of Effect

14.2.24 There are generally no accepted criteria for assessing the significance of socio-economic and community effects. The terms used to define the significance of effects are as follows:

- Adverse: detrimental or negative impacts to a socio-economic resource or receptor
- Negligible: imperceptible impacts to a socio-economic resource or receptor
- Beneficial: advantageous or positive impact to a socio-economic resource or receptor

14.2.25 Where beneficial or adverse effect have been identified, these have been assessed against the following scales:

- Minor: slight, very short or highly localised impact – may be considered not significant
- Moderate: limited impact (by extent, duration or magnitude) which may be considered significant
- Major: considerable impact (by extent, duration or magnitude) of more than local significance (for example a sizeable change in relation to the baseline or affecting a wide geographic area, and is also significant.

Limitations and Assumptions

Limitations

14.2.26 Limitations of the assessment, together with assumptions used are summarised as follows:

- baseline conditions have been established using data that is currently available
- professional judgement and expertise have been used to assess impacts where quantitative information or appropriate guidance is not available.

Assumptions

14.2.27 In terms of population and related assessments based on a maximum figure of 8,500 dwellings, assumptions have included:

- an average dwelling density of 2.4 people per unit (as derived from the 2011 Census).
- 22% of the dwellings would be affordable housing.

14.3 Baseline

Existing Baseline

Existing Land-Uses

14.3.1 Land-uses within the application Site boundary include agricultural, commercial and residential uses and nearly 70 existing buildings. A large proportion of the Site area is occupied by farmsteads and associated agricultural land for a mixture of arable and livestock farming purposes (the effects on agriculture and soils are described in Section 5 of this ES), in addition to the site of the former Folkestone Racecourse (which closed in 2012). Other commercial uses located and currently operational within the application Site boundary are identified in Table 14-5, including offices, workshops, a café and recording studio. These uses currently employ in the region of 70 staff.

Table 14-5 Commercial Uses within the Application Site Boundary

Business Name and Location	Description
Airport Café, Ashford Road, Sellindge	Café
Salvage Yard, Rear of Airport Café	Land used for lorry parking
Unit 1, Benham Water Farm, Ashford Road, Newingreen	Workshop
Unit 2b, Benham Water Farm, Ashford Road, Newingreen	Office
Unit 3, Benham Water Farm, Ashford Road, Newingreen	Workshop
Station House, Westenhanger Railway Station	Auction house
Euro Cosmetics Ltd, Hillhurst Farm, Saltwood	Office
Office 1, Hillhurst Farm, Saltwood	Office
Office 2, Hillhurst Farm, Saltwood	Office
Office 3, Hillhurst Farm, Saltwood	Office
Hillhurst Farm, Stone Street, Saltwood	Recording studio

14.3.2 There are a number of commercial enterprises located immediately adjacent to the application Site boundary. These include:

- Westenhanger Castle, a wedding and conference venue
- Holiday Extras, providers of online holiday support services (premises has recently expanded)
- A motorway service station adjacent to junction 11 of the M20 and including a Channel Ports Truck Park
- Nearby small businesses including those located on Barrow Hill and a marquee hire company on Harringe Lane
- Port Lympne Wildlife Park
- Lympne Industrial Estate, which accommodates a range of light industrial and warehousing businesses and which has planning permission for expansion

14.3.3 Residential properties located within the application Site boundary include several farmsteads as well as isolated properties located to the south of Ashford Road (A20) in the vicinity of Newingreen.

Population

14.3.4 Table 14-6 shows the population and gender profile for the local and wider areas, with Table 14.7 setting out data relating to the age profile of those residents.

Table 14-6 Population Growth (%)

	2001	2011	Population Growth 2001-2011 (%)	2017 Population Estimate	Population Growth 2011-2017
Folkestone & Hythe District	N/A	107,969	N/A	111,400	3.18%
Kent County	1,329,718	1,463,740	10.08	1,554,600	6.21%
South East	8,000,645	8,634,750	7.93	9,080,800	5.17%
England	49,138,831	53,012,456	7.88	58,744,600	10.81%

Source: Office for National Statistics Census Data 2001, 2011, Population Estimates Mid-2017

14.3.5 The most recent population data at Lower Super Output Area (LSOA) level is from the 2011 Census. There are three LSOAs that cover the application Site boundary (Shepway 008D, Shepway 009C and Shepway 009D); 2011 Census data shows that the three LSOAs had a total population of 5,627 people. Population density for each of these three LSOAs is 0.7, 1.3 and 2.2 persons per hectare respectively, compared to a district-wide population density of 3.0.

14.3.6 Table 14-7 shows there is a slightly higher proportion of young people (0-15) in the county of Kent and the South-East region than is the case for Folkestone & Hythe District and England as a whole. There is also a higher number of young adults aged 16-44 than in the South East and England than at local and county level. Folkestone and Hythe District has a higher proportion of residents aged 45-64 and retired population than is the case for other areas.

Table 14-7 Age Profile (%)

Age Group	Folkestone & Hythe District	Kent	South East	England
0-15	17.9	19.3	19.0	18.9
16-24	10.6	11.3	11.2	11.9
25-44	23.3	25.0	26.5	27.5
45-64	27.5	26.4	26.1	25.4
65+	20.8	17.9	17.1	16.4

Source: Mid-Year Population Estimates, 2017

14.3.7 Table 14-8 outlines data relating to ethnicity, identifying that the district of Folkestone and Hythe and the County of Kent have a higher proportion of people from a white ethnic background than the South East or England as a whole.

`Table 14-8 Ethnicity (%)

Ethnicity	Former Shepway District	Kent	South East	England
White	94.7	93.7	90.7	85.4
Mixed	1.2	1.5	1.9	2.3
Asian/Asian British	3.4	3.3	5.2	7.8
Black/African/Caribbean/Black British	0.4	1.1	1.6	3.5
Other ethnic group	0.3	0.5	0.6	1.0

Source: Census Data 2011

Housing

14.3.8 Average earnings and property prices can be contributing factors to types of housing tenure in an area. This is demonstrated by the 2011 census housing tenure data in Table 14-9. Over half of the population of both Folkestone and Hythe and Kent are property owners. Folkestone and Hythe District has slightly more privately rented properties, whereas Kent has a higher percentage of social rents. In terms of property prices, Folkestone and Hythe was one of only two districts in Kent that saw an increase in property sales in 2017 compared to 2016 (Ref 14.19).

Table 14-9 Housing Tenure (%)

	Former Shepway District	Kent	South East	England
Owned	64.8	67.3	67.6	63.3
Shared ownership	0.5	1.0	1.1	0.8
Private rented	22.2	16.5	16.3	16.8
Social rented	11.2	13.9	13.7	17.7

Source: Census Data 2011

14.3.9 The Strategic Housing Market Assessment (SHMA) (Ref 14.19) produced in March 2017 shows that net housing completions in the district between 2001 and 2015 averaged 333 dwellings per annum. The SHMA sets out self-containment values for Shepway, stating that Shepway migration flows are positive and natural change is negative – i.e. people move from elsewhere to live in the district and then remain there for the rest of their lives, a pattern which is common along the south coast.

Economy and Employment

14.3.10 Table 14-10 shows the economic activity and inactivity rates for Folkestone and Hythe District compared with Kent and the South East. The proportion of people economically active in Folkestone and Hythe District is lower than for the other two geographical areas; the proportion of people who are self-employed is also lower. A proportion of economically inactive residents within Folkestone and Hythe District are classified as long-term sick.

Table 14-10 Economic Activity and Inactivity

	Folkestone & Hythe District	Kent	South East
Economically Active	73.2%	79.8%	81.1%
In employment	70.4%	75.6%	78.3%
Employees	63.2%	63.4%	66.2%
Self-employed	7.2%	11.7%	11.8%
Unemployed	4.5%	5.1%	3.5%
Economically Inactive	26.8%	20.2%	18.9%
Looking after family / home	21.2%	25.8%	24.8%
Long-term sick	33.0%	24.1%	18.7%

Source: Nomis July 2017-Jun 2018

14.3.11 Table 14-11 provides details of employment by occupation. The table shows that there is a higher proportion of residents in the associate professional and technical group compared to Kent and the South East, as well as higher proportions of residents in caring, leisure and services occupations.

Table 14-11 Employment by Occupation

Soc 2010 Group	Folkestone & Hythe District	Kent	South East
Managers, directors and senior officials	8.0%	11.0%	12.1%
Professional occupations	14.8%	19.0%	22.3%
Associate professional & technical	18.2%	15.0%	16.0%
Administerial & secretarial	11.6%	10.9%	10.4%
Skilled trades occupations	12.7%	11.2%	9.5%
Caring, leisure & other service occupations	13.9%	9.3%	8.9%

Soc 2010 Group	Folkestone & Hythe District	Kent	South East
Sales and customer service occupations	5.7%	6.6%	7.1%
Process plant & machine operatives	5.0%	5.8%	4.6%
Elementary occupations	10.1%	10.4%	8.8%

Source: Nomis July 2017-Jun 2018

14.3.12 ONS claimant count for Folkestone and Hythe District in October 2018 was 2.7%; which compares to 2.0% for Kent and 1.4% for the South East as a whole. A higher proportion of claimants are males across all three geographies. Folkestone and Hythe District shows a higher proportion of claimants in the 18-21 age group than is the case for Kent or the South East (5.0% compared to 3.6% and 2.1% respectively).

14.3.13 With regard to qualifications, statistics for the former Shepway District show that a higher proportion of residents have no or lower level qualifications than is the case at county level or for the South East (Table 14-12).

Table 14-12 Qualifications

Qualifications	Former Shepway District	Kent	South East
No qualifications	24.7	22.5	19.1
GCSE and A level equivalents	44.3	43.9	42.2
Further and higher education	21.8	24.7	29.9
Other qualifications	5.4	5.1	5.2

Source: Census data 2011

14.3.14 Average gross weekly pay for full-time workers in 2018 was £519.7 for residents of Folkestone and Hythe District, compared to £598.1 for Kent and £614.5 for the South East (Nomis 2018).

14.3.15 The Employment Land Review (ELR) for Shepway (2017) (Ref. 14.21) summarises information about the local economy. The Review notes that Shepway supported around 48,200 jobs in 2016, representing an employment growth of 27% over the period from 1997 which was much higher than the growth recorded in Kent (22%), the South East (19%) and the UK (19%) over the same period. The District is over-represented in a number of employment sectors including public administration and defence, agriculture and finance and insurance, whilst under-represented in manufacturing, professional and other private services, and information / communication. Productivity (as measured by Gross Value Added) was lower in Shepway in 2016 than the average for Kent or the South East, reflecting the over-representation of lower value sectors in the district. Finally, the Review highlights that the district has a much lower rate of business start-ups compared to regional and national averages (69 business births per 10,000 working-age persons in 2014 compared to 83 for Kent and 93 for the South East). In terms of business counts by size, Table 14-13 shows the proportions of businesses within each size category in Folkestone and Hythe District and for the South East.

Table 14-13 Employment by Occupation

Business Size	Folkestone & Hythe District	Kent	South East
Micro (0 to 9)	89.6%	89.7%	89.9%
Small (10 to 49)	8.9%	8.5%	8.2%
Medium (50 to 249)	1.2%	1.5%	1.5%
Large (250+)	0.3%	0.3%	0.4%

Source: Nomis 2018

14.3.16 The Otterpool Park Employment Land Needs Assessment (OPLNA) 2018 (Ref 14.22) provides a partial update of the 2017 Shepway ELR. The report updates District wide growth projections and associated employment land requirements over the period to 2037 (i.e. to align with the Core Strategy Local Plan review period) by drawing on the latest population projections and economic forecasts. It also provides estimates of employment land needs for the District and Otterpool Park specifically, based on different assumptions of growth and demand.

14.3.17 The OPLNA considers Experian projections used to inform the 2017 ELR (taken from Experian's March 2016 release). The latest forecasts imply a much lower level of job growth in Folkestone and Hythe District on an 'average per annum' basis, albeit covering different periods of time and a different end year to the forecast. The latest forecasts imply growth of 237 jobs per annum (between 2018 and 2037) compared with 445 jobs per annum (between 2006 and 2026) in the 2017 ELR.

14.3.18 The Shepway Economic Development Strategy (2015 -2020) (Ref 14.23) identifies four priorities for the area including building on economic strengths; boosting productivity and supporting business growth; promoting further investment; and improving education and skills attainment. Within these priorities there is a focus on promoting key sectors which are well represented in the district already and which have potential for future growth. These include financial services, creative industries, business and professional services, transport and logistics, energy, tourism, culture, retail and recreation, and advanced manufacturing. Key activities identified include encouraging more business start-ups, supporting businesses to grow and improving survival rates of businesses.

14.3.19 Travel to work data for the former Shepway District identifies it to be a net exporter of labour, with key commuting destinations being Ashford, Dover, Canterbury, Maidstone and London city centre. The self-containment rate for Shepway was 69% in 2011 (this refers to the share of residents who also work in the district). Travel to Work Areas (TTWAs) defined in 2015 by the Office for National Statistics (ONS) identify best fit boundaries within which commuting is as self-contained as possible. The 2015 data shows Folkestone and Dover as part of a combined TTWA (in previous assessments, Folkestone and Dover formed separate TTWAs).

14.3.20 The Employment Opportunities Study prepared for the Otterpool Park Garden Town by Lichfields in March 2018 (Ref 14.24) identifies that the existing commercial market in Shepway is relatively localised, with the District recording a relatively low share of inward investments compared to other parts of Kent over the last two decades. Reasons for this include the nature of the employment site offer coupled with delivery barriers to land coming forward for development. Shepway does not have availability of strategic employment land which in turn reduces the extent of its commercial property market catchment area.

Deprivation

14.3.21 The English Indices of Deprivation 2015 provide a relative measure of deprivation at small area levels (Lower Super Output Areas) across England, based on information relating to income, employment, health and disability, education, crime, barriers to housing and services and living environment, which can be combined into an overall Index of Multiple Deprivation (IMD) (Ref. 14.25).

14.3.22 Deprivation is measured across seven different areas or domains – income, employment, health, education, living environment, crime and barriers to services using a wide range of indicators. These measures are aggregated to create the index of multiple deprivation (IMD), which gives an indication of overall deprivation.

14.3.23 According to the 2015 Indices of Deprivation, levels of deprivation in Folkestone and Hythe District as a whole have reduced between 2010 and 2015 relative to other local authorities in England. However, four

LSOAs within Folkestone and Hythe remain in the top 10% most deprived communities in England, namely Folkestone Harbour, Folkestone Harvey Central, Folkestone East and Folkestone South.

Community Services and Infrastructure

14.3.24 Community services and infrastructure relate to education and healthcare facilities, in addition to other community facilities such as libraries, post offices, community centres and places of worship. Community facilities are a means of stimulating social inclusion and provide an important resource to existing and future communities. Existing community services and infrastructure are described below and illustrated on Figure 1.14.

Education

14.3.25 In terms of education provision, the Community Infrastructure Delivery Strategy produced by Quod (Ref. 14.26) to support the Outline Planning Application (OPA) identifies 10 childcare providers and 12 primary schools within 5km of the application Site boundary. In terms of early years provision, the nearest childcare providers are Little Learners Pre-School in Sellindge and the Punch and Judy Play Group in Lympne.

14.3.26 Primary schools located within 5km of the Site are listed in Table 14-14 and shown on Figure 14.1. The nearest schools to the site are Lympne Church of England Primary School and Sellindge Primary School. Table 14-14 also shows the current pupil numbers and capacity for each school (the majority of which have only one or one-half forms of entry (FE)) together with an indication of surplus spaces as relevant.

Table 14-14 Primary School Capacity

School Name	Pupil Application Numbers (PAN)	Capacity	Number on Roll (NOR)	Surplus
Aldington Primary School	30	190	203	0
Brabourne Church of England Primary School	15	105	102	3
Hythe Bay Church of England Primary School	60	420	397	23
Lyminge Church of England Primary School	30	210	194	16
Lympne Church of England Primary School	30	210	209	1
Mersham Primary School	30	210	190	20
Palmarsh Primary School	20	140	134	6
Saltwood Church of England Primary School	30	210	222	0
Sellindge Primary School	15	105	115	0
Smeeth Community Primary School	20	140	131	9
St Augustine's Catholic Primary School	30	210	206	4
Stowting Church of England Primary School	15	105	92	13

Source: Community Infrastructure Delivery Strategy, Quod 2018

14.3.27 The table shows that schools in the surrounding area to the Site tend to be small and have limited capacity. Overall, 95 places or 4% of all places across all years are unfilled in these schools. Intake to these schools has remained relatively steady over the last seven years, with expansions during this time limited to the addition of ten places at Aldington Primary School; two further schools (Palmarsh Primary and Sellindge Primary) are likely to expand in future to meet demand from housing developments in Sellindge and Hythe (Kent County Council 2018). The Community Infrastructure Delivery Strategy (Quod 2018) identifies that demand for school places in rural areas and villages surrounding the Site is otherwise forecast to remain steady.

14.3.28 There are currently 12 secondary schools within both Ashford Borough Council (ABC) and Folkestone & Hythe District Council (FHDC). The closest school to the site is Brockhill Park Performing Arts College on the outskirts of Hythe. It is noted that the Pent Valley Technology College closed in 2016 for various financial reasons.

14.3.29 The capacity of secondary schools in both ABC and FHDC for Years 7-11 is shown below in Table 14-15, including the total capacity for each district.

Table 14-15 Secondary School Capacity

Secondary School	Admissions Type	Sex	District	PAN	Capacity	Number on Roll	Surplus
The North School	Comprehensive	Mixed	ADC	215	1,075	916	159
The John Wallis Church of England Academy	Comprehensive	Mixed	ADC	210	1,050	975	75
Highworth Grammar School	Selective (grammar)	Girls	ADC	184	916	984	0
Towers School and Sixth Form Centre	Comprehensive	Mixed	ADC	243	1,215	794	421
Homewood School and Sixth Form Centre	Comprehensive	Mixed	ADC	390	1,920	1,721	199
The Norton Knatchbull School	Selective (grammar)	Boys	ADC	149	745	885	0
Wye School	Comprehensive	Mixed	ADC	90	360	361	0
Folkestone Academy	Comprehensive	Mixed	FHDC	270	1,290	1,336	0
The Marsh Academy	Comprehensive	Mixed	FHDC	180	900	746	154
Brockhill Park Performing Arts College	Comprehensive	Mixed	FHDC	235	1,175	1,137	38
The Folkestone School for Girls	Selective (grammar)	Girls	FHDC	180	885	860	25
The Harvey Grammar School	Selective (grammar)	Boys	FHDC	150	750	691	59
Total Folkestone & Hythe				**1,015**	**5,000**	**4,770**	**276**
Total Ashford				**1,481**	**7,281**	**6,636**	**854**
TOTAL				**2,496**	**12,281**	**11,406**	**1,130**

Source: Community Infrastructure Delivery Strategy, Quod 2018

14.3.30 Over both authority areas there is some secondary school capacity, with some 9% of spaces (1,130 in total) across Years 7-11 currently unfilled. Surplus capacity is currently greater in ABC (12%) than in FHDC (5%), which partly reflects a period of transition following the closure of Pent Valley Technology

College in Folkestone. The Turner Free School is due to open on the former Pent Valley site in September 2018 with a Year 7 intake of 120 and at full capacity will provide 600 additional places at Years 7-11 (Community Infrastructure Delivery Strategy 2018).

14.3.31 An extra 4 form entry secondary school may be needed by 2023-24 in FHDC due to forecast rising demand (Kent County Council 2016) (Ref 14.27). Demand for secondary school places in ABC is also forecast to rise from 2018/19 onwards, partly due to new developments and this is proposed to be managed both through the expansion of existing schools and the opening of a new 8 form entry school in Chilmington Green in 2022.

14.3.32 There are currently four selective grammar schools within the two districts (two boys' schools and two girls' schools); places at these schools would not necessarily be available to all local pupils who apply.

14.3.33 There are currently 122 surplus places in the three schools closest to Otterpool Park. However, demand for secondary school places as a result of population growth (including from other planned housing development elsewhere in the two districts) is expected to fill most of this surplus over the next six years (Community Infrastructure Delivery Strategy 2018).

14.3.34 Further education is typically provided in a sixth-form college, a further education college or a higher education institution; higher education generally relates to degree level or above.

14.3.35 All of the secondary schools listed in the table also have sixth form provision, except for the Wye School (which opened in 2013 and has admitted its first post-Year 11 students in September 2018). The nearest sixth form to the Site is Brockhill Park Performing Arts College which currently has 187 sixth form students pursuing a range of A/AS levels and vocational qualifications.

14.3.36 The nearest further education college is East Kent College's campus in Folkestone, which also has campuses in Dover and Broadstairs and provides a range of professional, vocational and technical further education courses. Ashford College provides a combination of further and higher education courses and is the only further education college in Ashford Borough.

Healthcare

14.3.37 This section examines existing healthcare provision near to the Otterpool Park Site. This includes primary healthcare facilities within five kilometres, including General Practitioners (GPs), dentists and pharmacies. It also examines hospital provision at district levels. This analysis is based on publicly available NHS data.

14.3.38 There are currently five GP surgeries within 5km of the application Site boundary, located on Figure 14-1. The Community Infrastructure Delivery Strategy states that these surgeries have a total of 17 GPs and 28,289 patients. The nearest GP surgery to the Site is the Sellindge Surgery which currently has three GPs and 4,890 patients.

14.3.39 The average for the NHS South Kent Coast Clinical Commissioning Group (CCG) (which covers Folkestone and Kent as well as Dover and Deal) is 3,000 patients per FTE GP, while the average for the NHS Ashford CCG is 2,560 per FTE GP. By contrast, the average for the NHS South East region is 1,980 per FTE and GP and for England as a whole is 2,060 per FTE GP (Community Infrastructure Delivery Strategy 2018).

14.3.40 Based on the NHS benchmark of 1,800 patients per GP for planning purposes, there is no surplus capacity for new residents in existing surgeries in the local area.

14.3.41 There are currently four pharmacies located within 5km of the Site (three in Hythe and one in Lyminge), together with two dentist surgeries (both of which are in Hythe).

14.3.42 The nearest hospitals are the William Harvey Hospital, Ashford and the Royal Victoria Hospital, Folkestone. The former operates an Accident and Emergency department (A&E) as well as a range of specialist care departments. The latter has a minor injuries unit as well as some specialist services including diagnostic services, mental health care, children's and adolescent services and other outpatient services.

14.3.43 The East Kent Hospitals University NHS Foundation Trust (which is responsible for operating both hospitals) is currently examining ways of reorganising hospital care in East Kent and a number of options are due to be consulted on in 2019.

Community Centres and Facilities

14.3.44 There are several local community halls located in nearby areas. The two nearest halls are the Sellindge Village Hall and the Lympne Village Hall, run by Sellindge and Lympne Parish Councils respectively and available to hire for community uses. Sellindge Sports and Social club also hosts local activities. There are also places of worship belonging to multiple congregations, including several historic parish churches. Evidence from community consultation has demonstrated that the existing community halls are successful and popular.

Open Space and Recreation

Open Space and Play Areas

14.3.45 The Shepway Open Space Strategy (Ref 14.28) published in 2017 identifies existing open space provision. The Strategy identified that the quality and value of publicly accessible open space across the former Shepway District is relatively good, with a greater quantity of open space than surrounding local authorities. Green corridors are a key component of the open space network, providing opportunities for recreation, sustainable travel and nature conservation.

14.3.46 The Shepway Play Area Review (June 2017) (Ref. 14.29) was prepared to help define the desired level of play provision across the District in terms of quantity, quality and accessibility. The review highlights that the western half of the District away from the more densely populated coastal towns experiences some lack of play provision. Ten wards within the District fail to meet the Fields in Trust (FiT) quantity benchmark with regard to the provision of play areas, including Hythe and North Downs West (wards within which the proposed Development sits).

Existing Walking and Cycling Routes

14.3.47 There are 11 PRoW that dissect the site. A PRoW survey was undertaken in April 2018 to determine condition of these routes and from that to identify likely level of recreational usage. The survey identified a relatively low level of usage of these routes, and primarily for local uses such as dogwalking / fitness purposes.

14.3.48 The Travel Plan which accompanies the OPA identifies that there are various on-road and off-road walking routes within the Site, with footways provided on many of the roads including Ashford Road, Aldington Road and Barrow Hill. Walking accessibility is lacking in east-west connections, with the exception of the footpath along the railway to the north of the Site and the narrow footway along the A20 Ashford Road.

14.3.49 There are no dedicated cycle routes in the immediate vicinity of the Site. The coastal National Cycle Network Route 2 lies approximately 1km to the south of the application Site boundary and is a popular long distance recreational route following the English Channel coastline. The section closest to Otterpool Park is traffic free and runs between West Hythe and Folkestone to the east and towards Romney Marsh in the west. The route runs along the towpath of the Royal Military Canal through West Hythe, Hythe and Folkestone. Cyclists can access the route via Royal Military Road which is located at the southern point of Lympne Hill. Regional on-road cycle route 17, runs to the east of Otterpool Park providing connections to Canterbury and Dover.

14.3.50 A Walking and Cycling Study prepared for Kent County Council in April 2018 (Ref. 14.30) undertook a detailed assessment of the walking environment and found that existing provision was not of a sufficient width or separation from high speed traffic to enable pedestrians and cyclists to comfortably travel without conflict. Outside built-up areas the footway provision is described as negligible, typically limited to farmstead access points.

14.3.51 The Royal Military Canal stretches in an east-west direction between the western edge of Folkestone and the northern edge of Rye and is approximately 3km to the south of the Site. The footpath along the canal has been upgraded at West Hythe to enable use by cyclists and equestrians in addition to pedestrians; over 61,000 visits were recorded along the new route in a thirteen-month period. The West Hythe carpark, from which the canal can be accessed by pedestrians, is often at capacity. The Saxon Shore Way follows the route of the Royal Military Canal in this location.

Tourism and Recreation

14.3.52 To the south of the Site is the Kent Downs Area of Outstanding Natural Beauty (AONB). Described in the AONB Management Plan (Ref 14.31) as a 'living, working landscape shaped and managed by people', over one million people already live within a kilometre of the AONB boundary and there is considerable demand for access and recreation. Whilst rural leisure and tourism are important ways of supporting the local economy and community well-being, tourism and recreation needs to be sustainable. A visitor survey undertaken by the AONB Unit identified that the main motivations for visiting the Kent Downs are for its beauty and tranquillity, with walking being the main activity.

14.3.53 The AONB Management Plan identifies that some areas within the Kent Downs suffer either from over capacity or over use, with a consequent detrimental impact on landscapes and communities. Locations within the AONB considered to be potentially vulnerable to increases in recreational pressure as a result of their environmental sensitivity include the Folkestone to Etchinghill Escarpment and the Wye and Crundale Downs.

14.3.54 Visitor surveys were undertaken by a team of four Arcadis employees at these two locations during August and September 2017 to determine level of use, principal recreational uses (e.g. walking, fitness, dogwalking), likely catchment areas for visitors and principal mode of travel used to reach each destination. Key findings from the survey included that:

- Visitor numbers were understandably higher at the weekend than on a weekday
- The majority of people interviewed were day visitors rather than people visiting as part of a wider holiday
- The majority of visitors on both weekdays and weekends were from within a twenty minute drive time (the majority of visitors to the Folkestone to Etchinghill Escarpment were primarily from Folkestone and surrounding settlements, whilst the majority of visitors to the Wye and Crundale Downs were from the towns of Ashford and Wye)
- Reasons for people choosing these locations to visit included proximity to home, the variety of footpaths and tracks available, and the quality of the scenery
- Walking and dogwalking formed the principal activities undertaken at both locations.

14.3.55 Key routes within the AONB include the North Downs Way National Trail, a long-distance footpath extending through Surrey to Dover and which is 156 miles in length. Sections of the route nearest to the proposed Development extend from the town of Wye to Dover, passing along the Etchinghill Escarpment. Other walks and trails in the vicinity of the Site include the Tolsford Trek, which links the Elham Valley Way, Saxon Shore Way and North Downs Way.

14.3.56 Further afield from the Site is the Dungeness complex (including Romney Marsh and Rye Bay). The area receives a high number of visitors, approximately 550,000 visits are made per annum, with the RSPB reserve receiving approximately 30,000 visitors (Ref. 14.32). A visitor survey undertaken in 2006 identified that Dungeness has a large and dispersed catchment, with approximately 33% of visitors living more than 80km distant (i.e. outside Kent and East Sussex altogether with the largest single source in this zone being London, responsible for 5% of all visits). The remaining 66% of visitors were dispersed across an area of up to 50 miles/80km covering virtually all of Kent and East Sussex. Less than 10% of surveyed visitors to Dungeness actually came from the 'local' area (i.e. within 10 miles / 16km). The survey also indicated that Dungeness has a relatively small proportion of 'regular' visitors - the survey identified that 87% of visitors surveyed were either on their first visit or only visited Dungeness 'rarely'. Only 13% of visitors visited regularly (i.e. at least once a month). More recent survey work was undertaken in 2014/15 to inform a sustainable access strategy for the Romney Marsh and Rye Bay area. Similarly, this survey identified Dungeness Point and the Dungeness RSPB reserve as locations that attracted visitors from further afield (more than 15km), whereas Greatstone and Lade areas tended to be more popular amongst local residents.

14.3.57 Finally, Westenhanger Castle is a Grade I listed building located on the northern edge of the Site, between the CTRL and former Folkestone Racecourse. Two Grade I listed barns occupy the outer courtyard to the west of the castle. At present, Westenhanger Castle functions primarily as a wedding and events venue. The castle holds between 30-35 weddings per year (each attended by between 40-250 people), in addition to events such as concerts, conferences, car shows and historic tours. The grounds of the castle include a temporary marquee to improve capacity for wedding events. Operation of Westenhanger Castle as a wedding and events venue has led to the formation of arrangements and linkages with a range of local businesses (for example florists and caterers) as well as links with local accommodation providers.

Future Baseline

14.3.58 The SHMA (2017) (Ref. 14.19) uses population projections to show Shepway's population increasing over the period 2014-2017 from 109,500 people to 126,500; this is equivalent to an average growth in households of 538.

14.3.59 The draft Core Strategy Review 2019 applies the Government's standard method for calculating housing need. It identifies a need for 676 new homes a year on average over the period 2018/19 to 2036/37 (19 years) or some 12,845 additional homes in total.

14.4 Design and Mitigation

14.4.1 A number of measures have either been embedded within the design of the proposed Development or have been identified in order to minimise the potential adverse impacts (for example of construction activities). These are discussed below in relation to the construction and operation phases of Otterpool Park.

Construction Approach and Mitigation of Construction Effects

14.4.2 A Code of Construction Practice (CoCP) would be submitted for agreement with FHDC prior to the commencement of works and would include information relating to potential adverse environmental issues and the management and mitigation thereof. This may include detail in relation to effects that may have an impact on residential amenity (for example in relation to working hours, the proposed routes for construction traffic and how information about construction activities will be communicated to existing residents).

14.4.3 Mitigation measures relating to air quality, noise, landscape and transport (which may impact upon residential amenity) are described in more detail in Sections 6.4, 12.4, 13.4, and 16.4 respectively.

Scheme Design and Mitigation of Operational Effects

14.4.4 The following elements have been embedded in the design of the proposed Development and are shown within the Parameter Plans prepared to support the OPA:

- ensuring provision of education and healthcare facilities within the Site to accommodate the anticipated demands of the resident population and positively contribute to the standard of facilities within KCC
- including provision of sufficient space to accommodate a range of community facilities in order to promote community interaction, empowerment and community development
- ensuring the provision of open space, sports and play provision to meet the needs of the population of Otterpool Park
- providing opportunities for employment growth within the Site, including the promotion of home-working through appropriate infrastructure such as broadband speeds
- integrating the Development with the local public transport network, providing information regarding transport availability in home owner's/tenant's start-up packs, and promoting public transport links in property sales.

14.4.5 It has been noted that some areas within the Kent Downs AONB suffer either from over capacity or over use at present; the proposed Development presents an opportunity to either improve capacity at key locations or to improve the condition of the footpath network and linkages within it. Priorities that should be considered in relation to improvements within the AONB include:

- improvements to PRoW in the immediate vicinity of the Site, notably along the Lympne escarpment (for example improvements to drainage, surfacing, improved fencing and signage)
- improvements to access points to the wider footpath network within the AONB, for example crossing points

- possible creation of additional capacity at car parks within the vicinity of the Site (for example exploration of opportunities to extend the capacity of the carpark at West Hythe to serve users of the Royal Military Canal)
- opportunities to fill missing links in the existing PRoW network in the vicinity of the Site.

14.5 Assessment of Residual and Cumulative Effects

Introduction

14.5.1 The potential beneficial and adverse socio-economic effects of the proposed Otterpool Park Development during the construction and operational phases are considered below. These include the following:

- beneficial impacts on the local and wider labour market arising from employment opportunities within the construction sector
- potential adverse effects on local communities during construction, arising from a combination of construction activities on-site, the movement of materials, noise and disturbance issues and increased provision need from temporary workforces
- the creation and take-up of employment space providing direct and wider labour market gains during the operational phase
- population increase created by the supply of new housing, with a subsequent need for local services and facilities including education, healthcare, open space, sports, play and community provision.

Residual Effects from Construction

Existing Land-Uses

14.5.2 There are a number of existing employment uses within the application Site boundary, including offices and workshops, in addition to a café and a recording studio. These uses are expected to be lost as a result of land-take for the proposed Development, resulting in the loss or displacement of approximately 70 jobs across a range of occupation types and levels. Factors to be weighed in the consideration of the impact of loss of existing employment within the application Site include the possibility of a number of these employment uses relocating to nearby premises (for example there is an arrangement to offer relocated premises within the Site to employment uses lost at Benham Farm); the retention of employment uses in some locations (for example employment space will remain at Hillhurst Farm, there are no plans to close the café and the station premises remain privately owned with no foreseeable change to employment uses here); the phasing of the proposed Development (such that not all employment uses would be impacted simultaneously and land-take of employment areas comprising part of the longer-term phasing plan); and finally, the contribution that the proposed Development makes to employment in the area once operational (i.e. that there will be a net gain overall in terms of employment creation).

14.5.3 Taking the above into account, the effect of the proposed Development in terms of loss of existing employment is considered to be **neutral.**.

Economy and Employment

14.5.4 The principal socio-economic impact arising from the construction of the proposed Development relates to the creation of construction employment and opportunities for training and skills development over the short and longer term.

14.5.5 Construction employment has been calculated using regional data for employment and turnover within the construction sector based on Standard Industrial Classification 2007 subclasses and using data from the 2017 Annual Business Survey (Office for National Statistics). This analysis has identified a turnover per employee within the construction sector for the South East of £202,248. This figure has been applied to the capital expenditure estimates for the proposed Development, resulting in 7,807 gross direct construction job years and thereby 781 FTE direct construction jobs (where one FTE is equivalent to ten annual job years).

14.5.6 Leakage and displacement factors then need to be applied – the Additionality Guide (HCA fourth edition) defines 'leakage' as being where benefits go outside of the area under consideration, and displacement as being where a proportion of outputs are accounted for by reduced outputs elsewhere in the area under consideration. The Additionality Guide provides 'ready reckoners' to help quantify likely levels of leakage and displacement. Given the nature of the construction industry (for example the workforce is characterised by relatively high levels of mobility – workers moving from place to place with new construction projects), leakage and displacement factors of 50% and 25% have been applied. Finally, there are likely to be indirect employment effects arising from the proposed Development – these may relate for example to supply chain linkages or from employment in businesses arising or expanding to service the construction workforce. The Additionality Guide provides guidance as to composite multipliers that can be applied to quantify benefits arising from these more indirect sources; at the local level (local authority wide) a composite multiplier of 1.15 has been applied, extending to 1.7 for the wider region, recognising the strong local supply linkages and income or induced effects likely to arise as a result of the proposed Development. A summary of the construction employment impacts calculations is provided in Table 14-16.

Table 14-16 Construction Employment Summary

	Construction Employment (FTE)
FTE direct construction jobs	781
Leakage (50%)	390
Displacement (25%)	292
Composite multiplier (1.15 local study area) Composite multiplier (1.7 wider region)	336 (net FTE construction jobs – local area) 496 (net FTE construction jobs – wider region)

14.5.7 Taking into account the scale of the regional construction workforce in the South East, together with the relatively mobile nature of construction workers, this is considered to be a moderate beneficial impact and not significant.

14.5.8 Although there is no detailed information available at present relating to skills and training requirements, the phased approach to the proposed Development does offer long-term opportunities and could facilitate career development through apprenticeships and training in construction trades. The proposed Development also presents an opportunity for growth in new and developing construction trades, such as sustainable techniques and the green construction sector. The Employment Opportunities Study produced for Otterpool Park by Lichfields in March 2018 identified the potential to generate significant and long-term demand for green construction skills and to showcase green construction approaches, with the scale of delivery at Otterpool Park giving critical mass; opportunities cited here include establishing links with local education and training providers such as the construction skills centre at the Folkestone Campus of East Kent College which has recently expanded. The effect of the proposed Development on construction skills and training development is considered to be **moderate beneficial** and **significant**.

Residential Amenity

14.5.9 The construction phase would undoubtedly lead to some temporary disruption for local communities and potential effects on residential amenity by virtue of noise, disturbance, construction traffic, potential air quality changes (for example construction dust) as well as changes to the visual landscape. Residents in the adjoining settlements of Lympne, Westenhanger, Barrow Hill, Sellindge and Newingreen would be particularly vulnerable to changes in residential amenity by virtue of their proximity to the proposed Development.

14.5.10 With respect to potential noise effects on nearby residential properties, Section 13 of the ES (Noise) identifies that there will be temporary adverse noise from demolition and construction works and ground borne vibrations. Mitigation measures include the restriction of working hours to daytime working during weekdays and Saturday morning at weekends. Construction activities will be controlled through

the Construction Environmental Management Plan (CEMP) with the potential effects of various techniques to be carefully considered with regards to noise.

14.5.11 For existing settlements and individual properties, a detailed visual amenity impact assessment (Section 12 Landscape) identifies that although the proposals were found to be noticeable, due to the distances involved, the degree of conserved intervening vegetation, the proposed buffer zones, coupled with the proposed embedded design and mitigation measures, the effect on existing residents is considered to be not significant.

14.5.12 Section 6 of the ES (Air Quality) identifies a number of sensitive receptors (e.g. residential properties) within 350m of the application site boundary. The Section notes that the potential for impacts depends significantly on the distance between the dust generating activity and receptor location. The air quality assessment states that the risk of dust impacts during the construction phase was evaluated by assessing the dust emissions magnitude of the planned construction activities and took into account the existing sensitivity of area. It was concluded that there would be a high risk of dust impacts from the construction phase if left unmitigated. However, with the application of the relevant mitigation measures summarised in Appendix 6.3, it is concluded that the residual effect would be no worse than negligible. The identified mitigation measures will be incorporated into the Code of Construction Practice (CoCP).

Section 16 (Transport has identified that there are likely to be **minor adverse** effects for residents relating to the increase in construction vehicles on the local highway network. Potential delays to journey times for pedestrians and drivers may be experienced due to the volume of traffic and potential need to introduce temporary traffic management controls on route to the Development Site. The safety of road users may also be affected by the increase of large type construction vehicles. As such, a Construction Traffic Management Plan would be produced to mitigate these effects, effectively routing construction vehicles away from sensitive residential areas where possible.

14.5.13 It is considered that with the specific construction mitigation measures outlined in Sections 6.4, 12.4, 13.40, and 16.4, the effects on residential amenity are likely to be **minor adverse** and **not significant**.

Public Safety

14.5.14 Construction works have the potential to affect public safety. Construction areas would need to be appropriately cordoned and signed to prevent public access and stipulate the necessary safety precautions if entering the site.

14.5.15 The effect of the proposed Development on public safety of local residents, businesses and visitors is considered to be **minor adverse** and therefore **not significant**, likely to only affect a relatively small geographic area at any one time and being temporary in nature.

Residual Effects from Operation

14.5.16 The proposed Development creates new housing, employment, community and leisure space which will have a range of effects in terms of the population and associated services and facilities.

Population

14.5.17 The proposed Development is for the creation of 8,500 new homes at Otterpool Park. A household density of 2.4 persons per dwelling has been assumed to inform the OPA; the proposed Development in its entirety therefore would result in an estimated total population of 20,400 people, with construction taking place over 25 years including completion of the Framework Masterplan.

Housing

14.5.18 The proposed Development comprises 8,500 new homes. The Housing Strategy prepared to accompany the OPA refers to market evidence suggesting significant demand for homes in Kent, and issues relating to housing supply not keeping pace with demand. The SHMA for the former Shepway District points to net housing completions averaging 333 dwellings per annum between 2001 and 2015.

14.5.19 The majority of new homes within the application Site boundary (92%) comprise residential development under Use Class C3; the remaining 8% comprise extra care housing under Use Class C2. The Housing Strategy summarises key features of residential development, which will:

- be phased to maintain a steady rate of delivery on site, with the scale of delivery informed by market demand
- ensure a variety of house types are provided in each Development Zone to offer a range of choice to suit a variety of lifestyles (i.e. homes are built in a range of styles, sizes and tenures to suit different requirements and preferences, and also in order to create quality of place)
- be planned in accordance with minimum space standards for all homes.

14.5.20 Otterpool Park has the potential to test delivery of self-build housing on a large scale and the proposed Development will seek to deliver a proportion of self and custom build on each phase.

14.5.21 The proposed Development aims to achieve provision of 22% affordable housing in line with emerging policy requirements. A phasing plan for affordable provision overall and within the various affordable housing types will be developed with the overall end target of 22% clearly established.

14.5.22 The former Shepway district is home to a higher proportion of retired and elderly people than is the case for Kent as a whole. The proposed Development provides a mix of options for older people to meet a range of care needs, including large flats to appeal to ‘down-sizers’, a retirement village in close proximity to the new town centre, extra care housing with a range of levels of support from independent living to care packages, and a nursing home for those with higher care needs.

14.5.23 The Vision for Kent (Ref. 14.33) describes the challenges facing Kent and the priorities for the County for the next ten years. The strategy promises to ensure there is choice of high-quality and accessible services that will tackle disadvantage particularly through housing that supports strong communities, provides a good quality of life and reduces household costs. Kent County Council’s Strategic Statement (Ref. 14.34) links the vision and priorities of the council to a series of strategic and supporting outcomes that will drive service delivery across the County. The statement supports well planned housing, seeking to ‘increase resident satisfaction with community facilities and amenities in new housing developments’.

14.5.24 The proposed Development provides almost 70% of the housing required in the District for the entire Plan period. Taking into account this contribution to housing supply together with the beneficial effect of the proposed Development in terms of meeting the need for housing of different tenures and sizes it is considered to have a **major beneficial** and therefore **significant** effect in terms of housing availability and type.

Economy and Employment

14.5.25 The Employment Opportunities Study for Otterpool Park identifies that whilst the Shepway economy has grown relatively strongly during the past two decades, there are a number of gaps and issues which ultimately constrain the ability of the district to compete with other parts of Kent and the wider South-East. These include lower than average business start-up rates, out-commuting of more highly qualified residents, a lack of good quality and deliverable employment sites in accessible locations of greatest market demand (which in turn constrains economic performance and ability to diversify the local economy), and availability of high quality premises.

14.5.26 Impacts on employment and economic growth in the area as a result of the proposed Development relate principally to the potential for employment generation, which can take a number of forms – for example on-site jobs (resulting from allocated land uses), population-derived jobs (resulting from estimated population increase) and additional potential employment (for example from home working).

14.5.27 Table 14-17 sets out employment generation resulting from commercial floorspace and other uses planned within the proposed Development. The total employment floorspace includes B1 and B2 uses (commercial business space in hubs, a commercial business park and light industrial business park), as well as hotel, leisure, mixed retail and related uses (shops, professional services, retail services, cafes, restaurants, drinking establishments, hot food takeaways (Use Classes A1-A5)), and community / non-residential facilities that may have an employment element (for example schools, sports and healthcare centres). The total proposed employment generating floorspace is 82,418 sqm, with employment spread across each of the Development Zones to meet local needs.

14.5.28 Employment generation has been calculated using the HCA Employment Densities Guidance (2015) (Ref. 14.35) applied to net internal floorspace areas unless otherwise stated. The table shows that the proposed Development would generate 7195 FTE across a range of sectors which, when takes into account part-time workers, could equate to 8,950 jobs (part-time working has been based on the industry

breakdown of part-time employment in Folkestone and Hythe using the Business Register and Employment Survey 2016). The number of home-workers has been estimated using the ratio of home-workers to dwellings in Folkestone and Hythe based on 2011 Census data. This is anticipated to increase due to the changing work patterns since 2011.

Table 14-17 Employment Generation by Floorspace

Use Class	Description	FTE	% Part Time	Jobs
B1 Offices	Commercial business in hubs	770	28%	895
B1 Offices	Commercial business park	2,850	28%	3,315
B2 Light industrial	Light industrial business park	230	28%	265
A2 / A3 / A4 Business, food & drink	Business, Café / restaurant, Pub / takeaway	460	58%	650
A1 Retail	Retail	740	63%	1,075
C1 Hotel	c.120-bed hotel	40	58%	55
C2 Residential institutions	Extra care housing	435	44%	555
D1 Non-residential	Primary schools	205	72%	320
D1 Non-residential	Secondary school (including sixth form)	220	33%	265
D1 Non-residential	Nursery provision	75	53%	105
D1 Non-residential	Healthcare provision	115	44%	145
D! Non-residential	Community centre	70	60%	105
D2 Leisure	Sports pavilion	10	60%	10
D2 Leisure	Indoor sports hall	70	60%	95
C3 Residential	Home-working	905	35%	1,095
	TOTAL	**7,195**		**8,950**

Source: Otterpool Park Economic Statement (Quod)

14.5.29 The Employment Opportunities Study points to the potential benefits to existing residents within Folkestone and Hythe District of employment creation, suggesting that a significant proportion of new jobs (75%) would likely be taken up by residents within the district based on current commuting patterns.

14.5.30 The employment generated within the proposed Development has the potential to create a range of jobs across different occupational groups with varying skills requirements. Given the mix of commercial floorspace proposed, the majority of jobs are expected to come forward in high value sectors such as professional, scientific and technical activities and manufacturing (61.8% and 3.4% respectively), with an estimated 64.6% of jobs in Otterpool Park requiring high-skilled workers (Employment Opportunities Study, 2018).

14.5.31 In addition to on-site jobs described in Table 14-17, the proposed Development has the potential to create off-site jobs in the wider area (new settlements elsewhere in the UK, such as Bicester Eco-Town for example, have been estimated to generate an additional 200 jobs in the wider area for every 1,000 additional population). Otterpool Park presents an opportunity to provide a strategic employment function within Folkestone and Hythe District and potentially act as a key attractor for some growth sectors.

14.5.32 The proposed Development includes up to 6,175 sqm (gross) A1 retail provision and up to 10,075 sqm (gross) of other A Class uses. The Retail Impact Assessment (RIA) (Ref. 14.36) which accompanies the OPA suggests that town centres within a ten minute drive time of Otterpool Park (i.e. Folkestone, Hythe, Cheriton, Lyminge and Sellindge) are currently in good health with vacancy rates improving in Folkestone, Hythe and Cheriton. The Retail Impact Assessment concludes that there would be no appreciable trade diversion from existing retail centres and that 'the proposed Development would not give rise to significant adverse impacts, accords with the sequential approach and should therefore be considered to be acceptable and consistent with planning policy guidance at all levels'.

14.5.33 Benefits of the proposed retail floorspace within the proposed Development identified in the Retail Impact Assessment include:

- increased consumer choice
- creation of local job opportunities
- a retail expenditure generated by the future population of Otterpool Park on comparison and convenience goods in the region of £121.9 mn per annum
- that its scale and distribution will promote highly sustainable patterns of development with retail needs associated with the new residential community being met in close proximity, often within easy walking distance.

14.5.34 As a result of the increased employment opportunities, including higher quality and more accessible employment locations, together with opportunities presented by increased employment floorspace, business stock, and scope for bringing forward more highly skilled jobs, the proposed Development is considered to have a **major beneficial** and **significant** effect on the local and wider economy.

Community Services and Infrastructure

14.5.35 The new population for Otterpool Park will generate a requirement for community infrastructure (notably education, healthcare and community facilities, and open space / play provision). This section considers the impact of the proposed Development on each of these areas in turn, taking into account existing and planned provision. The Community Infrastructure Delivery Strategy (Quod 2018) prepared to support the OPA, is referred to within the following sections.

Education

14.5.36 The potential effect on education facilities (early years learning, primary and secondary schools, and further education) is dependent on the potential child yield (i.e. the number of children of each age expected to be living in each home) arising from the proposed Development and the current capacity within existing schools.

14.5.37 The baseline analysis for education highlighted that existing primary schools in the vicinity of the proposed Development tend to be small and with limited capacity and are unlikely to have capacity to significantly expand (aside from Palmarsh Primary and Sellindge Primary which are likely to expand in the future to meet demand from recent housing developments in Sellindge and Hythe). There is therefore unlikely to be capacity to cater for demand for primary school places from Otterpool Park in existing local schools except in a very limited way for the first homes to be occupied (Quod 2018).

14.5.38 In terms of secondary school provision, there are currently 122 surplus places in the three schools closest to the proposed Development, although demand for secondary school places as a result of population growth (including from other planned housing development elsewhere in the two authority areas) is expected to fill most of this surplus over the next six years. It is noted that some of the demand created by Otterpool Park may be met by expansion of The Harvey Grammar School (a selective, boys' school) but that the majority of secondary school places for Otterpool Park will be met on-site (Quod 2018).

14.5.39 The Community Infrastructure Delivery Strategy sets out the methodology by which this has been calculated, based on information provided by Kent County Council and confirmed through population modelling undertaken by Quod; the assumptions are summarised as:

- Early years: 0.08 children per home
- Primary School: 0.28 children per home
- Secondary School: 0.20 children per home
- Sixth form: 0.07 children per home (360 A level places and 180 FE places for 8,000 homes, only 250 of which would be on-site)

14.5.40 The Community Infrastructure Strategy notes that these assumptions are sensitive to build-out rate, tenure, size of homes, demographic trends and government education policy. Table 14-18 summarises child yield for each education age group and translates this into Forms of Entry (FE) / provision required for the proposed Development. Older person's housing has been excluded from the calculations.

Table 14-18: Child Yields and FE Requirements

Age Group	Number of Pupils	Forms of Entry	School Requirements
Early Years	630	24 classes	A 2 class (54 pupil) nursery school located with every primary school (10 classes) Additional 5-6 private settings in flexible high street space subject to market demand
Primary School	2,200	10.5 FE	Four 2FE primary schools One 3FE primary school Safeguarding up to 3FE
Secondary School	1,570	10.5 FE	One 10 FE secondary school One FE off-site Safeguarding up to 3 FE offsite
Sixth Form	530	Up to 530 places, including work-place based and apprenticeship places; likely to be 240-250 places in a full-time education setting.	250 places as part of secondary schools

Source: Community Infrastructure Delivery Strategy, Quod 2018

14.5.41 The table demonstrates that sufficient school places will be delivered as part of the proposed Development to meet the needs of children on-site and to reduce the potential for children to travel on-site to school from elsewhere. Taking into account the range of new education provision, including secondary provision off-site, the proposed Development is considered to have a **moderate beneficial** and **significant** effect on education.

Healthcare

14.5.42 The proposed Development incorporates up to 12,980 sqm (Gross External Area) of healthcare floorspace, including one large healthcare practice in addition to three other smaller sites allocated for potential health needs.

14.5.43 The Community Infrastructure Delivery Strategy states that the expected demand for new GPs at Otterpool Park is based on the assumption that a GP serves 1,800 – 2,000 people; based on an average household size in Kent of 2.16 people (Census 2011), the 8,500 homes proposed would generate demand for up to 10 FTE GPs. Analysis of the baseline data regarding existing facilities identifies that there is no surplus capacity for new residents in existing surgeries in the local area and that patient to GP ratio within existing practices are currently higher than average (Quod 2018).

14.5.44 The healthcare provision presented as part of the proposed Development is sufficient to both mitigate the impacts of development and provide an opportunity for additional healthcare services. As such, the effect of the proposed Development on healthcare provision is considered to be **moderate beneficial** and **significant** over the long-term.

Community Facilities

14.5.45 Community facilities play an important role in social networking and cohesion, particularly as part of the creation of a new community. Community facilities encompass not only traditional community centres but embrace other types of meeting places such as places of worship, youth centres and libraries. Accordingly, the Development Specification for Otterpool Park includes nearly 8,000 sqm (Gross External Area) of flexible community use floorspace. The quantum has been calculated using a benchmark of 0.15-0.30 sqm per person (Quod 2018).

14.5.46 The two nearest community facilities to Otterpool Park are the Sellindge and Lympne Village Halls, both of which are well-used by the local communities they serve. The new provision of community facilities aim to complement rather than compete with these facilities.

14.5.47 The effect of the proposed Development on community facilities is considered to be **minor beneficial** and **not significant** and long-term, given the potential scale and flexibility of type of facility that can be offered.

Open Space and Recreation

14.5.48 Under this heading, impacts of the proposed Development on existing walking and cycling routes are considered, as are impacts on sports and play provision. The section also considers the effect of the proposed Development on recreation in the wider area, notably on the Kent Downs AONB and other environmentally sensitive areas in the vicinity of the Site.

Open Space and Play Areas

14.5.49 The population generated as a result of the proposed Development will create additional demand for play areas, recreational open space and sports facilities. Accordingly, a range of open space, sports and play area provision have been incorporated into the design, notably:

- Sports playing pitches (25.9 ha)
- Children's play space (6.1 ha)
- Strategic parks (7.8 ha)
- Allotments / orchards (7.2 ha)
- General amenity space (39.8 ha)

14.5.50 In addition to the above, there are opportunities to utilise shared provision of school playing fields (a further 11.8 ha). The precise configuration of open space is subject to detailed design at the reserved matters stage having regard to the Parameter Plans and Design Guidelines.

14.5.51 The proposed Development is considered to have a **moderate beneficial** and long-term **significant** effect on sports provision and play areas, by virtue of its ability to meet the needs of new residents on-site.

Green Infrastructure

14.5.52 No walking or cycling routes will be lost as a result of the proposed Development, although inevitably there may be a change in their character in certain areas (i.e. routes that may have been very rural may now form part of more urban links). Walking and cycling links in the wider area (for example the Royal Military Canal) may experience an increase in usage levels due to an increase in population numbers. Opportunities to accommodate this increase in the form of improvements to capacity of existing car park at West Hythe, have been raised earlier in this Section.

14.5.53 The incorporation of green infrastructure, open space and a variety of habitats and landscapes forms an intrinsic part of the design of Otterpool Park, including:

- a variety of woodlands, wetlands, meadows, allotments, recreation areas all connected by green corridors with retained trees, hedgerows and water courses
- a landscaped green open space to create a setting for Westenhanger Castle
- creation of a Woodland Country Park on the upper slopes of the Site between Harringe Brook Woods, Otterpool Manor and Upper Otterpool Farm provides an opportunity to create an open space for recreation with links to existing woodland parks and the Saxon Way Walk to the east and south

- use of the East Stour River corridor to incorporate both formal and informal walking and cycling routes connecting areas of open space and leisure / sports provision
- creation of a landscape buffer between the proposed Development and the village of Lympne, with opportunities here for informal recreation, walking and horse-riding
- a Heritage Trail is also proposed within the Site, linking features of interest including the World War II pill box, Lympne Airfield features, the Bronze Age barrows at Sellindge and Westenhanger Castle.

14.5.54 Given the above opportunities, the proposed Development would be likely to have a **moderate beneficial** and **significant** effect on green infrastructure provision in the local area.

Tourism and Recreation

14.5.55 This section primarily considers the effects of the proposed development on the Kent Downs AONB and other environmentally sensitive areas in the vicinity of the Site. The baseline study identified that the Kent Downs AONB is a popular location for walking and outdoor recreation and accessible by an already significant urban population in towns around its periphery. The AONB Management Plan has identified that some areas of the AONB may suffer from over-use and require ongoing investment to maintain and improve facilities (for example the quality and surfacing of footpaths).

14.5.56 Visitor surveys undertaken at locations within the AONB identified that a significant proportion of people use particular walking routes because of the proximity to their home; the sections of the AONB most likely to be affected by the new population living at Otterpool Park are therefore likely to be those nearest to the proposed Development, for example the Lympne escarpment. Many of the PRoW up and down the Lympne escarpment have already been identified by the AONB as being in need of improvement, including as a result of their recreational usage (for example requiring improvements to their surfacing). The proposed Development is likely to contribute to this usage, potentially leading to further condition issues associated with footpaths.

14.5.57 The estimated new population of Otterpool Park once fully built-out is in the region of 20,400 people; there are several points of relevance here. Firstly, this is the total population and therefore includes young children / the elderly / people who may not be sufficiently mobile to access the wider countryside. Secondly, the proposed Development is planned to be delivered over a 25 year period and as such, the population will increase on an incremental basis giving time to respond to issues as they may develop (for example to study recreation patterns of early occupiers and to make adjustments to necessary mitigation accordingly). Finally, the proposed Development differs from many other residential schemes in that it provides a much more holistic approach to the needs of the population it will generate; as a potential garden settlement community, the emphasis is clearly on creating an appropriate landscape and environment to support new housing and to incorporate a wide range of areas, landscapes and habitats for people to access within the Site.

14.5.58 Taking these factors into account, together with the mitigation highlighted in the preceding section, it is considered that the proposed Development would be likely to have a **minor adverse** and **not significant** effect on tourism and recreation within the wider area.

Cumulative Effects

14.5.59 As previously noted, the proposed Development will be fully built out over a period of approximately 25 years. The duration of build-out is such that there will inevitably be a range of schemes and projects that, together with the proposed Development, may have a cumulative socio-economic effect. Due to the nature of the Development, only significant cumulative impacts relating to population, housing, employment and community infrastructure provision have been assessed.

14.5.60 Several applications are for significant levels of new residential development and associated infrastructure. Within FHDC, these include Shorncliffe Garrison and the Folkestone Seafront proposals at Folkestone (1,200 units and 1,000 units respectively), the Nickolls Quarry proposal at Hythe (1,050 units) and the expansion at Sellindge (250 units). Within ABC, these include Chilmington Green (5,750 units), Court Lodge Farm (950 units) and the former Rowcroft and Templer Barracks in Ashford (1,250 units). These applications are generally supported with various social and community infrastructure. The Community Infrastructure Delivery Strategy for Otterpool Park states that expanding schools as demand arises helps to ensure school places meet the needs of children living within Otterpool Park, rather than attracting children in from elsewhere. Taking into account also the intention to deliver 10,000 homes at Otterpool Park as part of the Otterpool Framework Masterplan (OFM) project, the cumulative effect on community infrastructure has been considered and additional provision made for a 2FE primary school and up to 10FE secondary school.

14.5.61 Applications for significant levels of employment development include the extension to Lympne Industrial Estate (up to 52,000 sqm) and land adjacent to Enterprise Way at Lympne (30,668 sqm of employment land) within FHDC. If built, these employment uses will ultimately form part of the fabric of Otterpool Park and add diversity to the offer (though not necessarily in this location); the focus on specific growth sectors could complement wider initiatives underway in other parts of Kent (Employment Opportunities Study, 2018).

14.5.62 The proposed Development together with committed schemes identifies would generate employment opportunities as a result of construction activities; whilst a quantitative assessment of the value of this activity is not known, it is expected that there will be a significant beneficial effect on construction related employment.

14.6 Assessment Summary

14.6.1 Table 14-19 provides a summary of the assessment undertaken with respect to the topic of socio-economics and community, outlining the potential significant effects, mitigation measures and significance of the residual effect.

Table 14-19 Assessment Summary

Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measures	Residual Effect Significance
Local businesses	Loss of existing employment within the application Site boundary	Construction	N/A	Not Significant
Local economy	Employment creation as a result of construction of the proposed Development	Construction	N/A	Significant
Local economy	Expenditure in the local economy as a result of supply chain linkages and spend in the local economy	Construction	N/A	Not significant
Existing residents	Impacts on residential amenity arising from environmental changes to air quality, noise, and changes to visual impacts	Construction	A range of potential mitigation measures outlined within relevant Sections of this ES and taken forward in a Code of Construction Practice	Not significant
Existing residents	Potential impacts on public safety as a result of construction activities	Construction	Mitigation measures to be outlined in the Code of Construction Practice and include appropriate fencing, signage	Not significant

			and safety precautions	
Existing and future residents	Meeting the need for a range of housing of different tenures, sizes and types	Operation	N/A	Significant beneficial
Local and wider economy	Increased employment opportunities, higher quality and more accessible employment locations and scope for more highly skilled jobs	Operation	N/A	Significant beneficial
Users of community services and infrastructure	Sufficient school places delivered to meet the needs of children on-site and reduce potential for children to travel to school from elsewhere	Operation	N/A	Significant beneficial
Users of community services and infrastructure	Healthcare provision to meet the needs of the new population and to provide an opportunity for additional healthcare services	Operation	N/A	Significant beneficial
Users of community services and infrastructure	Scale and flexibility of community facilities provided within the proposed Development to meet the needs of future population	Operation	N/A	Not significant
Users of community services and infrastructure	Provision of green infrastructure, open space, play areas and sports provision to meet the needs of the future population	Operation	N/A	Significant beneficial
Existing and future residents and visitors	Increased recreational pressure on environmentally sensitive areas in the Kent Downs AONB	Operation	Appropriate mitigation to be explored but which may include improvements to footpath surfacing and quality, completion of 'missing links' in walking trails, improvements to parking capacity at key locations	Not significant

14.7 References

Reference	Title
Ref 14.1	Town and Country Planning Act 1990
Ref 14.2	Localism Act 2011
Ref 14.3	Housing and Regeneration Act 2016
Ref 14.4	National Planning Policy Framework 2018
Ref 14.5	Housing White Paper
Ref 14.6	Planning for the Right Homes in the Right Places
Ref 14.7	A Green Future: Our 25 Year Plan to Improve the Environment
Ref 14.8	Shepway District Council Local Plan Review 2006
Ref 14.9	Shepway District Council Core Strategy (2013)
Ref 14.10	Shepway District Council Places and Priorities Local Plan (Submission Draft February 2018)
Ref 14.11	Folkestone and Hythe District Council Core Strategy Review (2018)
Ref 14.12	Affordable Housing Supplementary Planning Document, Shepway District Council (2008)
Ref 14.13	Design Manual for Roads and Bridges
Ref 14.14	Additionality Guide, Homes and Communities Agency, 2014
Ref 14.15	Office for National Statistics, 2011 Census Data
Ref 14.16	Office for Population Statistics, Annual Population Survey 2017
Ref 14.17	Office for National Statistics, Business Registration and Employment Survey
Ref 14.18	Annual Schools Census data, 2017
Ref 14.19	Strategic Housing Market Assessment, Folkestone and Hythe District Council, March 2017
Ref 14.20	London Healthy Urban Development Unit
Ref 14.21	Shepway Employment Land Review, Lichfields, 2017
Ref 14.22	Economic Land Needs Assessment, Folkestone & Hythe District Council, 2018
Ref 14.23	Economic Development Strategy, Shepway District Council
Ref 14.24	Employment Opportunities Study, Lichfields, 2018
Ref 14.25	Index of Multiple Deprivation 2015
Ref 14.26	Community Infrastructure Delivery Strategy, Quod 2018
Ref 14.27	Commissioning Plan for Education Provision in Kent, Kent County Council 2018-2022
Ref 14.28	Shepway Open Space Strategy, Shepway District Council, 2017
Ref 14.29	Shepway Play Area Review, Shepway District Council, 2017
Ref 14.30	Kent Walking and Cycling Study, Mott Macdonald, 2018
Ref 14.31	Kent Downs AONB Management Plan, AONB Unit, XXXX
Ref 14.32	An East Kent Approach to Green Infrastructure and Recreation, Val Hyland Consulting and Blackwood Bayne Consulting, 2014
Ref 14.33	Vision for Kent 2012-2022, Kent County Council
Ref 14.34	Increasing Opportunities, Improving Outcomes@ Kent County Council Strategic Statement 2015-20, Kent County Council

Ref 14.35	Homes and Communities Agency Employment Densities Guide, 2015
Ref 14.36	Otterpool Park Retail Impact Assessment, Quod 2018

15 Surface Water Resources and Flood Risk

15.1 Introduction

15.1.1 This Section of the ES assesses the impact of construction and operation of the proposed Development with respect to surface water resources and flood risk. The assessment incorporates relevant design and other mitigation measures that would be employed during construction of the proposed Development.

15.1.2 This Section should be read in conjunction with Section 7: Biodiversity and Section 10: Geology, Hydrogeology and Land Quality.

15.1.3 It has also been prepared alongside and informed by a Flood Risk Assessment (FRA) and Surface Water Drainage Strategy (SWDS) provided in Appendix 15.1, in addition to an outline Water Cycle Study (WCS), provided in Appendix 15.2.

15.1.4 The proposed Development has also been subject to a Water Framework Directive (WFD) Screening assessment, provided in Appendix 7.22.

Relevant Aspects of the Proposed Development

15.1.5 A full description of the proposed Development is given in Section 4. Aspects that are of particular relevance to this assessment include proposals for the supply of clean (potable) water and the management of waste water generated from the Development. Given the large scale of the Development and its location is an area defined as 'water stressed', a sustainable solution to water demand management, supply and waste water disposal is critical and are considered in this assessment.

15.1.6 Measures to safeguard the water quality of local features are necessary with the aim of contributing towards the objectives of key legislation, such as the Water Framework Directive.

15.1.7 Management of the effects of Development on the existing land drainage and watercourse flow regimes is another key aspect in terms of ensuring that there is no detriment to flood risk on or off-site.

15.2 Assessment Methodology

Legislation, Policy and Guidance

Legislation

15.2.1 This impact assessment has been undertaken in accordance with current legislation specific to the surface water environment, a summary of which is provided below.

15.2.2 Directive 2000/60/EC of the European Parliament (the Water Framework Directive) (European Parliament and Council, 2000) introduced a single system of water management across the European Union (EU), which is based on the principle of river basin management. In order to achieve the Directive's objectives Member States are required to identify 'River Basin Districts' (RBDs) and produce 'River Basin Management Plans' (RBMPs) for each of the respective RBDs.

15.2.3 The Water Environment (Water Framework Directive [WFD]) (England and Wales) Regulations 2003 (Her Majesty's Stationery Office (HMSO), 2003) implements the WFD in England and Wales. The Regulations identify the RBDs and the processes that the responsible authorities for the implementation of the Directive should follow in order to: produce the necessary RBMPs; identify bodies of water within each RBD that are used, or intended to be used, for the abstraction of drinking water; and produce a register of 'protected areas' within each RBD.

15.2.4 The Water Resources Act 1991 (HMSO, 1991), as amended, sets out the regulatory regime under which water abstraction and impounding is licensed by the Environment Agency (EA).

15.2.5 The Pollution Prevention and Control Act 1999 (HMSO, 1999) provides for a unified system of environmental permitting. Within this the Environmental Permitting (England and Wales) Regulations 2016 (as amended) (HMSO, 2016) provide the permitting regime that encompasses water discharge activities, groundwater activities, waste management activities and some activities associated with mines and quarries, including waste mining operations. An environmental permit is required for specified activities. Certain activities may benefit from an exemption from the environmental permitting regime, provided that they fulfil the conditions set by the EA.

15.2.6 The Water Drainage Act 1991 (HMSO, 1991) together with the Water Resources Act 1991 provide for the EA to prevent the obstruction of any main river through the construction of flow control structures, culverts or any other structure in a main river. Where culverting or other works have a potential to affect the flow regime on ordinary watercourses, consent is required from the Lead Local Flood Authority (LLFA) under the Flood and Water Management Act 2010 (HMSO, 2010), which provides better, more comprehensive management of flood risk for people, homes and businesses.

Policy

15.2.7 The assessment has considered the National Planning Policy Framework (NPPF) (Department for Communities and Local Government, 2018) and its supporting Planning Practice Guidance – Flood Risk and Coastal Change (Department for Communities and Local Government, 2014). The NPPF sets out Government policy on development and flood risk. Its aims are to ensure that flood risk is taken into account at all stages of the planning process, to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. Where new development is exceptionally necessary in such areas, policy aims to make it safe, without increasing flood risk elsewhere, and, where possible, reducing flood risk overall.

15.2.8 The assessment also considers those relevant policies of the Shepway District Local Plan Review (2006) and Folkestone & Hythe District Council Core Strategy (2013), in addition to the Kent Areas of Outstanding Natural Beauty (AONB) Landscape Design Handbook (2006). These have been summarised within Table 15-1 along with NPPF relevant policy paragraphs.

Table15-1:Summary of Relevant Adopted Policies

Document	Policy	Summary of Requirements	Scheme Response
National Planning Policy Framework, as amended (2018)	Paragraphs 149 and 150	Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures or making provision for the possible future relocation of vulnerable development and infrastructure. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaption measures, including through the planning of green infrastructure.	The assessment has considered future changes to the water environment and the design of the Scheme incorporates climate change resilience measures and green infrastructure as detailed in Section 15.4 Design and Mitigation and Appendix 15.1.

	Paragraph 163	Where appropriate, applications for development should be submitted with a site-specific flood risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exceptions tests, as applicable) it can be demonstrated that: Within the site, the most vulnerable development is located in areas of lowest flood risk The development is appropriately flood resistant and resilient. It incorporates sustainable drainage systems Any residual risk can be safely managed Safe access and escape routes are included where appropriate, as part of an agreed emergency plan.	A Flood Risk Assessment has been undertaken and is provided in Appendix 15.1. SuDS have been incorporated into the design of green infrastructure spaces, as noted in Section 15.4 Design and Mitigation.
	Paragraph 170	Planning policies and decisions should contribute to and enhance the natural and local environment by: Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability. Development should, where possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as River Basin Management Plans.	A WFD Screening assessment has been undertaken informed by the South East River Basin Management Plan. Design and mitigation measures to prevent deterioration of water quality, including the promotion of SuDS, are outlined in Section 15.4 Design and Mitigation.
A Green Future: Our 25 Year Plan to Improve the Environment (2018)	Section 1: Using and managing land sustainably	Key goals are stated as: Reducing risks from flooding and coastal erosion Expanding the use of natural flood management solutions Putting in place more sustainable drainage systems Making ‘at risk’ properties less vulnerable to flooding	SuDS have been incorporated into the design of green infrastructure spaces, as noted in Section 15.4 Design and Mitigation.
Shepway District Local Plan Review (2006)	Policy CO13 (Nature Conservation)	Development proposals likely to have a harmful effect on the freshwater environment, including water courses, natural ponds, canals and sewers and adjoining banks, will only be permitted where harmful impact will be minimal, and where benefit in the form of increased access and / or water-based recreation outweigh the negative effects. In such cases, measures should be taken to minimise impacts and full compensate for remaining adverse effects.	Section 15.4 Design and Mitigation.
	Policy U2 (Sewage and Wastewater Disposal)	Planning permission for housing developments of five or more dwellings and other forms of development generating a similar flow of effluent will be refused unless connection is made to the nearest available mains drainage system with capacity to serve the development or details are submitted which show how the development will be connected to a mains drainage system.	This has been addressed within the outline Water Cycle Study, provided in Appendix 15.2.
	Policy U4 (Protection of Ground and Surface Water Resources)	Development will not be permitted unless it is demonstrated that it would not lead to an unacceptable risk to the quality or potential yield of surface or ground water resources or lead to an unacceptable risk of pollution.	This is addressed within the Flood Risk Assessment and Surface Water Drainage Strategy in Appendix 15.1.
	Policy CSD5 (Water and Coastal Environmental Management in Shepway)	Development should contribute to sustainable water resource management which maintains or improves the quality and quantity of surface and ground water bodies, and where applicable, the quality of the coastal environment and bathing waters. This will be achieved by protecting or enhancing natural water reserves through sustainable design and construction, managing development in relation to wastewater infrastructure, and promoting long-term resilience to climatic pressures on the coast and water systems. Proposals must be designed to contribute to the maintenance of a sustainable supply of water resources in the district and the achievement of water management plans for the district. Development will be permitted where the following criteria are met: All developments should incorporate water efficiency measures appropriate to the scale and nature of the use proposed. Planning applications for the construction of	The impact of the proposed Development on water resources has been addressed within the outline Water Cycle Study, provided in Appendix 15.2. Water efficiency measures are included within the proposed Development design, as described in Section 15.4.

		new dwellings should include specific design features and demonstrate a maximum level of usage of 105 litres per person per day, or less. New buildings and dwellings must be delivered in line with wastewater capacity and designed so as to ensure that peak rate and surface water runoff from the site is not increased above the existing surface water runoff rate, incorporating appropriate sustainable drainage and water management features. The quality of water passed on to watercourses and the sea must be maintained or improved, and flood risk must not be increased by development within the district. Water reserves and the coastal environment will be maintained and enhanced through Shepway District Council working with partners to manage development and upgrade water infrastructure and quality, and through green infrastructure provisions (policy CSD4).	
	Policy SD1 (Sustainable Development)	Locate new development within or around existing built-up areas, especially on previously developed land, in preference to 'greenfield' sites. Maintain and enhance water, soil and air quality Prevent negative impacts on coastal protection, flood defence, land drainage and groundwater resources Development proposals that would significantly conflict with the above criteria will only be permitted where it can be shown that: There is an overriding economic or social need; Negative impacts are minimised as far as possible; and Measures will be taken to compensate for the adverse environmental effect. Compensatory measures, as a minimum, ensure that no net environmental loss occurs.	The proposed Surface Water Drainage Strategy, that forms Appendix 15.1, addresses the impact of the proposed Development on the surrounding water environment. Section 15.4 identifies Design and Mitigation Measures to prevent adverse impacts on the water environment, including the promotion of SuDS techniques to enhance water quality.
Shepway Core	Policy CSD9 (Sellindge Strategy)	Development shall be designed to minimise water usage, as required by the emerging Water Cycle Study. Total water use per dwelling shall not exceed 90 litres per person per day (including external water use).	This has been addressed within the outline Water Cycle Strategy (2013)
	Policy SS3 (Place-Shaping and Sustainable Settlements Strategy)	All development must meet the following requirements: Consideration of alternative options within the appropriate area should be evident, with a sequential approach taken as required for applicable uses set out in national policy, for example to inform decisions against flood risk. For development located within zones identified by the Environment Agency as being at risk from flooding, site-specific evidence will be required in the form of a detailed flood risk assessment. This will need to demonstrate that the proposal is safe and meets with the sequential approach within the applicable character area of Shepway of the three identified, and (if required) exception tests set out in national policy. It will utilise the Shepway Strategic Flood Risk Assessment (SFRA) and provide further information. Development should also meet the following criteria as applicable: No residential development, other than replacement dwellings, should take place within areas identified at "extreme risk" as shown on the SFRA 2115 climate change hazard maps; or All applications for replacement dwellings, should, via detailed design and the incorporation of flood resilient construction measures, reduce the risk to life of occupants and seek provisions to improve flood risk management. Strategic scale development proposals should be sequentially justified against district-wide site alternatives.	Development in the floodplain is limited to the proposed bridge crossings of the East Stour River. This is addressed within the FRA that is provided in Appendix 15.1.
The Kent Downs AONB Landscape Design Handbook (2006)	New Built Development	Seek to retain key landscape features on development sites – such as woodland, shaws (narrow belts of woodland), hedgerows, orchards, mature trees, watercourses and ponds as a basis for the new landscape structure and setting of the site.	Green and blue infrastructure have been incorporated into the design, as outlined the Surface Water Drainage Strategy in Appendix 15.1.

15.2.10 The following emerging policies from the Core Strategy Review have also been considered in the assessment:

Table 15-2: Summary of relevant emerging policies from the Core Strategy Review

Document	Policy	Description
Shepway District Council Places and Policies Local Plan- Submission Draft, February 2018)	Policy NE7 Contaminated Land	Development will be permitted subject to the identification, and commitment to the implementation of, practicable and efficient measures to treat, contain and/or control any contamination so as to: Prevent contamination of any watercourse, water body or aquifer
Folkestone and Hythe District Council Core Strategy Review (2019) – Consultation Draft (Regulation 19)	Policy SS7 (New Garden Settlement – Place Shaping Principles)	A green and blue infrastructure strategy shall be developed that enhances existing green and blue infrastructure assets in accordance with policy CSD4. Additionally, the strategy shall deliver: Sustainable drainage systems (SuDS) to maximise landscape and biodiversity value and to prevent downstream flooding of the East Stour River, developed as part of an integrated water management solution.
	Policy CSD9 (Sellindge Strategy)	Development shall be designed to minimise water usage, as required by the Water Cycle Study. Total water use per dwelling shall not exceed 90 litres per person per day of potable water (including external water use). Development shall contribute to improvements in the local wastewater infrastructure and other utilities, as required to meet the needs of the development.

Guidance

15.2.11 A number of standards and non-statutory guidelines, which provide details of assessment methodologies and mitigation techniques, have been used to inform the assessment, including:

- Construction Industry Research and Information Association (CIRIA), 2001.C532 Control of Water Pollution from Construction Sites
- Mustow et al., 2005. The Practical Methodology for Determining the Significance of Impacts on the Water Environment
- British Standards Institute, 2009. Code of Practice for Earthworks (BS6031);
- Highways England (formally Highways Agency), 2009. Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, part 10 (HD 45/09)
- Ministry of Housing Communities and Local Government, 2014. Flood Risk and Coastal Change Planning Practice Guidance
- CIRIA, 2015. C650 Environmental Good Practice on Site
- EA, 2017. Flood Risk Assessments: climate change allowances; and
- Lead Local Flood Authorities of the South East of England, 2017. Water People Places: A guide for master planning sustainable drainage into developments.

Consultation and Scoping

Consultation

15.2.12 Table 15-3 provides a summary of Consultee issues raised with respect to surface water resources and flood risk and how they have been addressed. Further details of extensive consultation being undertaken during the preparation of FRA and WCS Reports, which informed this Section can be found in Appendix 15.2

Table 15-3: Summary of Consultation

Consultee/Contact	Date	Summary of Consultee Issue	How Addressed?
Kent County Council (KCC)/ Water Resources – Alan Turner	01/08/2018	Drafts of the WCS and FRA reports were sent to the Consultee in July 2018 and the following has been highlighted: Water has been identified as a key defining feature for the proposed Development and this should be reflected in the WCS Report. An integrated approach which considers the more severe flood events downstream needs to be of high priority in discussions.	Meetings were held with KCC, EA and FHDC (9th and 20th August 2018) to discuss the key points raised and agree the way forward. The FRA and WCS reports have been updated to address the key issues and are provided in Appendix 15.1 and 15.2.
Kent County Council (KCC)/ Flood and Water Management – Bronwyn Buntine,	01/08/2018	The level of detail which has been presented to define amounts of space that need to be allocated per development parcel is appreciated. In general, the approach would seem sensible, but the presentation of the analysis is slightly confusing. Final discharge points to the Stour need to be identified and need further discussion. There will need to be a pre-development scenario against which future development is measured/assessed. This needs to be summarised within the FRA.	
Environment Agency (EA)/ KSL Planning – Jennifer Wilson		Flood risk to the proposed Development has been defined and assessed using currently available data, with no site-specific detailed hydrological or hydraulic modelling. This approach is deemed appropriate. Requirements should be established for specific consents where works are proposed in proximity to main rivers.	A FRA is provided in Appendix 15.1. Consent requirements for works in proximity to main rivers are detailed in Section 15.4.
	06/08/2018	Drafts of the WCS and FRA reports were sent to the Consultee in July 2018 and the following has been highlighted: From a water quality perspective, the proposals seem acceptable. The preferred eventual sewage disposal options stated are well reasoned. A whole-site solution to sewerage provision, delivered in an appropriately phased manner, needs to be directly referred to. It may be appropriate to have a condition that seeks to address timely sewage infrastructure provision. The practicalities and costs of using reclaimed water for non-potable use requires discussion.	Meetings were held with KCC, EA and FHDC (9th and 20th August 2018) to discuss the key points raised and agree the way forward. The FRA and WCS reports have been updated to address the key issues and are provided in Appendix 15.1 and 15.2. It was agreed during the meeting held on 20th August 2018 that detailed fluvial hydraulic modelling is not required for the

		Whilst we are generally content with the content and recommendations of the submitted overarching draft Flood Risk Assessment/Drainage strategy, we would welcome the opportunity to be involved in the formulation of the flood risk management and surface water strategies associated with the individual parcels and phases. The increased fluvial flow in particular should be analysed in more detail, particularly in relation to the bridge crossings of the East Stour, location of attenuation features, invert levels and functionality of any outfalls and set-back from the river. The future functionality of the Aldington Flood Storage Area should also be a key consideration.	Outline Planning Application as the proposed surface water strategy is robust and will reduce peak runoff rates to less than the greenfield rates for extreme events (e.g. 3.33% AEP and 1% AEP). Detailed modelling can be undertaken if required to inform the detailed WCS prior to development commencement, as part of the consideration of reserved matters applications.
Southern Water Plc. – Paul Kent	03/08/2018	Infrastructure to supply the site with water and to treat wastewater is sufficient for the proposed Development. Drafts of the WCS and FRA reports were sent to the Consultee in July 2018 and the following has been highlighted: Clarification is required on the proposed actual per capita consumption. The possibility of returning effluent from Sellindge WwTW back to Otterpool for various uses needs to be covered. Clarification is required regarding the overall impact on peak flows from the Otterpool SuDS Strategy and the WwTW discharge.	An outline Water Cycle Study is provided in Appendix 15.2 detailing proposals for water supply and wastewater management. Meetings were held with Southern Water (on 15th and 21st August 2018) to discuss these comments and other stakeholder comments related to onsite and offsite wastewater infrastructure provision. The FRA and WCS reports have been updated to address the key issues. Southern Water agreed to draw up a letter of confirmation for providing the necessary infrastructure to serve the proposed Otterpool development, including outline detail of how this would be achieved. . This letter has been provided ahead of the planning submission, which is included in the Water Cycle Study presented in Appendix 15.2
Folkestone and Hythe District Council (FHDC)/ Planning – James Farrar	07/08/2018	Drafts of the WCS and FRA reports were sent to the Consultee in July 2018 and the following has been highlighted: The purpose and role of the WCS needs to be clear.	Meetings were held with KCC, EA and FHDC (9th and 20th August 2018) to discuss the key points raised and agree the way forward. The FRA and WCS reports have been updated to address the key issues and are provided in Appendix 15.1 and 15.2.
		The project needs to be put in the context of the wider sub-region/catchment, with particular reference to downstream impacts. As noted by the Place Panel, water could be a defining feature of the Garden Town. The LPA is generally encouraged by the potential scope for innovation which it would like to see explored further and secured through a forthcoming planning application.	
Ashford Borough Council (ABC)	18/10/2018	Meeting was held with Ashford Water Group to discuss the latest water and waste water proposals and no major concerns were raised.	The FRA and WCS reports reflect the latest water supply and waste water proposals, see Appendix 15.1 and 15.2.

Scoping

15.2.13 Table 15-4 provides a summary of consultee responses contained within the Scoping Opinion in relation to surface water resources and flood risk, and the corresponding location in the ES where they are addressed.

Table 15-4: Summary of EIA Scoping Opinion

Consultee/Contact	Summary Scoping Opinion Response	Location in the ES
KCC	The climate change allowances are the main criteria to consider and ensure that sufficient allowance is provided within the drainage design. The conceptual drainage strategy should demonstrate location and "order of magnitude" sizing for particular drainage measures. Flood risk has been covered adequately within the Scoping document however it should be reiterated that additional surface water runoff into the East Stour may impact the functioning of Aldington Flood Storage Reservoir and this needs to be considered within the site-specific FRA.	Section 15.5 and FRA in Appendix 15.1.
Folkestone and Hythe District Council (FHDC)	The general approach, the methodology proposed, and the assessment of the significance of effects is considered acceptable, and the assessment should be undertaken on that basis. No hydrological or hydraulic modelling will be undertaken on the basis that there is no development in fluvial flood zones. This approach must be agreed with the EA.	Section 15.5 and FRA in Appendix 15.1.

	The effects associated with temporary diversions and temporary loss of floodplain storage should be considered.	
EA	Concerns expressed about where foul drainage would go, and water quality effects to the East Stour. Stated that the risks presented by the disposal of effluent and surface water run-off on water quality from the proposed Development should be fully assessed within the ES. The English Channel should also be considered as a potential receptor given that there is the possibility of treated effluent which may be discharged near a bathing beach. This receptor should be given a High sensitivity based on its amenity use and the effect of the proposed Development on this attribute should be assessed. No reference to the potential impact of misconnections from all of the houses.	Section 15.5 and outline WSC in Appendix 15.2.
Historic England	Consideration should be made to the existing flood issue at Westenhanger Castle in which flood events deposit sewage within parts of the scheduled monument.	Section 15.5
Ashford Borough Council (ABC)	All drainage of the Site is across the border into Ashford Borough. The potential effect on water quality in the East Stour and potential for downstream impacts in Ashford should be considered.	Section 15.5

The Study Area

15.2.14 The study area for this assessment includes land within the outline planning application (OPA) Site boundary and proposed Otterpool Framework Masterplan Area (OFMA) boundary, in addition to the downstream reaches of the East Stour up to and including Ashford. Any other surface water receptor within 1km of the OPA and OFMA boundaries has also been included.

15.2.15 The study area has been defined in consultation with the relevant statutory bodies, including the EA, to reflect the surrounding water environment. The study area is considered to be sufficient for the inclusion of all potentially affected surface water receptors. Beyond this 1km buffer there is considered to be no potential for significant effects on surface water receptors.

15.2.16 The study area is illustrated in Appendix 15.3 X.

Methodology for Establishing Baseline Conditions

15.2.17 A desk-based study was carried out to establish the baseline conditions within the study area. The desk study was informed by a number of published datasets available from the British Geological Survey (BGS), the EA, Soilscapes (Cranfield Soil and Agrifood Institute) and Nature on the Map (Natural England). Data was also gathered through consultation with the key consultees listed in Table 15-1 and Table 15-2.

15.2.18 A site walkover was undertaken in October 2017 to supplement the understanding of the baseline characteristics of the study area and its water features.

15.2.19 Flood risk data and flood history information has been collected from a number of strategic reports produced by FHDC including the Strategic Flood Risk Assessment (SFRA) (2015) and Stage 1 Surface Water Management Plan (SWMP). Data to describe hydrological catchment areas and characteristics has been drawn from the Centre for Ecology and Hydrology (CEH) (2017) Flood Estimation Handbook web service.

15.2.20 Other data sources have included the South-East River Basin Management Plan (EA, 2015), the Stour Catchment Abstraction Management Strategy (CAMS) (EA, 2013), the FHDC Water Cycle Study (2011) and its 2018 update; the Water Resource Management Plan prepared by Affinity Water (2015 and 2019 draft) and assets datasets from Southern Water.

15.2.21 A site-specific ground investigation, inclusive of soakaway infiltration tests and groundwater level monitoring has been undertaken that has yielded data informing this assessment, as well as the FRA and Surface Water Drainage Strategy. Calculations have also been completed using best practice Flood Estimation Handbook methods to characterise baseline (greenfield) rates and volumes of rainfall runoff from the Site. Further details are provided in Appendix 15.1.

Forecasting the Future Baseline

15.2.22 The assessment considers the periods of construction and subsequent operation of a number of future phases of the proposed Development. These assessment periods, described in Section 15.5, have been selected to tie into future cycles of water environment, flood risk and water resource management.

15.2.23 In the absence of the Development proposals, referred to as the Base Case, the current water environment is expected to be subject to future temporal variations. For example, it is anticipated that baseline water quality throughout the study area would be subject to change driven by implementation of measures to deliver the objectives of the WFD.

15.2.24 Climate change is anticipated to increase peak rainstorm intensities resulting in potential for an increased frequency of flash flood events. However, there is also potential for more frequent periods of drought, reducing the availability or reliability of surface and groundwater resources for both water supply and to transport and dilute waste water effluents.

15.2.25 In addition, construction of other consented developments or those in planning in the study area, have the potential to influence the Base Case future baseline. Potential effects include those on drainage pathways and catchment hydrology, in addition to water quality and water resource effects such as demand for water supplies and impacts on the capacity of waste water treatment systems.

Defining the Importance/Sensitivity of resource

15.2.26 The adopted assessment methodology is drawn from Volume 11, Section 3, Part 10 of the Design Manual for Roads and Bridges (Highways Agency, 2009) and comprises a number of stages. The first stage involves making a judgement as to the value (or sensitivity) of receptors and their attributes, which is assigned to one of the categories identified in Table 15-5.

Table 15-5: Criteria for Determining the Value (Sensitivity) of Water Environment Receptors

Value (Sensitivity)	Criteria	Examples
Very High	Attributes has a high quality and rarity on a regional or national scale	Surface Water: European Union (EU) designated salmonid/cyprinid fishery Watercourse achieving WFD Class 'High' Site protected under EU or United Kingdom (UK) wildlife legislation (Special Area of Conservation, Special Protection Area, Site of Scientific Interest, Ramsar Site) Supports a public potable water supply to a large community Flood Risk: Designated washland or a large and active floodplain where there is a high potential for flooding of a large number (>100) of residential properties and infrastructure
High	Attribute has a high quality, importance and rarity on a local scale	Surface Water: Watercourse achieving WFD Class 'Good' Major cyprinid fishery

		Species protected under EU or UK wildlife legislation Supports industrial or agricultural abstraction of >500 m^3/day or supports a Private Water Supply of potable water to a small community Flood Risk: Floodplain or defence protecting between 1 and 100 residential properties or industrial premises from flooding
Medium	Attribute has a medium quality, importance and rarity on a local scale	Surface Water: Watercourse achieving WFD Class 'Moderate' Water feature that supports an abstraction for agricultural or industrial use of between 50 and 499m^3/day or supports a Private Water Supply of potable water to an individual property Flood Risk: Floodplain or defence protecting 10 or fewer industrial properties from flooding.
Low	Attribute has a low quality, importance and rarity on a local scale	Surface Water: Watercourse that is not a fishery, achieving WFD Class 'Poor' Supports an abstraction for agricultural or industrial use of <50m^3/day. Does not support a public or private potable water supply. Flood Risk: Floodplain within limited constraints and a low probability of flooding of residential and industrial properties.

Methodology for Assessing Impacts

Impact Characterisation

15.2.27 The magnitude of change (or impact) on the baseline condition is then assigned considering the scale and extent of change and the nature and duration of the impact. Definitions of magnitude are provided in Table 15-6, which were adapted from the DMRB with reference to the paper Practical Methodology for Determining the Significance of Impacts on the Water Environment (Mustow et.al, 2005).

Table 15-6: Criteria for Determining the Magnitude of Impact on Water Environment Receptors

Magnitude of Impact	Criteria	Examples
Major Adverse	Results in loss of attribute and/or quality and integrity of the attribute	Loss or extensive change to a fishery or designated nature conservation site Change in the WFD class of a river reach or pollution of a potable source of abstraction Increase in peak flood level (1% annual probability) > 100 mm, or increasing the risk of flooding to >100 residential properties
Moderate Adverse	Results in effect on integrity of attribute, or loss of part of attribute	Partial loss in productivity of a fishery Pollution of a non-potable source of abstraction Increase in peak flood level (1% annual probability) > 50 mm, or increased flood risk to < 100 residential properties
Minor Adverse	Results in some measurable change in attribute quality or vulnerability	Discharges to a watercourse that results in no significant loss of quality, fishery or biodiversity value Increase in peak flood level (1% annual probability) < 50 mm or increasing the risk of flooding to < 10 industrial properties
Negligible	Results in effect on attribute of insufficient magnitude to affect the use or integrity	
Minor Beneficial	Results in some beneficial effect on an attribute or a reduced risk of a negative effect occurring	Reduction in peak flood level (1% annual probability) of 10mm to 50mm
Moderate Beneficial	Results in moderate improvement of attribute quality	Reduction in quantity or improvement in quality of a polluting discharge Reduction in peak flood level of between 50mm and 100mm in the 1% annual probability event
Major Beneficial	Results in major improvement in attribute quality	Prevention of existing polluting discharges sufficient to achieve WFD class improvement. Reduction in peak flood level of > 100mm in the 1% annual probability event

Assessing Significance

15.2.28 The overall significance of effects on hydrology, flood risk and surface water receptors are then derived by combining the value (sensitivity) of the receptor with the magnitude of the predicted impact (change), as illustrated in Table 15-7. Slight, moderate and large/very large significance may be adverse or beneficial.

Table 15-7: Criteria for Determining the Significance of Effects on Water Environment Receptors

		MAGNITUDE OF IMPACT			
		Negligible	**Minor**	**Moderate**	**Major**
SENSITIVITY OF ATTRIBUTE	**Very High**	Neutral	Moderate/Large	Large/Very Large	Very Large
	High	Neutral	Slight/Moderate	Moderate/Large	Large/Very Large
	Medium	Neutral	Slight	Moderate	Large
	Low	Neutral	Neutral	Slight	Slight/Moderate

15.2.29 Where more than one significance outcome is possible, professional judgement is used to determine which is most appropriate on a case-by-case basis and ensuring regard to the precautionary principle. Effects with an overall significance of Moderate, Large and Very Large are considered Significant in terms of the EIA Regulations.

Limitations and Assumptions

Limitations

15.2.30 Flood risk to the proposed Development has been defined and assessed using currently available data from the EA and the LLFA.

15.2.31 No hydrological or hydraulic modelling or water quality monitoring surveys have been carried out and the sensitivity (value) of hydrology (water resources) and water quality attributes have been assigned on the basis of available published data. This is considered appropriate given the outline nature of the application for planning permission and given the availability of existing, contemporary data sets.

Assumptions

15.2.32 No assumptions relevant to this assessment that lie outside of the outline construction methodology and available operational information, documented in Section 4.3, have been made.

15.3 Baseline

Existing Baseline

Catchment Hydrology

15.3.1 The study area has a moderately sloping topography towards the north-west, with ground levels varying between approximately 57m and 107m above ordnance datum (AOD).

15.3.2 Governed in part by this topography, surface water mainly flows from east to west. The topography divides the Site into a number of sub-catchments each drained by a network of ordinary watercourses that discharge ultimately to the East Stour. Other surface water features within the study area include ponds, a lake and numerous ditches and drains. The East Stour drains a total area of 19.49km^2 to National Grid Reference (NGR) E609400, N137700 located downstream of the Site and receives an average annual rainfall of 775mm.

15.3.3 A desk study review of the hydrogeology aquifer classification 625k data from the British Geological Survey (BGS) shows that most of the Site lies upon a section of the Lower Greensand Group which is considered to be a highly productive aquifer with significant intergranular flow. The EA Aquifer Designation Map indicates that the Site is partially located on both Principal and Secondary A Aquifer. Principal aquifers are described as geology that exhibits high permeability and/or provide a high level of water storage. They may support water and/or river base flow on a strategic scale. Secondary A aquifers are described as permeable strata capable of supporting water supplies at a local rather than strategic scale and in some cases forming an important source of base flow to rivers. Further detail is provided in Section 10.3 (Geology, Hydrogeology and Land Quality Section).

15.3.4 A review of the Soilscapes map, provided as Figure 6 of the Flood Risk Assessment and Surface Water Drainage Strategy (Appendix 15.1), has been undertaken. This shows that the soil types for the Site can be split into four main areas. Most of the Site is covered by freely draining, slightly acidic but base rich soils. The second largest soil type in terms of plan area on the Site can be identified as loamy soils with naturally high groundwater likely influenced by the East Stour and underlying geology. The west of the Site is partially covered by slowly permeable, seasonally wet slightly acidic loamy soils which follows the profile of the Harringe Brooke (a minor tributary of the East Stour River). To the east, freely draining and slightly acidic loamy soils cover a small proportion of the Site.

Surface Water Quality

15.3.5 The WFD sets out standards for water quality in rivers, estuaries, coastal waters and aquifers. River Basin Management Plans (RBMP) identify the main issues within a catchment and outline the means of achieving the targets set by the Directive.

15.3.6 Within the study area the only waterbody which is classified under the European Parliament and Council (2000) WFD is the East Stour reach of the Stour hydrological catchment.

15.3.7 Baseline water quality has been characterised for the East Stour using WFD monitoring data relevant to the Cycle 2 2016 legal baseline. Available data indicates that the East Stour currently achieves Moderate status. This status is limited by biological quality elements (macrophytes and phytobenthos combined) and physico-chemical quality elements, specifically phosphates. The East Stour has a target to achieve Good status by 2027. Its chemical water quality 'does not require assessment' as the watercourse does not receive any known discharges of priority substances.

15.3.8 Whilst WFD legislation is also applicable to the minor watercourses that flow through the application Site; these features are not specifically monitored by the EA. Therefore, the water quality attributes of minor watercourses have been inferred using the data for the East Stour to which they drain, as summarised in Table 15-8.

Flood Risk

15.3.9 An FRA has been carried out for the proposed Development and is provided in Appendix 15.1. The baseline flood risk to the proposed Development is summarised below.

15.3.10 The EA Flood Map for Planning as provided in Figure 12 of the supporting FRA, indicates that the vast majority of the Site is located on land designated in Flood Zone 1 (land having less than 1 in 1,000 annual probability of flooding). There are limited areas of Flood Zone 2 (land having between a 1 in 100 and 1 in 1,000 annual probability of flooding) and Flood Zone 3 (land having a 1 in 100 year or greater annual probability of flooding). These areas follow the route and profile of the East Stour valley which runs through the northern half of the Site. There are no recorded historical flood events having affected the Site. However, the EA reports that downstream, the town of Ashford is susceptible and has experienced past flooding.

15.3.11 As a largely greenfield Site, rainfall runoff patterns are governed by topography, soil type and the nature of the overlying surfaces. Data on existing surface water flood risk have been gathered from the EA Long term flood risk map, as provided in Figure 13 of the supporting FRA. This indicates limited areas of localised flooding within the area of study, mostly associated with valley features representing drainage routes/flow paths; and the channels of the watercourses within the Site, such as the East Stour meander. The Site is therefore subject to varying degrees of flood risk from surface water sources.

15.3.12 The Stage 2 FHDC SFRA reports on flood risk from groundwater sources and is informed by data compiled by the BGS. The datasets and related mapping indicate that the whole of the Folkestone and Hythe District is generally located within a low risk area in terms of groundwater flooding. The risk of flooding from groundwater sources to the Site is considered to be low.

15.3.13 The Site does not lie within an area at risk of flooding from reservoirs. The nearest extent of flooding shown on the EA Long term flood risk map is located 2.8km to the north-west of the Site towards Ashford. The risk of flooding from artificial sources is considered to be low.

15.3.14 The Stage 2 FHDC SFRA details that the majority of sewer networks within the area of study are combined sewers. These networks can be overwhelmed during large rainstorm events, resulting in surcharge and risk of land and property flooding. Many of the surface water and highway sewers also discharge directly to local watercourses, which increases the risk of surcharging drainage during a storm event. Historic England has highlighted issues of flooding at Westenhanger Castle when sewage is deposited within parts of the scheduled monument.

Water Resources

15.3.15 The study area is known to have limited surface and groundwater resources and is considered to be a water stressed area. Low average annual rainfall in the catchment makes it one of the driest areas in the country. The EA currently class surface water and groundwater resources within the District as over-licensed or over-abstracted and the Stour Catchment Abstraction Management Strategy (CAMS) indicates that no further consumptive licences will be granted for surface water abstraction.

15.3.16 Potable water is supplied to the District by Affinity Water and the District lies completely within Water Resource Zone (WRZ) 7 in the Southeast region. This WRZ is supplied via a number of groundwater abstractions from the underlying chalk aquifer and the import of treated water from neighbouring water companies, namely South East Water (SEW) and Southern Water (SW).

15.3.17 Wastewater in the District is collected and treated by SW. There are currently two treatment facilities nearby, the Sellindge Wastewater Treatment Works (WwTW) located approximately 1km to the west and the West Hythe WwTW in the adjoining catchment approximately 7km to the southeast. Sellindge discharges to the East Stour River via Horton Priory Dyke and West Hythe WwTW discharges to the English Channel via a long sea outfall.

15.3.18 Table 15-8 provides a summary of the values assigned to water receptors and their attributes. These have been assigned guided by the criteria presented in Table 15-5.

Table 15-8 Summary of Value of Water Environment Receptors and their Attributes

Receptor	Attribute	Description	Value (Sensitivity)
East Stour	Flood flow storage and conveyance	The East Stour is the receptor and final conveyance route for most of the surface water drainage generated within the application site boundary, it therefore has a key function in local land drainage and flood risk management	High
	Water quality	The East Stour currently has WFD 'Moderate' overall ecological classification and 'Good' chemical classification, with a target of achieving 'Good' status by 2027	Medium
	Water supply and dilution and transport of waste water	The East Stour is identified as being unlikely to support new consumptive abstractions given the reliability of water availability. The watercourse receives discharges from the Sellindge WwTW.	High
Ordinary watercourses	Flood flow storage and conveyance	Watercourses with limited constraints and low probability of flooding industrial/residential properties, but medium to high risk of surface water flooding and which are key to local land drainage	Medium
	Water quality	Inferred WFD class of 'Moderate' without any protected designations	Medium
	Water supply and dilution and transport of waste water	Inferred that the existing watercourses are unlikely to support new requests for consumptive abstractions given the reliability of water availability in the East Stour	Medium
Ponds	Flood flow storage and conveyance	Waterbodies with low probability of flooding industrial/residential properties	Low
	Water quality	Inferred WFD class of 'Moderate' without any protected designations	Medium

15.3.19 The English Channel has been scoped out as a potential receptor given that the current waste water treatment strategy, described in Section 15.5, discounts use of the West Hythe WwTW.

Future Baseline

15.3.20 The proposed Development is expected to be constructed in phases, with the OPA for 8,500 homes built out by 2044. The full OFMA for 10,000 homes would be built out by 2046. Base case environmental conditions over this relatively long period would be expected to vary from the present-day baseline described.

15.3.21 By 2027 objectives for the East Stour, detailed in its RBMP are for this waterbody to achieve Good overall status, an improvement from its existing Moderate status. Key drivers for improvements are the better management of agricultural/rural land to reduce diffuse pollution and also the higher quality of point source discharges to the river from sewage treatment works.

15.3.22 Future Asset Management Planning (AMP) cycles (5 yearly) will deliver upgrades and efficiencies in the infrastructure that supplies potable water to the study area and given the water stressed nature of the area, there will be drivers to maximise water use efficiency in all new development through the adoption of Water Sensitive Urban Design principles in line with the latest CIRIA guidelines (Ref 15-26).

15.3.23 Similarly, in Base case future years planned implementation of improvements and investment in waste water treatment infrastructure will contribute to reducing the risk of sewer flooding and also contribute to water quality improvements in the East Stour catchment.

15.4 Design and Mitigation

15.4.1 Details of the design and mitigation measures that would act to safeguard the existing hydrological regime, surface water receptors and their attributed are summarised below.

Construction Approach and Mitigation of Construction Effects

15.4.2 A qualitative assessment of the effects on the water environment resulting from construction of the proposed Development has been undertaken. This has considered the types of construction activities involved, the duration of activities and their proximity to water features. When assigning magnitude to the impacts identified, in accordance with Table 15-6, the following measures and controls have been assumed to be in place.

15.4.3 To ensure the quality of the water environment does not deteriorate during construction, a Code of Construction Practice (CoCP) would be produced and implemented following agreement with FHDC. This would document best practice construction methodologies and describe procedures for the management of environmental impacts during construction, including a Pollution Control Plan, to safeguard the quality of surface water during the construction phase. Method statements would be prepared, and activities would be managed and monitored by the main contractor, to include the following best practice measures:

- Avoiding the storage of any potentially polluting materials in close proximity to any waterbodies, including stockpiles of soil to reduce potential for sedimentation. Where this is not possible works would be undertaken in accordance with approved method statements and in accordance with environmental permitting requirements/restrictions in order to safeguard the water environment.
- Soil stripping managed to ensure the minimum area of exposed soil at any one time.
- Fuels and chemicals would be stored, and refuelling would take place within bunded areas to prevent leakage, and these would be located away from waterbodies. Drainage from these areas would incorporate an isolation facility such that the outlet could be sealed in the event of a spill.
- Provision made for water treatment to remove sediment before discharge to a surface water feature.
- Concrete would be laid only following the suitable preparation of the ground surface and temporary shuttering used to contain potential leaks.
- Designated washing out areas would be set up for concrete lorries with impermeable liners to protect the soil and groundwater below.
- Waste water generated from the construction compound(s) would be disposed of via appropriate means, for example pumped out and removed from site by tanker.

15.4.4 An emergency spillage response plan would document measures to be implemented to prevent pollutants infiltrating into the soils beneath the site and reaching surface water receptors. Appropriate equipment (e.g. absorption mats) would also be made easily accessible on site to deal with accidental spillages and the plan would also provide a full list of protocols and communication channels with the EA in the event of an accidental pollution incident. Should any pollution incidents occur, the EA incident hotline would be called immediately in tandem with dealing with any spillages.

15.4.5 To promote the sustainable use of water resources, measures would be implemented to promote general water use efficiency and particularly to reduce the use of potable water. Examples include rainwater harvesting to provide water supply for the construction welfare facilities and for use in dust suppression, the collection of greywater for use in wheel washing facilities and leakage prevention.

Scheme Design and Mitigation of Operational Effects

15.4.6 The assessment of the operational effects of the proposed Development has been both qualitative and quantitative in some respects. For example, calculations have been undertaken to quantify the effects on rainfall runoff rates and volumes, and to define soil infiltration capacities, to inform a Flood Risk Assessment and Surface Water Drainage Strategy (Appendix 15.1). In addition, calculations have been undertaken to estimate potable water demand and waste water generation. Calculations have also been carried out to assess the effects of operational discharges from the Site on the water quality of receiving waterbodies. Full details are provided in the Outline Water Cycle Study in Appendix 15.2.

15.4.7 As detailed in the FRA the proposed Development would utilise Sustainable Drainage Systems (SuDS) to manage surface water across the proposed Development, in terms of both water quality and quantity. The proposals would ensure that greenfield (existing) discharge rates would not be exceeded during rainfall events up to a 1 in 100 (1%) annual probability including an allowance for climate change. SuDs infrastructure would be included in green infrastructure spaces that would be present throughout the proposed Development. Several infiltration areas have also been included in the design where the ground conditions are suitable. Swales, soakaways, permeable paving, rain gardens and green roofs would provide more localised surface water management. The Site would aim to be an exemplar regarding the provision of SuDS and multi-functional green space, promoting Water Sensitive Urban Development (WSUD) principles. This would ensure that flood risk is mitigated during each development phase and cumulatively as the phases progress, whilst also reduce water demand and maximise overall environmental benefits.

15.4.8 The use of SuDS would promote good water quality standards and would also allow for the creation of new wildlife spaces and valuable open amenity areas. A variety of methods are proposed to be employed for different sources of runoff to remove hydrocarbons, metals, sediments and other impairments on water quality. Pre-treatment would be utilised to supplement filtration, bioremediation, detention and vegetation uptake processes.

15.4.9 Development in the floodplain across the Site would be limited to three new road bridges over the East Stour to connect the north riverside area to the south. To ensure these bridges do not cause constrictions to flow, which could increase flood risk onsite and upstream, the bridges would be designed in accordance with best practice and where required, hydraulic modelling would inform their design. A Flood Risk Activity Permit (FRAP) would be prepared for the bridge structures. In addition, ordinary watercourse consent applications under the Land Drainage Act 1991 would be obtained as required from KCC, as the LLFA for works impacting on the flow conveyance of minor watercourses on the Site. The FRAP permit and ordinary watercourse consent applications would demonstrate that:

- The design of watercourses crossings would cause no increase in flood risk either upstream or downstream.
- Access to the main river network for maintenance and improvement would not be prejudiced.
- Works would be carried out in such a way as to avoid unnecessary environmental damage

15.4.10 As described in paragraph 15.4.6, an outline WCS has been prepared (Appendix 15.2) to assess the impacts of proposed development on the existing water resources, receiving water environment and existing infrastructure, including the proposals for the sustainable planning of water use and wastewater treatment. A detailed WCS would also be undertaken prior to construction to ensure that the proposed Development would have no adverse impacts on water resources, water quality and flood risk. Water Sensitive Urban Design (WSUD) principles would be set out in the detailed WCS and put in place to restrict the maximum amount of extra potable water consumed by each new household to the 90 litres of water per person per day target, in line with the relevant policies described in Section 15.2.

15.4.11 Capacity constraints associated with the existing WwTWs and sewerage network to accommodate increased flows from the proposed Development as the development phases progress would be addressed with future investment and careful planning. Initial assessment detailed in the outline WCS (Appendix 15.2) indicates that upgrading the existing Sellindge WwTW (operated by Southern Water) or providing an onsite works are both viable options. These options would be taken forward for detailed assessment and a preferred option, once confirmed, would be phased and implemented ahead of the proposed Development. This would be set out in a detailed WCS prepared prior to the submission of any relevant reserved matters applications.

15.5 Assessment of Residual and Cumulative Effects

Residual Effects from Construction

Water Quality

15.5.1 The construction phases of the Development would require earthworks to take place, including excavation, transportation, stockpiling and backfilling of material. Erosion and subsequent mobilisation of this material, by wind or water, and its transportation via surface water runoff to surface watercourses has the potential to result in sedimentation.

15.5.2 There is also the potential for accidental spillages of oils, chemicals, cement and fuels from the movement of construction traffic across the Site and in association with chemical storage facilities.

15.5.3 However, given the implementation of the control measures documented in the CoCP and the embedded design measures outlined in Section 15.4 it is considered that there would be negligible impact on the water quality attributes of surface water features, with an overall **negligible** significance of effect.

15.5.4 During the construction of the new bridges to facilitate crossings of the East Stour and where works are required to any ordinary watercourses to accommodate the Development, there is a higher risk of temporary impacts on surface water quality through the disturbance of the banks of the watercourses and through works being undertaken in closer proximity to them. However, measures outlined in the CoCP for avoiding pollution when working adjacent to watercourses or in channel, would be implemented. The effect of these construction activities on the water quality attributes of surface water receptors is therefore considered to be minor and would have an overall **negligible/slight adverse** significance of effect.

15.5.5 This assessment is supported by the results of a WFD Screening assessment report provided in Appendix 7.22. The WFD report concludes that the proposed Development is compliant with WFD objectives and no further detailed stages of assessment are necessary.

Flood Risk and Drainage

15.5.6 Construction activities would result in the creation of additional impermeable surface areas within the Site as subsequent development phases progress. Increased rates and volumes of surface water runoff would be generated from these areas of the Development, with the potential for increased surface water flood risk on Site and in downstream areas. However, management of Site drainage using the range of SuDS techniques described in Section 15.4 would result in a negligible magnitude of impact on the conveyance properties of watercourses and the overall baseline land drainage regime. This would result in an overall **neutra**l significance of effect.

Water Resources

15.5.7 Given the commitment to sustainable use of water resources on Site during the construction phase, as outlined in paragraph 15.4.5, it is considered that there would be a negligible impact and an overall **neutral** significance of effect on surface water resources.

15.5.8 Foul water generated during the construction phase by construction staff would be dealt with appropriately to ensure there would be a negligible impact and an overall **neutral** significance of effect on the water environment.

Residual Effects from Operation

Water Quality

15.5.9 SuDS would be installed to manage impacts arising from the generation of surface water runoff as the Development becomes operational at the end of each phase. These SuDS systems would be implemented as part of the Site enabling works stage in each development phase and would collect, convey and provide treatment of surface water runoff ensure the sustainable management of operational surface water drainage. It is therefore considered that the magnitude of any impact on surface water quality during the operation phases of the Development would be negligible, with an overall **neutral** significance of effect.

Flood Risk and Drainage

15.5.10 A potential effect on baseline fluvial flood risk is associated with the permanent bridges to facilitate the crossings of East Stour acting to change the existing flow regime of this river. However, as the bridges would be designed in accordance with best practice to avoid localised hydraulic effects and configured in accordance with EA FRAP requirements, it is considered that there would be negligible impacts on flow conveyance, with an overall **neutral** significance of effect.

15.5.11 Given that building, with the exception of the new bridge crossings, would be avoided in areas at existing risk of fluvial flooding, no material loss of floodplain storage would result due to the proposed Development.

15.5.12 As a result of the design and the sustainable management of surface water runoff on the Site, the development would result in a negligible magnitude of impact on flood risk, with an overall **neutral** significance of effect.

Water Resources

15.5.13 The design of the proposed Development would make use of Water Sensitive Urban Design Principles to ensure the sustainable management of both foul discharges and potable water supply. The methods to deliver these principles would be set out in a detailed WCS prior to construction. SuDS systems would enhance infiltration of rainfall runoff into the ground, potentially contributing to an increase in base-flow in the smaller watercourses that flow through the Site. This would provide slight beneficial impacts for the flow regimes of these surface water features. It is therefore considered that the operation of the proposed Development would have a negligible impact on water resources. The overall significance of effects would be **neutral**.

Cumulative Effects

15.5.14 The cumulative effects of the proposed Development, including the 10,000 home Framework Masterplan, have been assessed with reference to the development schemes listed in Appendix 2.4 of the ES. The assessment considers those schemes that have been consented within the borough of Ashford and Folkestone and Hythe District and that have the potential to have a cumulative impact on the surface water environment by being situated in the same hydrological catchments as the proposed Development.

15.5.15 There is the potential for developments that drain the same hydrological catchments to have a cumulative impact on flood risk, through the generation of increased runoff. However, in line with local policy requirements, described in Section 15.2, it is considered that other developments would also incorporate SuDS (including best practice construction methods) to manage impacts on water quality and run off quantity during their construction and operation. It is therefore considered that there would be **neutral** cumulative effects on these attributes of the surface water environment within the study area.

15.5.16 Development of the Site together with other sites located in the same foul water catchment draining to Sellindge WwTW, has the potential to result in cumulative excessive demand on the network and treatment capacity of the WwTW. Further work to assess options for the management of foul water would be carried out as part of a detailed WCS going forward. Where on-site measures to treat foul water from the proposed Development are adopted, there would be no cumulative impact on the existing Sellindge WwTW. However, it is considered that upgrading the infrastructure at the WwTW would provide sufficient mitigation to manage any cumulative effects.

15.5.17 There is also the potential for cumulative impacts on water resources, which may be significant given the water stressed nature of the East Stour catchment. However, a detailed WCS would be undertaken prior to construction of the proposed Development to ensure the sustainable management of water resources that prevent any adverse impacts on the water environment. It would be expected that other developments would be designed to be sensitive to water resource usage and would follow similar sustainable and Water Sensitive Urban Design principles. It is therefore considered that cumulative effects on water resources would be **negligible**.

15.6 Assessment Summary of Effects

15.6.1 This assessment has concluded that development of the Site could be undertaken without increasing construction or operational phase flood risk (from fluvial or surface water sources) to the Site itself or downstream areas. This would be achieved through locating new built development, with the exception of the proposed new bridge crossings, in Flood Zone 1 and maintaining surface water runoff rates that equal or better existing greenfield rates, through the implementation of SuDS measures. The bridge crossings would be designed as such that there would be no local hydraulic changes that could impact on flood risk and where required hydraulic modelling would be provided to support this.

15.6.2 The proposed Development is considered to cause no overall detriment to the quality of surface water features during either its construction or operational phases.

15.6.3 The Site would promote the use of SuDS, multi-functional green space and Water Sensitive Urban Development design principles, to ensure that flood risk is mitigated whilst reducing water demand and maximising overall environmental benefits. It is considered that the additional pressures that the proposed Development would put on water supply and foul water treatment infrastructure would be sustainably managed to ensure no overall adverse impacts on local water resources. This would be fulfilled as part of a detailed WCS going forward.

15.6.4 Table 15-9 provides an assessment summary of the likely effects of the proposed Development with respect to the surface water environment.

Table 15-9 Summary Table of Effects

Receptor	Potential Significant Effect	Mitigation Measures	Residual Effect Significance
Construction Phase			
East Stour Ordinary Watercourses Ponds	Silt pollution	A CoCP would be produced and implemented. This would document procedures for managing environmental impacts during construction and would include a Pollution Control Plan.	**Slight Adverse - Not Significant** (Watercourses at Bridge Crossings) **Neutral - Not Significant** (Other watercourses and features)
	Pollution with fuel, oils, cement or concrete	An emergency spillage response plan would also be prepared to document measures to be implemented to prevent pollutants reaching surface water receptors. Water efficiency measures would be implemented to	**Slight Adverse - Not Significant** (Watercourses at Bridge Crossings) **Neutral - Not Significant** (Other watercourses and features)

		promote sustainable use of water resources and reduce the use of potable water.	
	Increase in flood risk – increased surface water runoff from impermeable areas and due to soil compaction/disturbance	Site drainage would be managed appropriately using a range of SuDS techniques. No further mitigation measures required.	**Neutral - Not Significant**
Operation Phase			
East Stour Ordinary Watercourses	Changes in flow conveyance and/or local hydraulics of watercourses being crossed by bridges	SuDS would be included within green infrastructure spaces to manage surface water quality and quantity across the proposed Development. Development in the floodplain would be limited to three new road bridges over the East Stour. These bridges would be designed in accordance with best practice and, where required, hydraulic modelling to ensure that there would be no constriction of flow in these watercourses. The construction of the bridge structures would be in line with that set out in any flood risk activity environmental permit (FRAP), of which would be applied for prior to construction.	**Slight Adverse - Not Significant**
	Increase in flood risk – increased surface water runoff from impermeable areas and due permanent increase in impermeable land cover		**Neutral - Not Significant**
	Increase in potable water demand and waste water discharges	A detailed WCS would be undertaken prior to construction to ensure the proposed Development would have adverse impacts on water resources. WSUD principles would be set out in the detailed WCS to restrict the maximum amount of extra potable water consumed by each household to 90 litres of water per person per day.	**Neutral - Not Significant**
		SuDS would be used to promote good water quality standards. A variety of methods are proposed to be employed for different sources of runoff to remove hydrocarbons, metals, sediments and other impairments on water quality. Pre-treatment would be utilised to supplement filtration, bioremediation, detention and vegetation uptake processes.	**Neutral - Not Significant**
	Pollution with fuels, oils or silt,		**Neutral - Not Significant**

15.7 References

Reference	Title
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Ref 15.2	Affinity Water. (2018). *Draft Water Resources Management Plan 2019*. [online] Available at: https://www.southernwater.co.uk/media/1311/annex-3-supply-forecast.pdf. (Accessed 10 Apr. 2018).
Ref 15.3	British Standards Institute. (2009). *Code of Practice for Earthworks (BS 6031).* [online] Available at: https://www.thenbs.com/PublicationIndex/documents/details?Pub=BSI&DocID=291403. (Accessed 11 Apr. 2018).
Ref 15.4	Centre for Ecology and Hydrology. (2017). *Flood Estimation Handbook Web Service*. [online] Available at: https://fehweb.ceh.ac.uk/. (Accessed 7 May. 2018).
Ref 15.5	Construction Industry Research and Information Association (CIRIA). (2001). *C532 Control of Water Pollution from Construction Sites.* [online] Available at: http://www.orkneywind.co.uk/advice/SEPA%20Pollution%20Advice/ciria%20c532.pdf. (Accessed 22 May. 2018).
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Ref 15.11	Environment Agency. (2015). *South-East River Basin Management Plan.* [online] Available at: https://www.gov.uk/government/collections/river-basin-management-plans-2015#south-east-river-basin-district-rbmp:-2015. (Accessed 24 May. 2018).
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Ref 15.13	Environment Agency. (2018). Stour Catchment Abstraction Management Strategy. [online] Available at: https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process. (Accessed 24 May. 2018).
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Ref 15.15	Folkestone and Hythe District Council. (2015). *Strategic Flood Risk Assessment.* [online] Available at: https://www.folkestone-hythe.gov.uk/planning/planning-advice-and-fees/planning-permission-in-flood-risk-areas. (Accessed 17 May. 2018).
Ref 15.16	Her Majesty's Stationery Office (HMSO). (1991). *The Water Drainage Act 1991*. [online] Available at: https://www.legislation.gov.uk/ukpga/1991/59/contents. (Accessed 23 May. 2018).
Ref 15.17	Her Majesty's Stationery Office (HMSO). (1991). *The Water Resources Act 1991*. [online] Available at: http://www.legislation.gov.uk/ukpga/1991/57/contents. (Accessed 23 May. 2018).
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Ref 15.20	Her Majesty's Stationery Office (HMSO). (2010). *Flood and Water Management Act 2010.* [online] Available at: https://www.legislation.gov.uk/ukpga/2010/29/contents. (Accessed 23 May. 2018).
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Ref 15.22	Highways England. (2009). *Design Manual for Roads and Bridges* (DMRB). Volume 11, Section 3, part 10 (HD 45/09). [online] Available at: http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section3/hd4509.pdf. (Accessed 12 Jun. 2018).
Ref 15.23	Lead Local Flood Authorities of the South East of England. (2017). *Water People Places: A guide for master planning sustainable drainage into developments.* [online] Available at: https://www.midsussex.gov.uk/media/2909/water-people-places-a-guide-for-master-planning-sustainable-drainage-into-developments.pdf. (Accessed 24 May. 2018).
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Ref 15-26	Construction Industry Research and Information Association (CIRIA), (2013). C723 Water Sensitive Urban Design in the UK: Ideas for built environmental practitioners

16 Transport

16.1 Introduction

16.1.1 This Section of the ES assesses the potential impact of the proposed development upon traffic and transportation. Full details of the proposed development are presented in Section 4 of this ES, which set the basis against which this assessment has been conducted.

16.1.2 This Section includes an overview of the methodology for the description of baseline conditions, consideration of the traffic and transport construction and operational effects and the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed.

16.1.3 It follows the assessment methodology set out in the document entitled, "*Guidelines for the Environmental Assessment of Road Traffic*" (Ref 16-1), published by the Institute of Environmental Assessment (IEA) in 1994. The IEA is now known as the Institute of Environmental Management and Assessment (IEMA), so this document will be referred to as the 'IEMA Guidelines' throughout the remainder of this Section.

16.1.4 A Transport Assessment (TA), accompanying appendices and figures reports and draft Framework Travel Plan (FTP) have also been prepared in liaison with Folkestone & Hythe District Council (FHDC), Kent County Council (KCC) and Highways England (HE). This provides further detailed assessment of the impact of the proposed Development upon local transport network capacity and mitigation.

Relevant Aspects of the Proposed Development

16.1.5 A full description of the proposed Development is given in Section 4. Specific aspects that relate to the transport topic include the impacts upon highways and local public transport services that would result from the delivery of up to 8,500 homes along with retail, commercial, leisure, education, health and community facilities, green infrastructure, highway infrastructure and public open space. Full details are provided in section 16.4.

16.2 Assessment Method

Legislation, Policy and Guidance

16.2.1 This impact assessment has been undertaken in accordance with current legislation, national and local plans and policies. Outlined below are those elements of current legislation, policy and guidance relevant to transport in the context of the Development.

National Planning Policy Framework, 2018

16.2.2 The revised National Planning Policy Framework (NPPF) (Ref 16-2) sets out the Government's planning policies for England and how these are expected to be applied. The NPPF provides a framework within which locally-prepared plans for housing and other development can be produced.

16.2.3 Paragraph 102 sets out the transport issues which should be addressed within Development Plans and decisions. So that:

- "The potential impacts of development on transport networks can be addressed;
- Opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;
- Opportunities to promote walking, cycling and public transport use are identified and pursued;
- The environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and
- Patterns of movement, streets, parking and other transport considerations are integral to the design of schemes and contribute to making high quality places".

16.2.4 Paragraph 103 of Section 9 'Promoting sustainable transport' states:

"Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health".

16.2.5 Paragraph 109 states that:

"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe".

16.2.6 Within this context Paragraph 110 finds that applications for development should:

- "Give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;
- Address the needs of people with disabilities and reduced mobility in relation to all modes of transport;
- Create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;
- Allow for the efficient delivery of goods, and access by service and emergency vehicles; and
- Be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations".

16.2.7 Paragraph 111 sets out that:

"All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed".

The Strategic Road Network and the Delivery of Sustainable Development – Department for Transport Circular 02/13, 2013

16.2.8 The Department for Transport (DfT) Circular explains how the Highways Agency (now Highways England) will participate in all stages of the planning process with Government Offices, regional and local planning authorities, local highway/ transport authorities, public transport providers and developers to ensure national and regional aims and objectives can be aligned and met (Ref 16-3).

16.2.9 The Circular sets out that proposals should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.

16.2.10 It is identified that a robust travel plan that promotes use of sustainable modes is an effective means of managing the impact of development on the road network and reducing the need for major transport infrastructure. Highways England expects the promoters of development to put forward initiatives that manage down the traffic impact of proposals to support the promotion of sustainable transport and the development of accessible sites.

16.2.11 Further guidance on engagement with Highways England on planning matters is contained in the document 'The strategic road network: Planning for the Future', published in September 2015 (Ref 16-4).

Travel Plans, Transport Assessment and Statements, 2014

16.2.12 A set of National Planning Practice Guidance (NPPG) has been published to inform how the principle of the NPPF should be practiced (Ref 16-5). Those that specifically relate to transport matters are:

- Travel Plans, Transport Assessments and Statements in Decision-Taking (March 2014); and
- Transport Evidence Bases in Plan Making and Decision Taking (October 2014).

16.2.13 These guidelines provide a common approach which are aimed at ensuring that all relevant issues have been addressed within an assessment. This Transport Assessment adopts the national guidelines and approaches where possible, taking account of the specific nature of the development.

16.2.14 Kent County Council guidelines for the preparation of Transport Assessments for development[1] have been archived along with the national guidelines[2] produced by the DfT.

16.2.15 Transport Assessment guidance is now incorporated into the NPPF. Paragraph 32 of the NPPF states:

- **"**All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:
- The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
- Safe and suitable access to the site can be achieved for all people; and
- Improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe. "

Kent Local Transport Plan 4: Delivering Growth without Gridlock 2016-2031, 2016

16.2.16 The Kent Local Transport Plan (LTP) (Ref 16-6) sets out how the County will achieve its transport vision over the coming years, bringing together transport policies and local and nationally significant schemes.

16.2.17 Kent's transport policies identify a series of improvements (strategic, countywide and local) to increase the overall capacity of transport networks and systems, enabling them to accommodate the additional trips generated by development.

16.2.18 Relevant to this development the LTP states:

"There is substantial future housing growth in the district, including the proposed Otterpool Park garden town, which will require considerable infrastructure investment to support this new town, including upgrading Westenhanger Station".

16.2.19 Transport priorities identified for Folkestone & Hythe relevant to the development are:

- Upgrading of Westenhanger Rail Station;
- Upgrades to Junction of the M20; and
- Newingreen junction highway improvements.

Folkestone & Hythe Core Strategy Local Plan, 2013

16.2.20 The Core Strategy (Ref 16-7) is a long-term plan bringing together the aims and actions of the government, local councils, residents, businesses and voluntary groups, by managing land-use and developments. The Folkestone & Hythe Core Strategy Local Plan was adopted as part of the statutory development plan for the district on 18 September 2013. The general plan period for this document is from 2006 up to the end of 2031.

16.2.21 Policy SS5 District Infrastructure Planning states:

"Development should provide, contribute to or otherwise address [Folkestone & Hythe]'s current and future infrastructure needs. Infrastructure that is necessary to support development must exist already, or a reliable mechanism must be available to ensure that it will be provided at the time it is needed".

16.2.22 Planning permissions will only be granted where:

- The design of a development aims to reduce unnecessary or unsustainable demands on physical and social/community infrastructure, and environmental or utility network capacity;
- Development does not jeopardise current or planned physical infrastructure;
- The location, design or management of development provides a choice of means of transport and allows sustainable travel patterns, for pedestrians, cyclists and/ or public transport; and
- All major trip-generating uses will provide Travel Plans.

Folkestone & Hythe District Council Transport Strategy, 2011

16.2.23 The Transport Strategy (Ref 16-8) published January 2011, provided a robust evidence base which informed the Core Strategy document. The role of the Transport Strategy has been to inform the District Council of the transport related issues and opportunities predicted to result from the delivery of the Core Strategy, identifying appropriate transport measures, where necessary.

16.2.24 The strategy considers both transport matters which relate to the existing district area, as well as those relating to the potential Strategic Site allocations which have been made for future development.

16.2.25 Four initial options were suggested for walking:

- Improvements to road crossing points;
- Improvements to signage and clutter reductions;
- Completions of selected links; and
- Enhancements of the environment of the town centres.

16.2.26 Six initial options were suggested for cycling:

- Creation of a comprehensive District wide cycle network;
- Enhancement of road crossing facilities;
- Enhancement of signage;
- Promotion of parking facilities at destinations;
- Consideration of cycle hire; and
- Promotion of safety awareness.

16.2.27 Folkestone & Hythe District Council, working with Kent County Council as the highway authority for the district, provide and manage parking across Folkestone & Hythe. Key measures identified by the parking strategy included:

- Promotion of Workplace Travel Plans for existing sites;
- Promotion of balanced parking provision at new developments;
- Integration of management of on and off-street parking;
- Review of management of car parking at Westenhanger Rail station – including formalising parking at the station, reviewing parking management on Stone Street, and promoting access to station in connection with three local Core Strategy sites; and
- Promotion of 'visible' parking provision for use by tourists.

16.2.28 In relation to potential strategic development sites within the district, it is stated as necessary for the respective applicant team to prepare detailed Transport Assessments and Travel Plans, to be reviewed by Folkestone & Hythe District Council as the planning authority, Kent County Council as the highway authority, as well as Highways England.

[1] *Guidance on Transport Assessments and Travel Plans (Kent County Council, October 2008).*

[2] *Guidance on Transport Assessment (DfT, 2007).*

16.2.29 The Transport Strategy recommends:

> *"…that in parallel to the Transport Assessments being undertaken, site Travel Plans are also prepared. These documents should seek to set sustainable travel targets for the developments covering the delivery and early occupation of the site (usually a minimum of five years from first occupation)".*

Core Strategy Local Plan Review Submission Draft, 2019

16.2.30 The Core Strategy Review has been published for consultation under Regulation 19 of the Planning and Compulsory Purchase Act 2004 (Ref 16-9). This is the final consultation before the Plan is considered by an independent Planning Inspector at the Examination in Public. The purpose of the document is to allocate sufficient land to meet the identified development needs of the district for the period up to 2037.

16.2.31 This draft follows the previous public consultation on the 'Preferred Options' stage in March 2018.

16.2.32 It is an update of the adopted Core Strategy Local Plan (2013) and continues to include policies for strategic development sites. Proposed policies include the provision for a garden settlement within the North Downs character area, comprising the Otterpool Park development.

16.2.33 Proposed policy SS1 District Spatial Strategy states:

> *"The potential for significant sustainable development in the district is focused on maximising strategic infrastructure where landscape capacity exists, with the creation of a new settlement in the North Downs Area. This will be a major, long-term growth opportunity, developed on garden town principles during the plan period and beyond. Policies SS6-SS9 set out rigorous design requirements and ambitious environmental and sustainability targets that the new settlement must meet to ensure its potential is realised." "*

16.2.34 In addition, Proposed Policy SS6 finds that the Development would present the major opportunity to secure a high-speed rail service between Westenhanger and London St Pancras. The council is pursuing this with train operating companies, infrastructure providers and stakeholders. A transport hub could potentially be provided at the existing Westenhanger station, allowing easy transfer between walking, cycling, bus and train journeys.

16.2.35 The railway station upgrade and hub will potentially deliver:

- Lengthening of the existing platforms;
- New and refurbished station buildings with improved customer facilities;
- A new footbridge between platforms; and
- Car parking to meet the needs of the new town and nearby villages.

16.2.36 Policy SS7 outlines the place shaping principles for sustainable access and movement for the new Otterpool Park settlement:

- *"The development shall be underpinned by a movement strategy which prioritises walking, cycling and access to public transport and demonstrates how this priority has informed the design of the new settlement. All homes shall be within 800 metres/10 minutes' walk of a local neighbourhood centre with an aspiration that all homes are within 400 metres/5 minutes' walk of such facilities;*
- *Development shall incorporate smart infrastructure to provide real-time and mobile-enabled public transport information in accordance with smart town principles (Policy SS9 (2));*
- *A permeable network of tree-lined streets, lanes, pathways, bridleways, cycleways and spaces will be created that provides connections between neighbourhoods, the town centre, employment opportunities and public transport facilities. Footpaths, cycleways and bridleways should link to existing public rights of way, nearby villages and the wider countryside, including the North Downs Way and the SUSTRANS national cycle route network, taking account of the findings of the access strategy (Policy SS7 (1));*
- *Road infrastructure should be designed for a low speed environment, with priority given to pedestrians and cyclists through the use of shared space in ultra-low speed environments and dedicated cycle routes and separate pedestrian walkways where appropriate. The use of grade separations, roundabouts, highway furniture and highway signage should be minimised;*
- *A parking strategy shall be developed that balances the necessity of car ownership with the need to avoid car parking that dominates the street scene to the detriment of local amenity. The parking strategy shall deliver well-designed and accessibly-located cycle parking facilities within the town and neighbourhood centres, at Westenhanger Station and transport hub, as well as at employment developments;*
- *Westenhanger Station shall be upgraded at the earliest opportunity to provide a high-speed service ready integrated transport hub, in partnership with Network Rail, the rail operator and Kent County Council, which gives priority to pedestrians, cyclists, bus and train users. The council will continue to work with Network Rail to introduce high-speed rail services from Westenhanger to central London, subject to discussions with stakeholders; and*
- *The existing bus network that serves the surrounding towns and villages will be upgraded and new services provided as an integral element of the transport hub and settlement. All new homes shall be within a five-minute walk of a bus stop."*

Places and Policies Local Plan, Submission Draft, 2018

16.2.37 The Places and Policies Local Plan, Submission Draft (2018) (Ref 16-10) was produced to support the delivery of the Core Strategy and set out the preferred options ready for consultation.

16.2.38 The Places and Policies Local Plan identifies specific sites for that we consider suitable for development throughout the district to provide up to 2,500 new homes and land for offices, community uses and other types of development. It also sets out:

a) What they want their buildings to look like;
b) How they serve the economy and communities; and
c) How they relate to each other and to what's already there.

16.2.39 Policy NP9 Land at Folkestone Racecourse – The land falls within the Otterpool Park area. The Places and Policies Local Plan, Preferred Options explains, under Policy ND9, the conditions under which development proposals will be supported. Conditions include the proposal achieving the highest quality design of both buildings and surrounding space and reinforces local rural distinctiveness; and the development ensures that there is no adverse impact on water quality from wastewater overflow.

A Charter for Otterpool Park, 2017

16.2.40 Although not planning policy, Folkestone & Hythe District Council has produced a Draft Charter (Ref 16-11) setting out its aspirations for Otterpool Park (2017). The Charter included principles focusing on creating a place that is environmentally, socially and economically sustainable.

16.2.41 In relation to access and movement, the Charter suggests that Otterpool Park will aspire to comprise the following four policies set out in the Core Strategy Local Plan Review (2018):

- SS6: New Garden Settlement – Development Requirements;
- SS7: New Garden Settlement – Place Shaping Principles;
- SS8: New Garden Settlement – Sustainability and Healthy New Town Principles; and
- SS9: New Garden Settlement – Infrastructure, Delivery and Management.

Consultation and Scoping

Consultation

16.2.42 In accordance with the Environmental Impact Assessment (EIA) Regulations, a request for a Scoping Opinion was submitted to Folkestone & Hythe District Council (FHDC) in Spring 2018. This defined the proposed scope of the Transport assessment, outlined the work that had been undertaken to date, and proposed the work that would be undertaken for inclusion within the Environmental Statement (ES). A Scoping Opinion was issued by FHDC in June 2018. A summary of the responses received, and the ongoing consultation undertaken with FHDC is presented in Table 16-1.

Table 16-1 Summary of Consultations held in respect of Traffic and Transport

Consultee/Contact/Date	Summary of Consultee Issue	How Addressed?
Kent County Council / Matthew Hogben / June 2017 Folkestone & Hythe / James Hammond Highway England / Kevin Bown, Nigel Walkden April 2017 – March 2018	Use of TRICS and other assumptions to derive trip rates	Discussions relating to the method of calculating trip generation were held with Kent County Council, Folkestone & Hythe District Council and Highways England. The trip generation method technical note[3] contained in the TA describes the agreed method. These assumptions were used in the ES assessment
Kent County Council / Matthew Hogben / June 2017 Folkestone & Hythe / James Hammond Highway England / Kevin Bown, Nigel Walkden May 2017 – November 2017	Use of Census 2011, NTS and other sources and assumptions related to calculation of trips by mode	The method for the calculation of trips by mode was agreed with Kent County Council, Folkestone & Hythe District Council and Highways England. A technical note[4] describing the method of derivation of the mode splits in detail is contained in the TA. These assumptions were used in the ES assessment
Kent County Council / Matthew Hogben / June 2017 Folkestone & Hythe / James Hammond Highway England / Kevin Bown, Nigel Walkden July 2017 – March 2018	Use of Census 2011 and gravity modelling for the distribution of trips.	Discussions relating to the method for the distribution of trips were held with Kent County Council, Folkestone & Hythe District Council and Highways England between July 2017 and March 2018. The agreed method is described in the technical note[5] contained in the TA. These assumptions were used in the ES assessment
Kent County Council / Matthew Hogben August 2017	Modelling scenarios should include a base year of 2018 and the end of the Local Plan period (2037). Other scenarios to be agreed during further consultation.	The scenarios agreed during scoping, including 2018 and 2037, were included in the TA
Kent County Council / Matthew Hogben August 2017	M20 junctions 9 and 14 should be included in modelling scope if the increase in traffic related to the development is significant M20 Junction 10A should be included in modelling scope A20 route to Ashford to be included in scope	These junctions were included in the assessment
	A261 route to Hythe plus the Hythe gyratory to be included in scope	
Kent County Council / Matthew Hogben August 2017	Future year background flows are to be provided from the area wide strategic model owned by Highways England. Strategic modelling to be undertaken by Highways England.	Highways England advised that the area wide strategic model is not suitable for use for generating future year background flows. TEMPro was used instead, as agreed with Highways England, Kent County Council and Folkstone & Hythe District Council
Highways England / Kevin Bown, Nigel Walkden August 2017	The area wide strategic model is not suitable for use for generating future year background flows. TEMPro is to be used instead, with housing and job forecast inputs to be reviewed by the authorities.	TEMPro was used in the assessment with agreed housing and job forecasts.
Kent County Council / Matthew Hogben August 2017	Additional traffic data to be collected in typical month (i.e. excluding school holidays) and validated against 2016 data	The traffic data collected was validated against 2016 data.
Kent County Council / Matthew Hogben August 2017	Impact on existing bridleways to be considered	The impact on existing bridleways has been considered in the TA
Kent County Council / Matthew Hogben August 2017	The impact and mitigation of the Lorry Holding Area and Operation Stack should be considered.	Lorry Park proposals are currently in development and have not been assessed in the TA, as noted by Highways England. Operation Stack is to be replaced in early 2018. The currently available information regarding the new proposals have been considered in the TA and this ES Section.
Highways England / Kevin Bown, Nigel Walkden December 2017	Since the Lorry Park is not a committed development it should not be included in the assessment. However, the impact and mitigation of Operation Stack should be considered.	
Kent County Council/ Folkstone & Hythe District Council August 2017	Reduction of speed limit to 30mph on and realignment of A20 through the site should be considered.	A speed limit reduction to 30mph is proposed for the A20 between the existing 30mph speed limit at Sellindge through the site to the junction with the A261 Hythe Road and including the proposed Newingreen Link road.
Canterbury City Council June 2018	Committed growth in the Canterbury District Local Plan 2017 will need to be taken account of in the assessment if developments are within a reasonable distance of the Otterpool Park site and are considered likely to have the potential to generate significant traffic effects.	Forecast growth in Canterbury has been considered in the assessment through discussions with Kent County Council.

Scoping

16.2.43 Table 16-2 provides a summary of consultee responses contained within the Scoping Opinion in relation to transport and how where they were addressed.

[3] Otterpool Park Trip Generation Calculation Method Technical Note (Arcadis, 2018)
[4] Otterpool Park Method for deriving Mode Splits (October 2018)
[5] Otterpool Park Method for the Distribution of External Vehicle Trips

Table 16-2 Summary of Scoping Opinion

Consultee/Contact/Date	Summary of Consultee Issue	How Addressed?
Canterbury County Council	The lorry park should be included in the cumulative impact assessment if the land is still shortlisted for use as such.	Lorry Park proposals are currently in development and have not been assessed in the TA, as noted by Highways England. Operation Stack is to be replaced in early 2018. The currently available information regarding the new proposals have been considered in the TA and this ES Section.
Folkestone & Hythe District Council / James Farrar July 2018	On the Lorry Park issue we do not think it needs to be scoped in at this stage	
Canterbury County Council	Modelling used in any Transport Assessment should include specific or strategic modelling of routes into Canterbury	The scope of highway capacity modelling was expanded to consider key junctions in Canterbury. The scope was agreed with Kent County Council and included in the transport assessment. Impact on the key roads in Canterbury identified during scoping is included in the ES
Kent County Council	Scope of modelling required in Canterbury	

The Study Area

16.2.44 The extent of the assessment study area for each mode has been defined by the routes people will travel using each mode between the site and off-site locations across the UK. The study area for walk and cycle trips includes all existing and proposed pedestrian routes within the site boundary and destinations within walking distance of the site; Sellindge and Stanford, east towards Hythe, west along Aldington Road and south along Lympne Hill. The assessment of these trips considers the scale of increase in trips and the current and proposed condition of the routes.

16.2.45 The effect of the development on public transport is considered on the routes and services that provide access to the on- and off-site locations between which residents of and visitors to the site are expected to travel. For bus services, this includes services that route to the site and other connecting services. The scale of impact on existing services that are expected to experience an increase in patronage is considered. It is acknowledged that further investigation of the effects of impacts on these services and mitigation required would be undertaken by Kent County Council and discussed with the County and local service providers.

16.2.46 Figure 16-1 (Appendix 16-1) presents the extent of the highway capacity study area agreed with Kent County Council, Folkestone & Hythe District Council and Highways England. Existing and committed junctions are indicated by solid black circles while junctions proposed as part of the development proposals are coloured yellow. Each of these junctions has been assessed using the appropriate LinSig, Arcady or Picady modelling software.

16.2.47 The IEMA guidelines recommend that two rules are considered when assessing the effect of development traffic on a highway link:

- **Rule 1**: Include highway links where total traffic flows will increase by more than 30% (or the number of Heavy Goods Vehicles (HGVs) will increase by more than 30%); and
- **Rule 2**: Include any other specifically sensitive areas where traffic flows will increase by 10% or more.

16.2.48 In this instance, it is considered that as the proposed Otterpool Park development is located within the vicinity of a number of sensitive residential areas and communities, the 10% threshold should apply.

16.2.49 Consideration has also been given to the temporal scope of identified impacts. Impacts which would only occur over a short duration or infrequently have been reviewed using professional judgement to determine whether it would be appropriate to reduce the impact magnitudes suggested by the criteria identified.

Methodology for Establishing Baseline Conditions

Overview of Assessment Years and Scenarios

16.2.50 The following forecast years have been assessed:

- 2018 Base Year: pre-construction 'without development' baseline;
- 2044 Main Assessment: the forecast year of full build-out for the 8,500 homes and associated land uses. This represents the main assessment for the Outline Planning Application.

16.2.51 Each future year assessment includes two scenarios:

- Do-Minimum (DM), which includes:
  - committed highway improvement schemes; and
  - forecast baseline traffic flows.
- Do-Something (DS), which includes:
  - committed highway improvement schemes;
  - highway schemes proposed for the Otterpool Park Development;
  - forecast baseline traffic flows; and
  - Otterpool Park development traffic flows.

16.2.52 For each assessment year a weekday morning peak hour (0800 to 0900) and a weekday evening peak hour (1700 to 1800) has been assessed. These time periods align with the local highway network peak periods as determined from analysis of traffic survey data, as described in Chapter 4 of the accompanying TA.

Baseline 2018

Sustainable Modes

16.2.53 The assessment of baseline conditions for sustainable modes has been informed by site observations and audits, client liaison meetings and desktop-based analysis.

16.2.54 The assessment considers the condition of the existing walking and cycling environment, including access to local amenities, access to public transport services and service provision.

Highway Network

16.2.55 The assessment of existing highway conditions has also been informed by site observations and audits, survey data collection, client liaison meetings, as well as desktop-based analysis.

16.2.56 Traffic flow data from the following sources has been used in this assessment:

- Folkestone & Hythe District Council survey data collected in the district in October 2016;
- Corinthian Mountfield Ltd survey data collected in Canterbury in March 2014 and March 2018;
- Arcadis survey data collected in June 2017; and
- TRADS database survey data collected in October 2016 and June 2017.

16.2.57 The data collected in Canterbury in March 2014 was validated against data collected in March 2018. The comparison indicated that there has been little change in traffic flows along Old Dover Road and Nackington Road between 2014 and 2018, with results indicating a net decrease in traffic demand of 3.4% and 5.7% in the AM and PM peak hours respectively. It was agreed with Kent County Council that the 2014 traffic data would be used to represent the 2018 baseline traffic flow for the two junctions in Canterbury included in the assessment.

16.2.58 The data collected in June 2017 was validated against the October 2016 data. The AM and PM peak network peak hours were observed to be 08:00 to 09:00 and 17:00 to 18:00. The 2017 data was

growthed to 2018 to provide the baseline for assessment using TEMPro growth factors as described later in this Section.

16.2.59 Baseline highway capacity of the junctions within the study area requested for inclusion in the assessment by Kent County Council, Folkestone & Hythe District Council and Highways England was undertaken using the latest available software versions, Junctions 9 for the non-signalised junctions and LinSig 3.2.39.0 for signalised junctions. The validation of the baseline models was agreed with Kent County Council, Folkestone & Hythe District Council and Highways England.

16.2.60 Personal Injury Accident (PIA) data has been obtained from Kent County Council for the period of five-years up until the 30th August 2017, in order to identify any highway safety issues within an area approximately 500 metres from the proposed Masterplan boundary. Site-specific accident data available through CrashMap has been reviewed at locations beyond 500 metres as required by Kent County Council.

Forecasting the Future Baseline Case

Future Baseline Highway Network

Committed transport infrastructure/improvement schemes have been taken into account in the 'with' and 'without development' road network for the assessment. The schemes to be taken into account have been agreed with Kent County Council and are described in full in Chapter 6 of the TA.

Future Baseline Traffic Flows

16.2.61 Since detailed information of the scale, type and location of new development within the study area between 2018 and 2044 is not available at this stage, it was agreed during scoping with Kent County Council and Highways England that the primary method for forecasting future traffic growth should be the application of growth factors derived from TEMPro, a program that provides projections of the total number of trips in an area over time based on the forecast number of households and jobs for use in local and regional transport models.

16.2.62 In addition to the use of TEMPro, the following specific developments for which traffic generation and routing assumptions were available are included in the assessment separately

- Land East of Ashford Road (A20);
- Site South of A20;
- Land at Willesborough Lees; and
- Mountfield Park, South Canterbury.

16.2.63 It was agreed with Highways England that an annual growth rate of 0.6% should be assumed for heavy goods vehicle traffic routing on the M20, as is consistent with data in the National Road Traffic Forecasts.

A full description of the method used to forecast baseline traffic growth is provided in Chapter 6 of the TA. As described in the TA, the 'without development' baseline does not include all forecast growth from housing and employment in Folkestone & Hythe as it is assumed that, if the Otterpool Park development does not go ahead, the District would not meet its housing and employment forecasts. If the District did meet its growth forecasts without Otterpool Park, the 'without development' baseline traffic flows can be expected to be around 15% greater than forecast in this assessment.

Forecasting Development Trips

16.2.64 Discussions relating to the method of calculating trip generation, mode split and trip distribution were held with Kent County Council, Folkestone & Hythe District Council and Highways England between April 2017 and March 2018. The details of the agreed methods are set out in the TA in Chapter 7 (trip generation), Chapter 8 (mode split) and Chapter 9 (trip distribution).

Methodology for Assessing the Environmental Effects

16.2.65 The environmental effects of road traffic resulting from the Otterpool Park development have been assessed upon the local highway network in accordance with IEMA guidelines. The assessment has been carried out for all routes within the identified study area.

16.2.66 Assessments have been undertaken across a typical working day with the effects compared the peak morning and evening hours. On any link where increases in traffic flow are in excess of the above IEMA impact threshold (30% on any link or 10% on sensitive links), a detailed environmental assessment against the assessment criteria has been undertaken on this link.

16.2.67 The IEMA Guidelines state that an environmental assessment of traffic effects should be carried out when there is an increase in flow by more than 30% (or the number of heavy goods vehicles will increase by more than 30%) and where there is an increase of traffic flow of 10% in sensitive areas.

16.2.68 In this instance it is considered that the resultant extent of the Otterpool Park proposals and proximate to sensitive residential areas and communities, the 10% threshold should apply.

Defining the Importance/ Sensitivity of Resource

16.2.69 Resources are the assets and facilities which may be affected by the Development such as the highway network. Receptors are the users or beneficiaries of those resources such as pedestrians and drivers who travel within the Study Area. This will include the areas along the highway routes that could be sensitive to changes in traffic volumes. Sensitive areas are defined by the presence of sensitive receptors, such as residential properties, community centres, schools, equestrian facilities or accident black spots.

16.2.70 The impacts of traffic may be on the following receptors (as set out in the 'Guidelines for the Environmental Assessment of Road Traffic') as:

- People at home;
- People at work;
- Sensitive groups including children, elderly and disabled;
- Sensitive locations such as hospitals, churches, schools, and historical buildings;
- People walking;
- People cycling;
- Open spaces, recreational areas, shopping areas;
- Sites of ecological/nature conservation value; and
- Sites of tourist/visitor attraction.

16.2.71 Table 16-3 summarises the receptors and their corresponding sensitivity on the links that form part of the assessment in Section 16.5.

Table 16-3 Receptors and Sensitivity on Assessment Links

Link	Receptor	Receptor Sensitivity
B2067 Otterpool Lane	Pedestrian routing on proposed footpaths	Medium
	Private vehicle users	Medium
	Bus passengers	Medium
	Cyclists routing on proposed segregated cycleways	Low

Link	Receptor	Receptor Sensitivity
	Existing/Proposed residential properties segregated from road by hedges, green buffers, foot/cycleways or driveways (including Otterpool Manor)	Low
	Green open spaces	Low
	Lympne Industrial Park	Low
A20 Ashford Road b/w Otterpool Lane & Newingreen	Private vehicle users	Medium
	Bus passengers	Medium
	Pedestrians routing on proposed segregated footpaths	Low
	Cyclists routing on proposed segregated cycleways	Low
	Existing/Proposed residential properties segregated from road by hedges, green buffers foot/cycleways or driveways	Low
	Green open spaces	Low
Proposed Newingreen Link Road	Primary school users	High
	Pedestrians routing on proposed footpaths	Medium
	Private vehicle users	Medium
	Bus passengers	Medium
	Shopping areas	Medium
	Health centre	Medium
	Cyclists routing on proposed segregated cycleways	Low
	Existing/Proposed residential properties segregated from road by hedges, green buffers foot/cycleways or driveways	Low
A20 Ashford Road b/w Newingreen & M20	Private vehicle users	Medium
	Bus passengers	Medium
	Pedestrians routing on proposed segregated footpaths	Low
	Cyclists routing on proposed segregated cycleways	Low
	Existing/Proposed residential properties segregated from road by hedges, green buffers foot/cycleways or driveways	Low
	Proposed business properties segregated from road by hedges, green buffers foot/cycleways or driveways	Low
	Green open spaces	Low
A20 Ashford Road at Barrow Hill	Pedestrians routing on existing footpaths	Medium
	Cyclists routing on highway	Medium
	Private vehicle users	Medium
	Bus passengers	Medium
	Existing residential properties	Medium
	Green open spaces	Low
Aldington Road b/w Otterpool Lane & Stone Street	Pedestrians routing on existing footpaths	Medium
	Cyclists routing on highway	Medium
	Private vehicle users	Medium
	Bus passengers	Medium
	Existing residential properties segregated from road by hedges, green buffers footways or driveways	Low
Stone Street	Primary school users	High
	Pedestrians routing on existing footpaths	Medium
	Cyclists routing on highway	Medium
	Private vehicle users	Medium
	Bus passengers	Medium
	Existing residential properties segregated from road by hedges, green buffers footways or driveways	Low
Lympne Hill	Cyclists routing on highway	Medium
	Private vehicle users	Medium
	Existing residential properties segregated from road by hedges, green buffers footways or driveways	Low
Cheriton Road / Cheriton High Street	Grammar school users	High
	Pedestrians routing on existing footpaths	Medium
	Cyclists routing on highway	Medium
	Private vehicle users, including on-street parking	Medium
	Bus passengers	Medium
	A1/A2/A3/A4 Retail properties	Medium
	Residential properties, including above retail properties	Medium
	Places of worship	Medium
	Graveyard	Low
A261 Hythe Road	Pedestrians routing on existing footpaths	Medium
	Cyclists routing on highway	Medium
	Private vehicle users	Medium
	Bus passengers	Medium
	Existing residential properties segregated from road by hedges, green buffers footways or driveways	Low
	Green open spaces	Low
A20 Hythe Road west of Swan Lane	Primary school users	High
	Pedestrians routing on existing narrow footpaths west of Sellindge	High
	Pedestrians routing on existing footpaths at Sellindge	Medium
	Cyclists routing on highway through Sellindge Village	Medium
	Cyclists routing on highway west of Sellindge Village	Medium
	Private vehicle users, including on-street parking	Medium

Link	Receptor	Receptor Sensitivity
	Bus passengers	Medium
	A1/A2/A3/A4 Retail properties	Medium
	Sellindge Village Hall	Medium
	Existing residential properties segregated from road by hedges, green buffers footways or driveways	Low
	Green open spaces	Low

16.2.72 The environmental effects as set out in the IEMA Guidelines cover the following areas of concern:

- Pedestrian severance;
- Pedestrian amenity;
- Pedestrian delay;
- Pedestrian fear and intimidation;
- Driver delay;
- Accidents and safety;
- Hazardous loads; and
- Dust and dirt.

16.2.73 In addition, the Design Manual for Roads and Bridges (DMRB) guidelines (Ref 16-13) include the need to separately assess the impact of a scheme on pedestrians and cyclists. A commentary on the impact on Public Rights of Way will be provided in this Section for completeness.

Pedestrian Severance

16.2.74 Severance occurs when there is difficulty experienced in crossing a heavily trafficked road. The guidance set out in Design Manual for Roads and Bridges Volume 11, Section 3, Part 8 Pedestrians, Cyclists, Equestrians and Community Effects suggests that changes in traffic flow of 30%, 60% and 90% are considered as 'minor', 'moderate' and 'major' changes in severance respectively. Severance change is therefore measured in terms of percentage change in traffic rather than in actual flow.

16.2.75 All these factors are considered when determining the likely severance effect. In general terms, according to the IEMA Guidelines, a 30% change in traffic flow is likely to produce a 'slight' change in severance, with 'moderate' and 'substantial' changes occurring at 60% and 90% respectively.

Pedestrian Amenity

16.2.76 The term pedestrian amenity is broadly defined as the relative pleasantness of a journey. It is considered to be affected by traffic flow, speed and composition, as well as footway width, lighting and quality and the separation/ protection from traffic. It encompasses the overall relationship between pedestrians and traffic, including fear and intimidation which is the most emotive and difficult effect to quantify and assess.

16.2.77 The IEMA Guidelines reference the *Manual of Environmental Appraisal* (Department of Transport, 1983) which suggests that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or its HGV component) is halved or doubled.

Pedestrian Delay

16.2.78 The delay incurred by pedestrians is generally a direct consequence of their ability to cross roads, which is influenced by volume as well as the general level of pedestrian activity and visibility. Thus, the provision of crossing facilities, the geometric characteristics of the road, and the traffic volume, composition and speed are all factors that can affect pedestrian delay and have been considered when assessing this effect.

16.2.79 The IEMA Guidelines advise that in assessing levels of, and changes in, pedestrian delay, assessors do not attempt to use quantitative thresholds given the range of local factors and conditions which can influence pedestrian delay. Instead, the IEMA Guidelines recommend the use of professional judgement to determine whether pedestrian delay is a significant effect.

16.2.80 Studies have shown that, for a link with no crossing facilities and a two-way flow of about 1,400 vehicles per hour, a lower delay threshold of 10 seconds and upper threshold of 40 seconds could apply depending on other road and traffic flow characteristics.

Pedestrian Fear and Intimidation

16.2.81 There are no commonly agreed thresholds for estimating levels of danger or fear and intimidation. However, the IEMA Guidelines suggest the adoption of values from *Pedestrian Delay, Annoyance and Risk - Imperial College* (Crompton,1981) when considering any effect on pedestrian fear and intimidation. These thresholds are replicated in Table 16-4 and can be used as a first approximation of the likelihood of pedestrian fear and intimidation, although other factors need to be considered such as proximity to traffic and footpath widths.

Table 16-4 Assessing Magnitude of Impacts of fear and Intimidation

Importance/sensitivity of resource or receptor*	Average Traffic Flow over 18 Hour Day (Vehicle/hour)	Total 18 Hour Goods Vehicle Flow	Average Speed over 18 Hour Day (Mile/hour)
Major	1800+	3000+	20+
Moderate	1200 - 1800	2000 – 3000	15 – 20
Minor	600-1200	1000 - 2000	10 - 15

Source: IEMA Guidance

Driver Delay

16.2.82 Delay to drivers generally occurs at junctions where vehicle manoeuvres are undertaken, with vehicles having to give or receive priority depending upon the junction arrangement. Driver delay could also occur on narrow roads if flows are increased (particularly those where it is difficult for vehicles to pass).

16.2.83 The proposed development is anticipated to have an impact on junctions around the application site and operational assessments have been undertaken within the TA to ascertain the likely change in operation as a result of proposed development generated traffic. Driver delay is determined through use of junction delay information.

16.2.84 To maintain consistency with the categorisation of delay impact considered 'severe' in the TA, a change in delay of 20 seconds or more is considered a major impact. A change in delay of between 16 and 20 seconds has therefore been classified as a moderate impact, a change of between 11 and 15 seconds would be minor, and up to 10 seconds would be Negligible.

Accidents and Safety

16.2.85 Accidents and safety is assessed using the personal injury accident data obtained from highway authority records. The IEMA Guidelines recommend that professional judgement will be needed to assess the impacts.

Hazardous Loads

16.2.86 Paragraph 2.4 of the IEMA Guidelines acknowledges that most developments would not result in an increase in the number of movements of hazardous or dangerous loads.

16.2.87 The proposed development is not anticipated to generate any hazardous loads. Hazardous loads have therefore not been considered further within this assessment.

Air Pollution including Dust and Dirt

16.2.88 The effects on air quality, dust and dirt are considered in Section 6: Air Quality.

Construction Effects

16.2.89 Given the outline nature of the outline planning application, there is limited information available on the proposed construction works. The transport and access effects of the construction of the proposed development would be dependent on various factors including, the final programme and phasing of construction works, import/export of materials, construction processes adopted.

16.2.90 The number of construction vehicle HGVs has been calculated by considering the type and amount of construction and demolition material and waste arisings for each assessment year. The total yearly material and waste arising was calculated by volume and the corresponding total yearly number of HGVs required to transport the load was estimated.

16.2.91 A qualitative assessment has been made of the likely significant transport and access effects of the proposed construction works. This has been based on an estimation of reasonable worst-case conditions and has sought to consider those aspects of the construction works that could lead to significant effects. The assessment has drawn upon Arcadis's experience of assessing the environmental effects of similar developments.

16.2.92 Suitable management and control measures have been identified which it is proposed should be incorporated into a Construction Environmental Management Plan (CEMP) to manage the construction works.

Determining the Significance of Effects

16.2.93 In order to determine the significance of effects, the following parameters have been considered:

- The sensitivity of each link on the preferred route;
- The percentage increase in total traffic and/or HGVs as a result of the Development along each link on the preferred route (magnitude of impact); and
- The environmental effects as set out within IEMA Guidelines on each link where the impacts of the Development are above the significance thresholds.

16.2.94 The significance of transport effects has then been determined by considering the identified impact magnitudes in terms of traffic increase alongside the receptors affected by those impacts (taking account of their sensitivity) to determine the significance of effects. Moderate and major adverse/beneficial effects are assumed to represent significant effects. As there are no published standard criteria, the Table 16-5 provides a matrix of magnitude of impact against sensitivity of receptors to identify where significant effects are anticipated to occur. Significant effects are highlighted in the table.

Table 16-5 Significance of Effect

Magnitude of Effect	Sensitivity of receptor		
	High	Medium	Low
Major	Major	Major/Moderate	Moderate
Moderate	Major/Moderate	Moderate	Minor
Minor	Moderate	Minor	Minor/Negligible
Negligible	Minor	Minor/Negligible	Negligible

Limitations and Assumptions

16.2.95 The following assumptions and limitations are relevant to the assessment:

- The transport assessment process has been progressed over the course of the last two years, accordingly some data including the personal injury accident data (PIA) was collected up to August 2017. This age of data is not considered to be significant and the data collected provides an adequate basis for assessment;
- Detailed PIA data was collected for an area within 500 metres of the site. An analysis of accidents outside of this area was required in the case of the A259 Prospect Road / A259 East Road / Station Road / High Street junction and Cheriton Road. For this analysis, details of the cause of the accidents was not available. This is not considered to be significant and the data collected provides an adequate basis for the purpose for which it was intended;
- The future 'with' and 'without' development highway impact assessment includes committed network changes, some of which have yet to be implemented. The most significant scheme, the new M20 Junction 10A, is currently in construction. Since these are committed schemes, it has been assumed that they will be implemented. The impact assessment has been based on forecasts of how the future network will operate following implementation;
- The TA focuses on assessing effects during peak highway network hours (08:00 – 09:00 and 17:00 – 18:00), while the ES, in accordance with guidance, considers effects over 18-hour days (06:00 – 24:00). Peak hour traffic data from the TA has been used to calculate 18-hour flows using a factor based on automatic traffic counters (ATC) on roads within the study area;
- Since baseline traffic data was collected, traffic calming measures have been implemented on West Hythe Road. Kent County Council suggests that traffic flows along West Hythe Road and Lympne Hill are expected to decrease as a result of less 'rat-running' traffic using this route. Traffic flows on Lympne Hill as well as Aldington Road and Stone Street on approach to Lympne Hill, are therefore expected to be lower than forecast;
- It has been assumed that construction HGV trips would occur outside of highway network hours, and that service and delivery trips made within peak hours can be minimised. These would be achieved through site-specific and/or site-wide Construction Management Plans and Delivery and Servicing Plans;
- Growth rates derived from TEMPro for the 'with development' scenario assume that the housing and employment forecasts provided by the local authorities would be met in full. Growth rates derived from TEMPro for the 'without development' scenario assume that Folkestone & Hythe District Council would not meet their housing and employment forecasts if the Otterpool Park development did not go ahead as described in the Application. The 'with development' scenario therefore tests significantly greater household and job growth than the 'without development' scenario. This assumption is understood to be consistent with the emerging Folkstone & Hythe District Council Core Strategy. This means that the comparison between the 'with' and 'without development' traffic flows and the results of 'with' and 'without development' capacity testing as presented in the TA show an absolute worst case in terms of any increases in traffic flow, highway network delay and queuing in the 'with development' scenario. Traffic flow increases in the 'without development'

scenario could be up to 10% greater if the Folkestone & Hythe housing and employment forecasts are met in an alternative way to Otterpool Park providing for housing and employment need;

- Following consultation with Highways England, it was not possible to utilise the South East Regional Traffic Model to determine the likely re-distribution of forecast trips that would result from future congestion on the network. The use of VISUM within the highway capacity modelling study area has allowed the anticipated re-distribution of traffic to be estimated on the main highway links within the study area but has not taken into account possible re-distribution of traffic away from main links. The assessment therefore represents a worst-case redistribution of traffic on the links included in the study area on which the assessed junction are located;
- Increases in operational bus trips resulting from potential changes to local bus services proposed to be delivered with the development have not been included in future traffic flows. However, such trips will not have a significant effect on the findings presented in this Section;
- Trip generation by mode has been based primarily on existing travel patterns, which are heavily influenced by the fact that the area in the vicinity of Otterpool Park currently offers little alternative to travel by modes other than walk for short distances (travel within the site) or car for trips external to the site. The result is that travel mode shares for sustainable modes are currently low, especially for external trips. The Otterpool Park development proposals are expected to increase the number of cycle and bus trips made over short distances and the number of bus and rail trips made over longer distances. The assessment therefore represents a worst-case in terms of car driver mode share;
- At the time of submission of this application, the base VISSIM model has been agreed with Kent County Council, but discussions are ongoing with Highways England. The results of the VISSIM will therefore be reported separate from this Transport Assessment and will inform ongoing discussions regarding highway impact mitigation. The results of the VISSIM are not expected to change the conclusions of this Section or the TA;
- At the time of undertaking the trip generation and impact assessments, two Secondary schools were proposed which would be in use in the 2044 and 2046 assessment years. This was subsequently reduced to one school for both assessment years. The result of the change in the number of proposed Secondary schools is a slight reduction in external trips. This is because the demand for Secondary school places generated by the on-site residential land uses remains the same, but the total number of pupil places has been reduced. Since on-site pupils are assumed to be given priority for places, the number of spaces available for pupils living off-site was reduced, thus the number of external trips was reduced. However, the reduction in external trips due to the change is low and does not have a material effect on the results and conclusions of the report, including the level of mitigation proposed.

16.3 Description of the Baseline Conditions

Existing Baseline

Walking and Cycling

16.3.1 Figure 16-2 (Appendix 16-1) presents the existing walking and cycling networks and bridleways across the site and in the local area. The following sections provide an outline of the key walking and cycling routes and current aspirations for enhancement. These sections also make reference to the findings of the Walking and Cycling Study[6] (Ref 16-12) commissioned by Folkestone & Hythe District Council to investigate the current walking and cycling environment in the area and consider improvements that would complement the Otterpool Park masterplan proposals.

16.3.2 Otterpool Park is located in a rural setting and benefits from various public footpaths and byways located largely to the outskirts of the site, connecting residential areas with their surrounding areas. However, walking accessibility through the site is limited with many areas lacking a coherent network for pedestrians to navigate across the site and connect into external links.

A description of the walking and cycling environment on existing highway routes within and surrounding the site is provided in the following sections.

<u>A20 Ashford Road</u>

16.3.3 The A20 Ashford Road routes through the site and links it to Barrow Hill, Sellindge and, further afield, Ashford to the west and Newingreen, Sandling Park and the M20 Junction 11 to the east.

16.3.4 Footway provision along the A20 varies. Along its eastern boundary adjacent to Sandling Park, a footway of around 1-1.5m in width is located on the western side only, separated from the carriageway by a narrows grass verge and bollards spaced between 4.5-5.5m apart. As the A20 turns west, footpaths of between 1.5m and 2m in width are located on both sides of the road for a distance of around 150m from the junction with the A261 Hythe Road and Stone Street. East of this section, the footpath on the north side is replaced by a grass verge and hedgerows. The southern footpath extends through the junction with Otterpool Lane through Barrow Hill and Sellindge. A footpath is regained on the northern/eastern side as it routes north through Barrow Hill to Sellindge. The A20 narrows to one lane under the railway bridge north of Barrow Hill but maintains footpaths on both sides of the road. North of this bridge, the footpaths on both sides widen to around 2.5m.

16.3.5 There is a lack of formal pedestrian crossing facilities along the length of the route with the exception of a signalised pedestrian crossing on the southern arm of the junction with Otterpool Lane. However, there appears to be some evidence of the verges being used as informal pedestrian routes particularly where public rights of way (PRoW) cross the A20, described in more detail later in this section.

16.3.6 No infrastructure is provided for cyclists and the alignment of the A20, particularly on the section south of the junction with the M20, poses a particularly challenging environment for all but the most experienced cyclists.

16.3.7 The Walking and Cycling Study (Ref 16-12) commissioned by Folkestone & Hythe District Council considered a number of possibilities for enhancement of the walking and cycling networks was identified for this route:

- Introducing a shared footway and cycleway on the southern side of the A20 to connect with a possible cycle route to Folkestone along the A20;
- Introducing cycle and pedestrian crossing phases at the Otterpool Lane signals in order to facilitate walking and cycling movements to Lympne Industrial Park;
- Provision of safe crossing points over the A20, between A261 and M20 to the existing HE/281 footpath; and
- Provision of a re-aligned A20 through the development.

<u>Otterpool Lane</u>

16.3.8 Otterpool Lane routes south of the A20 from a location east of Barrow Hill, Sellindge through the heart of the southern section of the Otterpool Park site and provides access to the Link Park industrial estate and thus provides access for large vehicles. There are no formal footpaths on either side of the road, although it is possible to traverse part of the length of the road on a grass verge on the western side of the road.

16.3.9 With the exception of the signal-controlled pedestrian crossing at the junction with the A20, there are also no pedestrian crossing facilities or traffic calming measures along the length of the road, with most of the road subject to the national speed limit

[6] *Otterpool Park Garden Town, Kent Walking and Cycling Study (Mott Macdonald, August 2018).*

Stone Street

16.3.10 Routing south from the junction with the A20 and the A261 Hythe Road, Stone Street provides access for pedestrians and cyclists to Lympne. A footpath is provided on at least one side of the road for its entire length, averaging between 1.5m and 2m in width.

16.3.11 Stone Street provides no formal pedestrian crossing or cycling facilities, but has traffic calming features located in the middle of Lympne in the form of two sections of the carriageway that are narrowed to 1-way only, thus reducing traffic speeds through the village.

Aldington Road

16.3.12 Aldington Road routes west-east from Aldington in the west to a junction with the A261 Hythe Road in the east, forming junctions with both Otterpool Lane and Stone Street.

16.3.13 West of the junction with Otterpool Lane, the carriageway is flanked by hedgerows making it impossible for pedestrians to traverse it other than on the carriageway. The high hedgerows make visibility difficult.

16.3.14 The section between Otterpool Lane and Stone Street offers a footpath on the northern side for most of its length. East of Stone Street, the footpath gradually disappears to be replaced by a narrow grass verge on the southern side. East of the junction with Lympne Hill, Aldington Road offers no off-road route for pedestrians.

A261 Hythe Road

16.3.15 The A261 Hythe Road junction with the A20 is heavily-trafficked and congested at peak periods. This junction, and the one adjacent to the east between the A20 and Stone Street, offers no pedestrian or cycle facilities.

16.3.16 There is no footway provision along the length of the A261 Hythe Road until it meets Aldington Road. East of here, a narrow footpath is provided on the southern side.

16.3.17 This heavily-trafficked road is not currently a suitable route for pedestrians, while cyclists would find its narrow and winding nature a challenging environment. The Folkestone & Hythe District Council Walking and Cycling Study identifies this route as a priority for improvement with regard to cycle linkages.

Public Rights of Way

16.3.18 The network of public rights of way (PROW), as well as other footpaths and bridleways, within close proximity to the site are shown within Figure 16-2, in Appendix 16-1.

16.3.19 There are 11 PRoW that route internally within the site area, providing connections between the villages of Sellindge, Newingreen, Lympne and Westenhanger. Arcadis has undertaken a detailed access and patronage survey of these routes as part of the socioeconomic assessment contained in Section 14 of the ES. This section provides details of a selection these existing routes.

16.3.20 Public footpath HE/275, routes through the site between the railway line and the A20 within the vicinity of the Racecourse. Photograph 2 illustrates the condition of Bridleway HE/271A north of the site which routes from A20 Barrow Hill passing under the Railway line and M20. There are existing issues with north-south permeability and lack of wider connections and links over the railway line and M20.

16.3.21 Footpaths HE/281 and HE/313 provide connections to the east into Hythe. There are currently no controlled crossing facilities on the A20 allowing pedestrians to cross safely, and the alignment of the A20 does not provide ideal visibility for drivers. As a result, there are some issues with east -west severance. A Walking and Cycling Study commissioned by Folkestone & Hythe District Council identifies the A20 and A261 as two key severance features within the study area which will need to be addressed. The A20 in particular dissects the study area which could have a severe impact on the wider permeability of the site.

16.3.22 There are also a number of nearby recreational areas including:

- Harringe Brooke Wood situated on the western boundary of the site comprising an area of woodland adjacent footpath HE/316; and
- Royal Military Canal is accessed at West Hythe approximately 1km from the site via an existing footpath HE/319 and bridleway HE/317.

16.3.23 A Walking and Cycling Study commissioned by Folkestone & Hythe District Council also identified a number of opportunities for improving cycling and walking connections to the surrounding area of Otterpool Park. In summary these comprise:

- Cycle linkages to the Hythe area;
- Cycle linkages to the Folkestone area;
- Connections with Westenhanger Railway Station, particularly to the north; and
- Integration of internal road network and surrounding PRoW.

Designated Cycle Routes

16.3.24 At present there are no dedicated cycle routes in the immediate vicinity of the site. However, the coastal National Cycle Network Route 2 lies approximately 1km south of the southern boundary of the site and is a popular long-distance recreational route following the English Channel coastline.

16.3.25 The section closest to Otterpool Park is traffic free and runs between West Hythe and Folkestone to the east and towards Romney Marsh in the west. The route runs along the canal towpath through West Hythe, Hythe and Folkestone. Cyclists can access the route via Royal Military Road which is located at the southern point of Lympne Hill, the nearest connection to the site. These routes are shown in Figure 16-3, within Appendix 16-1.

16.3.26 Regional on-road cycle route 17, also runs to the east of Otterpool Park providing connections to Canterbury and Dover.

16.3.27 Other than the designated cycle routes it would be considered that there very little existing cycle infrastructure within the vicinity of Otterpool Park. The Mott Macdonald; Walking and Cycling Strategy identified the presence of painted west and eastbound cycle lanes on the carriageway between the A20/ M20 roundabout junction and Sandling Road.

Public Transport

Bus Services and Infrastructure

16.3.28 Although the existing site for Otterpool Park predominantly comprises agricultural land, there are in total 22 existing bus stops located within the study area. Bus stops are located on the strategic and local routes within the area, namely along the A20 Ashford Road, B2067 Aldington Road and Stone Street between Aldington Road and Ashford Road. Within the Otterpool Park area, bus services currently route along the A20 Barrow Hill/ Ashford Road, B2067 Otterpool Lane, Stone Street and Aldington Road. A plan showing existing bus service routes is provided in Appendix 16-1, Figure 16-4.

16.3.29 Table 16-6 summarises the services which serve the bus stops along these routes. Figure 16-5 (Appendix 16-1) presents the location of bus stops in the vicinity of the site and a 400m walk distance isochrone around each bus stop.

16.3.30 The 10/ 10A bus service provides a regular bus service between Folkestone and Ashford and has the highest frequency (hourly, Monday to Friday) of all the bus services in the Otterpool Park area. The 111 operates on a Thursday only, between Ashford and Folkestone via Aldington and Burmarsh. The 994 and 18A runs daily, once in the morning and returns in the afternoon, taking local children to and from schools in Folkestone and Canterbury and only operates on school days.

Table 16-6 Summary of Local Bus Services (One-way Frequency)

Bus Number	Route	Frequency (One-way)		
		Monday - Friday	Saturday	Sunday
10/10A	Ashford – Folkestone	Hourly	Hourly	2 hours (No.10 only)
18A	Ashford – Canterbury	School Service	-	-
111	Ashford – Folkestone	Once on Thursday only	-	-
994	Cheriton – Stanford	School Service	-	-

Source: Traveline South and East (16th November 2018)

Rail Station and Services

16.3.31 Westenhanger Railway Station is located in the north-eastern corner of the Otterpool Park area. The station is strategically located on the South-Eastern Railway Line connecting Ashford and Dover. All trains serving Westenhanger are operated by Southeastern. The station is unstaffed and facilities at the station are limited. There is no waiting room or cycle parking facilities and there is limited accessibility for the mobility impaired. There is no waiting room or cycle parking facilities and there is limited accessibility for the mobility impaired. A seated area and toilet are provided along with limited free car parking (refer to section 3.5).

16.3.32 Table 16-7 presents a summary of key destinations and the frequency of services from the station, which includes hourly (two trains an hour at certain times) southbound services into Folkestone. Northbound, there is an hourly service to Ashford, where high speed Eurostar (HS1) as well as regular services to London depart from.

Table 16-7 Summary of Rail Services from Westenhanger Railway Station

Destination	Journey Time	Frequency (approx.)
Ashford International	9 minutes	30 minutes
Folkestone Central	11 minutes	30 minutes
Dover Priory	24 minutes	30 minutes
London Charing Cross	1 hour 33 minutes	30 minutes
London St Pancras (via Ashford International)	1 hour 10 minutes	30 minutes

Source: National Rail Enquiries (16th November 2018)

Highway Network

16.3.33 The following key links on the local highway network are shown in Appendix 16-1, Figure 16-6.

M20 Corridor

16.3.34 The M20 motorway connects Kent with the M25 and London. It terminates in the east at Junction 13, on the northern outskirts of Folkestone. The M20 within the vicinity of Otterpool Park comprises three lanes in either direction, subject to the national motorway speed limit.

16.3.35 Junction 11 is a grade-separated five-arm junction which lies directly adjacent to the north-east corner of the site and is the main gateway to the site from the motorway. Junction 11 connects with the A20 (south), B2068 (north) and the STOP 24 Service Station via a five-arm roundabout. Junction 11 gives access to the M20 westbound (Ashford and London) and eastbound (Folkestone, Dover and continental Europe via ferry or Eurotunnel). Junction 11 serves as the main gateway highway access to the Otterpool Park site from the wider area.

16.3.36 Junction 11A to the east provides eastbound on-slips (from the A20) and westbound off-slips (from the Eurostar terminal) to the M20. Junction 12 consists of a grade-separated four-arm roundabout, with two arms providing on/off slips to the M20. The roundabout links to the A20 Ashford Road in the north and Cheriton Approach to the south, which provides access into Folkestone along Cheriton Road.

16.3.37 Junction 13 provides on- and off-slips linking to two mini-roundabouts; one to the north on the A20 and one to the south linking the A20 to the A259, which routes to/from the east, and the A2034 Cherry Garden Avenue routing south towards Cheriton Road. Just east of Junction 13, the M20 becomes the A20.

16.3.38 Junctions 9 and 10 provide access to Ashford. Both are four-arm grade-separated junctions, of which two arms consist of east- and westbound on/off slips to the M20. Junction 9 provides access to Ashford north of the M20 via Trinity Road and south via Fougeres Way. Junction 10 provides access to north Ashford via Kennington Road and south via Bad Munstereifel Road.

A20 Ashford Road / Barrow Hill / Hythe Road

16.3.39 The A20 is a major distributor road in Kent and crosses the Otterpool Park area from east to west and also forms the north-eastern boundary of the area. The A20 Ashford Road provides access to the M20, via Junction 11. The road consists of a single carriageway subject to a 50mph limit through the site, reverting to 40mph limit through Barrow Hill and 30mph through Sellindge village.

16.3.40 The existing road alignment of the A20 Ashford Road leading to Junction 11, comprises a sub-standard section resulting in poor driver visibility and potential road safety performance, assessed later in the Chapter. In addition, the typical daily flow capacity of a rural road of this current character (Rural S2 Road in TA 46/97), the A20 at this location appears to be operating slightly above capacity with the existing flows.

16.3.41 The A20 Barrow Hill is constrained by a single lane section, controlled by traffic signals, where the road passes under the high-speed and Network Rail lines south of Sellindge. Underneath the railway bridge there is a height restriction of 4.7m. North of Barrow Hill, the A20 Hythe Road provides a route to/from Ashford.

16.3.42 A number of residential properties front along the A20 predominantly within the settlements of Sellindge, Barrow and Newingreen. In addition, there are also a range of local amenities including schools, community hall, places of worship and local shops.

B2067 Otterpool Lane

16.3.43 The B2067 Otterpool Lane comprises a single carriageway road with a north - south alignment routing through the site. The road is predominantly subject to the national speed limit, which reduces to 50mph at the northern extent within the vicinity of the signalised junction with the A20 Ashford Road. The southern end of Otterpool Lane forms a priority junction with Aldington Road.

16.3.44 The road provides access to Lympne Industrial Park, Lympne Animal Park and Gardens, and a farm. Otterpool Lane is bounded by hedgerows and rural land. There are no footways present along the road.

A261 Hythe Road

16.3.45 The A261 Hythe Road connects the A20 at Newingreen with the A529 within Hythe, comprising a single carriageway road with no footway provision. The road is predominantly subject to the national speed limit, which reduces to 30mph on approach to the built-up area of Hythe.

16.3.46 It should be noted that there is a sharp double curve in the road alignment through the village of Pedlinge.

Aldington Road

16.3.47 Aldington Road forms the southern boundary of the Otterpool Park area. It has an approximate east-west alignment, extending from the A261 Hythe Road in the east past Lympne Hill and Otterpool Lane to form a priority junction with Roman Road and Knoll Hill in the west.

16.3.48 Aldington Road is a narrow single carriageway road. There is a 2m width restriction (except for access) east of the junction with Lympne Hill. These width restrictions are sign-posted to the east of the Aldington Road/ Stone Street junction and on the east side of the Lympne Hill junction. Aldington Road becomes narrow to the west of the Otterpool Lane junction where it becomes the B2067, potentially allowing only one vehicle at a time to pass through.

16.3.49 The road is subject to the national speed limit, which reduces to 30mph within Lympne. A footway is provided along the northern side of the carriageway between Lympne Distribution Park and Octavian Drive, within Lympne. In addition, the route has a hilly terrain sloping in a westerly direction.

Harringe Lane

16.3.50 Harringe Lane has an approximate north-south alignment extending between the A20 and B2067, located at the north-western boundary of the Otterpool Park area. The road provides access to a limited number of residential properties and farmland.

16.3.51 The narrow country lane is bounded with hedgerows and can only accommodate one-way traffic movements with regular passing points. Harringe Lane is subject to width restrictions with signage restricting vehicles of a width greater than 1.98m (except for access). There is no footway provision along the road.

Stone Street

16.3.52 Stone Street was a Roman road between Lympne and near to Canterbury. In the study area it extends northwards from Aldington Road to the junction with the A20 Ashford Road and the A261 Hythe Road. Stone Street also extends further north from the A20 providing access to Westenhanger Railway Station. The road is separated by a small section of the A20 Ashford Road and as such has been split into the following two sections for this study; Stone Street south (between Aldington Road and Hythe Road) and Stone Street north (north of the A20).

16.3.53 The southern section comprises a single lane carriageway allowing for two-way movements, with the exception of one-way priority traffic calming measures in place north of Lympne built up area. At the Aldington Road junction, signage states that Stone Street is 'Unsuitable for heavy goods vehicles'. The road is subject to a 40mph speed limit, which reduces further within the settlement boundary to 30mph. Footways are predominantly provided along at least one side of the carriageway.

16.3.54 The northern section, which provides access to Westenhanger Rail Station and a number of residential properties, comprises a narrow single carriageway road, subject to a speed limit of 30mph.

16.3.55 North of Westenhanger Railway Station, Stone Street narrows to a single-track road on a bridge over the railway line before coming to an end by the M20 motorway. There is also a section of Stone Street north of M20 motorway, beyond the study area.

Baseline Traffic Flows

16.3.56 Table 16-8 presents AM and PM peak baseline flows on the key links within the study area.

Table 16-8 Summary of AM and PM Peak Hour 2018 Baseline Flows

Link Name	Number of Vehicles					
	AM Peak Hour			PM Peak Hour		
	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way
B2067 Otterpool Lane	224	213	**437**	317	114	**431**
A20 Ashford Road b/w Otterpool Lane & Newingreen	224	276	**500**	437	202	**639**
A20 Ashford Road at Newingreen	218	372	**590**	463	226	**689**
A20 Ashford Road b/w Newingreen & M20	762	664	**1,426**	700	746	**1,446**
A20 Ashford Road at Barrow Hill	300	232	**532**	278	329	**607**
Aldington Road b/w Otterpool Lane & Stone Street	87	140	**227**	138	71	**209**
Stone Street	315	120	**435**	90	193	**283**
B2067 Aldington Road west of Otterpool Lane	158	111	**269**	109	96	**205**
Lympne Hill	237	117	**354**	89	246	**335**
B2068 Stone Street	315	120	**435**	90	193	**283**
M20 east of J11	2,397	2,124	**4,521**	2,094	2,599	**4,693**
M20 west of J11	2,132	2,550	**4,682**	2,704	2,045	**4,749**
Cheriton Road	550	337	**887**	591	338	**929**
A261 Hythe Road	277	348	**625**	479	272	**751**
A259 Military Road	1,061	-	**1,061**	1,008	-	**1,008**
A259 Prospect Road	837	499	**1,336**	791	722	**1,513**
Swan Lane	98	140	**238**	186	102	**288**
A20 Hythe Road west of Swan Lane	377	267	**644**	289	424	**713**
A2070 Kennington Road	769	387	**1,156**	450	625	**1,075**
A262 Hythe Road	350	344	**694**	556	396	**952**
A260 Spitfire Way	586	1,032	**1,618**	1,048	674	**1,722**
A260 Canterbury Road	476	1,548	**2,024**	803	1,230	**2,033**
Alkham Valley Road	1,069	227	**1,296**	1,042	126	**1,168**
Nackington Road	518	360	**878**	311	506	**817**
Old Dover Road	593	314	**907**	279	527	**806**
Bad Munstereifel Road	1,658	1,576	**3,234**	1,909	1,802	**3,711**
A292 Hythe Road	350	344	**694**	556	396	**952**
A2070 Kennington Road	676	435	**1,111**	305	646	**951**
A20 Fougeres Way	1,753	1,728	**3,481**	1,586	2,048	**3,634**
A251 Trinity Way	1,409	999	**2,408**	1,141	1,570	**2,711**

M20 Freight Traffic Management

Operation Stack

16.3.57 Freight parking at the Port of Dover is limited and demand can sometimes exceed capacity. Industrial action can also disrupt operations at the port. As a consequence, freight queues that cannot be accommodated at the port or Eurotunnel can form on the M20.

16.3.58 Operation Stack is a procedure to managing congestion that has been activated in Kent during periods of extraordinary cross-Channel disruption. It involves "stacking" large goods vehicles on the M20 between Junction 8 (Maidstone services) and Junction 9 (Ashford) on the M20. If more space is needed, the closed section extends to Junction 11.

16.3.59 Freight is separated into two queues on either side of the coastbound carriageway; one for tunnel traffic and one for port traffic. The middle lanes are kept clear for emergency vehicles. Lorries are released at the request of the Port of Dover and Channel Tunnel. Highways England[7] state that freight queues occasionally extend from the Eurotunnel toll booths onto the M20 to Junction 11A, which is east of Junction 11 which forms the main gateway into the Otterpool Park site from the wider area. During such times, freight queues informally on the hard shoulder and motorway signals are set to warn approaching drivers.

16.3.60 During periods when Operation Stack is in effect, freight vehicles can be diverted as follows:

- From the west, vehicles leave the M20 at Junction 7 (Maidstone), where they are diverted via the A249, M2 and A299 to get to Manston;
- From the north (Dartford Crossing), vehicles use A2, M2 and A299 to get to Manston;
- From Manston vehicles use the A256 and A2 to get to the Port of Dover.

16.3.61 Other drivers are diverted onto local roads as follows:

- If heading to the tunnel, vehicles use the M20 and A20 (between Junctions 8 and 11) diversion;
- If heading to the port, vehicles use the A2 (from M25), M2, A2; and
- If already on the M20 when Operation Stack is put in place, vehicles are diverted off at Junction 7 on M20 via the A249, M2, A2 towards Dover.

Alternative Freight Management Schemes

16.3.62 In July 2016, the Government announced a proposal for a lorry holding area located near Stanford. Highways England carried out a public consultation over the summer of 2016 and in October 2016 the decision to select Stanford West became the subject of a judicial review. In November 2017, following legal advice, the Government withdrew this initial proposal and at the same time instructed Highways England to explore the development of a lorry holding area solution through the normal planning process. The Government has also asked Highways England to consider the need for additional lorry parking across Kent.

16.3.63 In the meantime, Highways England will implement an alternative scheme to Operation Stack in March 2019. The new scheme, called Operation Brock, would create up to 2,000 on-road lorry holding spaces between Junctions 8 (Maidstone) and 9 (Ashford) on the M20. A contraflow system would be implemented on the northbound carriageway to allow traffic to travel in both directions between Junctions 8 and 9, while lorries are queuing on the southbound side. Drivers would be able to access both junctions, rather than being diverted onto smaller local roads. A lower speed limit would also be implemented during times when Operation Brock is in place.

16.3.64 This new strategy is proposed to offer 'significant benefit' compared to Operation Stack, as it would keep traffic flowing in both directions. The Government has said that this "interim plan" will start early in 2019 while a permanent solution is found and will "minimise disruption and mean people will be able to go about their everyday lives". The Freight Transport Association has stated that this offers a good compromise until a permanent solution is found.

16.3.65 During summer 2018, Highways England held consultation with the public and key stakeholders seeking a permanent solution to replace Operation Stack in order to develop a new proposed approach intended to enable lorries to be held away from other traffic during disruption and with the aim to keep the M20 open in both directions for other traffic.

16.3.66 Following the public consultation exercise, Highways England is currently in the process of analysing all the comments and feedback received and intend to commence further consultation on more detailed options and proposals in winter 2018/19.

Accidents and Safety

16.3.67 Personal Injury Accident (PIA) data has been obtained from KCC for the period of five-years, up until the 30th August 2017. In order to identify any highway safety issues within an area approximately 500m from the proposed Masterplan boundary. The full record of the accident data along with plots of all accidents by severity is contained within Appendix 16-2.

16.3.68 The data shows that a total of 117 recorded accidents took place within the study area over the five-year period. Of those, the vast majority of accidents, totalling 101, were of slight severity, 13 serious and three of which fatal. Table 16-9 provides a summary of the number of accidents by location and severity.

Table 16-9 Accidents by Location and Severity (within approximately 500m of the Development boundary)

Location	Number of Accidents			
	Fatal	Serious	Slight	Total
M20 (including B2068 Stanford Intersection and B2068 Stanford Bypass)	1	5	48	**54**
A20 Ashford Road and Barrow Hill	2	7	36	**45**
A261 Hythe Road	0	0	2	**2**
B2067 (Otterpool Lane and Aldington Road)	0	1	4	**5**
Harringe Lane	0	0	0	**0**
Stone Street	0	0	0	**0**
Lympne	0	0	10	**10**
Sellindge	0	0	1	**1**
Total	**3**	**13**	**101**	**117**

16.3.69 Interrogation of the accident data shows that during the study period two accidents involved a pedestrian, three involved pedal cyclists, 15 involved motorcyclists, six involved Light Goods Vehicles (LGV) and 18 involved a Heavy Goods Vehicle (HGV).

16.3.70 Accidents are spread across the network with clusters of four or more accidents occurring in a number of locations. The locations have been summarised within Table 16-10. Where an accident has occurred within 25 metres of a junction it is assumed to have occurred at the junction.

[7] *Solutions to Operation Stack: Managing freight traffic in Kent Public information exercise (Highways England, June 2018).*

Table 16-10 Summary of Accident Cluster Locations

Location	Accidents / Severity	Number of accidents involving vulnerable road users or large vehicles
M20 Junction 11 Roundabout – M20 Off-slip Eastbound Arm	6 Accidents (All Slight)	2 Cyclists, 1 LGV, 1 HGV
M20 Junction 11 Roundabout – A20 Ashford Road Arm	6 Accidents (All Slight)	1 HGV
A20 Ashford Road Roundabout	4 Accidents (All slight)	1 Cyclist, 2 Motorcycles
A20 Ashford Road (between Hythe Road and Stone Street)	9 Accidents (2 Serious, 7 Slight)	5 Motorcycles, 1 HGV

16.3.71 More detailed analysis of accidents by cluster location has been set out in the following sections. As a result of the high volume of traffic at the M20 junctions, it is considered that an assessment of each motorway cluster would be unnecessary.

A20 Ashford Road Roundabout

16.3.72 The accident data for A20 Ashford Road roundabout is set out in Table 16-11. The data does not indicate a common cause or pattern of accidents at the junction. Whilst all accidents are regrettable, it is considered that across a five-year period the level of accidents is typical of a roundabout junction and there is no safety issue which would require junction improvements.

Table 16-11 Accident Locations A20 Ashford Road Roundabout

Accident Ref	Severity	Involving	Causation
62	Slight	1 Car, 1 Motorcyclist	Vehicle pulled into the path of another vehicle along the circulatory.
72	Slight	2 Cars	Nearside collision on the gyratory.
81	Slight	1 Car, 1 Motorcyclist	Nearside collision on the gyratory.
94	Slight	1 Car, 1 Cyclist	Car accelerated into the cyclist on the circulatory.

A20 Ashford Road (between Hythe Road and Stone Street)

16.3.73 The accident data for the A20 Ashford Road (between Hythe Road and Stone Street) is summarised in Table 16-12. The data indicates that six accidents over the five-year period involved a single vehicle (including four motorcycles), two were serious in severity.

16.3.74 These accidents were the result of the driver/rider losing control of their vehicle, predominantly occurring in wet conditions. This suggests that there may be an issue with vehicle speeds at this location, alignment deficiency, poor drainage or poor road surface friction properties with the carriageway along this section of the A20.

Table 16-12 Accident Locations A20 Ashford Road (between Hythe Road and Stone Street)

Accident Ref	Severity	Involving	Causation
61	Slight	2 Cars	Vehicle fails to stop and collides into the rear of another vehicle travelling in the same direction.
69	Slight	1 Car, 1 Motorcyclist	Vehicle failed to look whilst pulling out of the junction with Hythe Road, colliding into a motorcycle.
70	Slight	1 Car, HGV	Driver lost control due to slippery road colliding into an oncoming HGV.
78	Slight	1 Car	Driver lost control of vehicle due to wet surface, causing it to skid off the carriageway.
82	Slight	1 Motorcyclist	Rider lost control and came into contact with the central reservation kerb.
95	Serious	1 Motorcyclist	Not Available.
99	Serious	1 Motorcyclist	Wet conditions caused motorcycle to skid on the apex of bend, near junction with London Road.
109	Slight	1 Motorcyclist	Vehicle failed to look whilst pulling out of the junction with Hythe Road, colliding into a motorcycle.
112	Slight	1 Car	Driver lost control of vehicle (wet conditions), causing it to skid off the carriageway.

16.3.75 For completeness, an overview of the location and severity of all accidents occurring on each link is provided in Table 16-13.

16.3.76 For the links that fall outside the 500m buffer of the Development boundary, accident data has been extracted from the CrashMap database[8]. It should be noted that the data from CrashMap does not provide any information on accident causation and/ or involvement.

Table 16-13 All Accidents by Location and Severity

Link	Number of Accidents			
	Fatal	Serious	Slight	Total
B2067 Otterpool Lane *	0	0	2	**2**
A20 Ashford Road b/w Otterpool Lane & Newingreen	2	1	5	**8**
A20 Ashford Road at Newingreen *	0	2	5	**7**
A20 Ashford Road b/w Newingreen & M20 *	0	2	18	**20**
A20 Ashford Road at Barrow Hill *	0	1	5	**6**
Aldington Road b/w Otterpool Lane & Stone Street *	0	0	0	**0**
Stone Street	0	1	4	**5**
B2067 Aldington Road west of Otterpool Lane	0	0	1	**1**
Lympne Hill	0	0	4	**4**

[8] *Collision data for the most recent five years of data available for each road link has been obtained from CrashMap. It should be noted that CrashMap only provide the location and severity of accident and not details relating to the accident causation (https://www.crashmap.co.uk).*

Link	Number of Accidents			
	Fatal	Serious	Slight	Total
B2068 Stone Street	0	0	5	**5**
M20 (including B2068 Stanford Intersection and B2068 Stanford Bypass) *	1	5	48	**54**
Cheriton Road	0	0	12	**12**
A261 Hythe Road	0	0	11	**11**
A259 Military Road	0	0	5	**5**
A259 Prospect Road	0	1	3	**4**
Swan Lane	0	0	1	**1**
A20 Hythe Road west of Swan Lane	0	7	23	**30**
A2070 Kennington Road	0	2	9	**11**
A262 Hythe Road	0	2	27	**29**
A260 Spitfire Way	0	2	11	**13**
A260 Canterbury Road	1	11	62	**74**
Alkham Valley Road	1	7	33	**41**
Nackington Road	0	2	4	**6**
Old Dover Road	0	1	21	**22**

*Source: CrashMap except links marked * for which source = KCC*

Road Safety Summary

16.3.77 Whilst all PIAs are regrettable, the overall accident record in the entire study area over a five-year period does not give undue cause for concern. Based on the number and frequency of accidents at the location, it is considered that there is a potential issue with speeding on the A20 Ashford Road on the section between the A261 Hythe Road north along the dualled section to Stone Street.

16.3.78 Several accidents have occurred due to poor weather conditions. Aside from the above noted issues, the evidence does not suggest specific safety deficiencies on the local highway network in the vicinity of the development site.

Baseline Summary

16.3.79 The local transport network and walking and cycling environment has been assessed, describing the site's accessibility and environmental surroundings, including the existing extensive network of PRoW. Walking accessibility through the site is currently restricted and there are no designated cycle routes in the immediate vicinity.

16.3.80 The highway network and railway line surrounding the site provides severance for pedestrian and cyclists connecting to the surrounding areas with a lack of existing formal and safe crossing opportunities on a number of roads.

16.3.81 The public transport network is relatively limited in terms of bus services, with infrequent hourly services between Folkestone and Ashford as well as a number of school services routing through the study area. However, the existing bus service does pass through the central part of the Otterpool Park site, presenting opportunities to enhance existing services to serve future residents.

16.3.82 The local area is well connected to the rail network, with half hourly services running to Ashford International (with onward connections to London), Folkestone Central and Dover Priory. However, there are inadequate facilities at Westenhanger Station comprising lack of car parking, no cycle parking provision and limited mobility access.

Future Baseline

Traffic Flows

16.3.83 A 2044 Future Baseline/ Reference Case (without the Otterpool Park development) has been assessed. This includes all committed and planned developments which represents maximum growth of the highway capacity modelling area without the development. For the purposes of environmental assessment, this scenario is to be used as the Future Year Baseline against which the impacts of the Otterpool Park development will be assessed.

16.3.84 It is predicted that there will be a significant increase in traffic flow for the majority of links assessed by 2044 compared to the Base Year. Table 16-14 provides the predicted 2044 Future Baseline/ Reference Case traffic flows, with flows shown for the AM and PM peak hours periods. The percentage increase in flow is also shown.

16.3.85 The increase in flows is the direct result of planned development in the modelling study area and growth in traffic movements on the wider network in Kent.

Table 16-14 2044 Future Baseline/ Reference Case (Without Development) Forecast Traffic Flows

Link	2044 Future Baseline (Without Development)		Percentage Change with 2018 Baseline	
	AM Peak	PM Peak	AM Peak	PM Peak
B2067 Otterpool Lane	531	500	22%	14%
A20 Ashford Road b/w Otterpool Lane & Newingreen	737	848	47%	33%
A20 Ashford Road at Newingreen	823	920	39%	34%
A20 Ashford Road b/w Newingreen & M20	1,629	1,811	14%	25%
A20 Ashford Road at Barrow Hill	890	887	67%	46%
Aldington Road b/w Otterpool Lane & Stone Street	280	261	23%	25%
Stone Street	471	321	8%	13%
B2067 Aldington Road west of Otterpool Lane	302	231	12%	13%
Lympne Hill	406	384	15%	15%
B2068 Stone Street	471	321	8%	13%
M20 east of J11	5,508	5,782	22%	23%
M20 west of J11	5,577	5,789	19%	22%
Cheriton Road	1,073	1,117	21%	20%
A261 Hythe Road	738	912	18%	21%
A259 Military Road	1,192	1,144	12%	13%
A259 Prospect Road	1,489	1,695	11%	12%
Swan Lane	269	324	13%	13%
A20 Hythe Road west of Swan Lane	907	886	41%	24%
A2070 Kennington Road	1,409	1,296	22%	21%
A262 Hythe Road	900	1,218	30%	28%

Link	2044 Future Baseline (Without Development)		Percentage Change with 2018 Baseline	
	AM Peak	PM Peak	AM Peak	PM Peak
A260 Spitfire Way	1,806	1,927	12%	12%
A260 Canterbury Road	2,259	2,268	12%	12%
Alkham Valley Road	1,426	1,298	10%	11%
Nackington Road	1,050	981	20%	20%
Old Dover Road	1,073	951	18%	18%

16.4 Design and Mitigation

Construction Approach and Mitigation of Construction Effects

16.4.1 A Construction Traffic Management Plan (CTMP) would be implemented to minimise the effects of road traffic during the construction phase and would incorporate:

- Identification of appropriate safe routes for the proposed development traffic to and from the site via the M20 and A20;
- Where possible the development would try and utilise raw materials from local sources to reduce the vehicular traffic impact;
- Staff travelling to work would be encouraged to car-share, walk, cycle and travel via public transport and appropriate vehicle constraint targets will be set out within the CTMP;
- Full staff welfare facilities will be provided was part of the compound construction to reduce the requirement to travel off-site on lunch breaks and encourage sustainable travel;
- Frequent inspections and monitoring to confirm the required measures would be implemented;
- There would be designated and adequate onsite parking facilities for site workers who travel by car, or other vehicles, to ensure that vehicles are not parked on the highway;
- The contractor would implement cleaning measures, such as wheel washing or wash-down facilities, which would serve to minimise the spread of dust, mud and other materials on to the roads;
- Regular sweeping of roads would be undertaken, both on and off the site to reduce the spread of mud; and
- Furthermore, detailed measures in relation to construction vehicles have been suggested within Section 6 Air Quality and Section 13 Noise and Vibration.

Scheme Design and Mitigation of Operational Effects

Land Use Provision

16.4.2 The proposed development quantum and mix of land uses is such that the site will provide a sufficient scale and range of services that will meet the demands of the local population that means the need to travel long distances by non-sustainable modes of transport will be minimised, with a high level of contained trips. It is also anticipated that the services provided will not be of a type that will attract significant trips from people living external to Otterpool Park.

Otterpool Park Transport Strategy

16.4.3 Otterpool Park will be influenced by the travel needs of the existing and future communities. The aim is to strike the right balance between ensuring the Garden Town is a great place to live and work with all the amenities its population needs, while also providing easy connections to and from neighbouring communities. There will be a high proportion of local trips made within Otterpool Park as the development incorporates a range of schools, healthcare, community and sports facilities to meet as many of the needs of residents as possible and minimise travel to other locations. There will be local shopping and services and on-site employment locations together with the infrastructure for home working.

16.4.4 The Otterpool Park development and associated access and travel strategy will provide residents, employees and visitors with an attractive and comprehensive network of sustainable travel opportunities to provide viable alternatives to travel by private car. This will be balanced against ensuring that the highway access arrangements are robust enough to sustain additional traffic movements, provide connectivity to existing routes and allow the existing network to function within reasonable limits without causing significant issues for Otterpool Park and existing local residents.

16.4.5 The infrastructure of the Masterplan will be complemented by bespoke green travel measures, which will build on the opportunities offered by the existing and proposed walking, cycling, equestrian and public transport infrastructure, and promote and develop sustainable travel opportunities as well as support low emissions vehicles and innovative transport solutions.

Key Principles of the Transport Strategy

16.4.6 The Transport Strategy for Otterpool Park is founded on the following principles:

- Create walkable neighbourhoods and a high street highly accessible by walking and cycling;
- Provide strong walking, cycling and bus connections to the rail station, employment, high street, local centres and schools from the residential areas;
- Provide connectivity by walking, cycling and bridleways into the surrounding countryside and existing communities;
- Ensure a high level of connectivity to and from Otterpool Park within the sub-region by frequent and high-quality public transport;
- Integrate the access and travel network into the existing strategic and local networks and upgrade the network where necessary;
- Minimise and manage the impacts of traffic on the existing road network particularly through existing communities and other sensitive areas;
- Provide for parking requirements for cars and bicycles;
- Implement a range of sustainable travel behavioural measures to encourage use of sustainable modes; and
- Provide for future needs for electric vehicles and flexibility to adapt to innovative transport solutions.

Creating Walkable Neighbourhoods

16.4.7 The design of the development provides for walkable neighbourhoods, with the majority of all homes within easy walking or cycling distances of facilities and services, as follows:

- 400 metres of a LEAP (local play area) (Drawing OPM(P)1035C);
- 700 metres of a MUGA (multi use games area) (Drawing OPM(P)1033C);
- 800 metres of a primary school (Drawing OPM(P)1030C) and local centre (Drawing OPM(P)1031C); and
- 1,000 metres of allotments and community orchards (Drawing OPM(P)1036C), sports pitches (Drawing OPM(P)1032C) and a NEAP (neighbourhood play area) (Drawing OPM(P)1034C).

16.4.8 Walkable neighbourhoods create the opportunity for containing trips within the site and for achieving high levels of walking and cycling usage.

Walking and Cycling Strategy

16.4.9 As explained in this section, the Walking and Cycling Strategy aims to create a highly connective and permeable network of routes that support the anticipated high-demand from the resident and working Otterpool Park population, whilst, also bringing benefits to the existing populations in adjacent settlements and leisure users of existing footpaths and bridleways. This strategy also responds to the Folkestone & Hythe District Council Walking and Cycling Study as discussed in Section 16.3.

16.4.10 To ensure cycle and walking routes are well used and fit for purpose, there are 'direct routes' that act as commuting routes to allow direct and fast access between residential areas and the station, town centre, key local employment areas, local centres and schools. These will be a mix of routes that are adjacent to the road network and off-road connections where they are more direct. There will also be a network of 'leisure routes' introduced, consisting of longer, meandering paths which will connect the green spaces and Otterpool Park to the wider countryside. The routes are illustrated in Drawing OPM(P)1010D.

16.4.11 Where walking and cycling routes share the highway corridor, the following provision will be made:

- The strategic street will have 4.6m express segregated cycleway on one side and 3-4m shared path on the other;
- Primary streets will have 4.6m express segregated cycleway on one side and 3m footpath on the other;
- Secondary streets will have 3-4m shared path on one side and 2m footway on the other; and
- In tertiary and other streets, these will be quiet streets and cyclists will share the roadway with vehicles.

16.4.12 Where walking and cycling routes intersect with vehicular traffic routes, junctions will be designed to afford priority to non-motorised users. The safety of pedestrians and cyclists will be ensured by providing routes of adequate widths and with crossing points located on key desire lines that include refuges and other formal/ controlled crossing facilities as appropriate.

16.4.13 A series of walking and cycling routes away from vehicular traffic will also be created, establishing a safe network linking the high street and local centres to and through the residential areas. These routes will link into the existing footpaths and footways within the site, which will be upgraded as appropriate to form an integral element to support the Strategy. The propensity to walk will not only be influenced by distance but the quality of the of the walking experience. Such as routing through green spaces, local centre and residential streets offering a high-quality walking experience, with good quality landscaping, gardens and streetscape. Hence, it is hoped that these well-designed routes will provide an attractive and more sustainable alternative to the car.

16.4.14 There will be a number of locations where key walking and cycling links will connect across the A20 between the northern and southern parts of the development. The junctions will incorporate controlled crossing facilities to afford priority to pedestrians and cyclists (and equestrians where there is a bridleway).

16.4.15 All walking and cycling routes will be of a high-quality with all-weather surfacing, well-lit and easily maintained. Routes will be through green spaces, along the river corridor, or on well-designed streets to make them a more attractive option and more direct than using the car. The layout of homes and routes will ensure natural surveillance to increase user safety.

16.4.16 The Walking and Cycling Strategy seeks to improve connectivity between Otterpool Park and the wider network. The priorities for improvement, as identified in the Walking and Cycling study commission by Folkestone & Hythe District Council (April 2018) are as follows:

- Improvements in cycle linkages to the Hythe area;
- Improvements in cycle linkages to the Folkestone area;
- Improvements to Westenhanger Station access and destinations to the north of HS1 and the M20; and
- Connections between the internal network and existing PRoW.

16.4.17 The nature of the improvements is part of an ongoing dialogue and connections will be supported through the likely provision of contributions to off-site sustainable transport improvements. However, this will be secured and detailed within the supporting Section 106 legal agreement following planning submission.

Public Transport Strategy – Rail

16.4.18 An upgrade to the passenger facilities at Westenhanger Station is being sought in conjunction with key stakeholders. The station is intended to provide a major hub of activity within the settlement, enhanced transport interchange, an identity for commercial, social and residential land uses and improved linkages for visitors to Westenhanger Castle. It is envisaged that improvements would include:

- Upgraded passenger waiting facilities and information;
- Platform extensions;
- A new pedestrian overbridge between platforms;
- Lift access to platforms;
- Secure cycle storage;
- Bus interchange;
- Parking including EV charging spaces; and
- Potential for commercial provision of café/ retail facilities.

16.4.19 The potential to enhance rail services with additional direct services to London is also being explored with the aspiration of at least hourly direct services of less than 60 minutes journey time.

16.4.20 It is envisaged that a car park will be provided for the station which will initially be a surface car park and would be expanded over time with decking or structures to provide a multi storey facility.

Public Transport Strategy – Bus

16.4.21 The bus services strategy is to provide an accessible, frequent and reliable service for residents to connect within the site to key destinations including local centres, schools, employment sites and Westenhanger Station and to key destinations, notably Ashford and Hythe.

16.4.22 It is intended that there would be a bus stop within 400 metres of the majority of homes and contributions to bus services to enable provision at 30-minute frequencies from early occupation. By the time of full development, it is envisaged that there would be a 15-minute frequency service, increasing to every 10 minutes once fully commercial. The aim is for people to be able to turn up and catch a bus within no more than a typical 5-7 minutes wait.

16.4.23 Bus services would be likely to firstly involve an enhancement to the existing services on the A20, with additional buses being added to increase frequencies and provide a bus service through the development on the north and south side of the A20.

16.4.24 The majority of residents would be within no more than 400 metres walking distance (less than five minutes at average DfT walking speeds), of a proposed bus service from bus stops.

16.4.25 The strategy plan shows two indicative Otterpool Park routes:

- From Sellindge on the A20, routing through the northern part of Otterpool Park to the town centre and station, and then via the business area of the masterplan to the A20 south to Newingreen and to Hythe (and vice versa); and
- From Sellindge on the A20, routing through the southern part of Otterpool Park, then across to the town centre and station, and then via the business area of the masterplan to the A20 south to Newingreen and to Hythe (and vice versa).

16.4.26 The development will be phased and built out in different areas of the Masterplan. Bus routes will develop through the build out of the development in conjunction with bus operators and it is important to allow for flexibility in provision whilst adhering to the strategy principles. There is therefore a need to plan the implementation of bus service changes to reflect the development phasing to ensure that, as new settlement centres are established, walking distances to bus stops are minimised.

16.4.27 High quality bus stop facilities would be provided to make the services an attractive option for short and long journeys, with shelters, lighting and information. Infrastructure design will take account of the accessibility needs of the mobility impaired. Real time information on bus services would be available via bus stops or other appropriate technology for users.

16.4.28 It is likely that bus services would be delivered by the bus operator and monitored by the Quality Bus Partnership (QBP) between Folkestone & Hythe District Council, Kent County Council and the bus operator, to achieve quality local bus services. The aim of a QBP is to develop and improve all aspects of bus travel within the District, including infrastructure, with the overall objective of increasing passenger numbers, thereby reducing the need to travel by car. The measures that the QBP might consider for the Route 10 which will pass through the Otterpool site might include investment in new vehicles, with consideration of hybrid or electric buses, as well as fare incentives and new infrastructure on the route, such as, enhancements to existing bus stops and the provision of new high-quality facilities. However, at present discussions are ongoing as to the delivery of bus services for the development and various means of provision will be considered including use of demand responsive services in the early years.

Highway Access Strategy

16.4.29 The highway access strategy is based on the main access to Otterpool Park being from Junction 11 of the M20 via the A20. It is recognised that traffic will also use other routes. However, through upgrading the route from Junction 11 and thus providing high quality linkages, traffic impacts on other routes will be minimised. Furthermore, the approach is to mitigate impacts on the network but not to provide significant capacity increases elsewhere that encourage car use or the use of more sensitive routes.

Primary Roads

16.4.30 A network of primary roads will provide access through Otterpool Park, connecting both sides of the A20 and serving the station, town centre, schools, local centres and employment as well as giving access to the residential areas. These routes will provide for bus movements and have walking and cycling connections alongside. The primary roads are indicated in the Movement and Access Parameter Plan (OPM(P)1010D).

Upgrade of the A20 Ashford Road

16.4.31 The A20 between the roundabout south of the M20 J11 and north of the Newingreen junction is proposed to be upgraded to an urban dual carriageway of 40mph speed limit. This is proposed to be provided west of the existing route, with a landscape buffer provided to minimise visual and other impacts on the Area of Outstanding Natural Beauty and Sandling Park to the east of the existing A20. The new safer route will balance the need to accommodate future traffic with minimising the impacts. The existing A20 would then be removed and form part of the landscape buffer. Drawing OP-ARC-XXX-DR-T-001 Rev P03 shows the A20 alignment plan and profile, together with typical sections.

16.4.32 At the northern end of the A20 upgraded link, there will be another new traffic signalised junction and a new primary road providing access to the station and employment area.

16.4.33 At the southern end of the A20, there will be a new traffic signalised junction connecting to the proposed Newingreen Link.

Newingreen Link

16.4.34 The Newingreen Link is proposed to serve the development and provide a route for the A20 east-west traffic effectively bypassing the existing Newingreen junction (illustrated in Drawing OP-ARC-XXX-DR-T-002 Rev P03). The new route is proposed as a single carriageway 30mph strategic route with a segregated footway and cycleway alongside. Stone Street will be connected to the new link via a cross road priority junction but there will be no through route to the station or to the Newingreen junction, ensuring Stone Street serves as a quiet access to properties. A new crossroads with traffic signals would be provided to give access to the town centre and railway station to the north, and development to the south.

16.4.35 The Newingreen Link would be the through route, with the existing A20 tying into the link via a new junction at a point west of Newingreen. On the section of the existing A20 from Newingreen westwards it is envisaged the speed limit of Ashford Road west of Newingreen would be reduced to 30mph. This complements the proposed 30mph Newingreen Link speed and is likely to enhance road safety in an area that has a poor accident record (four injury collisions including two fatal incidents in the past five years). In addition, this will enhance noise and air quality aspects for residents in the vicinity and fit the proposed highway environment which includes a number of proposed junctions, better walking and cycling connectivity and more direct frontages. The Otterpool Lane junction is to be maintained as a traffic signalised three-arm junction and there is proposed to be a new junction to the west near to Otterpool Manor, providing access to the development to the north and south.

16.4.36 West of the Newingreen Link, it is proposed that the existing A20 is reduced in speed limit to 30mph and a segregated walking and cycling route is proposed alongside the highway, to provide an enhanced connection along the route prior to full development along the corridor. This is illustrated in Drawing OP-ARC-XXX-DR-T-006 Rev P02.

Car Parking Provision

16.4.37 The level of car, motorcycle and bicycle parking to be provided will be agreed at the reserved matters stage for each development zone. It is anticipated however that the development will be constructed in accordance with the FHDC standards at the time of submission of the relevant reserved matters applications.

Sustainable Travel and Low Carbon Measures

16.4.38 A comprehensive range of measures are suggested for the development to promote sustainable travel and vehicle choices, in addition to the provision of infrastructure in the form of walking and cycling routes and bus services and cycle storage. The suggested measures are set out in the draft Framework Travel Plan (Document reference 10011914-ARC-00-XX-RP-TP-0001-P1.1), which is also submitted for information with the Application. These would be confirmed as part of a Final Travel Plan, agreed prior to occupation of the development.

16.4.39 The development will need to provide for the future requirements for electric vehicles and give the flexibility to adapt to innovative transport solutions such as autonomous vehicles. Suggested measures include:

- Seek to develop an electric vehicle car club in conjunction with an operator;
- Seek to develop a rental bike scheme, including electric bikes;
- Provide passive provision for electric vehicle charging at all homes with allocated spaces as well as to on-street parking areas; and
- Develop electric vehicle charging point strategy with provision in local centres, employment locations and the rail station.

Mitigation of Operational Effects

16.4.40 The mitigation and enhancement measures described above form part of the proposed Otterpool Park development and these form an integral part of the scheme. These mitigation measures have been considered within the potential effects and as such the mitigation measures set out here relate to further mitigation required to address the identified potential effects from this assessment.

16.4.41 Required mitigation is considered by link in the following sections.

A20 Ashford Road at Barrow Hill Driver Delay

16.4.42 In the future case, the traffic flow increase would have a major adverse effect on driver delay at the signal-controlled one-way section of Barrow Hill.

16.4.43 As described in the TA, the efficiency of the signals can be improved through cycle time optimisation. The intergreens between the two traffic movements are very high as the distance to pass the conflict area within the one-way section as this is longer than at a typical junction. As a result, a substantial portion of the cycle time is taken up by the intergreen period. Increasing the cycle time is a potential way to increase junction efficiency.

16.4.44 Longer cycle times mean that proportionally less of each cycle is lost to the intergreen period. This means the total amount of green time allocated to each approach within the peak hour is increased. Mitigation in the form of signal timing changes is proposed for these signals.

16.4.45 It was found that by increasing cycle time from 50 seconds to 72 seconds in the AM peak and 88 seconds in the PM peak, the junction should operate within capacity in both the AM and PM periods with a maximum delay of 50 seconds per PCU.

16.4.46 Preliminary discussions regarding the implementation of the proposed mitigation has been held with Kent County Council and Folkestone & Hythe District Council. Further discussions are required with Kent County Council signals team regarding the potential upgrade on the current vehicle detection and method of control should be considered in conjunction with cycle time optimisation. This could increase the efficiency of the junction and allow cycle times to vary depending on queue length and demand. This could help to manage queues and maintain driver satisfaction by minimising wasted green time.

Aldington Road between Otterpool Lane and Stone Street

16.4.47 Aldington Road is anticipated to experience a major to moderate effect on pedestrian severance, pedestrian amenity and accidents and safety.

16.4.48 For the majority of this section of Aldington Road, there is settlement only on one side of the road, with the other side consisting of a hedgerow for which there is no reason for pedestrians to cross the road. For a short section at the eastern end to the west of Stone Street, the settlement of Lympne extends across Aldington Road in the form of Lympne Village Hall and around ten houses off The Street.

16.4.49 The impact of the increase in traffic flows is therefore considered to be restricted to a small section of Aldington Road. A set of dropped kerbs with tactile paving are located on Aldington Road opposite the access to the Village Hall. This is on the main desire line for pedestrian routing to/from Lympne. Visibility at this location is good, with at least 200m visibility for pedestrians in each direction along Aldington Road as well as along Stone Street.

16.4.50 Depending on the volume of future pedestrian flows, pedestrians may benefit from enhancing the crossing point either in the form of build-outs on either side to reduce the crossing distance and reduce vehicle speeds, or greater formalisation of the crossing in the form of a zebra crossing.

16.4.51 Alternatively, traffic calming measures could be implemented close to key pedestrian desire lines across the road. This could take the form of speed cushions or carriageway narrowing to form one-lane sections with give-ways on approach such as are in place on Stone Street through Lympne Village.

16.4.52 Implementation of pedestrian facilities and/or traffic calming features as described is expected to reduce the overall effect on severance, pedestrian amenity and accidents and safety, as described in section 16.5.

Stone Street Severance

16.4.53 Stone Street is anticipated to experience a **Moderate adverse** impact on pedestrian severance in the PM peak and a minor adverse impact in the AM peak due to the forecast increase in traffic flows.

16.4.54 The impact on severance and accidents and safety is expected to be restricted to the section of Stone Street routing through Lympne, as Stone Street north of Lympne has settlement on only one side of the road and there is therefore limited need for pedestrians to cross the road.

16.4.55 Within Lympne, locations where pedestrians can cross the road are limited as the majority of the road has a footpath on only one side of the road. However, due to the location of bus stops and the existing Lympne primary school on this section of Stone Street, pedestrians will be required to cross the road at some point.

16.4.56 It is suggested that traffic flows along Stone Street are monitored and if an issue of severance is identified, a study should be undertaken to determine the most beneficial location for a pedestrian crossing facility such as a pedestrian refuge, where the carriageway has sufficient width, or a zebra crossing with zig-zag 'keep clear' markings. Anti-skid surfacing could be provided on approach to the crossing. Alternatively, a traffic calming measure such as a speed cushion that allows a bus to pass over but which would slow the speed of a smaller vehicle could be located at strategic locations that would enhance the impact of the existing traffic calming in the form of the carriageway narrowing to one-lane operation.

16.4.57 Introduction of pedestrian facilities and/or traffic calming of this type is expected to reduce the impact of severance, as described in section 16.5.

Stone Street and A261 Hythe Road Driver Delay

16.4.58 Stone Street and the A261 Hythe Road are expected to experience potentially a major adverse impact on driver delay at the junction with the A20 Ashford Road. Options for mitigation at these junctions have been discussed with Kent County Council and Folkestone & Hythe District Council, with discussions ongoing at the time of submission of the Application. Future capacity constraints at this junction have already been identified within Transport Assessments produced for other developments in the area, as well as by Kent County Council who has investigated a major intervention at this junction which has not been implemented due to monetary constraints.

16.4.59 The proposed mitigation for these junctions has been described and tested in detail in the TA. The implementation of the Newingreen Link road enables a fresh investigation into the junction in the light of reduced traffic flows. The Link road also provides an alternative route for the abnormal load vehicles associated with the Link Park industrial estate on Otterpool Lane, which route to the M20 via Newingreen. This means the A20 Ashford Road junction with Hythe Road and Stone Street would not need to be designed to accommodate abnormal-length vehicles and thus could be designed within a smaller area.

16.4.60 The mitigation designed to address the potential impacts and mitigate the predicted delays requires merging of the existing A20 Ashford Road priority junctions with Stone Street and Hythe Road into one signalised junction. The results for the proposed mitigation would reduce driver delay to 68 seconds per PCU on Stone Street and 62 seconds per PCU on Hythe Road.

Lympne Hill Pedestrian Severance

16.4.61 During discussions regarding the need for mitigation on Lympne Hill held with Kent County Council and Folkestone & Hythe District Council, it was ascertained that, since traffic survey data was collected for this junction, traffic calming measures have been implemented along West Hythe Road, which leads into Lympne Hill to the north. Kent County Council advised that this is expected to reduce traffic along West Hythe Road and Lympne Hill, particularly traffic that were using the route to avoid the alternative route to/from destinations in the south of the District via Hythe. This is expected to have had a positive effect on pedestrian severance on Lympne Hill.

16.4.62 As defined in Table 16-2, Lympne Hill is not expected to have pedestrian receptors due to the nature of the road which is populated by a small number of residential properties set back from the carriageway, with the majority of the road flanked by hedges and open space with no footways. Pedestrian severance on Lympne Hill is therefore not anticipated to be a significant effect.

Cheriton Road / Cheriton High Street Driver Delay

16.4.63 A major/moderate effect on driver delay is predicted at the Cheriton Road and Cheriton High Street junctions with Risborough Lane and Cherry Garden Avenue. Detailed testing of these junctions has been undertaken and reported in the TA.

16.4.64 The Cheriton Road junction with Risborough Lane is expected to operate with significant delay in the 'without development' scenario. As described in section 16.2, the 'without development' scenario includes significantly less housing and job growth forecast than is tested in the 'with development' scenario. In order for the junction to operate within capacity a substantial highway improvement would be required at this location prior to 2037. Initial discussions regarding mitigation at this junction have been held with Kent County Council and Folkestone & Hythe District Council. Discussions will continue to be held following submission of this planning application, including the potential provision of contributions to be secured and detailed within the supporting Section 106 legal agreement.

16.4.65 Mitigation would also be required at the Cheriton High Street junction with Cherry Garden Avenue and Beachborough Lane prior to 2037 in the 'without development' scenario. Potential mitigation for this junction has been tested and results are presented in the TA. If the junction were to be redesigned to allow the right turns from the Cherry Garden Avenue and Beachborough Lane approaches to run opposed safely, it could add considerable capacity benefits to the junction and reduce the number of stages required. Delays on the Cheriton High Street link could be reduced to a maximum of 63 seconds per PCU. A full description of the necessary mitigation is provided in the Transport Assessment.

A261 Hythe Road Fear and Intimidation

16.4.66 The moderate adverse effect relating to fear and intimidation on the A261 Hythe Road concerns cyclists, as pedestrians are not expected to use this route.

16.4.67 As described in section 16.3, the Folkestone & Hythe District Council Walking and Cycling Study identifies this route as a priority for improvement with regard to cycle linkages. Since the report makes no firm proposals for improvement, further investigation into mitigation options is required. The promotors of the Otterpool Park development are committed to supporting the upgrade of this route for cycle use to reduce adverse effects, most likely through the provision of financial contributions to be secured and detailed within the supporting Section 106 legal agreement following planning submission.

16.5 Assessment of Residual and Cumulative Effects

Residual Effects from Construction

Potential Impacts

16.5.1 The potential impacts during the construction phase are identified as:

- Potential impact on pedestrian amenity and fear and intimidation due to the increase in vehicle flows and the change in flow composition i.e. an increase in large type vehicles. A lorry movement plan would be prepared to carefully phase construction vehicles to and from site.
- Potential increase in pedestrian and driver delay due to the additional vehicles associated with the Development on the highway network together with possible temporary traffic management. However, possible disruption would be minimised by ensuring working times are outside of peak periods, convoy systems are in place to group vehicle movements, movements are restricted away from schools start and closing times and temporary facilities are designed to minimise disruption to traffic.
- Potential reduction in public safety, particularly vulnerable road users, due to the introduction of large type vehicles travelling to and from site. Construction traffic would be restricted from travelling past schools and where this is not possible; vehicles will be restricted during start and closing times. A convoy system and banks man would be used where vehicle movements need assistance to reduce the potential effect on the safety of road users and potential traffic management control.

Assessment Overview

16.5.2 The assessments of impacts associated with the construction phase of the Development has identified that there are likely to be **minor adverse** effects for residents and business relating to the increase in construction vehicles on the local highway network. Potential delays to journey times for pedestrians and drivers may be experienced due to the volume of traffic and potential need to introduce temporary traffic management controls on route to the Development Site. The safety of road users may also be affected by the increase of large type construction vehicles.

16.5.3 As such, a Construction Traffic Management Plan would be produced to mitigate these effects, effectively routing construction vehicles away from sensitive residential areas where possible.

Residual Effects from Operation

16.5.4 The permanent traffic and transport operational impacts associated with the additional traffic flow generated by Otterpool Park in 2044 have been assessed by firstly identifying those links expected to see an increase in traffic of more than 10% in peak hour flow, as set out in Section 16.4.

16.5.5 For each of those links, the impact on the following has then been considered:

- Severance
- Pedestrian Amenity;
- Driver delay;
- Pedestrian delay;
- Fear and intimidation; and
- Accidents and safety.

Trip Generation and Assignment

16.5.6 The forecast background and Otterpool Park development traffic has been calculated and assigned to the highway network as described in section 16.2 for the 2044 assessment year. This represents the year of full occupation of the 8,500 home-scheme for which outline planning permission is sought. Full details of the predicted development trip generation and assignment for the Development can be found within the TA.

16.5.7 Table 16-15 shows the predicted 18 hour AM and PM peak traffic flows on key links within the study area for the 'with' and 'without development' scenarios along with the percentage change on each link. It should be noted that the difference between the 'with' and 'without development' flows is not equal to the total Otterpool Park development traffic flows due to an element of dynamic re-routing of background traffic flows in the 'with development' scenario, as determined in the VISUM model.

Table 16-15 Otterpool Park Forecast Development Traffic Flows

Link	18 Hour Flow		
	Without Development	With Development	Percentage Change
B2067 Otterpool Lane	5,673	7,824	**37.9%**
A20 Ashford Road b/w Otterpool Lane & Newingreen	8,721	10,151	**16.4%**
Proposed Newingreen Link Road	0	14,344	N / A
old A20 Ashford Road at Newingreen	9,590	6,526	-32.0%
A20 Ashford Road b/w Newingreen & M20	18,927	32,539	**71.9%**
A20 Ashford Road at Barrow Hill	9,777	13,541	**38.5%**
Aldington Road b/w Otterpool Lane & Stone Street	2,449	5,061	**106.7%**

Link	18 Hour Flow		
	Without Development	With Development	Percentage Change
Stone Street	3,184	5,101	**60.2%**
B2067 Aldington Road west of Otterpool Lane	2,818	2,929	3.9%
Lympne Hill	4,177	7,402	**77.2%**
B2068 Stone Street	7,181	7,637	6.4%
M20 east of J11	125,984	149,678	**18.8%**
M20 west of J11	142,699	154,112	8.0%
Cheriton Road / Cheriton High Street	11,448	15,761	**37.7%**
A261 Hythe Road	9,633	11,652	**21.0%**
A259 Military Road	13,637	14,951	9.6%
A259 Prospect Road	18,588	20,164	8.5%
Swan Lane	3,263	3,444	5.6%
A20 Hythe Road west of Swan Lane	9,865	13,502	**36.9%**
A2070 Kennington Road	14,883	15,764	5.9%
A262 Hythe Road	22,007	23,504	6.8%
A260 Spitfire Way	34,787	35,104	0.9%
A260 Canterbury Road	47,609	48,945	2.8%
Alkham Valley Road	30,287	31,288	3.3%
Nackington Road	9,893	10,273	3.8%
Old Dover Road	12,406	12,595	1.5%
Bad Munstereifel Road	90,752	96,456	6.3%
A292 Hythe Road	22,007	23,504	6.8%
A2070 Kennington Road	14,316	15,208	6.2%
A20 Fougeres Way	48,793	50,284	3.1%
A251 Trinity Way	35,208	35,687	1.4%

16.5.8 Table 16-15 shows in highlight those links where a 10% or more increase in traffic is forecast in the 'with development' scenario compared to the 'without development' scenario in 2044. This is based on the IEMA thresholds (Rule 2), which suggest that a detailed assessment should be undertaken on especially sensitive areas, where traffic flows increase by 10% or more.

16.5.9 Due to the high volume of traffic and the lack of sensitive receptors, it is not considered that the M20 East of Junction 11 would be sensitive from an environment perspective. As such, the effects of the proposed development would be **negligible**, and no further detailed assessments have been undertaken.

16.5.10 As the Newingreen Link is a new road, it has been included in the assessment. The receptors on the links included in the assessment and the sensitivity of the receptors has been presented in Table 16-2. The assessment has been undertaken in the following sections.

Pedestrian Severance

16.5.11 Severance occurs when there is difficulty experienced in crossing a heavily trafficked road. The guidance set out in DMRB Volume 11, Section 3, Part 8 Pedestrians, Cyclists, Equestrians and Community Effects suggests that changes in traffic flow of 30%, 60% and 90% are considered as 'minor', 'moderate' and 'major' changes in severance respectively.

16.5.12 Table 16-15 presented the 'with' and 'without development' traffic flows on the key links in the study area and the percentage change in traffic flows between the two scenarios. This table identifies ten links that are expected to experience a 30% or greater traffic flow increase.

16.5.13 Pedestrian severance is assumed to be mitigated where dedicated pedestrian crossing facilities such as zebra or signalised crossings are provided on key desire lines. Where this is the case, links experiencing an increase in traffic flow of 30% or greater are assumed to have a **negligible adverse** effect on receptors. Of the links in Table 16-16, the following would have existing or proposed signalised crossings on key desire lines includes:

- A20 Ashford Road between Otterpool Lane and Newingreen
- Proposed Newingreen Link Road;
- A20 Ashford Road between Newingreen and M20;
- A20 Ashford Road at Barrow Hill;
- Cheriton Road; and
- A259 Military Road.

16.5.14 The following sections consider the expected impact on receptors on the remaining links that are expected to experience 30% or greater traffic flow increase.

Table 16-16 Otterpool Park Development Flows Impact on Level of Pedestrian Severance

Link	Percentage Change	Significance of Effect
B2067 Otterpool Lane	37.9%	Change in flow greater than 30%, therefore effect is **Minor adverse**
A20 Ashford Road b/w Otterpool Lane & Newingreen	16.4%	**Negligible** due to signalised pedestrian crossings on link
Proposed Newingreen Link Road	N / A	**Negligible** due to signalised pedestrian crossings on link
A20 Ashford Road b/w Newingreen & M20	71.9%	**Negligible** due to signalised pedestrian crossings on link
A20 Ashford Road at Barrow Hill	38.5%	**Negligible** due to signalised pedestrian crossings on approach to Barrow Hill
Aldington Road b/w Otterpool Lane & Stone Street	106.7%	Change in flow greater than 90%, therefore effect without mitigation would be Major adverse Mitigation to be provided in form of new pedestrian crossing facilities and/or traffic calming as described in section 16.4, which is expected to have a Minor/Moderate beneficial effect on pedestrian severance. Residual effect would therefore be **Minor adverse**
Stone Street	60.2%	Change in flow greater than 60%, therefore impact would be **Moderate adverse** Mitigation to be provided in form of new crossing facilities and/or additional traffic calming, which is expected to have a Moderate beneficial effect on pedestrian severance. Residual effect would therefore be **Negligible**

Link	Percentage Change	Significance of Effect
Lympne Hill	77.2%	Change in flow greater than 60%, therefore residual effect is **Moderate adverse** Due to a negligible number of pedestrian receptors, and the recent introduction of traffic calming measures on West Hythe Road, no further mitigation is proposed
Cheriton Road	37.7%	**Negligible** due to signalised pedestrian crossings on link
A261 Hythe Road	21.0%	Change in flow less than 30%, therefore impact is **Negligible**
A20 Hythe Road west of Swan Lane	36.9%	**Negligible** at location of zebra crossing outside Primary School **Minor adverse** west of Sellindge

Pedestrian Amenity

16.5.15 As explained in section 16.2, the pedestrian amenity threshold, as set out in the IEMA Guidelines to assess the significance of change, is where the traffic flow is halved or doubled. Table 16-15 presented the 'with' and 'without development' traffic flows on the key links in the study area along with the percentage change in flows. The table showed that Aldington Road between Otterpool Lane and Stone Street is the only link that requires assessment for pedestrian amenity as the 'with development' traffic flow is a little more than double the 'without development' traffic flow in the PM peak period. As the increase in flow is approximately double in the 'with development' scenario, the impact would be **Moderate adverse**.

16.5.16 As described in section 16.4, mitigation is proposed in the form of new or enhanced pedestrian crossing facilities and/or traffic calming measures to reduce vehicle speeds and provide more suitable crossing facilities for pedestrians, particularly on desire lines such as the walk from Lympne to the Village Hall. This would result in a **Minor adverse** residual effect on this section of Aldington Road. Effect on all other links would be **Negligible**.

Pedestrian Delay

16.5.17 The IEMA Guidelines suggest that pedestrian delay is experienced at a lower threshold when pedestrians experience a 10 second delay crossing a carriageway with no crossing facilities for a two-way flow of 1,400 vehicles per hour. The upper threshold amounts to a 40 second delay, also where no crossing facilities exist. Table 16-17 presents the 18 hour flow total as an hourly average for each link. The effects on all links would be **Negligible**, with the exception of the A20 Ashford Road b/w Newingreen & M20 having **a Minor adverse** residual effect.

Table 16-17 Impact on Pedestrian Delay

Link	Average Hourly Flow over 18 Hours	Mag of Effect
B2067 Otterpool Lane	435	Flow less than 1,400 vehicles per hour and visibility for pedestrians and drivers is good, therefore effect is **Negligible**
A20 Ashford Road b/w Otterpool Lane & Newingreen	564	Flow less than 1,400 vehicles per hour, signalised crossings are to be provided and visibility for pedestrians and drivers is good, therefore effect is **Negligible**
Proposed Newingreen Link Road	797	Flow less than 1,400 vehicles per hour, signalised crossings are to be provided and visibility for pedestrians and drivers is good, therefore effect is **Negligible**
A20 Ashford Road b/w Newingreen & M20	**1808**	Flow greater than 1,400 vehicles per hour. However, a signalised crossing is to be provided on the desire line for the PRoW across the A20 and pedestrian activity across the A20 at this location is expected to be low. Realignment of A20 will significantly improve visibility for pedestrians and drivers. Therefore residual effect would be **Minor adverse**
A20 Ashford Road at Barrow Hill	752	Flow less than 1,400 vehicles per hour, signalised crossing to be provided across A20 on approach to Barrow Hill and visibility for pedestrians and drivers is good, therefore effect is **Negligible**
Aldington Road b/w Otterpool Lane & Stone Street	281	Flow less than 1,400 vehicles per hour, pedestrian activity expected to be low and visibility for pedestrians and drivers is good, therefore effect is **Negligible**
Stone Street	283	Flow less than 1,400 vehicles per hour and visibility for pedestrians and drivers is good, therefore effect is **Negligible**
Lympne Hill	411	Flow less than 1,400 vehicles per hour and pedestrian activity expected to be very low, therefore effect is **Negligible**
Cheriton Road / Cheriton High Street	876	Flow less than 1,400 vehicles per hour and signalised crossing are provided at locations along the route, therefore effect is **Negligible**
A261 Hythe Road	647	Flow less than 1,400 vehicles per hour. Road alignment limits visibility for pedestrians and drivers at some locations. Pedestrian activity is low and the majority of the route is flanked by open fields thus there is no reason for pedestrians to cross at these locations. Therefore effect is **Negligible**
A20 Hythe Road west of Swan Lane	750	Flow less than 1,400 vehicles per hour. Zebra crossing and traffic calming located within Sellindge Village. Pedestrian activity west of Sellindge Village is expected to be low and visibility for pedestrians and drivers is good, therefore effect is **Negligible**

Fear and Intimidation

16.5.18 Fear and intimidation can be established through a combination of traffic flow, speed and composition. The criteria from the IEMA Guidelines for assessing this have been set out in Table 16-4.

16.5.19 Table 16-18 shows the predicted 2044 hourly traffic flows with the development over an average 18-hour period and identifies the likely impact of fear and intimidation. The sensitivity of the link is summarised in terms of the receptors in the vicinity, as set out earlier in Table 16-3.

16.5.20 In summary, the assessment on level of effect shows **Negligible/Minor adverse** impact on all links.

Table 16-18 Impact on Level of Fear and Intimidation

Link	Average Hourly Flow over 18 Hours	Magnitude of Effect
B2067 Otterpool Lane	435	Flow less than 600 vehicles per hour. 3-4m footpath and 4.6m shared foot/cyclepath to be provided, with segregation on one side of the road by hedgerows with pedestrian/cycle facility on development plot. Therefore effect is **Negligible**
A20 Ashford Road b/w Otterpool Lane & Newingreen	564	Flow less than 600 vehicles per hour. 3-4m footpath and 4.6m shared foot/cyclepath to be provided, therefore effect is **Negligible**

Link	Average Hourly Flow over 18 Hours	Magnitude of Effect
Proposed Newingreen Link Road	**797**	Flow between 600 and 1,200 vehicles per hour, suggests Minor adverse effect. However, footpath would be provided set back from the carriageway with a segregated cyclepath between the footpath and carriageway. Effect is therefore expected to be **Negligible**
A20 Ashford Road b/w Newingreen & M20	**1808**	Flow greater than 1,800 vehicles per hour, however pedestrians and cyclists have dedicated paths segregated by green space, therefore effect is **Negligible/Minor adverse**
A20 Ashford Road at Barrow Hill	**752**	Flow between 600 and 1,200 vehicles per hour. Footpaths are provided on both side of the road, some with reduced width, therefore effect is **Minor adverse**
Aldington Road b/w Otterpool Lane & Stone Street	281	Flow less than 600 vehicles per hour, therefore effect is **Negligible**
Stone Street	283	Flow less than 600 vehicles per hour, therefore effect is **Negligible**
Lympne Hill	411	Flow less than 600 vehicles per hour, therefore effect is **Negligible**
Cheriton Road / Cheriton High Street	**876**	Flow between 600 and 1,200 vehicles per hour. Footpaths of adequate width are provided on both sides of the road with additional protection such as kerbside bollards and guardrailing at specific locations. Crossing facilities are provided along the route in the form of signalised crossings and/or pedestrian refuges. Parked vehicles reduce visibility for pedestrians at some locations. Vehicle speeds are generally low due to signal-controlled junctions and congestion on the network, therefore effect is **Negligible**
A261 Hythe Road	**1306**	Flow between 1,200 and 1,800 vehicles per hour, therefore impact would be **Moderate adverse** As described in section 16.4, this link is identified as high priority for enhancement through the Folkestone & Hythe Walking and Cycling Study. Although mitigation is yet to be defined, measures are expected to be provided that would reduce effect to **Minor adverse**
A20 Hythe Road west of Swan Lane in Sellindge Village	**750**	Flow between 600 and 1,200 vehicles per hour. Traffic calming measures in Sellindge Village would result in a **Negligible** effect.
A20 Hythe Road west of Swan Lane west of Sellindge Village	**750**	Flow between 600 and 1,200 vehicles per hour. Narrow footways at locations west of Sellindge Village would result in in **Minor adverse** effect

Accidents and Safety

16.5.21 Table 16-19 presents the magnitude of effect of the development on Accidents and Safety which is assumed to be a culmination of a number of factors; the adverse effects caused by an increase in traffic flows, the overall volume of traffic and any existing issues which are causing accidents, and the beneficial effects of any interventions.

16.5.22 The increase in traffic flows generated by the development in relation to Otterpool Park, as described in Table 16-15, may increase the potential for collisions on the highway network. The magnitude of the adverse effect created by the increase in traffic flows on Accidents and Safety has been assumed to be the same as for pedestrian severance, i.e. changes in traffic flow of 30%, 60% and 90% are considered as 'minor', 'moderate' and 'major' effects respectively.

16.5.23 The effect on accidents and safety due to overall traffic volumes has been assumed to be equal to the effect described for fear and intimidation in Table 16-18.

16.5.24 Where analysis of existing accident causes, as described in section 16.3, has identified that accidents appear to be caused by poor road design or lack of pedestrian/cycle infrastructure, the link on which they occur has been assumed to have a minor, moderate or major adverse effect on Accidents and Safety according to professional judgement. Where existing accidents are not found to have a common cause, the effect of the existing design of road and infrastructure on Accidents and Safety is said to be negligible.

16.5.25 The introduction of mitigation measures on existing links or pedestrian/cycle infrastructure or application of design standards on new links, is assumed to have a beneficial effect on Accidents and Safety. The scale of beneficial effect is considered in terms of the scale of intervention. For example, segregated cycle or pedestrian facilities are expected to have a major beneficial impact on accidents and safety.

16.5.26 The following sections takes account of the cumulative magnitude of effects of traffic flows, existing accident and safety issues and interventions to derive an overall magnitude of effect on accidents and safety for each link.

Table 16-19 Impact on Accidents and Safety

Link	Magnitude of Effect on Risk of Accidents and Safety by Category				Overall Magnitude of Effect on Risk of Accidents and Safety	
	Risk of Accidents due to Existing Design	Effect due to Percentage Change in Traffic Flow	Effect due to Fear and Intimidation* (Table 16-18)	Effect due to Interventions	Pedestrians / Cyclists	Other Road Users
B2067 Otterpool Lane	Two slight and no cluster of accidents. None involving pedestrians or cyclists. No common causes identified Therefore **Negligible** effect due to existing design	37.9% **Minor adverse** effect due to increase in traffic	**Negligible** effect due to traffic volume	New foot and cycleways, some within development land segregated by existing hedges = **Moderate beneficial** effect for pedestrians/cyclists No change for other road users	Negligible effect due to existing design Minor adverse effect due to increase in traffic Negligible effect due to traffic volume Moderate beneficial effect due to interventions	Negligible effect due to existing design Minor adverse effect due to increase in traffic Overall effect = **minor adverse**

Link	Magnitude of Effect on Risk of Accidents and Safety by Category				Overall Magnitude of Effect on Risk of Accidents and Safety	
	Risk of Accidents due to Existing Design	Effect due to Percentage Change in Traffic Flow	Effect due to Fear and Intimidation* (Table 16-18)	Effect due to Interventions	Pedestrians / Cyclists	Other Road Users
					Overall effect = **Negligible**	
A20 Ashford Road b/w Otterpool Lane & Newingreen	Two fatal and one serious collision was recorded. But no cluster of accidents. None involving pedestrians or cyclists. No common causes identified Therefore **Negligible** effect due to existing design	16.4% **Negligible** effect due to increase in traffic	**Negligible** effect due to traffic volume	Introduction of reduced speed limit, new footpaths and segregated cycle path and signalised crossings = **Moderate beneficial** effect for pedestrians/cyclists Introduction of reduced speed limit = **Minor beneficial** effect for other road users	Negligible effect due to existing design Negligible effect due to increase in traffic Negligible effect due to traffic volume Moderate beneficial effect due to interventions Overall effect = **Minor beneficial**	Negligible effect due to existing design Negligible effect due to increase in traffic Minor beneficial effect due to interventions Overall effect = **Negligible**
Proposed Newingreen Link Road	None – new link.	N / A High traffic flows expected to create **Minor adverse** effect	**Negligible** effect due to traffic volume	Segregated cycle way plus footway segregated from road by cycleway on one side of road plus signal-controlled crossings = **Moderate beneficial** effect for pedestrians/cyclists **Negligible** effect for other road users	Minor adverse effect due to increase in traffic Negligible effect due to traffic volume Moderate beneficial effect due to interventions Overall effect = **Negligible**	Minor adverse effect due to increase in traffic Negligible effect due to interventions Overall effect = M**inor adverse**
A20 Ashford Road b/w Newingreen & M20	Two accidents on entry to M20 Junction 11, one on exit (involving a cyclist). Five accidents between Junction 11 and small roundabout to south, 1 involving a cyclist. All slight severity. Four accidents identified at the small roundabout (all slight) south of M20 Junction 11. Six accidents between small roundabout and Stone Street, two serious, four slight. Seven accidents between Stone Street and Hythe Road (two serious, five slight). Four occurred during slippery/wet conditions No accidents involving pedestrians. Accident causes suggest that there may be an issue with vehicle speeds at this location, an alignment deficiency, poor drainage or poor road surface friction properties with the carriageway. Road is to be re-aligned to meet design standards and signalised junctions with the proposed Business Park access, Newingreen Link Road and junction with Hythe Road will reduce vehicle speeds and provide opportunity to provide adequate drainage and surfacing Therefore **Negligible** residual effect	71.9% **Moderate adverse** effect due to increase in traffic	**Negligible/ Minor adverse** effect due to traffic volume	New signalised crossing on desire line for PRoW, segregated cycle and footpaths, road re-alignment to meet design guidance = **Major beneficial** effect for pedestrians/cyclists New road alignment, drainage and surfacing to meet design guidance = M**ajor beneficial** effect for other road users	Negligible effect due to design of road not being re-aligned Moderate adverse effect due to increase in traffic Negligible effect due to traffic volume Major beneficial effect due to interventions Overall effect = **Negligible**	Negligible effect due to existing design Moderate adverse effect due to increase in traffic Major beneficial effect due to interventions Overall effect = **Negligible**
A20 Ashford Road at Barrow Hill	Two serious collisions. None involving pedestrians or cyclists. No common causes identified Therefore **Negligible** effect due to existing design	38.5% **Minor adverse** effect due to increase in traffic	**Minor adverse** effect due to traffic volume	Introduction of reduced speed limit, new signal-controlled crossing at new junction on approach to Barrow Hill = **Minor beneficial** effect for pedestrians/cyclists Introduction of reduced speed limit = **Minor beneficial** effect for other road users	Negligible effect due to existing design Minor adverse effect due to increase in traffic Minor adverse effect due to traffic volume Minor beneficial effect due to interventions Overall effect = **Minor adverse**	Negligible effect due to existing design Minor adverse effect due to increase in traffic Minor beneficial effect due to interventions Overall effect = **Minor adverse**
Aldington Road b/w Otterpool Lane & Stone Street	No accidents recorded on link. Therefore **Negligible** effect due to existing design	106.7% **Major adverse** effect due to	**Negligible** effect due to traffic volume	Enhanced crossing points, plus reduced speeds due to new traffic calming	Negligible effect due to existing design	Negligible effect due to existing design

Link	Magnitude of Effect on Risk of Accidents and Safety by Category				Overall Magnitude of Effect on Risk of Accidents and Safety	
	Risk of Accidents due to Existing Design	Effect due to Percentage Change in Traffic Flow	Effect due to Fear and Intimidation* (Table 16-18)	Effect due to Interventions	Pedestrians / Cyclists	Other Road Users
		increase in traffic		measures = **Moderate beneficial** effect for pedestrians/cyclists Reduced speeds due to traffic calming = **Minor beneficial** effect for other road users	Major adverse effect due to increase in traffic Negligible effect due to traffic volume Moderate beneficial effect due to interventions Overall effect = **Minor adverse**	Major adverse effect due to increase in traffic Minor beneficial effect due to interventions Overall effect = **Minor adverse**
Stone Street	Five accidents; one serious (involving cyclist), four slight. No cluster of accidents. No pedestrian accidents. No common causes identified Therefore **Negligible** effect due to existing design	60.2% **Moderate adverse** effect due to increase in traffic	**Negligible** effect due to traffic volume	Enhanced crossing points, additional traffic calming measures as required, plus mitigation of congestion at junction with A20 = **Moderate beneficial** effect for pedestrians/cyclists Additional traffic calming measures as required, plus mitigation of congestion at junction with A20 = **Minor beneficial** effect for other road users	Negligible effect due to existing design Moderate adverse effect due to increase in traffic Negligible effect due to traffic volume Moderate beneficial effect due to interventions Overall effect = **Negligible**	Negligible effect due to existing design **Moderate adverse** effect due to increase in traffic Minor beneficial effect due to interventions Overall effect = **Minor adverse**
Lympne Hill	Four slight and no cluster of accidents. Two involving cyclists, none involving pedestrians. Therefore **Negligible** effect due to existing design	77.2% **Moderate adverse** effect due to increase in traffic	**Negligible** effect due to traffic volume	None	Negligible effect due to existing design **Moderate adverse** effect due to increase in traffic Negligible effect due to traffic volume overall effect = **Minor adverse**	Negligible effect due to existing design **Moderate adverse** effect due to increase in traffic Overall effect = **Minor adverse**
Cheriton Road / Cheriton High Street	35 accidents on road of length 1.5km; one fatal, four serious, 30 slight. Four involving cyclists (all slight), five involving pedestrians (all slight). Cluster of seven accidents on Cheriton High Street between Park Road and Marler Road; two serious, three slight. Cluster of 10 accidents at Cheriton Road junction with Cherry Garden Avenue; one serious, nine slight. Two involving pedestrians, three involving cyclists Overall **Minor adverse** effect	37.7% **Minor adverse** effect due to increase in traffic	**Minor adverse** effect due to traffic volume	Contributions to new traffic congestion scheme to be confirmed. Can include new pedestrian/cycle facilities if capacity allows Effect to be confirmed – assumed **Moderate beneficial** for all users at Cheriton Road/Cheriton High Road junctions with Risborough Lane and Cherry Garden Avenue	Minor adverse effect due to existing design Minor adverse effect due to increase in traffic Minor adverse effect due to traffic volume Moderate beneficial effect due to interventions Overall effect = **Minor adverse**	Minor adverse effect due to existing design Minor adverse effect due to increase in traffic Moderate beneficial effect due to interventions overall effect = **Minor adverse**
A261 Hythe Road	10 slight, one serious. One slight involving cyclist, no pedestrian accidents. No cluster of accidents. However, issues identified with current road alignment, therefore overall **Minor adverse** effect	21.0% **Negligible** effect due to increase in traffic	**Moderate adverse** effect due to traffic volume	Mitigation of traffic congestion at junction with A20 plus contributions to new cycle/pedestrian scheme = **Minor beneficial** effect for pedestrians/cyclists Mitigation of traffic congestion at junction with A20 = **Minor beneficial** effect for other road users	Minor adverse effect due to existing design Negligible effect due to increase in traffic **Moderate adverse** effect due to traffic volume Minor beneficial effect due to interventions Overall effect = **Minor adverse**	**Moderate adverse** effect due to existing design Negligible effect due to increase in traffic Minor beneficial effect due to interventions overall effect = **Minor adverse**
A20 Hythe Road west of Swan Lane at Sellindge Village	One serious accident at junction with Swan Lane due to driver error New traffic calming facilities provided in Sellindge Village, therefore **Negligible** effect due to existing design	36.9% **Minor adverse** effect due to increase in traffic	**Minor adverse** effect due to traffic volume	None	Negligible effect due to existing design Minor adverse due to increase in traffic Minor adverse effect due to traffic volume Overall effect = **Negligible**	Minor adverse effect due to existing design Minor adverse due to increase in traffic Minor adverse effect due to traffic volume Overall effect = **Negligible**

Link	Magnitude of Effect on Risk of Accidents and Safety by Category				Overall Magnitude of Effect on Risk of Accidents and Safety	
	Risk of Accidents due to Existing Design	Effect due to Percentage Change in Traffic Flow	Effect due to Fear and Intimidation* (Table 16-18)	Effect due to Interventions	Pedestrians / Cyclists	Other Road Users
A20 Hythe Road west of Swan Lane west of Sellindge Village	18 accidents have occurred on this 8.5km length of road; one involving a cyclist (fatal) and one involving a pedestrian (slight). The fatal cycle accident occurred at junction with The Street. Seven accidents occurred at junction with Station Road / Church Road; two serious, 5 slight, none involving pedestrians or cyclists. Overall **Negligible** effect due to existing design				Negligible effect due to existing design Minor adverse due to increase in traffic Minor adverse effect due to traffic volume Overall effect = **Negligible**	Negligible effect due to existing design Minor adverse due to increase in traffic Minor adverse effect due to traffic volume Overall effect = **Negligible**

** effect of fear and intimidation relates to overall effect on Pedestrians and Cyclists only*

Impact on PRoW

16.5.27 In addition to the impact on links where an increase in traffic flows generated by the Development of more than 10% is identified, the impact on the public rights of way network has been considered.

16.5.28 There are 11 PRoW that dissect the site. A PRoW survey was undertaken in April 2018 to determine condition of these routes and from that to identify likely level of recreational usage. The survey identified a relatively low level of usage of these routes, and primarily for local uses such as dog walking / fitness purposes. The sensitivity of receptors on these routes is therefore considered **Minor**.

16.5.29 No PRoW or bridleways would be removed as a result of the development proposals. The masterplan proposals have been designed to complement and, where possible, enhance existing PRoW and bridleways within the site and to link in with external routes adjoining the site. The proposed series of walking and cycling routes will link into the existing footpaths and footways within the site, which will be upgraded as appropriate. As such, the existing PRoW and bridleways are expected to experience an increase in usage levels due to increased accessibility and an increase in local population.

16.5.30 The incorporation of green infrastructure, open space and a variety of habitats and landscapes forms an intrinsic part of the design of Otterpool Park. Further details are provided in the Green Infrastructure Strategy. Given the above opportunities, the proposed Development is considered to have a **moderate beneficial** effect on PRoW and bridleways in the local area.

Driver Delay

16.5.31 Comprehensive transport modelling has been undertaken to understand the implications of the proposed development on traffic flows within the study area. This has established that the vast majority of junctions within the study area are not affected by significant driver delay, on the basis of assessment of flows during worst case 'peak hours' (08.00-09.00 and 17.00-18.00). This transport modelling work is presented in detail in the TA.

16.5.32 In the absence of traffic speed data, driver delay has been assessed by reviewing the effect of the proposed development against the projected average delay in seconds per vehicle or PCU on the link for both peak periods. A PCU is a measure of the impact of a particular vehicular mode based on how much space it takes up on the carriageway, with large vehicles having higher PCU values than smaller vehicles (i.e. a bus has a PCU value of 2.0, while a car is 1.0). Using PCUs as a measure of queuing and delay gives a truer reflection of the nature and density of traffic flow volumes than vehicle numbers.

16.5.33 Of the links in Table 16-15 that are expected to experience an increase in traffic flow of 10% or more in the 'with development' scenario, Table 16-20 presents which of these links are expected to have junctions that operate over practical or theoretical capacity or have new junctions created on the link. These factors are then considered in terms of a magnitude of effect on Driver Delay on each link.

Table 16-20 Impact on Driver Delay

Link	Location	Delay Assessment	Overall Magnitude of Effect on Driver Delay on Link
B2067 Otterpool Lane	Existing signalised junction with A20 Ashford Road	Operates within capacity in AM and PM peaks	Two existing junctions operating within capacity, therefore **Negligible** effect
	Existing priority junction with Aldington Road, with priority on Aldington Road	Operates within capacity in AM and PM peaks	
A20 Ashford Road b/w Otterpool Lane & Newingreen	Existing signalised junction with B2067 Otterpool Lane	Operates within capacity in AM and PM peaks	Addition of three new junctions on link operating within capacity results in **Minor adverse** effect
	New signalised crossing on A20 Ashford Road	Called on demand	
Proposed Newingreen Link	Signalised junction with A20 Ashford Road in east	Operates within capacity in AM and PM peaks	Two signalised junctions on link equates to **Minor adverse** effect
	Signalised junction with proposed High Street	Operates within capacity in AM and PM peaks	
A20 Ashford Road b/w Otterpool Lane & Newingreen	Existing priority roundabout with M20 Junction 11	Operates within capacity in AM and PM peaks	Existing junction operating within capacity, addition of three new signalised junctions on link operating within capacity results in **Minor adverse** effect
	New signalised junction with Business Park access	Operates within capacity in AM and PM peaks	
	New signalised junction with Newingreen Link Road	Operates within capacity in AM and PM peaks	
	New signalised junction with Hythe Road / Stone Street	Operates within capacity in AM and PM peaks	
A20 Ashford Road at Barrow Hill	New signalised junction with access roads on approach to Barrow Hill	Operates within capacity in AM and PM peaks	New signalised junction operating within capacity

Link	Location	Delay Assessment	Overall Magnitude of Effect on Driver Delay on Link
	Existing 1-way section operated by signal-control	Would operate with severe delays without proposed mitigation - Operates within capacity in AM and PM peaks with mitigation	results in **Minor adverse** effect
Aldington Road b/w Otterpool Lane & Stone Street	Existing priority junction with B2067 Otterpool Lane, with priority on Aldington Road	Operates within capacity in AM and PM peaks	Junctions operating within capacity, new pedestrian crossing(s) with low demand and traffic calming results in overall **Minor adverse** effect
	Existing priority junction with Stone Street, with priority on Aldington Road	Operates within capacity in AM and PM peaks	
	New pedestrian crossing on Aldington Road	Called on demand signalised crossing or Zebra crossing – low demand expected	
	New traffic calming on Aldington Road	Reduced vehicle speed	
Stone Street	New signalised junction with A20 Ashford Road	Would operate with severe delays without proposed mitigation - Operates within capacity in AM and PM peaks with mitigation	Junctions operating within capacity, new pedestrian crossing(s) and traffic calming results in overall **Minor adverse** effect
	Priority junction with Aldington Road, with priority on Aldington Road	Operates within capacity in AM and PM peaks	
	New pedestrian crossing on Stone Street	Called on demand signalised crossing or Zebra crossing	
	New traffic calming on Stone Street	Reduced vehicle speed	
Lympne Hill	Existing priority junction with Aldington Road, with priority on Lympne Hill	Operates over practical capacity in AM peak and within capacity in PM peaks	Junction operates within capacity therefore overall **Minor adverse** effect
B2068 Stone Street	Junction 11 with M20	Would operate with delays without proposed mitigation - Operates within capacity in AM and PM peaks with mitigation	Junction operates within capacity therefore overall **Negligible** effect
Cheriton Road / Cheriton High Street	Signalised junction with Risborough Lane	Would operate with severe delays without proposed mitigation - Operates within capacity in AM and PM peaks with mitigation	Mitigation at both junctions expected to reduce effects to **Minor/Moderate adverse** effect
	Signalised junction with Beachborough Road and Cherry Garden Avenue	Operates over theoretical capacity in AM and PM peaks – contributions to be made to junction improvement scheme to be confirmed	
A261 Hythe Road	New signalised junction with A20 Ashford Road	Would operate with severe delays without proposed mitigation - Operates within capacity in AM and PM peaks with mitigation	Mitigation at junction expected to reduce effects to **Minor adverse**
A20 Hythe Road west of Swan Lane in Sellindge Village	Existing priority junction with Swan Lane, with Priority on A20	Operates within capacity in AM and PM peaks	Junction operates within capacity therefore overall **Negligible** effect
A20 Hythe Road west of Swan Lane west of Sellindge Village	Existing priority junction with Stone Hill, with priority on A20	Operates within capacity in AM and PM peaks	Junctions operating within capacity along link, Junction 10A operating just at capacity in PM peak, therefore overall **Negligible** effect
	Existing priority junction with Station Road / Church Road, with priority on A20	Operates within capacity in AM and PM peaks	
	Existing priority junction with Mersham Road, with priority on A20	Operates within capacity in AM and PM peaks	
	Planned junction with M20 Junction 10A	Operates within capacity in AM peak and at capacity in PM peak	

Summary of Magnitude of Residual Effects

16.5.34 Table 16-21 provides a summary of the residual effects on links as described in the sections above.

Table 16-21 Summary of Traffic and Transport Impacts

Link	Pedestrian Severance	Pedestrian Amenity	Pedestrian Delay	Fear and Intimidation	Accidents and Safety	Driver Delay
B2067 Otterpool Lane	Minor Adverse – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant	Minor adverse – not significant
A20 Ashford Road b/w Otterpool Lane & Newingreen	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant	Minor beneficial – not significant	Negligible – not significant
Proposed Newingreen Link Road	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant	Minor adverse – not significant
A20 Ashford Road b/w Newingreen & M20	Negligible – not significant	Negligible – not significant	Minor Adverse – not significant	Negligible/ Minor adverse – not significant	Negligible – not significant	Negligible – not significant
A20 Ashford Road at Barrow Hill	Negligible – not significant	Negligible – not significant	Negligible – not significant	Minor Adverse – not significant	Minor Adverse – not significant	Minor Adverse – not significant
Aldington Road b/w Otterpool Lane & Stone Street	Minor Adverse – not significant	Minor Adverse – not significant	Negligible – not significant	Negligible – not significant	Minor Adverse – not significant	Minor Adverse – not significant

Link	Pedestrian Severance	Pedestrian Amenity	Pedestrian Delay	Fear and Intimidation	Accidents and Safety	Driver Delay
Stone Street	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant
Lympne Hill	Moderate Adverse – significant effect	Negligible – not significant	Negligible – not significant	Negligible – not significant	Minor Adverse – not significant	Minor Adverse – not significant
Cheriton Road	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant
A261 Hythe Road	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant
A20 Hythe Road west of Swan Lane in Sellindge Village	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant	Negligible – not significant
A20 Hythe Road west of Swan Lane west of Sellindge Village	Minor Adverse – not significant	Negligible – not significant	Negligible – not significant	Minor Adverse – not significant	Negligible – not significant	Negligible – not significant

16.5.35 As described in section 16.4, because of the low number of pedestrian receptors on Lympne Hill combined with the recent introduction of traffic calming on West Hythe Road, no further mitigation of pedestrian severance is proposed for Lympne Hill.

16.5.36 As described in section 16.6, discussions regarding the impact on fear and intimidation for cyclists on the A261 Hythe Road and the major adverse impact on driver delay on Cheriton Road are ongoing with Kent County Council and Folkestone & Hythe District Council. When mitigation measures are identified through further study, support is likely to be provided through the provision of contributions to be secured and detailed within the supporting Section 106 legal agreement.

16.5.37 The effects shown in Table 16-21 have been applied to the receptors shown in Table 16-3 to determine the overall effect on receptors. This is provided in the summary section 16.6.

Cumulative Effects

Planned and Committed Growth

16.5.38 Planned and committed traffic growth and transport schemes have been identified in consultation with Kent County Council, Folkestone & Hythe District Council and Highways England and have been included in the 'with' and 'without development' assessments described in this Chapter and the TA. Since the transport network improvements described in section 16.1 are integral to the proposed scheme, those improvements have also been included in the 'with development' assessment as embedded mitigation.

Otterpool Park Framework Masterplan Area Scheme

16.5.39 In addition to the outline application development, a wider Otterpool Park Framework Masterplan Area (OPFM) includes for up to 10,000 homes. Full details of the development proposals are set out in the Development Specification and summarised in Chapter 4 of this document. The additional development quantum and infrastructure that would be required for this scheme has been considered as a sensitivity test within the TA for the future year of 2046.

16.5.40 The additional development for the OPFM would be built out between 2044 and 2046 and would generate additional traffic on the transport networks. In addition, the baseline traffic would experience another two years of growth. The result would be that the effects described in the above sections would be exacerbated.

16.5.41 In terms of the magnitude of effects, the following changes would be expected from the Development scheme on links that would experience a traffic flow increase of 10% or greater in the 'with development' scenario:

- The impact on driver delay at the junction between Aldington Road and Stone Street would be anticipated to increase from negligible adverse to **major adverse**. Further mitigation may be required on Stone Street and Otterpool Lane to prevent traffic routing to Aldington Road;
- The A259 Prospect Road would experience an 11% increase in traffic flow in the AM peak and would therefore need to be subject to a transport environmental assessment. The results are expected to be as follows:
  - Pedestrian severance: **negligible adverse** effect;
  - Pedestrian amenity: **negligible adverse** effect;
  - Pedestrian delay: **negligible adverse** effect;
  - Fear and intimidation: **minor adverse** effect;
  - Accidents and safety: **negligible** effect; and
  - Driver delay: **minor adverse** effect.

Effects of Extraordinary Freight Conditions on M20

16.5.42 As described in section 16.3, Freight parking at the Port of Dover is limited and demand can sometimes exceed capacity which then has an adverse effect on the highway network. The current method of mitigation of the effect is the implementation of Operation Stack, which uses the M20 to hold HGVs while they are unable to access the port. This method of mitigation required the M20 to be closed to general traffic.

16.5.43 The Government and Highways England are currently considering options for an alternative permanent measure to mitigate the effects. Between 2016 and 2017, proposals for a parking area for HGVs located on land west of the M20 Junction 11 were put forward and then withdrawn. It was agreed with Folkestone & Hythe District Council and Highways England that these proposals were not to be assessed within the Otterpool Park application.

16.5.44 Section 16.3 explains that the information currently available states that Highways England will implement an alternative temporary scheme in 2019. The new scheme would provide on-road holding spaces for HGVs between the M20 junctions while keeping the motorway open to general traffic, albeit with reduced capacity.

16.5.45 The details of the scheme are currently being tested by Highways England and are not currently available. Based on the information currently available, it is assumed that the M20 Junction 11, which forms the primary motorway access junction for Otterpool Park, would be kept open for use by general traffic, including traffic routing to/from Otterpool Park. This means that the primary access routes to/from Otterpool Park – which are the M20 Junction 11, the A261 Hythe Road and the A20 Hythe Road – would all remain open as route options.

16.5.46 As the details of the new temporary mitigation scheme are not currently available and the change in traffic volumes on the local highway network that would result from implementation of the scheme are not known, it is not possible to accurately predict the likely residual effects of the scheme at this stage. Once further information is made available, an assessment of likely effects should be undertaken to determine the most appropriate form of mitigation required.

16.5.47 The most useful form of mitigation would be to supress the need to travel on the highway if an extraordinary freight situation occurs. As explained in the transport assessment, the travel behaviour assumptions used in the assessment, as agreed with Kent County Council, Folkestone & Hythe District Council and Highways England, are primarily based on existing travel patterns in the local area. As local

public transport services are difficult to access and service frequencies are low, the primary mode of travel for external trips is private car. As described in section 16.4, the mitigation of effects for Otterpool Park includes significant improvement to access for bus services, with the majority of homes within 400m of a bus stop, and to service frequencies. Access to rail services at Westenhanger station would be greatly improved with buses servicing the station and new station car parking facilities. In addition, proposals include for the future improvement of Westenhanger station passenger facilities and service frequency. These proposals are expected to have a major beneficial effect on mode shift from travel by private car to sustainable modes. The traffic flows and junction impacts described in the transport assessment and effects described in this chapter are therefore expected to represent a worst-case for highway effects.

16.5.48 Effective communication of highway network issues if they develop will have an important role to play in managing traffic on the three primary routes to/from the site. During periods when extraordinary conditions, such as Operation Stack/Brock or when accidents occur that lead to road closures and diversions, road users can be assisted to make route choices to avoid most congested routes where alternative routes or mode choice is available if they are made aware of the issue and effect. such information could be disseminated through a travel alert service via a phone app or text/MSM message direct to their phone or computer desktop. Advice providing route alternatives could be automatically be sent simultaneously. If disruption extends over a period of days, incentives for travel externally by non-car mode could be made available. This may be most relevant to workers in the Business Park who live off-site. In addition, on-site residences would be provided with effective broadband facilities to facilitate home-working, and cycle parking facilities to ensure an alternative travel mode to the private car is available.

16.5.49 Depending on how much general traffic the reduced capacity of the M20 will be able to accommodate, background traffic flows on primary roads adjacent to the M20 may increase leading during extraordinary network conditions. As shown in detail in the transport assessment, as a result of minor mitigation the M20 Junction 11 would have some spare capacity in the AM and PM peak periods to accommodate additional traffic. Further capacity enhancements could be made if monitoring of future traffic conditions requires. The constraint point on the two other primary routes to/from the site, the one-way signal-controlled system at Barrow Hill and the signalised junction at the A20 Ashford Road and A261 Hythe Road have been designed without significant spare capacity in order that vehicles are encouraged to use the M20 where possible.

16.5.50 While there is limited opportunity to increase capacity further through Barrow Hill, signal/cycle timings could be dynamically optimised to respond most effectively to changes in traffic flow volumes in each direction. The effect of the new traffic calming proposals in Sellindge Village, which Sellindge Parish Councillors suggest has reduce the amount of traffic, especially HGV traffic, routing through the village, on flows on the A20 Hythe Road during an extraordinary freight situation is not currently known. Further investigation into the long-term effects of the proposals would be needed to draw a conclusion.

16.5.51 Further capacity enhancement at the A20 Ashford Road / A261 Hythe Road could be provided with a larger intervention scheme. However, the implementation of a larger scheme to mitigate extraordinary, infrequent network conditions is not recommended if it encourages increased use of the A261 through Hythe during normal operating conditions.

16.5.52 It is envisaged that further assessment is likely to be required to determine effects during extraordinary network operating conditions, which would be undertaken in consultation with Kent County Council, Folkestone & Hythe District Council and Highways England once the details of future temporary or permanent mitigation schemes are available. It is acknowledged that network operating conditions during the implementation of any Highways England mitigation scheme and any further mitigation provided by Otterpool Park would be monitored to determine residual effects and inform the adaption of mitigation measures where required to most effectively mitigate effects.

16.6 Assessment Summary

16.6.1 Table 16-22 provides an assessment summary with respect to transport effects of the application scheme and how they have been addressed. The potential Significant Effects include embedded mitigation of the scheme design and the mitigation associated with the operational effects, as described in section 16.4.

Table 16-22 Assessment Summary (Application scheme, 8,500 homes)

Link / Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
B2067 Otterpool Lane				
Pedestrians routing on proposed footpaths	**Minor adverse** effect on severance and accidents and safety **Negligible/Minor adverse** effect on amenity , delay and fear and intimidation	C and O	None (mitigation embedded in design)	**Minor adverse** effect on severance and accidents and safety **Negligible/Minor adverse** effect on amenity , delay and fear and intimidation – therefore residual effects are not significant
Private vehicle users	**Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on driver delay	C and O	None (mitigation embedded in design)	**Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on driver delay – therefore residual effects are not significant
Bus passengers	**Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on service delay	C and O	None (mitigation embedded in design)	**Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on service delay – therefore residual effects are not significant
Cyclists routing on proposed segregated cycleways	**Negligible/Minor adverse** effect on accidents and safety Negligible effect on delay and fear and intimidation	C and O	None (mitigation embedded in design)	**Negligible/Minor adverse** effect on accidents and safety **Negligible** effect on delay and fear and intimidation – therefore residual effects are not significant
Existing/Proposed residential properties segregated from road by hedges, green buffers,	**Negligible/Minor adverse** effect on severance and accidents and safety **Negligible** effect on	C and O	None (mitigation embedded in design)	**Negligible/Minor adverse** effect on severance and accidents and safety **Negligible** effect on

Link / Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
foot/cycleways or driveways (including Otterpool Manor)	amenity, delay and fear and intimidation			amenity, delay and fear and intimidation – therefore residual effects are not significant
Green open spaces	**Negligible/Minor adverse** effect on severance and accidents and safety **Negligible** effect on amenity, delay and fear and intimidation	C and O	None (mitigation embedded in design)	**Negligible/Minor adverse** effect on severance and accidents and safety **Negligible** effect on amenity, delay and fear and intimidation – therefore residual effects are not significant
Lympne Industrial Park	**Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on vehicle delay	C and O	None (mitigation embedded in design)	**Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on vehicle delay – therefore residual effects are not significant
A20 Ashford Road b/w Otterpool Lane & Newingreen				
Private vehicle users	**Minor adverse** effect on driver delay **Negligible** effect on accidents and safety	C and O	None (mitigation embedded in design)	**Minor adverse** effect on driver delay **Negligible** effect on accidents and safety – therefore residual effects are not significant
Bus passengers	**Minor adverse** effect on service delay **Negligible** effect on accidents and safety	C and O	None (mitigation embedded in design)	**Minor adverse** effect on service delay **Negligible** effect on accidents and safety – therefore residual effects are not significant
Pedestrians routing on proposed segregated footpaths	**Negligible** effect on severance, amenity, delay and fear and intimidation **Negligible/Minor beneficial** effect on accidents and safety	C and O	None (mitigation embedded in design)	**Negligible** effect on severance, amenity, delay and fear and intimidation **Negligible/Minor beneficial** effect on accidents and safety – therefore residual effects are not significant
Cyclists routing on proposed segregated cycleways	Negligible effect on fear and intimidation **Negligible/Minor beneficial** effect on accidents and safety	C and O	None (mitigation embedded in design)	**Negligible** effect on fear and intimidation **Negligible/Minor beneficial** effect on accidents and safety – therefore residual effects are not significant
Existing/Proposed residential properties segregated from road by hedges, green buffers foot/cycleways or driveways	**Negligible** effect on severance, amenity, delay and fear and intimidation **Negligible/Minor beneficial** effect on accidents and safety	C and O	None (mitigation embedded in design)	**Negligible** effect on severance, amenity, delay and fear and intimidation **Negligible/Minor beneficial** effect on accidents and safety – therefore residual effects are not significant
Green open spaces	**Negligible** effect on severance, amenity, delay and fear and intimidation **Negligible/Minor beneficial** effect on accidents and safety	C and O	None (mitigation embedded in design)	**Negligible** effect on severance, amenity, delay and fear and intimidation **Negligible/Minor beneficial** effect on accidents and safety – therefore residual effects are not significant
Proposed Newingreen Link Road				
Primary school users routing on proposed segregated footpaths	**Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety	C and O	None (mitigation embedded in design)	**Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Pedestrians routing on proposed segregated footpaths	**Negligible/Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety	C and O	None (mitigation embedded in design)	**Negligible/Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Private vehicle users	**Minor adverse** effect on driver delay **Negligible/Minor adverse** effect on accidents and safety	C and O	None (mitigation embedded in design)	**Minor adverse** effect on driver delay **Negligible/Minor adverse** effect on accidents and safety

Link / Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
				– therefore residual effects are not significant
Bus passengers	**Minor adverse** effect on service delay **Negligible/Minor adverse** effect on accidents and safety	C and O	None (mitigation embedded in design)	**Minor adverse** effect on service delay **Negligible/Minor adverse** effect on accidents and safety – therefore residual effects are not significant
Shopping areas	**Negligible/Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety	C and O	None (mitigation embedded in design)	**Negligible/Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Health centre	**Negligible/Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety	C and O	None (mitigation embedded in design)	**Negligible/Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Cyclists routing on proposed segregated cycleways	**Negligible/Minor adverse** effect on delay **Negligible** effect on severance, fear and intimidation, and accidents and safety	C and O	None (mitigation embedded in design)	**Negligible/Minor adverse** effect on delay **Negligible** effect on severance, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Existing/Proposed residential properties segregated from road by hedges, green buffers foot/cycleways or driveways	**Negligible/Minor adverse** effect on delay **Negligible** effect on severance, amenity, fear and intimidation, and accidents and safety	C and O	None (mitigation embedded in design)	**Negligible/Minor adverse** effect on delay **Negligible** effect on severance, amenity, fear and intimidation, and accidents and safety – therefore residual effects are not significant
A20 Ashford Road b/w Newingreen & M20				
Private vehicle users	**Minor adverse** effect on driver delay **Negligible/Minor adverse** effect on accidents and safety	C and O	None (mitigation embedded in design)	**Minor adverse** effect on driver delay **Negligible/Minor adverse** effect on accidents and safety – therefore residual effects are not significant
Bus passengers	**Minor adverse** effect on service delay **Negligible/Minor adverse** effect on accidents and safety	C and O	None (mitigation embedded in design)	**Minor adverse** effect on service delay **Negligible/Minor adverse** effect on accidents and safety – therefore residual effects are not significant
Pedestrians routing on proposed segregated footpaths	**Negligible/Minor adverse** effect on delay, and fear and intimidation **Negligible** effect on severance, amenity, delay and accidents and safety	C and O	None (mitigation embedded in design)	**Negligible/Minor adverse** effect on delay, and fear and intimidation **Negligible** effect on severance, amenity, delay and accidents and safety – therefore residual effects are not significant
Cyclists routing on proposed segregated cycleways	**Negligible/Minor adverse** effect on delay, and fear and intimidation **Negligible** effect on accidents and safety	C and O	None (mitigation embedded in design)	**Negligible/Minor adverse** effect on delay, and fear and intimidation **Negligible** effect on accidents and safety – therefore residual effects are not significant
Existing/Proposed residential properties segregated from road by hedges, green buffers foot/cycleways or driveways	**Negligible/Minor adverse** effect on delay, and fear and intimidation **Negligible** effect on severance, amenity, delay and accidents and safety	C and O	None (mitigation embedded in design)	**Negligible/Minor adverse** effect on delay, and fear and intimidation **Negligible** effect on severance, amenity, delay and accidents and safety – therefore residual effects are not significant
Proposed business properties segregated from road by hedges, green buffers foot/cycleways or driveways	**Negligible/Minor adverse** effect on delay, and fear and intimidation **Negligible** effect on severance, amenity,	C and O	None (mitigation embedded in design)	**Negligible/Minor adverse** effect on delay, and fear and intimidation **Negligible** effect on severance, amenity, delay and accidents

Link / Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
	delay and accidents and safety			and safety – therefore residual effects are not significant
Green open spaces	**Negligible/Minor adverse** effect on delay, and fear and intimidation **Negligible** effect on severance, amenity, delay and accidents and safety	C and O	None (mitigation embedded in design)	**Negligible/Minor adverse** effect on delay, and fear and intimidation **Negligible** effect on severance, amenity, delay and accidents and safety – therefore residual effects are not significant
A20 Ashford Road at Barrow Hill				
Pedestrians routing on existing footpaths	**Minor adverse** effect on fear and intimidation, and accidents and safety **Negligible** effect on severance, amenity, and delay	O	None	**Minor adverse** effect on fear and intimidation, and accidents and safety **Negligible** effect on severance, amenity, and delay – therefore residual effects are not significant
Cyclists routing on highway	**Minor adverse** effect on fear and intimidation, and accidents and safety **Negligible** effect on delay	O	Signal cycle time optimisation	**Minor adverse** effect on fear and intimidation, accidents and safety and delay – therefore residual effects are not significant
Private vehicle users	**Major/moderate adverse** effect on driver delay **Minor adverse** effect on accidents sand safety	O	Signal cycle time optimisation	**Minor adverse** effect on driver delay, and accidents and safety – therefore residual effects are not significant
Bus passengers	**Major/moderate adverse** effect on service delay **Minor adverse** effect on accidents sand safety	O	Signal cycle time optimisation	**Minor adverse** effect on service delay, and accidents and safety – therefore residual effects are not significant
Existing residential properties	**Minor adverse** effect on fear and intimidation, and accidents and safety **Negligible** effect on severance, amenity, and delay	O	None	**Minor adverse** effect on fear and intimidation, and accidents and safety **Negligible** effect on severance, amenity, and delay – therefore residual effects are not significant
Green open spaces	**Minor adverse** effect on fear and intimidation, and accidents and safety **Negligible** effect on severance, amenity, and delay	O	None	**Minor adverse** effect on fear and intimidation, and accidents and safety **Negligible** effect on severance, amenity, and delay – therefore residual effects are not significant
Aldington Road b/w Otterpool Lane & Stone Street				
Pedestrians routing on existing footpaths	**Major/moderate adverse** effect on severance **Moderate adverse** effect on amenity, and accidents and safety **Negligible** effect on delay, and fear and intimidation	O	New/enhanced pedestrian crossing facilities and traffic calming measures	**Minor adverse** effect on severance, amenity, and accidents and safety **Negligible** effect on delay, and fear and intimidation – therefore residual effects are not significant
Cyclists routing on highway	**Moderate adverse** effect on accidents and safety **Negligible** effect on delay, and fear and intimidation	O	Traffic calming measures	**Minor adverse** effect accidents and safety Negligible effect on delay, and fear and intimidation – therefore residual effects are not significant
Private vehicle users	**Moderate adverse** effect on accidents and safety **Negligible** effect on driver delay	O	Traffic calming measures	**Minor adverse** effect on accidents and safety, and driver delay – therefore residual effects are not significant
Bus passengers	**Moderate adverse** effect on accidents and safety Negligible effect on service delay	O	Traffic calming measures	**Minor adverse** effect on accidents and safety, and service delay – therefore residual effects are not significant
Existing residential properties directly off highway	**Major/moderate adverse** effect on severance **Moderate adverse** effect on amenity and accidents and safety **Negligible** effect on delay, and fear and intimidation	O	New/enhanced pedestrian crossing facilities and traffic calming measures	**Minor adverse** effect on severance, amenity, and accidents and safety **Negligible** effect on delay, and fear and intimidation – therefore residual effects are not significant

Link / Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
Existing residential properties segregated from road by hedges, green buffers footways or driveways	**Moderate adverse** effect on severance **Minor adverse** effect on amenity and accidents and safety **Negligible** effect on delay, and fear and intimidation	O	New/enhanced pedestrian crossing facilities and traffic calming measures	**Negligible/Minor adverse** effect on severance, amenity, and accidents and safety **Negligible** effect on delay, and fear and intimidation – therefore residual effects are not significant
Stone Street				
Primary school users	**Major/moderate adverse** effect on severance **Moderate adverse** effect on accidents and safety **Minor adverse** effect on amenity, delay, and fear and intimidation	O	New pedestrian crossing facilities and traffic calming measures	**Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Pedestrians routing on existing footpaths	**Moderate adverse** effect on severance **Minor adverse** effect on accidents and safety **Negligible** effect on amenity, delay, and fear and intimidation	O	New pedestrian crossing facilities and traffic calming measures	**Negligible/Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Cyclists routing on highway	**Major/Moderate adverse** effect on delay **Minor adverse** effect on accidents and safety **Negligible** effect on fear and intimidation	O	New traffic calming measures and Signalisation of junction with A20	**Negligible/Minor adverse** effect on delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Private vehicle users	**Major/Moderate adverse** effect on driver delay **Minor adverse** effect on accidents sand safety	O	Signalisation of junction with A20	**Minor adverse** effect on driver delay, and accidents and safety – therefore residual effects are not significant
Bus passengers	**Major/Moderate adverse** effect on service delay **Minor adverse** effect	O	Signalisation of junction with A20	**Minor adverse** effect on service delay, and accidents and safety – therefore residual
	on accidents sand safety			effects are not significant
Existing residential properties segregated from road by hedges, green buffers footways or driveways	**Minor adverse** effect on severance **Negligible/Minor adverse** effect on accidents and safety **Negligible** effect on amenity, delay, and fear and intimidation	O	New pedestrian crossing facilities and traffic calming measures	**Negligible** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Lympne Hill				
Cyclists routing on highway	**Minor adverse** effect on accidents and safety **Negligible** effect on delay, and fear and intimidation	O	None	**Minor adverse** effect on accidents and safety **Negligible** effect on delay, and fear and intimidation – therefore residual effects are not significant
Private vehicle users	**Minor adverse** effect on driver delay, and accidents and safety	O	None	**Minor adverse** effect on driver delay, and accidents and safety – therefore residual effects are not significant
Existing residential properties segregated from road by hedges, green buffers footways or driveways	**Minor adverse** effect on severance **Minor/negligible** effect on accidents and safety **Negligible** effect on amenity, delay, and fear and intimidation	O	None	**Minor adverse** effect on severance **Minor/negligible** effect on accidents and safety **Negligible** effect on amenity, delay, and fear and intimidation – therefore residual effects are not significant
Cheriton Road / Cheriton High Street				
Primary school users	**Moderate adverse** effect on accidents and safety **Minor adverse** effect on severance, amenity, delay, and fear and intimidation	O	To be confirmed - contribution to be made to KCC/FHDC scheme	**Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Pedestrians routing on existing footpaths	**Minor adverse** effect on accidents and safety **Negligible/Minor**	O	To be confirmed - contribution to be made to KCC/FHDC scheme	**Minor adverse** effect on accidents and safety **Negligible/Minor**

Link / Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
	adverse effect on severance, amenity, delay, and fear and intimidation			**adverse** effect on severance, amenity, delay, and fear and intimidation – therefore residual effects are not significant
Cyclists routing on highway	**Major/Moderate adverse** effect on delay **Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on fear and intimidation	O	To be confirmed - contribution to be made to KCC/FHDC scheme	**Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on delay, and fear and intimidation – therefore residual effects are not significant
Private vehicle users, including on-street parking	**Major/Moderate adverse** effect on driver delay **Minor adverse** effect on accidents and safety	O	To be confirmed - contribution to be made to KCC/FHDC scheme	**Minor adverse** effect on accidents and safety **Negligible Minor adverse** effect on driver delay – therefore residual effects are not significant
Bus passengers	**Major/Moderate adverse** effect on service delay **Minor adverse** effect on accidents and safety	O	To be confirmed - contribution to be made to KCC/FHDC scheme	**Minor adverse** effect on accidents and safety **Negligible Minor adverse** effect on service delay – therefore residual effects are not significant
A1/A2/A3/A4 Retail properties	**Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on severance, amenity, delay, and fear and intimidation	O	To be confirmed - contribution to be made to KCC/FHDC scheme	**Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on severance, amenity, delay, and fear and intimidation – therefore residual effects are not significant
Residential properties, including above retail properties	**Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on	O	To be confirmed - contribution to be made to KCC/FHDC scheme	**Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on

Link / Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
	severance, amenity, delay, and fear and intimidation			severance, amenity, delay, and fear and intimidation – therefore residual effects are not significant
Places of worship	**Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on severance, amenity, delay, and fear and intimidation	O	To be confirmed - contribution to be made to KCC/FHDC scheme	**Minor adverse** effect on accidents and safety **Negligible/Minor adverse** effect on severance, amenity, delay, and fear and intimidation – therefore residual effects are not significant
Graveyard	**Negligible/Minor adverse** effect on accidents and safety **Negligible** effect on severance, amenity, delay, and fear and intimidation	O	To be confirmed - contribution to be made to KCC/FHDC scheme	**Negligible/Minor adverse** effect on accidents and safety **Negligible** effect on severance, amenity, delay, and fear and intimidation – therefore residual effects are not significant
A261 Hythe Road				
Pedestrians routing on existing footpaths	**Moderate adverse** effect on fear and intimidation **Minor adverse** effect on accidents and safety **Negligible** effect on severance, and amenity, and delay	O	To be confirmed - contribution to be made to KCC/FHDC scheme	**Minor adverse** effect on accidents and safety **Negligible/minor adverse** effect on fear and intimidation **Negligible** effect on severance, and amenity, and delay – therefore residual effects are not significant
Cyclists routing on highway	**Major/moderate** effect on delay **Moderate adverse** effect on fear and intimidation **Minor adverse** effect on accidents and safety	O	Signalisation of junction with A20, plus cycle scheme to be confirmed - contribution to be made to KCC/FHDC scheme	**Minor adverse** effect on accidents and safety **Negligible/minor adverse** effect on fear and intimidation **Negligible** effect on delay – therefore residual effects are not significant

Link / Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
Private vehicle users	**Major/Moderate adverse** effect on driver delay **Minor adverse** effect on accidents and safety	O	Signalisation of junction with A20	**Minor adverse** effect on driver delay, and accidents and safety – therefore residual effects are not significant
Bus passengers	**Major/Moderate adverse** effect on service delay **Minor adverse** effect on accidents and safety	O	Signalisation of junction with A20	**Minor adverse** effect on service delay, and accidents and safety – therefore residual effects are not significant
Existing residential properties segregated from road by hedges, green buffers footways or driveways	**Minor adverse** effect on fear and intimidation **Negligible adverse** effect on severance, amenity, and delay, and accidents and safety	O	To be confirmed - contribution to be made to KCC/FHDC scheme	**Minor adverse** effect on fear and intimidation **Negligible** adverse effect on severance, amenity, and delay, and accidents and safety – therefore residual effects are not significant
Green open spaces	**Minor adverse** effect on fear and intimidation **Negligible adverse** effect on severance, amenity, and delay, and accidents and safety	O	To be confirmed - contribution to be made to KCC/FHDC scheme	**Minor adverse** effect on fear and intimidation **Negligible adverse** effect on severance, amenity, and delay, and accidents and safety – therefore residual effects are not significant
A20 Hythe Road west of Swan Lane				
Primary school users in Sellindge Village	**Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety	O	None	**Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Pedestrians routing on existing narrow footpaths west of Sellindge	**Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety	O	None	**Minor adverse** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Pedestrians routing on existing footpaths at Sellindge	**Negligible** effect on severance, amenity, delay, fear and intimidation, and accidents and safety	O	None	**Negligible** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Cyclists routing on highway through Sellindge Village	**Negligible** effect on severance, amenity, delay, fear and intimidation, and accidents and safety	O	None	**Negligible** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Cyclists routing on highway west of Sellindge Village	**Minor adverse** effect on fear and intimidation **Negligible**/minor effect on delay, and accidents and safety	O	None	**Minor adverse** effect on fear and intimidation **Negligible/minor** effect on delay, and accidents and safety – therefore residual effects are not significant
Private vehicle users, including on-street parking	**Negligible** effect on accidents and safety, and driver delay	O	None	**Negligible** effect on accidents and safety, and driver delay – therefore residual effects are not significant
Bus passengers	**Negligible** effect on accidents and safety, and service delay	O	None	**Negligible** effect on accidents and safety, and service delay – therefore residual effects are not significant
A1/A2/A3/A4 Retail properties in Sellindge Village	**Negligible** effect on severance, amenity, delay, fear and intimidation, and accidents and safety	O	None	**Negligible** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Sellindge Village Hall	**Negligible** effect on severance, amenity, delay, fear and intimidation, and accidents and safety	O	None	**Negligible** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual

Link / Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
				effects are not significant
Existing residential properties segregated from road by hedges, green buffers footways or driveways	**Negligible** effect on severance, amenity, delay, fear and intimidation, and accidents and safety	O	None	**Negligible** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant
Green open spaces	**Negligible** effect on severance, amenity, delay, fear and intimidation, and accidents and safety	O	None	**Negligible** effect on severance, amenity, delay, fear and intimidation, and accidents and safety – therefore residual effects are not significant

16.6.2 Table 16-23 provides assessment summary with respect to transport effects of the OPFM area scheme of up to 10,000 homes and how they have been addressed.

Table 16-23 Assessment Summary (OPFM, 10,000 homes)

Link / Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
Aldington Road b/w Otterpool Lane & Stone Street				
Cyclists routing on highway	**Major/Moderate adverse** effect on delay **Moderate adverse** effect on accidents and safety **Negligible** effect on fear and intimidation	O	Traffic calming measures	**Major/Moderate adverse** effect on delay – therefore potential significant residual effect on delay without further mitigation **Minor adverse** effect accidents and safety **Negligible** effect on fear and intimidation – therefore residual effects on these categories are not significant
Private vehicle users	**Moderate adverse** effect on accidents and safety **Negligible** effect on driver delay	O	Traffic calming measures	**Minor adverse** effect on accidents and safety, and driver delay – therefore residual effects are not significant
Bus passengers	**Moderate adverse** effect on accidents and safety **Negligible** effect on service delay	O	Traffic calming measures	**Minor adverse** effect on accidents and safety, and service delay – therefore residual effects are not significant
Stone Street				
Cyclists routing on highway	**Major/Moderate adverse** effect on delay **Minor adverse** effect on accidents and safety **Negligible** effect on fear and intimidation	O	New traffic calming measures and Signalisation of junction with A20	**Major/Moderate adverse** effect on delay – therefore potential significant residual effect on delay without further mitigation **Negligible/Minor adverse** effect on fear and intimidation, and accidents and safety – therefore residual effects on these categories are not significant
Private vehicle users	**Major/Moderate adverse** effect on driver delay **Minor adverse** effect on accidents sand safety	O	Signalisation of junction with A20	**Major/Moderate adverse** effect on driver delay – therefore potential significant residual effect on delay without further mitigation **Minor adverse** effect on accidents and safety – therefore residual effects on accidents and safety are not significant
Bus passengers	**Major/Moderate adverse** effect on service delay **Minor adverse** effect on accidents sand safety	O	Signalisation of junction with A20	**Major/Moderate adverse** effect on service delay – therefore potential significant residual effect on delay without further mitigation **Minor adverse** effect on accidents and safety – therefore residual effects on

Link / Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
				accidents and safety is not significant
A259 Prospect Road				
Pedestrians routing on existing footpaths	**Minor adverse** effect on fear and intimidation **Negligible** effect on severance, amenity, delay, and accidents and safety	O	None	**Minor adverse** effect on fear and intimidation **Negligible** effect on severance, amenity, delay, and accidents and safety – therefore residual effects are not significant
Cyclists routing on highway	**Minor adverse** effect on fear and intimidation **Negligible** effect on delay, and accidents and safety	O	None	**Minor adverse** effect on fear and intimidation **Negligible** effect on delay, and accidents and safety – therefore residual effects are not significant
Private vehicle users, including on-street parking	**Minor adverse** effect on driver delay **Negligible** effect on accidents and safety	O	None	**Minor adverse** effect on driver delay **Negligible** effect on accidents and safety – therefore residual effects are not significant
Bus passengers	**Minor adverse** effect on service delay **Negligible** effect on accidents and safety	O	None	**Minor adverse** effect on service delay **Negligible** effect on accidents and safety – therefore residual effects are not significant
users of Waitrose Superstore	**Minor adverse** effect on fear and intimidation **Negligible** effect on severance, amenity, delay, and accidents and safety	O	None	**Minor adverse** effect on fear and intimidation **Negligible** effect on severance, amenity, delay, and accidents and safety – therefore residual effects are not significant
Residential properties	**Minor adverse** effect on fear and intimidation **Negligible** effect on severance, amenity,	O	None	**Minor adverse** effect on fear and intimidation **Negligible** effect on severance, amenity, delay, and accidents

Link / Receptor	Potential Significant Effect	Phase (Construction (C), Operation (O))	Mitigation Measure	Residual Effect Significance
	delay, and accidents and safety			and safety – therefore residual effects are not significant

16.7 References

Table 16-24 Table of References

Reference	Title
Ref 16-1	Institute of Environmental Assessment (1994); *Guidelines of the Environmental Assessment of Road Traffic.*
Ref 16-2	Ministry of Housing, Communities & Local Government (2018); *National Planning Policy Framework.*
Ref 16-3	Department for Transport (DfT) (2013); *The Strategic Road Network and the Delivery of Sustainable Development – Department for Transport Circular 02/13.*
Ref 16-4	Highways England (2015); *The Strategic Road Network: Planning for the Future.*
Ref 16-5	Ministry of Housing, Communities & Local Government (2014); *Travel Plans, Transport Assessment and Statements.*
Ref 16-6	Kent County council (2016); *Kent Local Transport Plan 4: Delivering Growth without Gridlock 2016-2031.*
Ref 16-7	Folkestone & Hythe District Council (2013); *Folkestone & Hythe Core Strategy Local Plan*.
Ref 16-8	Folkestone & Hythe District Council (2011); *Folkestone & Hythe District Council Transport Strategy.*
Ref 16-9	Folkestone & Hythe District Council (2018); *Core Strategy Local Plan Review*.
Ref 16-10	Folkestone & Hythe District Council (2018); *Places and Policies Local Plan, Preferred Options.*
Ref 16-11	Folkestone & Hythe District Council (2017); *A Charter for Otterpool Park (Draft)*.
Ref 16-12	Mott Macdonald (2018); *Otterpool Park Garden Town, Kent Walking and Cycling Study.*
Ref 16-13	Design Manual for Roads and Bridges (DMRB) guidelines

17 Waste and Resource Management

17.1 Introduction

17.1.1 This Chapter of the ES reports the environmental impact of construction and operation of the proposed Development with respect to solid waste management. A summary of relevant legislation, policy and guidance, and a description of the methodologies used to assess the potential effects of the proposed Development is provided in this Chapter. Baseline conditions are set out followed by the impact assessment which incorporates relevant design and other mitigation measures that would be employed during construction. A summary of the assessment is then provided.

17.1.2 Waste is defined in Article 3 of the European Framework Directive on waste (2008/98/EC) (European Commission, 2010) as "*any substance or object which the holder discards or intends or is required to discard*", where the term:

- 'Waste holder' is defined as the waste producer or the natural or legal person who is in possession of the waste.
- 'Waste producer' is defined as anyone whose activities produce waste (original waste producer) or anyone who carries out pre-processing, mixing or other operations resulting in a change in the nature or composition of this waste.

17.1.3 The assessment considers impacts on the environment as a result of the generation of construction, demolition and excavation (CDE) and operational waste, and includes measures to mitigate these impacts.

17.1.4 This Chapter should be read in conjunction with Chapter 10 (Geology, Hydrogeology and Land Quality), Figure 17-1: Waste Management Facilities and Landfill Sites, the separately submitted Outline Site Waste Management Plan (SWMP) and the Waste Strategy (ES Appendix 17.1).

17.2 Assessment Methodology

Legislation, Policy and Guidance

17.2.1 An outline of the legislation, policy and guidance relevant to the proposed Development at the national, regional and local levels is provided below.

Legislation

European Union (EU) Landfill Directive (Directive 1999/31/EC on the landfill of waste) (European Commission, 1999)

17.2.2 The EU Landfill Directive establishes a framework for the management of waste across the European Community. It also defines certain terms, such as 'waste', 'recovery' and 'disposal', to ensure that a uniform approach is taken across the EU.

EU Directive on Waste (Waste Framework Directive) (Directive 2008/98/EC on waste)

17.2.3 The Waste Framework Directive (WFD) (Directive 2006/12/EC on waste) contains the definition of waste. This definition is used to establish whether a material is a waste or not. It sets targets for recycling non-hazardous construction and demolition waste (Article 10: 70% by weight by 2020).

The Clean Neighbourhoods and Environment Act, 2005 (Clean Neighbourhoods and Environment Act, 2005)

17.2.4 It is the responsibility of everyone working in the construction industry to ensure that all waste is disposed of properly. All employees need to be made aware that if they are tasked with waste disposal this must be carried out in accordance with the law, or they risk being fined.

Environmental Permitting (England and Wales) Regulations, 2016 (as amended) (The Stationery Office, 2016)

17.2.5 The Environmental Permitting (England and Wales) Regulations (EPR) were created to standardise environmental permitting and compliance in England and Wales to protect human health and the environment.

Waste (England and Wales) Regulations, 2011 (as amended) (Waste (England and Wales) Regulations 2011, SI 2011/988 as amended, 2011)

17.2.6 The Waste Regulations transpose the WFD into English law. The Regulations require businesses to confirm that they have applied the waste management hierarchy, introduce a new waste hierarchy permit condition and a two-tier system for waste carrier and broker registration.

17.2.7 Site SWMPs are no longer mandatory for developments commencing after 1 December 2013. They are, however, recommended as best practice.

Environmental Protection Act 1990 (Part 2) (Environmental Protection Act 1990 (Part 2), 1990)

17.2.8 The Act outlines the basic provisions for the management of all waste, which includes details on the definition of waste and outlines Duty of Care placed on those involved in managing wastes.

Policy

17.2.9 The assessment has considered the relevant policies of the A Green Future: Our 25 Year Plan to Improve the Environment (2018), Kent County Council Minerals and Waste Local Plan (July 2016), Folkstone and Hythe District Council Core Strategy Review (2018), Kent County Council Minerals and Waste Local Plan Early Partial Review (2017). These have been summarised within Table

Table 17-1 Summary of Relevant Adopted Policies

Document	Policy/ Reference	Description in relation to waste	Project Response
A Green Future: Our 25 Year Plan to Improve the Environment (2018)	Chapter 4: Increasing resource efficiency and reducing pollution and waste	1.Maximising resource efficiency and minimising environmental impacts at end of life. ii. Reducing food supply chain emissions and waste iii. Reducing litter and littering iv. Improving management of residual waste v. Cracking down on fly-tippers and waste criminals	The assessment has considered; the existing and future waste capacities of local facilities; incorporates bring sites; and, underground waste storage
Kent County Council Minerals and Waste Local Plan (July 2016)	Policy CSW2 (Waste Hierarchy)	To deliver sustainable waste management solutions for Kent, proposals for waste management must demonstrate how the proposal will help drive waste to ascend the Waste Hierarchy whenever possible.	The assessment proposes community composting initiatives and a reuse centre
	Policy CSW3 (Waste Reduction)	All new development should minimise the production of construction, demolition and excavation waste and manage any waste in accordance with the objectives of Policy CSW 2. The following details shall be submitted with the planning application, except for householder applications:	The assessment has considered modern methods of construction to minimise construction waste; reuse of demolition waste on site such as hardcore; and a neutral cut and fill of excavation waste. A CoCP would be developed detailing the management of waste during construction.

Document	Policy/ Reference	Description in relation to waste	Project Response
		1.the measures to be taken to show compliance with this policy 2.the details of the nature and quantity of any construction, demolition and excavation waste and its subsequent management New development should include detailed consideration of waste arising from the occupation of the development including consideration of how waste will be stored, collected and managed. In particular proposals should ensure that: 1.there is adequate temporary storage space for waste generated by that development allowing for the separate storage of recyclable materials; and 2.as necessary, there is adequate communal storage for waste, including separate recyclables, pending its collection; and 3.storage and collection systems (e.g. any dedicated rooms, storage areas and chutes or underground waste collection systems), for waste are of high quality design and are incorporated in a manner which will ensure there is adequate and convenient access for users and waste collection operatives and will contribute to the achievement of waste management targets; and 4.adequate contingency measures are in place to manage any mechanical breakdowns. All relevant proposals should be accompanied by a recycling & waste management strategy which considers the above matters and demonstrates the ability to meet local authority waste management targets.	The assessment considers the types of waste and recycling collected and how it is stored. A Site Waste Management Plan has been prepared for as best practice during construction to management and minimise waste generated.
	Policy CSW4 (Strategy for Waste Management Capacity)	The strategy for waste management capacity in Kent is to provide sufficient waste management capacity to manage at least the equivalent of the waste arising in Kent plus some residual non-hazardous waste from London. As a minimum it is to achieve the targets for recycling and composting, reuse and landfill diversion identified in the Kent Joint Municipal Waste Management Strategy (as amended).	A waste strategy has been developed detailing how waste will be managed during construction and operation.
	Folkstone and Hythe District Council Core Strategy Review (2018)	Policy SS8 (New Garden Settlement – Sustainability and Healthy New Town Principles)	The application shall be accompanied by a site-wide waste strategy that demonstrate how a significant reduction in household waste and an increase in recycling rates will be delivered in comparison with the average across the county. Internal and external storage for recycling and waste shall be provided for all homes and businesses;	A waste strategy has been developed detailing how waste will be managed during construction and operation.
	Kent County Council Minerals and Waste Local Plan Early Partial Review (2017)	Policy CSW4 (Strategy for Waste Management Capacity)	The strategy for waste management capacity in Kent is to provide sufficient waste management capacity to manage at least the equivalent of the waste arising in Kent plus some residual non-hazardous waste from London. As a minimum it is to achieve the targets set out below for recycling and composting and other forms of recovery.	A waste strategy has been developed detailing how waste will be managed during construction and operation.

Guidance

17.2.10 The following relevant guidance have been referred to in the assessment:

Building Research Establishment (BRE) Site Methodology to Audit, Reduce and Target Waste (SMARTWaste) (Building Research Establishment, 2018)

17.2.11 SMARTWaste is a flexible, online-reporting platform for all company types across all sectors that can help to manage and reduce waste outputs, impacts and costs. It is intended for clients, contractors, owners, operators and occupiers. SMARTWaste can be used to prepare, implement and monitor SWMPs. The SMARTWaste SWMP's describe how materials will be managed efficiently and disposed of legally during construction, explaining how the reuse and recycling of materials will be maximised. This involves estimating how much of each type of waste is likely to be produced and the proportion of this that will be reused or recycled onsite, or removed from the site for reuse, recycling, recovery or disposal.

Contaminated Land: Applications in Real Environments (CL:AIRE) The Definition of Waste: Development Industry Code of Practice (CoP), 2011 (Contaminated Land: Applications in Real Environments (CL:AIRE), 2011)

17.2.12 The CL:AIRE CoP provides best practice for the development industry to use when assessing if materials are classified as waste, or not, and determining when treated waste can cease to be waste for

a particular use. It also describes an auditable system to demonstrate that the CL:AIRE CoP has been adhered to.

Waste Resources and Action Programme (WRAP) NetWaste Tool (WRAP, 2018)

17.2.13 WRAP is a charity that provides support and guidance to business, organisations and consumers to maximise the value of waste by increasing the quantity and quality of materials collected for reuse and recycling. WRAP's Net Waste Tool is a freely accessible online resource, that enables the generation of waste forecasts and prioritise waste reduction and recovery actions.

Repealed SWMP Regulations 2008 (The Stationery Office, 2008)

17.2.14 Under the SWMP Regulations 2008, all construction projects in England over 300,000 were required to have a SWMP in place. Even though this requirement (regulation) was repealed in 2013, many developments recognise the value of SWMP as a useful resource efficiency tool and the SWMPs continue to be prepared and implemented as best practices.

Consultation and Scoping

Consultation

17.2.15 The local authority, Kent County Council, were consulted regarding the proposed Development, and has been undertaken as part of the assessment to:

- Discuss waste management aspirations for the proposed Development and set targets.
- Determine a formal position with regards to any future waste facilities in the region and implications on waste management at the proposed Development.

17.2.16 Table 17-1 provides a summary of Consultee issues raised with respect to waste and how they have been addressed.

Table 17-2: Summary of Consultation

Consultee/Contact/Date	Summary of Consultee Comments	Response
KCC Hannah Allard / Nick Gill, Waste Officers. 7 November 2016	Information has been provided by KCC regarding existing recycling and disposal rates of waste collected from existing households.	Data reviewed and expanded using WasteDataFlow for years 2014, 2015 & 2016 to provide greater data confidence
KCC Bryan Geake / Alice Short, Principal Planning Officer / Planning Officers. 25 April 2018 – 16 November 2018	KCC has confirmed that the most up to date Waste and Minerals Annual Monitoring Report (AMR) has been published in 2018 for the period 2014/15. KCC has confirmed that the AMR 2015/16 is being produced. However, KCC has not been able to provide timescales for the release.	
KCC Nick Gill 23 April 2018	KCC has pointed out that the existing landfill provision is nearing full capacity and therefore the landfill capacity within the region is very limited. KCC has required assurances that the Waste Strategy developed for proposed Development would correspond to KCC's resources. It has been suggested that a new refuse and recycling centre would be expected to be required. As a general comment, KCC has advised that education and encouragement would be considerably more effective than imposition of mandatory	Analysis of the historical WasteDataFlow data and estimated waste for the proposed development has assisted in the development of strategy

Consultee/Contact/Date	Summary of Consultee Comments	Response
	requirements for recycling.	

Scoping

17.2.17 As outlined in Chapter 2: EIA Approach and Methodology, a Scoping Report was submitted to FHDC in February 2014. The submitted Scoping Report and Scoping Opinion from FHDC are provided as ES Appendix 2.1 and Appendix 2.2 respectively.

17.2.18 The assessment carried out has been based on the same approach set out in Scoping Report (Appendix 2.1) and has considered the following additional items:

- The site for the materials recycling facility and anaerobic digestion plant at Otterpool Quarry (granted planning permission by KCC under reference SH/08/124) which lies within the site of the proposed Development. Whilst the facility is not yet developed, the planning permission has been implemented and is therefore extant. This means that the site is safeguarded for waste management purposes under Policy CSW 6 of the KMWLP.
- The impact of KCC's ability to self-sufficiently manage its own waste, considering if the needs of the Otterpool waste facility waste stream could be met elsewhere.
- Waste infrastructure safeguarding areas in KCC.

The Study Area

17.2.19 The study area that formed the basis of the assessment encompassed the area over which the proposed Development would be expected to have an effect. This is informed by the proposed Development requirements.

17.2.20 For the purposes of CDE waste, the study has encompassed the application boundaries and comprised any waste facilities within the KCC that could potentially receive CDE waste arising.

17.2.21 The study area for operational waste has been defined as the area within the recognised administrative boundaries of KCC, including the waste management facilities that could potentially receive waste from the proposed Development.

17.2.22 Whilst the assessment does not include the operation of the facilities that could potentially accept CDE and operational waste, it is necessary to ensure that the facilities have the capacity and capability to support the proposed Development deliver on its waste objectives and targets.

Methodology for establishing baseline conditions

Establishing the Existing Baseline

17.2.23 For the purpose of this assessment, the baseline conditions have included the current waste management infrastructure in KCC that could potential take CDE waste. Existing baseline conditions have been established through desk-top research, including the interrogation of key data bases such as the EA Environmental Permitting Regulations (EPR) Dataset (Environment Agency, 2018) and Remaining Landfill Capacity Datasets (Environment Agency, 2018).

17.2.24 For the purpose of the operational waste assessment, operational waste refers to solid household and commercial and industrial (CI) waste arisings. The baseline conditions have included the existing waste management system in KCC, the quantities of waste and recyclables and analysis of waste collection arrangements and waste deposited at bring sites.

17.2.25 Baseline conditions for operational waste have been established through desk-top research, including the review of key databases including the interrogation of WasteDataFlow (Department for Environment, Food and Rural Affairs, 2018) (the web-based system for household waste data reported by UK local authorities to government) and literature such as British Standard 5906:2005 (British Standards Institute, 2005), WRAP report 'The nature and scale of waste produced by schools in England' (WRAP, 2008) and WRAP report 'The Composition of Mixed Waste' (WRAP, 2012).

Forecasting the Future Baseline

17.2.26 Future targets for CDE waste recycling, composting, other recovery (excluding recycling) and remainder to landfill have been established through desktop research, including the interrogation of documents such as the Waste Needs Assessment on CDE waste published in 2017 (Kent County Council, 2017).

17.2.27 Future baseline conditions for operational waste arisings from CI and residential buildings have been established through desktop research, including the interrogation of documents such as the Waste Needs Assessment report on CI waste (Kent County Council, 2017). and the Kent Waste Disposal Strategy 2017-2035 (Kent County Council, 2016).

Defining the Importance/Sensitivity of resource

17.2.28 The assessment of effects from CDE waste and operational waste focused on the potential direct impact of waste arisings on the existing local and regional waste management infrastructure. The waste management infrastructure is therefore the resource or receptor on which impacts would be assessed, and its importance / sensitivity would be dependent on its capacity to absorb additional waste, using the bespoke criteria based upon professional judgement developed and provided in Table 17-3.

Table 17-3: Criteria for Determining the Importance/Sensitivity of resource

Importance/ Sensitivity	Criteria
Very High	Very high increase in waste generation compared to existing regional/local generation rates, resulting in the need for the expansion of regional collection or waste disposal sites and hindering the achievement of regional/local recycling/reuse targets. Waste volumes generated by the proposed Development contribute to an excess of 5% of the total national capacity of waste. No measures in place to mitigate the impact of waste generated by the proposed Development. The proposed Development would require new (permanent) waste infrastructure to be constructed to accommodate waste.
High	High increase in waste generation compared to existing regional/local generation rates, resulting in the need for the expansion of regional collection or waste disposal sites and hindering the achievement of regional/local recycling/reuse targets. Waste volumes generated by the proposed Development contribute to an excess of 5% of the total generation in the region. Limited measures in place to mitigate the impact of waste generated by the proposed Development. >50% of proposed Development waste requires disposal outside of the region.

Importance/ Sensitivity	Criteria
Medium	Medium increase in waste generation compared to existing regional/local generation rates, resulting in the need for the expansion of regional collection or waste disposal sites and hindering the achievement of regional/local recycling/reuse targets. Waste volumes generated by the proposed Development contribute to greater than 1% but less than 5% of the total generation in the region. Limited measures in place to mitigate the impact of waste generated by the proposed Development. 1-50% of proposed Development waste requires disposal outside of the region.
Low	Minimal increase in waste generation compared to existing regional/local generation rates, resulting in the need for the expansion of regional collection or waste disposal sites and hindering the achievement of regional/local recycling/reuse targets. Waste volumes generated by the proposed Development are easily managed locally without significant increases in quantity (less than 1% of the total generation in the region). Measures in place to mitigate the impact of waste generated by the proposed Development. Waste infrastructure has sufficient capacity to accommodate waste from the proposed Development, without compromising integrity of the receiving infrastructure (design life or capacity) within the region.
Negligible	Very minimal increase in waste generation compared to existing regional/local generation rates, resulting in the need for the expansion of regional collection or waste disposal sites and hindering the achievement of regional/local recycling/reuse targets. Waste volumes generated by the proposed Development are unlikely to require additional waste management measures beyond those already present in the region. Measures in place to mitigate the impact of waste generated by the proposed Development.

Methodology for Assessing Impacts and Effects

Impact Characterisation

17.2.29 The assessment of effects from CDE and operational waste has been carried out based on available knowledge and considers two impacts:

- The potential direct impacts that the proposed Development could have on the existent local, regional and national waste management infrastructure.
- The impacts that additional waste management measures can have on the waste generated (e.g. legislative requirements, national strategy, regional waste targets, best practice).

17.2.30 The assessment has classified the impact the proposed Development would have on waste generation in the region and the effect it would have on the waste treatment facilities within the surrounding local authorities and the transport network. The classification for the magnitude of impact is provided in Table 17-4.

Table 17-4: Criteria for Determining the Magnitude of Impact

Magnitude of Impact	Criteria
Major	Significant amount of waste generated such that it may exceed current regional waste management capacity and require transport outside region. Generation of large volumes of hazardous and inert waste which is managed for disposal using methods lower down the Waste Hierarchy (e.g. off-site in landfill or incineration with energy recovery). Waste stored onsite for excessive periods or uncontrolled disposal (e.g. fly-tipped) leading to pollution of the environment. No reuse of volumes of site won materials.
Moderate	Moderate amount of waste generated such that it may exceed current regional waste management capacity and require transport outside region. Generation of moderate levels amounts of hazardous and inert waste which is managed for disposal using methods lower down the Waste Hierarchy (e.g. off-site in landfill or incineration with energy recovery). Reuse of 0-33% volumes of site won materials.
Minor	Small amount of waste generated such that it may exceed current regional waste management capacity and require transport outside region. Generation of small volumes of hazardous and inert waste which is managed for disposal using methods lower down the Waste Hierarchy (e.g. off-site in landfill or incineration with energy recovery). Reuse of 33-66% volumes of site won materials.
Negligible	Insignificant amount of waste generated such that it may exceed current regional waste management capacity and require transport outside region. Generation of negligible volumes of hazardous and inert waste which is managed for disposal using methods lower down the Waste Hierarchy (e.g. off-site in landfill or incineration with energy recovery). Reuse of 66-100% volumes of site won materials.
No Change	No waste generated. Reuse of 100% volumes of site won materials.

Assessing Significance of Effect

17.2.31 The overall significance of the effect is defined by combining the value (sensitivity) of the receptor with the magnitude of the impact (change). The scales of significance have been defined as detailed in Table 17-5.

Table 17-5: Determination of the Significance of Effects

Magnitude of Impact (Change)	Value / sensitivity of Receptor / Resource				
	Very high	High	Medium	Low	Negligible
Major	Very large	Large / very large	Moderate / large	Moderate	Slight
Moderate	Large / very large	Moderate / large	Moderate	Slight	Neutral
Minor	Moderate / large	Moderate	Slight	Neutral	Neutral
Negligible	Slight	Slight	Neutral	Neutral	Neutral
No change	Neutral	Neutral	Neutral	Neutral	Neutral

17.2.32 Effects which are Very Large, Large or Large / Moderate are considered to be significant for the purposes of EIA. Effects which are considered to be Moderate, Slight or Neutral are considered to be non-significant and would not require mitigation.

Limitations and Assumptions

Limitations

17.2.33 There are no published or formalised significance criteria relating to the assessment of waste impacts. However, professional judgement has been used to assess the significance effects of the proposed Development based upon bespoke significance criteria developed for the proposed Development (see Table 17-5).

17.2.34 Forecast data for CDE waste generation from the proposed Development has been estimated based upon proposed land use and environmental performance indicators from the BRE since detailed waste generation data is not available.

17.2.35 Assumptions have also be made based upon the nature of uses that would occupy the proposed commercial and industrial (CI) uses in compliance with the Waste Management in Buildings – Code of practice BS5906:2005 (British Standards Institute, 2005). This is considered to provide a reliable basis for assessment of the conditions at the proposed Development.

17.2.36 Household waste arisings forecast from the operational phase of the proposed Development have been estimated based upon 2016 WasteDataFlow data.

17.2.37 Waste arisings forecast from the operational phase of the proposed Schools within the Development have been based on the compositional waste analysis study undertaken by WRAP in 2008. This is considered to be the most recent data available and would represent a worst-case scenario.

17.2.38 Healthcare waste arisings forecast from the operational phase of the proposed Development have been based on indicators from the WRAP report on the composition and amount of mixed waste disposed of by Scottish Health and Social Care, Education, Motor, Wholesale and Retail Sectors due to the lack of specific indicators for England.

17.2.39 Large commercial vehicles such as heavy goods vehicles (HGV) are likely to be used to transport material resources and waste arising in and out of the site. Therefore, the forecast of the traffic movement have been based on the standard dimensions of HGVs.

17.2.40 CI waste forecast data has been reported as total waste because individual benchmarks for recycling and residual waste were not available. C&I (non-household) waste has been calculated to increase at 1% annually with 2% of total waste arisings sent to landfill (Kent County Council, 2017).

17.2.41 There are numerous committed schemes planned for in the surrounding area that would have a cumulative impact by in-combination effects throughout the CDE and operational phases of the proposed Development. However, it is not considered possible to reasonably undertake a quantitative cumulative assessment of the likely significant effects with regard to waste for the following reasons;

- Demolition and excavation waste: quantitative data are either not available on likely volumes of waste to be generated, or data needed to calculate likely volumes are not available.
- Construction waste: neither quantitative data nor sufficiently detailed enough schedules would be likely available on the construction phases proposed.
- Operational waste: Area accommodation schedules for all committed developments are available with some degree of detail, however data is not available to allow assessment of the current baseline situation for these developments such that the net change is unknown and not possible to estimate.

17.2.42 The above comprise inherent constraints to accurately predicting the waste arisings from cumulative developments.

17.2.43 HGV movements have been calculated based on the October 2018 building schedule using dwelling numbers and non-dwelling gross internal area (GIA) figures.

Assumptions

17.2.44 The amount of waste produced during the CDE phases would be affected by the specific types and methods of construction proposed by the works contractor(s). Given the outline nature of the proposals, assumptions have been made regarding types and methods of construction in order to estimate volumes of waste arising from the CDE phases.

17.2.45 In cases where waste has been calculated as a volume, WRAP's waste conversion factors have been applied to convert volume to weight.

17.2.46 In the absence of suitable recycling and reuse rate data for CI waste in the region, current recycling and reuse rates for domestic properties in the KCC area have been used to forecast the non-recyclable waste that would be generated by proposed CI uses. It is anticipated that proposed CI properties of the proposed Development would meet and exceed existing domestic recycling and reuse rates.

17.3 Baseline

Existing Baseline

Construction Phase

17.3.1 The reported CDE waste arisings from Kent and managed in Kent were just under 2 million tonnes (1.85 million tonnes) in 2015 and outside Kent were just over 400,000 tonnes (403,343 tonnes) in 2015.

17.3.2 The total capacity of waste management facilities and landfill sites in the Kent that could potentially take CDE waste are 3,717,773 tonnes and 3,708,751 m^3 (approximately 5,526,039 tonnes) respectively. In addition, there are landfill sites that are anticipated to become operational in during the construction phase of the proposed Development as listed in Table 17-6. Once operational, these facilities would be able to provide an additional combined capacity of 1,149,999 m^3.

Table 17-6: Pre-operation landfill sites in Kent accepting CDE waste (Environment Agency, 2018)

Facility Name	Facility Type	Permit Number	Post Code	Distance from Site (km)	Remaining Capacity end of 2017 (m^3)
Alpha Lake	Inert landfill	EA/EPR/EB3103LP/A001	ME3 7SX	53.18	999,999

Facility Name	Facility Type	Permit Number	Post Code	Distance from Site (km)	Remaining Capacity end of 2017 (m^3)
Wrotham Quarry at Addington	Inert landfill	EA/EPR/FB3003MP/A001	ME19 5DL	49.45	150,000

17.3.3 The Environmental Protection Act 1990 (Environmental Protection Act 1990 (Part 2), 1990) requires that all construction-related wastes removed from the proposed Development is undertaken by a company that is authorised to do so. Table 17-7 contains a list of waste management facilities, within 50km of the proposed Development that could potentially receive CDE waste arisings from the proposed Development.

Table 17-7: Non-exhaustive list of waste management facilities accepting CDE waste (Environment Agency, 2018)

Facility Name	Facility Type	Permit Number	Post Code	Distance from Site (km)	Annual Tonnage
Ridham Waste Transfer Station	Material Recycling Treatment Facility	EA/EPR/PB3931RK/A001	ME9 8SR	35.46	800,800
Hermitage Quarry	Physical Treatment Facility	EA/EPR/XP3898HM/V008	ME16 9NT	41.01	585,000
Richborough Park	Household and CI Waste Transfer Station	EA/EPR/ZP3292EL/A001	CT13 9NW	31.54	450,000
Richborough Hall Waste Transfer and Recycling Centre	Household and CI Waste Transfer Station	EA/EPR/MP3898HW/V003	CT13 9NW	31.03	380,000
Berth 6, Chatham Dockyard	Physical Treatment Facility	EA/EPR/AB3007XN/V003	ME4 4SR	45.73	280,000
Pelican Reach	Material Recycling Treatment Facility	EA/EPR/TP3495HH/V007	ME2 4NF	46.39	261,975
Waste Transfer Station at Ridham Dock	Transfer Station taking Non-Biodegradable Wastes	EA/EPR/CB3704FX/A001	ME9 8SR	35.43	250,000
Medway Materials Recycling Facility and Waste Transfer Station	Household and CI Waste Transfer Station	EA/EPR/BP3396LD/A001	ME2 4DZ	47.11	249,999
Brett Aggregates Ltd	Physical Treatment Facility	EA/EPR/FB3731RA/A001	ME9 8SR	35.10	249,999
Aylesford Recycling Facility	Household and CI Waste Transfer Station	EA/EPR/DB3104KP/V003	ME20 7PA	43.83	210,000

17.3.4 Table 17-8 contains a non-exhaustive list of landfill sites, within 50km of the Site that could potentially receive CDE waste arisings from the proposed Development.

Table 17-8: Landfill sites in Kent accepting CDE waste (Environment Agency, 2018)

Facility Name	Facility Type	Permit Number	Post Code	Distance from Site (km)	Remaining Capacity end of 2017 (m^3)
Shelford Landfill Site	Household and CI Waste Transfer Station	EA/EPR/KP3995HF/V002	CT2 0PR	23.12	2,091,712
Allens Bank	Inert landfill	EA/EPR/BS6904IB/V002	TN29 9PU	18.74	709,000
Hermitage Quarry Inert Landfill	Inert landfill	EA/EPR/EB3601KU/V003	ME16 9NT	40.88	693,039
Ham Farm Landfill	Inert landfill	EA/EPR/AB3309MZ/V002	ME13 7TS	26.11	115,000
Perry's Farm	Inert landfill	EA/EPR/GP3899LW/V002	ME3 0AW	44.39	50,000
Arnolds Lodge Landfill	Inert landfill	EA/EPR/DB3604XQ/V003	TN12 5HL	43.62	50,000

Operational Phase

Household Waste

17.3.5 The majority of the Site is currently undeveloped and is primarily agricultural land. Therefore, waste is currently only generated from agricultural activities and the small number of existing residential and business operations on Site. Development of the Site for residential, commercial, retail, education,

healthcare, hotel and sports facilities use would create a source of waste which would need to be collected and disposed of by FHDC and KCC.

17.3.6 Currently an alternating weekly collection system for the properties in FHDC is provided. In 2016, this represented 49,660 households. For households, residual waste and recycling is collected alternate weeks with food waste collected weekly. Garden waste is collected on alternate weeks, for garden waste subscribers. Collection arrangements are shown in Table 17-9.

Table 17-9: Waste collection arrangements for FHDC households (Folkestone & Hythe District Council, 2018)

Waste Stream	Waste Type	Collection arrangements
Co-mingled materials	Clean cans, tins, glass jars and bottles, empty aerosol cans, clean tin foil, plastic containers, tetra-packs	Wheeled bin with purple lid or purple box - collected fortnightly with paper and card
Paper and card	Clean paper and cardboard	Black box - collected fortnightly with co-mingled dry recyclables
Residual waste	Non-recyclable household rubbish	Wheeled green bin - collected fortnightly
Organics	Food waste (raw or cooked)	Green caddy - collected weekly with co-mingled waste or residual waste
Garden	Everyday garden waste (e.g. grass cuttings, leaves, and cut flowers)	Collected fortnightly (subscription service)
Batteries	Domestic batteries	Self-seal recycling bags (provided by FHDC) or clear food bag - collected fortnightly with co-mingled waste
Bulky waste	Non-commercial white goods (e.g. fridges, freezers and washing machines), cookers, lawnmowers, furniture (including bed frames and mattresses), carpets, TVs and small electrical items (DVD players, toasters and kettle)	Collection on request (chargeable service)
Other	Computer parts and other electrical equipment Clothes and other textiles Polystyrene foam Light bulbs, mirrors and Pyrex glass	Deposit at local household recycling centre

17.3.7 KCC operates 21 bring sites located in Ashford, Canterbury, Chatham, Cuxton, Dartford, Deal, Dover, Faversham, Folkestone, Gillingham, Herne Bay, Maidstone, Margate, New Romney, Pepperhill, Richborough, Sevenoaks, Sheerness, Sittingbourne, Swanley and Tunbridge Wells which can be used free of charge by householders (Kent County Council, 2018). The Folkestone and New Romney bring sites are located within the FHDC boundaries.

17.3.8 WasteDataFlow (Department for Environment, Food and Rural Affairs, 2018) is the web-based system for municipal waste data reporting by UK local authorities to government. This resource has been interrogated to determine the current KCC baseline in terms of household (HH) waste, residual waste and recycling rates, as presented in Table 17-10 and Table 17-11.

17.3.9 Table 17-10 shows KCC waste arisings data and recycling rates as published by WasteDataFlow.

Table 17-10: KCC waste arisings data and recycling rates from household collections and civic amenity sites (tonnes)

Metric	Estimated Waste Arisings (tonnes)		
	2014	2015	2016
Waste collected	500,313	495,253	508,667
Waste recycled	230,020	219,601	222,077
Residual waste	270,293	275,653	286,590
Total households collected from	644,626	645,198	651,255
Recycling rate	46.0%	44.3%	43.7%

17.3.10 Table 17-10 shows that KCC achieved a recycling rate of 46% in 2014, 44.3% in 2015 and 43.7% in 2016. These recycling rates have been compared against regional and national performance in Table 17-11. From this it is clear that FHDC and KCC (Department for Environment, Food & Rural Affairs, 2018) recycling rates are at the average for recycling rates for England (Department for Environment, Food & Rural Affairs, 2018).

Table 17-11: FHDC, KCC, and England Recycling rates

Area	2014	2015	2016
FHDC	51.7%	49.0%	44.5%
KCC	46.0%	44.3%	43.7%
England	44.8%	44.3%	44.9%

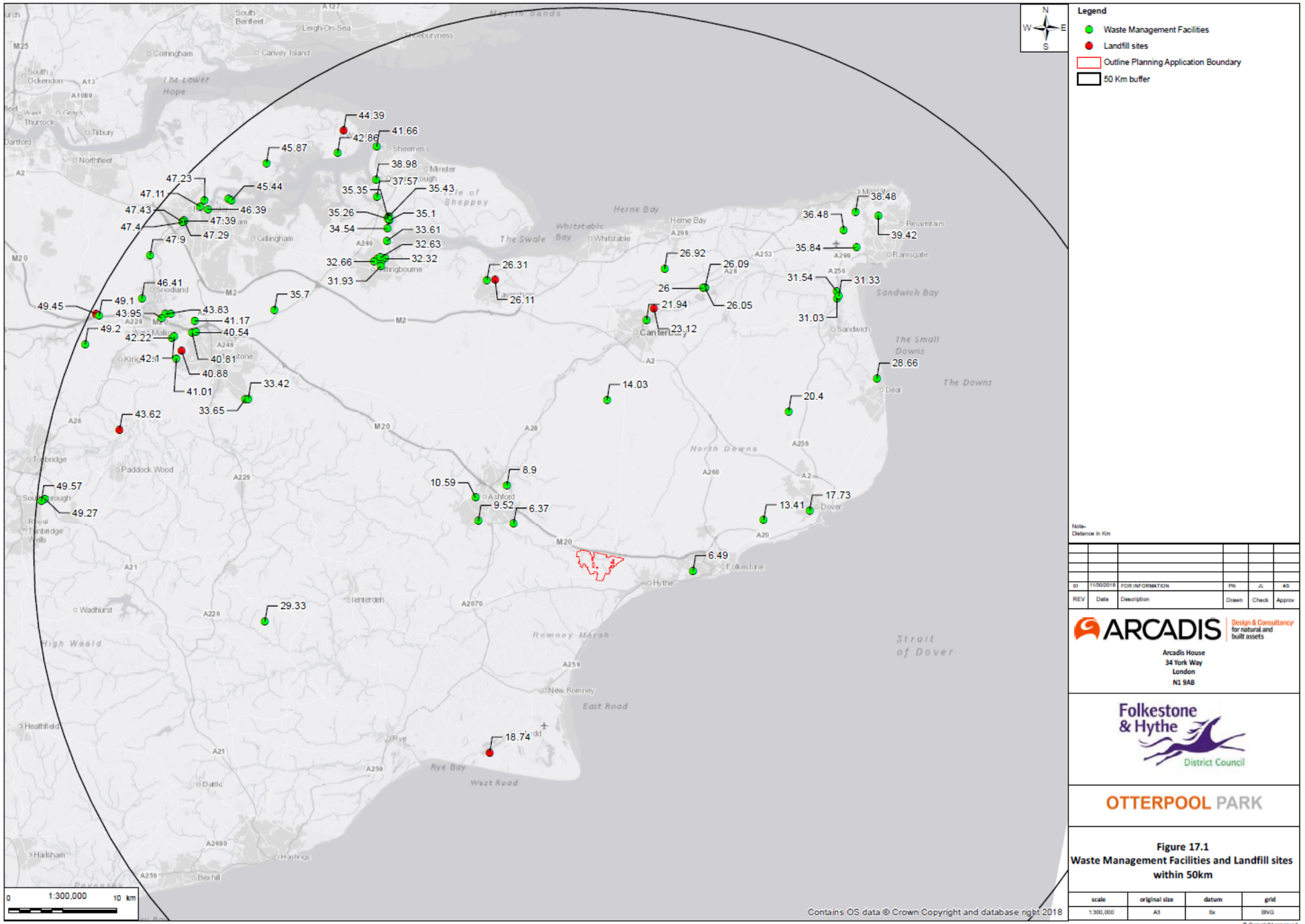
17.3.11 A breakdown of waste arising from household collections and waste deposited in bring sites are shown in Table 17-12.

Table 17-12: Waste arising from KCC's household collections and bring sites (tonnes)

Waste Stream	Quantities of waste (tonnes)		
	2014	2015	2016
Books	92	77	66
Co-mingled materials	85,363	83,982	84,206
Footwear only	28	6	3
Green garden waste only	46,401	44,086	48,624
Mixed cans	388	345	347
Mixed glass	2,430	2,237	2,653
Mixed paper and card	25,368	23,403	22,426
Textiles and footwear	638	679	673
Textiles only	187	155	119

Waste Stream	Quantities of waste (tonnes)		
	2014	2015	2016
Waste food only	27,338	26,344	24,794
Waste Electrical and Electronic Equipment (WEEE) - TVs and Monitors	6	1	0
WEEE - Fridges and Freezers	433	379	446
Paper	3,909	3,126	2,810
Green glass	4,703	4,045	3,933
Brown glass	868	727	655
Clear glass	3,525	2,921	2,780
Card	861	346	86
WEEE - Small Domestic Appliances	183	154	191
Post-consumer, non-automotive batteries	8	2	0
Gas bottles	1	0	0
Other Scrap metal	40	96	72
WEEE - Large Domestic Appliances	71	24	30
Other Plastics	0	0	5
Mixed Plastic Bottles	312	410	297
Furniture	0	18	19
Mixed garden and food waste	12,127	11,563	11,843
Mixed tyres	6	5	0
Plastics	0	8	33
Other compostable waste	14,734	14,460	14,967
Total recycling	**230,020**	**219,601**	**222,077**
Total residual	**270,293**	**275,653**	**286,590**
Total collected waste	**500,313**	**495,253**	**508,667**

Figure 17-1 Waste Management Facilities and Landfill Sites



Future Baseline

17.3.12 The Kent Waste Needs Assessment (2017) sets out targets for CDE and CI waste, which is based on the assumption that increasing cost of landfill would make the achievement of higher recycling and recovery rates more realistic. This resulted in the following targets presented in Table 17-13:

Table 17-13: CDE and CI waste targets for period 2021 - 2031

Waste Type	Management Method		2021	2026	2031
CDE	Recycling	Inert (recycled aggregate)	48%	52%	56%
		Non-inert (source separated)	12%	13%	14%
	Composting	(Non-inert)	1%	1%	1%
	Other recovery (excluding recycling)	Inert (recovery to land and backfill of mineral workings)	20%	20%	20%
		Non-inert (Energy from Waste)	5%	5%	5%
	Remainder to landfill	Inert	12%	10%	10%
		Non-inert	2%	1%	0.5%
CI	Recycling		63%	65%	65%
	Other Recovery (excluding recycling)		21%	19%	19%
	Remainder to landfill		16%	16%	16%

Construction Phase

17.3.13 The Kent Waste Needs Assessment 2017 predicts that existing management capacity in Kent was sufficient to meet the targets as translated into the quantity of waste requiring certain types of management in target years in Table 17-14 below.

Table 17-14: CDE waste management requirements for period 2021 - 2031 (tonnes)

Metric	Forecasted waste quantities (tonnes)		
	2021	2026	2031
Recycling	1,560,000	1,560,000	1,560,000
Other recovery (excluding recycling)	728,000	780,000	780,000
Remainder to landfill	312,000	260,000	260,000

Operational Phase

Household Waste

17.3.14 KCC forecasted a 20% rise in household waste between 2016-2031 as a result of a projected population growth of 17% growth from 2015, the breakdown of these projected figures is presented in Table 17-15 (Kent County Council, 2016).

Table 17-15: Projection of number of dwellings, population and waste forecast for 2021 and 2031

Metric	2021	2031
Dwellings	701,400	785,800
Population	1,635,100	1,799,200
Waste Tonnage	775, 800	869,800

CI waste

17.3.15 KCC forecasted a 10.42% increase in recycling / composting and a 10.36% increase in recovery, with a 12% increase of waste to landfill. The breakdown of these figures is detailed in Table 17-16.

Table 17-16: CI waste management requirements for period 2021 - 2031 (tonnes) (Kent County Council, 2017)

Metric	Forecasted waste quantities (tonnes)		
	2021	2026	2031
Recycling / Composting	892,000	937,000	985,000
Other Recovery (excluding recycling and composting)	357,000	375,000	394,000
Remainder to landfill	25,000	27,000	28,000

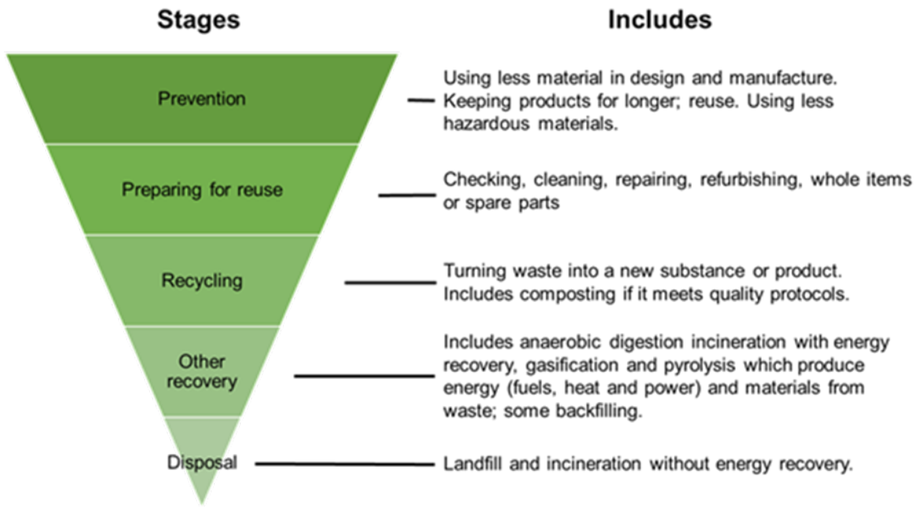
17.4 Design and Mitigation

17.4.1 Details of the design and mitigation measures that act to protect the receptors are summarised below.

Construction Approach and Mitigation of Construction Effects

17.4.2 Waste can cause harm to the environment through its treatment and final disposal, and therefore, the proposed Development, for effective waste management, has followed the principles of the waste hierarchy shown in Figure 17-2 below.

Figure 17-2: Waste Hierarchy



17.4.3 The waste hierarchy ranks waste management options according to what is best for the environment. It gives priority to prevention, then preparing it for reuse, then recycling, then recovery, and last of all disposal (e.g. landfill).

17.4.4 In addition, the five key principles of waste minimisation (design for reuse and recovery, off-site construction, materials optimisation, waste efficient procurement and deconstruction and flexibility) have been applied at the early design stage to support the use of materials in a more efficient manner and to consider how reuse, recycling and recovery of materials can be incorporated into the proposed Development and ultimately reduce waste to landfill.

17.4.5 Other key aspects of waste minimisation that have been considered during the design are:

- **Design complexity:** Reduce the complexity of the design to standardise the construction process and reduce the quantity of material resources required (e.g. ensure that floor to ceiling heights are consistent to encourage off-site fabrication, standardising room heights to match plasterboard dimensions and standard brick dimensions, etc.);
- **Specifications:** Avoid over specification and minimise variation in material resources, components and joints; evaluate the reuse and recycling opportunities for the specified material resources before specification (e.g. specify windows that could be recycled in the future, etc.); and evaluate the use of materials with high recycled content (e.g. ceramic tiles, reconstituted faced stones and reconstituted slates, etc.); and
- **Alignment, location, level and grading of the proposed Development**: These have been designed to minimise excavation volumes. It has also been designed to enable flexibility in the landscaping, so that it can accommodate the changes in spoil volumes that may arise when site conditions differ from those assumed during the design. Both these approaches should enable all excavation waste (except where contaminated) to be reused onsite where conditions allow.

Construction

17.4.6 For the construction phase, the CDE waste assessment assumes CDE activities between 2020 and 2044. For the operational phase, with reference to the impact of waste upon existing receptors, the following years have been assessed:

- Completion of first phase (delivery of 325 dwellings) – 2022.
- Mid way of construction completion at year 13 (delivery of 3,850 dwellings and 75,196 m^2 of retail and commercial space, schools, sports facilities and community space) – 2032.
- Construction completion year (delivery of remaining 4,325 dwellings and 78,196 m^2 of retail and commercial space, schools, sports facilities and community space) – 2042.

17.4.7 A summary of the likely floorspace area for each use is shown in Table 17-17.

Table 17-17: Summary of land use and planned floorspace

Land Use	Class / Description	Floorspace (GIA m^2)
Hotel	1 (approximately 120 rooms)	7,001
Retail Space	A1 – Shops and Retail Outlets	16,175
	A2 – Professional Services A3 – Food and Drink	10,075
Commercial Space	B1 – Business	66,660
	B2 – General Industrial Use	8,265
Schools	5 Primary schools	15,230
	1 Secondary School	14,351
Sport	Indoor Sports Hall	6,750
	Sports Pavilion	750
Health	1 main site and 3 'surgeries'	11800
Community	12 Nurseries	4,200
	Community Centre(s)	7,200
	Total:	**168,457**

17.4.8 The potential waste types that could arise during the construction phase are summarised in Table 17-18 below:

Table 17-18: Potential waste sources during the construction phase

Construction phase	Potential wastes produced	Classification of waste
Excavation	Made ground, soil and sub-soils	Inert; and / or, Non-hazardous; and / or, Potentially hazardous if it contains sufficiently high levels of heavy metals.
Demolition	Ceramics, concrete, bricks, insulation, metals, plastics, timber, plasterboard, etc	Inert; and / or, Non-hazardous; and / or,

Construction phase	Potential wastes produced	Classification of waste
		Potentially hazardous if it contains asbestos or sufficiently high levels of heavy metals.
Construction	Construction materials, such as concrete, bricks, plastics, metals, plasterboard, timber, paint, etc.	Inert; and / or, Non-hazardous; and / or, Hazardous.
	Made ground, soil and sub-soils	Non-hazardous, and Hazardous if it contains sufficiently high levels of heavy metals.

17.4.9 For excess material resources and waste, potential environmental effects are primarily related to the production, movement, transport, processing and disposal of waste arising from the Site during the CDE activities. Effects could include the temporary occupation of waste management facility capacity (during treatment) and a permanent decrease in landfill capacity (disposal).

17.4.10 The estimated quantities of construction waste arising during the construction activities would be affected by the types and methods of construction. At the time of writing, the types and methods of construction had not been decided and so it was not possible to accurately estimate the quantity of waste arising from the construction.

17.4.11 However, using waste benchmarking data from the BRE SmartWaste quantities of construction waste arising from the proposed Development have been estimated in Table 17-19 below:

Table 17-19: Estimated construction waste arisings from the proposed Development

Waste Stream	List of Waste (LOW) Code	BRE Key Performance Indicator (tonnes / 1,000 m²)	Estimated Quantities of Waste (tonnes)			Tonnes
			2022	2032	2044	Framework Masterplan 2046
Bricks	17 01 02	10.96	332	4,654	5,215	1,492
Tiles and ceramics	17 01 03	0.75	24	323	342	106
Concrete	17 01 01	17.03	470	7,067	8,777	2,110
Inert	17 05 04	41.67	1,274	18,064	19,084	5,725
Insulation materials (non-hazardous)	17 06 04	0.72	20	309	346	88
Metals	17 04 07	2.13	59	952	985	264
Packaging materials	15 01 06	3.76	115	1,613	1,740	517
Plasterboard / gypsum	17 08 02	4.57	136	1,942	2,189	609
Binders	17 01 01	0.16	5	67	72	22
Plastic (excluding packaging waste)	17 02 03	2.51	79	1,054	1,176	356
Timber	17 02 01	11.92	363	5,033	5,687	1,632
Floor coverings (soft)	20 01 11	0.12	2	58	58	10
Electrical and electronic equipment (Non-hazardous)	20 01 36	0.06	2	26	27	8
Furniture	20 03 07	0.02	0	9	16	2
Canteen / office / ad-hoc waste	20 03 01	1.32	37	604	586	166
Liquids	16 10 01	0.11	2	44	64	10
Oils	13 01 13	0.01	0	4	5	1
Bituminous mixtures (Non-hazardous (e.g. asphalt))	17 03 02	1.23	26	636	509	116
Hazardous waste	17 09 03	1.18	29	527	531	130
Other waste	17 09 04	3.91	111	1,722	1,820	500
Mixed construction and/or demolition waste	17 09 04	40.20	1,176	17,259	19,178	5,283

Waste Stream	List of Waste (LOW) Code	BRE Key Performance Indicator (tonnes / 1,000 m²)	Estimated Quantities of Waste (tonnes)			Tonnes
			2022	2032	2044	Framework Masterplan 2046
TOTAL			**4,260**	**61,967**	**68,408**	**19,148**

17.4.12 Mitigation measures would be implemented to reduce the impacts of waste arisings from the proposed Development. A Code of Construction Plan (CoCP) would be in place prior to construction. This would provide a suite of mitigation measures of particular relevance to waste and would require the contractors to:

- Promote opportunities for the potential reusing and recycling of all material resources and waste;
- Sort and segregate waste into different waste streams (where technically and economically feasible); and
- Manage material use to maximise the environmental and proposed Development's benefits from the use of surplus materials.

17.4.13 The CoCP would also mandate several subsidiary management plans, which would form part of the suite of mitigation measures of particular relevance to waste. These include:

- The Outline SWMP (separately submitted with the planning application) which would be developed into the full SWMP by the appointed Contractor. The SWMP would ensure that waste is managed in accordance with the waste hierarchy and other relevant legislative requirements. The SWMP would also detail information on the waste carriers and waste management facilities that would be used; and
- A Materials Management Plan (MMP) would be produced by the appointed Contractor to identify ways to reuse site-won or excavated materials within the construction of the proposed Development, provided it meets the requirements of the CL:AIRE Code of Practice (CoP).

Outline Site Waste Management Plan

17.4.14 As of 1 December 2013, the SWMP Regulations 2008 (The Stationery Office, 2008) were repealed. However, the implementation of the use of a SWMP remains as industry best practice.

17.4.15 A SWMP is used to plan, implement, monitor and review waste minimisation and management on construction sites. The SWMP is also used to record how waste is reduced, reused, recycled and disposed of on a construction site. This effectively means:

- Recording decisions taken to prevent waste through concept and design.
- Forecast waste produced on site.
- Plan how to reduce, reuse or recover the forecasted waste.
- Implement and monitor the planned activity.
- Review the SWMP and record lessons learnt.

17.4.16 The SWMP is a live document and is updated regularly during the course of the project. Preparing a SWMP at the early planning stage facilitates the identification and implementation of waste minimisation at the design stage, and reuse and recycling opportunities during on site operations, thereby potentially reducing the quantities of construction waste sent to landfill. Preparing a SWMP also encourages the review of current waste reduction and recovery practice levels, highlighting areas where good and best practice can be achieved.

Demolition

17.4.17 Demolition quantities have been estimated based on the buildings to be removed as shown on the drawing 'Extended Masterplan Buildings to be Demolished & Retained' (OPM(P)3018D), which consists primarily of residential buildings. Other building types are farm buildings and disused grandstands. Table 17-20 below details the demolition arisings from these buildings based on market knowledge and expert experience.

Table 17-20: Estimated demolition waste arisings from the proposed Development

Material Type	Estimated quantites (tonnes)	Estimated volume (m³)
Bricks	2,709.53	2,167.62
Tiles and Ceramics	175.69	298.67
Concrete	4,502.11	3,601.69
Inert	10,071.32	8,057.06
Insulation materials (non-hazardous)	171.96	687.83
Metals	491.87	1,180.48
Packaging materials	902.64	4,332.68
Plasterboard / Gypsum	1,128.94	3,386.83
Binders	38.69	30.95
Plastic (excluding packaging waste)	612.19	2,632.40
Timber	2,998.24	8,694.90
Floor coverings (soft)	41.37	153.07
Electrical and electronic equipment (non-hazardous)	14.67	58.67
Furniture	7.89	44.18
Canteen/Office/Ad hoc waste	287.09	1,378.05
Liquids	32.89	36.18
Oils	2.48	2.73
Bituminous mixtures (non-hazardous e.g. asphalt)	247.84	297.41
Hazardous waste	212.50	233.75
Other waste	998.55	4,793.03
Mixed construction and/or demolition waste	10,290.04	11,319.04
TOTAL	**35,938.50**	**53,387.22**

Excavation

17.4.18 Excavated material arising from construction would be targeted for fill and landscaping where this is feasible, and the material is suitable. Excavated materials, such as soils, will be carefully stored in segregated piles for subsequent reuse on the site, where possible. If the material is contaminated then it will be kept separate from clean material and sent for either treatment, recycling or recovery, where appropriate, or disposal at appropriately permitted facilities.

17.4.19 Any surplus inert excavated materials (e.g. soils, stone, bricks, clay, rubble, rock) may be suitable for use in land reclamation projects. This would require compliance with the criteria and thresholds for an exemption or a permit under the Environmental Permitting Regulations 2010 (as amended). The CL:AIRE DoW CoCP may also be applicable for the reuse of this material.

Vegetation

17.4.20 In order for construction to take place, areas of vegetation would require clearance. This would be managed in accordance with the CoCP. As a minimum all vegetation waste should be diverted from landfill, unless identified as an invasive species and no other options are available. The greatest opportunity for the sustainable management of vegetation waste is through recycling into compost.

17.4.21 Any material produced by the excavation works (e.g. good quality topsoil) deemed acceptable, would be stored and re-laid within the proposed Development whenever possible in accordance with the CoCP.

Hazardous waste

17.4.22 Any hazardous waste, would be removed and kept separate from other CDE waste as detailed in the CoCP, in order to avoid contaminating ‘clean’ materials.

17.4.23 No significant land contamination has been found to date. However, should any unacceptable concentrations of contamination be found, these may be removed from site or remediated in situ. This would be determined by a detailed remediation strategy.

Site practices

17.4.24 The proposed Development would have a Waste Manager or Champion who would oversee the implementation of the waste control strategy and the handling of any waste material, as set out in the CoCP. The Contractor would consider setting off-cut/surplus targets for sub-contractors with a positive incentive scheme for onsite waste champions.

17.4.25 Construction work will be carried out closely with the waste management contractors, in order to determine the best techniques for managing waste and ensure a high level of recovery of materials for recycling. An area would be established for spoil classification at the application boundary, as detailed in the CoCP.

17.4.26 The Contractor would register with the Considerate Constructors Scheme (Considerate Constructors Scheme, 2018). This is a national initiative, set up by the construction industry. Sites that register with the Scheme sign up and are monitored against a Code of Considerate Practice, designed to encourage best practice beyond statutory requirements.

17.4.27 The waste management compound would be established within the application boundary, to handle incoming waste from construction activities as set out in the CoCP. This would be designed to facilitate the segregation of key waste streams to maximise the opportunity to reuse, recycle and return wastes generated onsite.

17.4.28 Shelter will be provided to prevent materials such as cardboard and paper from deteriorating while being sorted or awaiting collection. Space would be provided to accommodate skips and the storage of reusable materials.

17.4.29 For all waste management options on the site compound, consideration would need to be given for identifying whether waste exemptions or permits are required to enable for the storage and treatment of waste materials.

17.4.30 Another consideration is the 'proximity principle', which advocates that waste should be disposed of (or otherwise managed) close to the point at which it is generated, thus aiming to achieve responsible self-sufficiency at a regional or sub-regional level. Where this is not possible, priority should be given to transportation by rail.

Transport of material resources and waste

17.4.31 Only where required material resources cannot be provided from within the proposed Development, either due to insufficient material resources or the wrong type of material resource, the required material resources would be imported onto the proposed Development via the existing road network.

Scheme Design and Mitigation of Operational Effects

17.4.32 A Waste Strategy (Appendix 17.1) has been developed as an embedded mitigation measure to provide a planned approach to resource as well as waste management. The Waste Strategy has identified the likely quantities and composition of waste that would be generated and propose appropriate waste management options that would optimise the management of waste generated during the construction and operation phases.

17.4.33 The Waste Strategy has been prepared for the proposed Development to select the most appropriate waste collection system for the proposed Development which saves space, provides value for money, minimises greenhouse gas (GHG) emissions and maximises the recycling and recovery of material.

17.4.34 The overall aim has been to develop a Waste Strategy that complies with current legislation, as well as supporting good practice in the management (segregation, storage, collection, treatment and/or disposal) of waste arisings from the proposed Development.

17.5 Assessment of Residual and Cumulative Effects

Residual Effects of Construction

17.5.1 Residual effects are those that remain after mitigation has been put in place. The residual effects are to be assessed as follows:

17.5.2 The assessment of effects from CDE and operational waste has focused on the potential direct impact of waste arisings on the existing local, regional, and national waste management infrastructure.

17.5.3 Recycling all inert and non-hazardous waste onsite and implementing the SWMP would ensure that impacts of construction waste are minimised.

17.5.4 In this assessment, it was forecasted that the CDE waste generated is as follows:

- Approximately 172,137 tonnes (256,816 m^3) of construction waste will be generated and there would be 3,545,636 tonnes amount of capacity remaining in the waste management facilities and 3,451,935 m^3 amount of capacity remaining in the landfill sites. The reduction in capacity of waste management facilities is 4.63% and the reduction in landfill capacity is 6.92%.
- Approximately 35,939 tonnes (53,549 m^3) of demolition waste will be generated and there would be 3,681,834 tonnes of capacity remaining in the waste management facilities and 3,655,202 m^3 of capacity remaining in the landfill sites. The reduction in capacity of waste management facilities is 0.96% and the reduction in landfill capacity is 1.44%.
- No excavation waste will be taken from the site and therefore there will be no reduction in capacity of the waste management facilities or landfill sites.
- Approximately 208,076 tonnes (310,033 m^3) of CDE waste will be generated and there would be 3,509,697 tonnes amount of capacity remaining in the waste management facilities and 3,398,718 m^3 amount of capacity remaining in the landfill sites. The reduction in capacity of waste management facilities is 5.59% and the reduction in landfill capacity is 8.35%.

17.5.5 This represents a minimal reduction in capacity of waste infrastructure in the region, therefore the effect from **CDE** has been assessed as **Neutral**.

17.5.6 It is anticipated that construction materials would be managed efficiently and therefore minimising waste. As there are measures in place to mitigate the impact of waste generated by the proposed Development and resulting in a minor reduction of capacity of waste infrastructure, the effect from **construction waste** has been assessed as **Neutral**.

17.5.7 It is anticipated that all demolished materials would be reused onsite. As there are measures in place to mitigate the impact of waste generated by the proposed Development and resulting in no reduction of capacity of waste infrastructure, the effect from **demolished material** has been assessed as **Neutral**.

17.5.8 With the 'cut and fill neutral' strategy being implemented, it is anticipated that all excavated materials would be reused onsite. As there are measures in place to mitigate the impact of waste generated by the proposed Development and resulting in no reduction of capacity of waste infrastructure, the effect from **excavated material** has been assessed as **Neutral**.

17.5.9 The proposed Development has been designed to minimise excavation volumes, and all excavation materials (after remediation) are expected to be reused onsite. Therefore, despite the volumes of excavation waste likely to arise from the construction of the proposed Development, the significance of effect on the FHDC and KCC waste management infrastructure is likely to be **Neutral**.

17.5.10 Recycling all inert and non-hazardous waste onsite, adhering to the requirements of the Waste Strategy and the SWMP submitted with this application would ensure that impacts of demolition waste are minimised. Therefore, the volumes of demolition waste likely to arise from the proposed Development, the significance of effect on the FHDC and KCC waste management infrastructure is likely to be **Neutral**.

17.5.11 Recycling all inert and non-hazardous waste onsite, adhering to the requirements of the Waste Strategy and the SWMP submitted with this application would ensure that impacts of construction waste are minimised. Therefore, despite the high volumes of construction waste likely to arise from the construction of the proposed Development, the significance of effect on the FHDC and KCC waste management infrastructure is likely to be **Neutral**.

17.5.12 The significance of effects for excavation and construction following mitigation are shown in Table 17-21 below:

Table 17-21: Significance of Effects (CDE)

Development phase	Mitigation Description	Significance of effects
Excavation	Excavation volumes minimised through design. All excavation materials to be reused onsite as a new landscape feature.	Neutral
Demolition	No waste sent to landfill except where landfill is the least environmentally damaging option. Waste to be managed through the development SWMP	Neutral
Construction	No waste sent to landfill except where landfill is the least environmentally damaging option. Waste to be managed through the development Waste to be monitored and audited.	Neutral

17.5.13 Materials unsuitable for use on site (e.g. timber off cuts that cannot be used on site) would be collected in receptacles for subsequent separation and considered for recycling at an off-site facility.

17.5.14 Based on the estimated quantities of material resources required and forecasted waste arising from the construction phase, potential number of traffic movements have been estimated and presented in **Error! Reference source not found.** below.

Table 17-22 Traffic movements of material resources and waste for the construction phase of the Framework Masterplan

Year	Number of HGV movements		
	Material	Waste	Total
2022	6,246	1,398	7,644
2023	8,811	1,972	10,783
2024	6,246	1,398	7,644
2025	8,999	2,014	11,013
2026	12,296	2,752	15,048
2027	7,685	1,720	9,405
2028	13,422	3,004	16,426
2029	12,877	2,882	15,759
2030	12,082	2,704	14,786
2031	9,561	2,140	11,701
2032	10,133	2,268	12401
2033	7,685	1,720	9,405
2034	8,650	1,936	10,586
2035	13,224	2,960	16,184
2036	13,502	3,022	16,524
2037	9,168	2,052	11,220
2038	12,671	2,836	15,507
2039	13,859	3,102	16,961
2040	11,464	2,566	14,030
2041	11,429	2,558	13,987
2042	8,122	1,818	9,940
2043	10,169	2,276	12,445
2044	10,303	2,306	12,609
2045	11,563	2,588	14,151

Year	Number of HGV movements		
	Material	Waste	Total
2046	5,764	12,90	7,054
Total	**255,931**	**57,282**	**313,213**

17.5.15 In addition to the mitigation measures that have been embedded, there are other waste minimisation measures that could be adopted;

- Specify the use of materials with a high percentage of recycled content;
- Reuse packaging by returning to supplier/manufacturer or using it for other purposes (e.g. Timber packaging pallets can be chipped and used for landscaping top mulch); and
- Devise and implement a Materials Logistic Plan (looking at supply routes, handling, storage and security).
- Utilise modern methods of construction e.g. modular off-site construction

Operational Phase

17.5.16 There are number of alternative initiatives that could be undertaken in the future, although no specific provision has been made within the proposed Development at present.

- Community reuse centre - Compliant with the first two tiers of the waste hierarchy (prevention and preparing for reuse).
- Community composting project - compliant with the third tier of the waste hierarchy (recycling) a community composting project could possibly be established.
- Set an initial target for the proposed Development that exceeds the current recycling rate for FHDC and KCC.
- Public Incentives Scheme - a scheme could be implemented to incentivise participation in recycling including performance-based charging schemes.
- Underground storage in high density areas, bring sites and street bins to help increase recycling, improve the street scene, facilitate collections and reduce vehicle movements.

Residual Effects from Operation

17.5.17 It is anticipated that, during the lifetime of the proposed Development, large quantities of operational waste would be produced on the Site (which currently generates minimal volumes of waste from a small number of existing homes and businesses). This could have a potentially significant effect on local waste management infrastructure and the ability of FHDC and the wider KCC to meet its waste management targets. As defined in the scoping report, the operation phase is to be developed over a 25-year period and therefore has been assessed at 3 stages;

- Completion of first phase (delivery of 325 dwellings) – 2022.
- Mid way of construction completion at year 13 (delivery of 4,250 dwellings and 75,196 m^2 of non-dwellings consisting of retail and commercial space, schools, sports facilities and community space) – 2033.
- Construction completion year (delivery of remaining 3,925 dwellings and 78,312 m^2 of non-dwellings consisting of retail and commercial space, schools, sports facilities and community space) – 2044.

17.5.18 Table 17-23 and Table 17-24 below sets out the forecasted household waste and non-household waste arising from the proposed Development broken down into key waste streams.

Table 17-23: Forecasted household waste arising from the proposed Development

Waste stream	Forecast household waste arisings		
	2022	2032	2044
Recyclable (tonnes)	1,061.41	12,573.66	14,546.26
Residual (m^3)	2,040.93	24,177.17	27,970.16

Table 17-24: Forecasted non-household total waste arising from the proposed Development

Building type	Forecast non-household total waste arisings		
	2022	2032	2044
Hotel	-	421.20	421.20
Commercial	-	628.99	2,782.12
Schools	-	15,556	2,157.09
Sports facilities	-	1351.35	2,895.75
Health facilities	-	18.40	18.40
Nurseries	-	11.08	22.16
Community facilities	-	1,053	2,527.20
Total	-	7,518.36	14,509.42

17.5.19 In the assessment, it was forecasted that the CDE waste generated is as follows:

- Based on recent WasteDataFlow returns, it is forecasted that approximately 1,061.41 tonnes of household recyclable waste will be generated during operation of the proposed Development per annum at 2022. This volume represents 0.0285% of the capacity of the existing waste management facilities.
- It is forecasted that approximately 12,573.66 tonnes of household recyclable waste will be generated during operation of the proposed Development per annum at 2032, which represents a 0.339% of the capacity of the existing waste management facilities.
- It is forecasted that approximately 14,546.26 tonnes of household recyclable waste will be generated during operation of the proposed Development per annum after completion (2044), which represents a 0.301% of the capacity of the existing waste management facilities.
- Based on recent WasteDataFlow returns, it is forecasted that approximately 2,040.93 m^3 of household residual waste will be generated during operation of the proposed Development per annum at 2022. This volume represents 0.055% of the capacity of the existing landfill facilities.
- It is forecasted that approximately 24,177.17 m^3 of household residual waste will be generated during operation of the proposed Development per annum at 2032, which represents a 0.438% of the capacity of the existing landfill facilities.
- It is forecasted that approximately 27,970.16 m^3 of household residual waste will be generated during operation of the proposed Development per annum after completion (2044), which represents a 0.754% of the capacity of the existing landfill facilities.

- It is forecasted that no waste from non-households will be generated during operation of the proposed Development per annum at 2022. This therefore will have no impact on the capacity of the existing waste management and landfill facilities.
- It is forecasted that approximately 7,518.36 tonnes of non-household waste will be generated during operation of the proposed Development per annum at 2032, which represents a 0.203% of the capacity of the existing waste management and landfill facilities.
- It is forecasted that approximately 14,509 tonnes of non-household waste will be generated during operation of the proposed Development per annum after completion (2044), which represents a 0.234% of the capacity of the existing waste management and landfill facilities.

17.5.20 It is anticipated that operational waste would be managed efficiently and therefore minimising arisings and diverting waste from landfill. As there are measures in place to mitigate the impact of waste generated by the proposed Development and resulting in a minor reduction of capacity of waste infrastructure, this represents a minimal reduction in capacity of waste infrastructure in the region, therefore the effect from operation has been assessed as Neutral significance of effect.

17.5.21 These figures do not take into account of any other additional proposed recycling, recovery or composting measures and also excludes the pre-operational landfill capacities (1,149,999 m^3).

17.5.22 Prior to any of the mitigation measures identified in Section 17.4, waste arisings from the proposed Development would contribute;

- an additional 1,061.41 tonnes per annum of HH waste and recyclables in year 2022, and. 2,040.93 m^3 are forecast to relate to annual residual waste, which represents an 0.47% increase. This would be in addition to the estimated 222,077 tonnes per annum of HH recyclable waste and 427,019 m^3 of residual HH waste already being generated by KCC. Effects of waste generated in the operational phase of the proposed Development would be long-term effects. The assessment anticipates a significant volume of recyclable waste generated from the proposed development (1,061.41 tonnes) would be diverted away from landfill thereby resulting in a **Neutral** significance of effect.
- an additional 12,808.81 tonnes per annum of HH waste and recyclables in year 2033, and. 24,629.32 m^3 are forecast to relate to annual residual waste, which represents an 5.74% increase. This would be in addition to the estimated 223,138 tonnes per annum of HH recyclable waste and 429,059 m^3 of residual HH waste already being generated by KCC. Effects of waste generated in the operational phase of the proposed Development would be long-term effects. The assessment anticipates a significant volume of recyclable waste generated from the proposed development (12,808.81 tonnes) would be diverted away from landfill thereby resulting in a **Neutral** significance of effect.
- an additional 14,546.26 tonnes per annum of HH waste and recyclables in year 2044, and. 27,970.16 m^3 are forecast to relate to annual residual waste, which represents an 6.17% increase. This would be in addition to the estimated 235,946 tonnes per annum of HH recyclable waste and 453,688 m^3 of residual HH waste already being generated by KCC. Effects of waste generated in the operational phase of the proposed Development would be long-term effects. The assessment anticipates a significant volume of recyclable waste generated from the proposed development (14,546.26 tonnes) would be diverted away from landfill thereby resulting in a **Neutral** significance of effect.
- zero additional tonnes per annum of non-HH waste and recyclables in year 2022, thereby resulting in a **Neutral** significance of effect.
- an additional 7,509.16 tonnes per annum of non-HH waste and recyclables in year 2033 are forecast to relate to annual total waste, which represents an 0.523% increase. This would be in addition to the estimated 1,435,140 tonnes per annum of non-HH waste already being generated by KCC. Effects of waste generated in the operational phase of the proposed Development would be long-term effects. The assessment anticipates a significant volume of recyclable waste generated from the proposed development (7,358.98 tonnes) would be diverted away from landfill thereby resulting in a **Neutral** significance of effect.
- an additional 14,509 tonnes per annum of non-HH waste and recyclables in year 2044 are forecast to relate to annual total waste, which represents an 0.912% increase. This would be in addition to the estimated 1,589,910 tonnes per annum of non-HH waste already being generated by KCC. Effects of waste generated in the operational phase of the proposed Development would be long-term effects. The assessment anticipates a significant volume of recyclable waste generated from the proposed development (14,218.82 tonnes) would be diverted away from landfill thereby resulting in a **Neutral** significance of effect.

17.5.23 The significance of effects following mitigation is shown in Table 17-25 below:

Table 17-25: Significance of Effects (Operation)

Development phase	Mitigation Measure	Significance of effects
Operation	Extend the FHDC recycling and waste collection system to the proposed Development.	Neutral
	Initial recycling/composting target of 50%	Neutral
	Integrate underground storage into high density areas, bring site and street bins to assist in increasing the recycling volumes	Neutral

Cumulative Effects

17.5.24 There are numerous committed schemes planned for in the surrounding area that would have a cumulative impact by in-combination effects throughout the CDE and operational phases of the proposed Development. However, it is not considered possible to reasonably undertake a quantitative cumulative assessment of the likely significant effects with regard to waste for the reasons explained in the limitations section. Therefore, a qualitative assessment has been carried out.

17.5.25 It is considered that all of the cumulative developments would be developed in line with the similar policy requirements as the proposed Development including the requirements for maximising reuse and recycling of CDE waste through a SWMP and the meeting of targets for recycling and composting waste. Therefore, results will be similar resulting in a **Neutral** significance of effect.

17.6 Assessment Summary

17.6.1 This Chapter has assessed the potential environmental impacts of waste materials in relation to the proposed Development and detailed measures to mitigate these impacts.

17.6.2 The assessment considered CDE waste to be hard and inert materials, soils and stones, plastics, packaging (wooden and plastic), insulation material, miscellaneous metals, canteen and office waste and operation waste to be household waste. Waste management infrastructure is therefore the resource or receptor on which impacts would be assessed, and the significance of impact would be dependent on its capacity to absorb additional waste.

17.6.3 Table 17-26 below provides a summary of significance of effects assuming implementation of mitigation measures as described in Table 17-26.

Table 17-26: Impact Summary Table

Potential Effect	Phase (Construction / Operation)	Mitigation Measures	Residual Effects
Capacity of waste management and landfill facilities	Construction	Waste to be monitored and audited. Specify the use of materials with a high percentage of recycled content. Reuse packaging by returning to supplier/manufacturer or	Neutral

Potential Effect	Phase (Construction / Operation)	Mitigation Measures	Residual Effects
		using it for other purposes (e.g. Timber packaging pallets can be chipped and used for landscaping top mulch). Put in place a Materials Logistic Plan (looking at supply routes, handling, storage and security). Employ modern methods of construction	
Capacity of waste management and landfill facilities	Operation	Set an initial target for the proposed Development that matches or exceeds the current recycling rate for FHDC and KCC. Open a community reuse initiative Launch a community composting project. Establish a public Incentives Scheme that could be implemented to incentivise participation in recycling including performance-based charging schemes. Install underground waste storage	Neutral

17.6.4 The significance of effects from both construction and operation have been assessed as **Neutral**.

17.6.5 The potential cumulative effects with other developments are likely to be during the construction phase, however there are no likely cumulative effects anticipated during the operational phase of these other developments.

17.7 References

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