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APPLICATION DOCUMENT | 3.10

TRANSPORT ASSESSMENT VOLUME 1: MAIN REPORT AND ANNEX OF FIGURES

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ARCADIS

Author: Arcadis

February 2019

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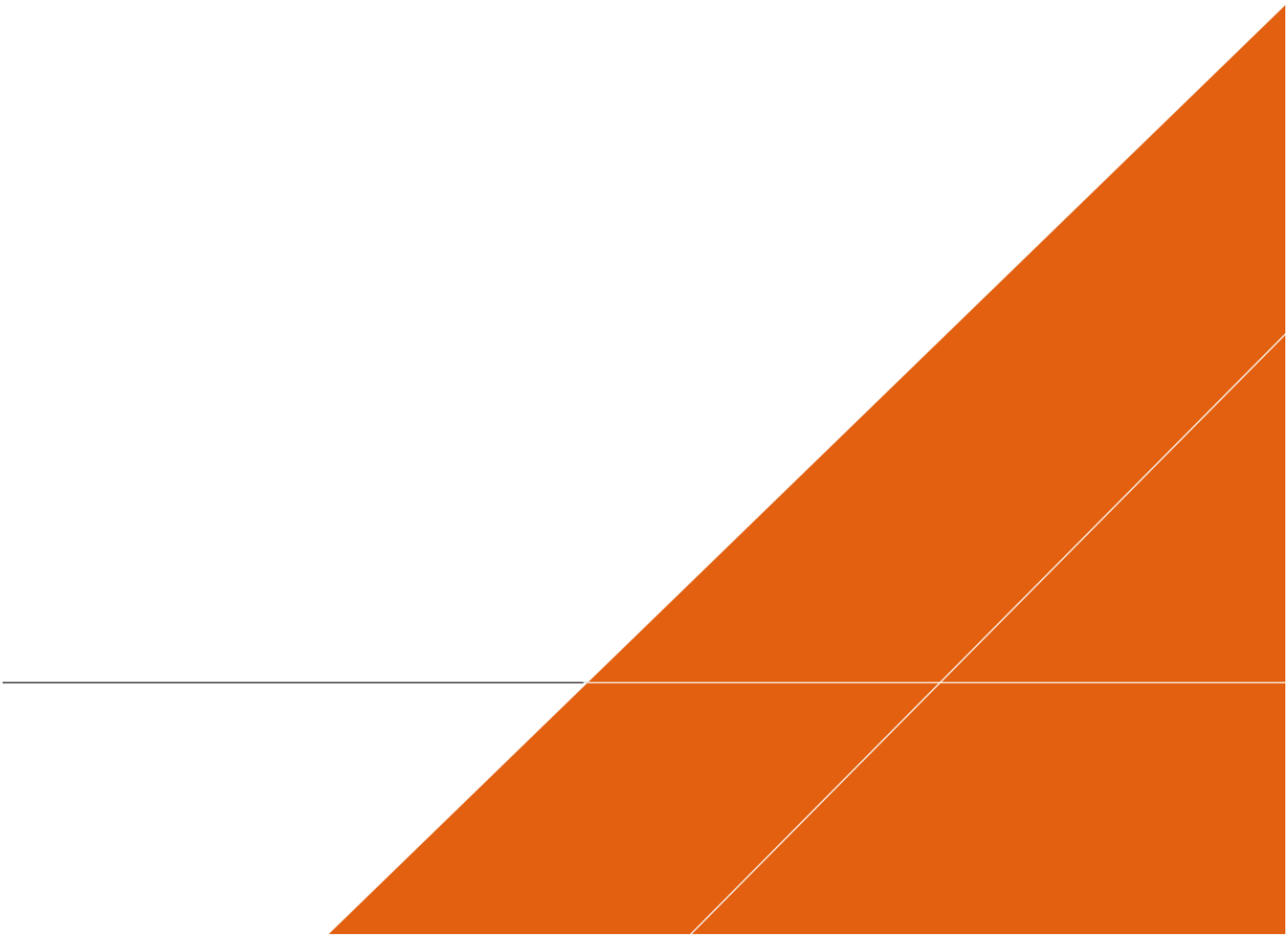
ARCADIS Design & Consultancy for natural and built assets

OTTERPOOL PARK

Transport Assessment

FEBRUARY 2019



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1 Introduction

1.1 Overview

1.1.1 Arcadis Consulting (UK) Ltd ('Arcadis') has prepared this Transport Assessment in support of an outline planning application for the 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). This application is submitted on behalf of Cozumel Estates Ltd. The application is submitted in association with Folkestone & Hythe District Council, as Cozumel Estates Ltd and Folkestone & Hythe District Council are joint promoters of Otterpool Park.

1.1.2 The Otterpool Park development is located on 580ha of land directly south-west of Junction 11 of the M20 motorway, and south of the HS1 and local rail link including Westenhanger Station in the administrative area of Folkestone & Hythe District Council in Kent.

1.1.3 The Transport Assessment sets out the baseline conditions for transport, the proposed access and travel strategy and assesses the impact of the proposals on the road network, traffic and sustainable travel modes. Following the assessment, the measures to mitigate impacts are outlined.

1.1.4 In addition to the outline application development, a wider Otterpool Park Framework Masterplan Area (OPFM) includes for up to 10,000 homes, which has also been assessed within this Transport Assessment and in the Environmental Statement. Full details of the development proposals are set out in the Development Specification and summarised in Chapter 5 of this document.

1.2 Site Location and Existing Land Uses

1.2.1 Otterpool Park is located in the west of the Folkestone & Hythe district. The towns of Folkestone and Hythe are located to the south east with Ashford to the north-west. The area is broadly bounded by the M20 and HS1 and Ashford-Folkestone railway line to the north, the A20 Ashford Road/Stone Street and Sandling Park to the east, Harringe Lane to the west and Aldington Road to the south.

1.2.2 The Kent Downs Area of Outstanding Natural Beauty (AONB) bounds the area along its eastern and southern edges. The AONB also lies approximately 1.25km to the north.

1.2.3 A number of villages are within or adjacent to the development site. Westenhanger lies to the north where, aside from the castle and station, existing buildings are primarily in residential use. Lympne is a residential settlement which lies to the south east. Barrow Hill lies to the north west. Newingreen is adjacent to the A20 in the centre of the development area.

1.2.4 Lympne Distribution and Industrial Park (known as Link Park) lies in the south west. A large portion of the remainder of the area is used as agricultural land with small farmsteads.

1.2.5 Beyond lie a number of settlements including Stanford to the north, Sellindge to the north-west, Sandling to the north east, Pedlinge to the east and West Hythe to the south.

1.2.6 The boundary of the site is shown on Drawing OPM(P)101 P submitted as part of the application.

1.3 Transport Assessment Scope

Scoping Discussions

1.3.1 The scope of this assessment has been agreed with Kent County Council, Folkestone & Hythe District Council and Highways England during discussions between July 2017 and July 2018. A scoping note was issued in March 2018 and has subsequently been updated to reflect the conclusion of the scoping discussions. Appendix A contains this updated scoping note.

1.3.2 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 of trips and the current and proposed condition of the routes.

1.3.3 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.

1.3.4 Figure 1 in the Annex of Figures 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 software.

1.3.5 Kent County Council requested that a VISSIM model be produced to assess the local junctions most likely to be impacted by the development, as indicated in Figure 1. 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 separately from this Transport Assessment and will inform ongoing discussions regarding highway impact mitigation.

1.3.6 Merge/diverge assessments have been undertaken within the study area on the M20 and at the A20 slip roads near Alkham Valley.

Assessment Years and Scenarios

1.3.7 The following forecast years have been assessed:

- 2018 Base Year: pre-construction ‘no scheme’ baseline;
- 2037: the end of the Folkestone & Hythe District Council Local Plan period;
- 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; and
- 2046 Sensitivity Assessment: representing the year of full build-out for OPFM, including 10,000 homes.

1.3.8 Each future year assessment includes two scenarios:

1) **Do-Minimum (DM)**, which includes:
   - committed highway improvement schemes; and
   - forecast baseline traffic flows.
2) **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.

1.3.9 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.

1.4 Contents of Transport Assessment

1.4.1 The remaining Chapters of this Transport Assessment are comprised as follows:

- Chapter Two: sets out the relevant transport policy and guidance;
- Chapter Three: provides an overview of the baseline conditions for sustainable travel;
- Chapter Four: establishes the baseline conditions for the highway network and traffic;
- Chapter Five: contains a summary of development proposals with particular emphasis on transport;
- Chapter Six: provides details of the future traffic flow and highway network conditions;
- Chapter Seven: presents the all-mode trip generation of the Otterpool Park development for the assessment years;
- Chapter Eight: specifies the forecast trips by mode generated by the development;
- Chapter Nine: explains the distribution of development trips on the transport networks;
- Chapter Ten: studies the effects of the development proposals on the sustainable transport networks;
- Chapter Eleven: presents the results of the capacity assessments at the junctions identified within the study area;
- Chapter Twelve: examines the effects of the development on the M20 and A20 slip roads; and
- Chapter Thirteen: summarises and concludes the assessment.

2 Transport Policy and Guidance

2.1 Background

2.1.1 This Chapter provides a review of relevant national, regional and local policy and guidance documents that has influenced the development proposals and the Transport Assessment.

2.1.2 As agreed with Kent County Council during scoping, the policy documents reviewed in this Chapter are as follows:

- National Planning Policy Framework (NPPF), 2019;
- The Strategic Road Network and the Delivery of Sustainable Development – Department for Transport Circular 02/13;
- Kent Local Transport Plan 4: Delivering Growth without Gridlock 2016-2031 (2016);
- Folkestone & Hythe Core Strategy, 2013;
- Folkestone & Hythe District Council Transport Strategy, 2011;
- Core Strategy Local Plan Review, 2019; and
- Places and Policies Local Plan, Submission Draft, 2019.

2.2 National Policy

National Planning Policy Framework, 2019

2.2.1 The NPPF 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.

2.2.2 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".*

2.2.3 Paragraph 103 of Chapter 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".

2.2.4 Whilst considering sites for specific development proposals, paragraph 108 outlines that it should be ensured that:

- *"Appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
- *Safe and suitable access to the site can be achieved for all users; and*

- *Any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree".*

2.2.5 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".

2.2.6 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".*

2.2.7 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".

2.2.8 The NPPF defines a Transport Assessment as:

"A comprehensive and systematic process that sets out transport issues relating to a proposed development. It identifies measures required to improve accessibility and safety for all modes of travel, particularly for alternatives to the car such as walking, cycling and public transport, and measures that will be needed deal with the anticipated transport impacts of the development".

2.2.9 The NPPF defines a Travel Plan as:

"A long-term management strategy for an organisation or site that seeks to deliver sustainable transport objectives and is regularly reviewed".

2.2.10 The relevant national guidelines on Transport Assessments and Travel Plans is provided in Section 2.5.

The Strategic Road Network and the Delivery of Sustainable Development – Department for Transport Circular 02/13

2.2.11 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.

2.2.12 The Circular sets out that proposals should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.

2.2.13 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.

2.2.14 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.

2.3 Regional Policy

Kent Local Transport Plan 4: Delivering Growth without Gridlock 2016-2031 (2016)

2.3.1 The Kent Local Transport Plan (LTP) sets out how the County will achieve its transport vision over the coming years, bringing together transport policies and local and nationally significant schemes.

2.3.2 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.

2.3.3 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".

2.3.4 Transport priorities identified for Folkestone & Hythe relevant to the development are:

- Upgrading of Westenhanger Rail Station;
- Upgrades to Junction 11 of the M20; and
- Newingreen junction highway improvements.

2.4 Local Policy

Folkestone & Hythe Core Strategy Local Plan, 2013

2.4.1 The Core Strategy 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.

2.4.2 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".

2.4.3 Policy SS5 goes on to confirm that 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

2.4.4 The Transport Strategy 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.

2.4.5 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.

Walking

2.4.6 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.

Cycling

2.4.7 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.

Parking

2.4.8 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.

2.4.9 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.

2.4.10 As potential strategic development sites come forward, it will be necessary for the respective applicant team prepare a detailed Transport Assessment and Travel Plan. Subsequently the 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)".

Local Plan Written Statement – Appendix 6: Kent County Council Vehicle Parking Standards, 2009

2.4.11 Appendix 6, of the full Local Plan Review written statement sets out the parking standards which were saved under the March 2009 Direction from the Secretary of State following the adoption of the Core Strategy Local Plan 2013. Policy TR12 states that:

"New development, redevelopment or a change of use will only be permitted if it makes provision for off street parking on or near the site in accordance with the current maximum vehicle parking standards, as set out in Appendix 6. These standards may be varied where:

a) The location is well served by public transport and there would be no adverse effect on road safety or traffic management.

b) This would allow development which would preserve or enhance the character or appearance of a conservation area or assist the re-use of a building of architectural or historic interest.

c) A commuted sum payment is made for improvements to or measures to assist the use of public transport, cycling or walking".

2.4.12 The District Planning Authority will apply the Kent 2003 standards, as set out in Appendix 6, to the Otterpool Park development.

Residential Parking Standards

2.4.13 The current parking provision for residential uses is based on the more recent Kent County Council Interim Guidance Note 3 (November 2008) on parking, giving indicative minimum and maximum residential parking guidelines depending on location. The policy for residential uses is based on categories of places from city/ town centre through to suburban edge/ village/ rural. Residential parking standards (Table 13.1 of the Draft Submission) for residential provision is identified in Table 1.

Table 1 Residential Parking Provision

	Location			
	City / Town Centre	**Edge of Centre**	**Suburban**	**Suburban Edge / Village / Rural**
On-street Controls	On-street controls preventing all (or all long stay) parking	On-street controls, residents' scheme and/or existing saturation (3)	No, or very limited, on-street controls	No on-street controls, but possibly a tight street layout
Nature of Guidance	Maximum (1)	Maximum	Minimum (6)	Minimum (6)
1 and 2 bed flats	1 space per unit	1 space per unit	1 space per unit	1 space per unit
Form	Controlled (2)	Not allocated	Not allocated	Not allocated
1 and 2 bed houses	1 space per unit	1 space per unit	1 space per unit	1.5 spaces per unit
Form	Controlled (2)	Allocation possible	Allocation possible	Allocation of one space per unit possible

	Location			
	City / Town Centre	Edge of Centre	Suburban	Suburban Edge / Village / Rural
3 bed houses	1 space per unit	1 space per unit	1.5 spaces per unit	2 independently accessible spaces per unit
Form	Controlled (2)	Allocation possible	Allocation of one space per unit possible	Allocation of one or both spaces possible
4+ bed houses	1 space per unit	1.5 spaces per unit	2 independently accessible spaces per unit	2 independently accessible spaces per unit
Form	Controlled (2)	Allocation of one space per unit possible	Allocation of both spaces possible (7)	Allocation of both spaces possible (7)

(1) Reduced, or even nil provision is encouraged in support of demand management and the most efficient use of land.
(2) Parking/garage courts, probably with controlled entry.
(3) Reduced, or even nil provision acceptable for rented properties, subject to effective tenancy controls.
(4) Open car ports or car barns acceptable at all locations, subject to good design.
(5) May be reduced where main provision is not allocated. Not always needed for flats.
(6) Lower provision may be considered if vehicular trip rate constraints are to be applied in connection with a binding and enforceable Travel Plan.
(7) Best provided side by side, or in another independently accessible form. Tandem parking arrangements are often under-utilised.

Source: Kent County Council Interim Guidance Note 3 (Kent County Council, 2008)

2.4.14 The current parking standards for cycles will be provided in the development in accordance with the Local Plan, as presented in Table 2. These are based on Kent County Council's Supplementary Policy Guidance SPG4 which seeks to encourage the use of bicycles by:

- Making them more easily accessible to users;
- Protecting them from theft; and
- Ensuring parking facilities are well-integrated into the design of the development.

2.4.15 A high standard of security is recommended to avoid the need to rake bicycles a long way into a building.

Table 2 Residential Cycle Parking Standards

Land Use	Cycle Parking Standard
Individual residential developments	1 space per bedroom
Sheltered accommodation	1 space per 5 units

Core Strategy Local Plan Review Submission Draft, 2019

2.4.16 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.

2.4.17 This draft follows the previous public consultation on the 'Preferred Options' stage in March 2018.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.

2.4.18 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."

2.4.19 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.

2.4.20 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.

2.4.21 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."*

2.4.22 Policy SS9 sets out the infrastructure, delivery and management requirements of a new garden settlement:

- A smart town – New dwellings shall provide adaptable space suitable for home working and other buildings (including shops, cafes, commercial buildings and community facilities) shall provide facilities for working on the move; and
- Long-term management and governance – Infrastructure, the urban realm, open spaces including informal pedestrian and cycle pathways, and facilities shall be designed to take into account long-term management and maintenance requirements.

Places and Policies Local Plan, Submission Draft, 2018

2.4.23 The Places and Policies Local Plan, Submission Draft (2018) was produced to support the delivery of the Core Strategy and set out the preferred options ready for consultation.

2.4.24 The Places and Policies Local Plan identifies specific sites considered 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:

- What they want their buildings to look like;
- How they serve the economy and communities; and
- How they relate to each other and to what's already there.

Policy NP9 – Land at Folkestone Racecourse

2.4.25 The land at Folkestone Racecourse also 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.

Electric Vehicle Parking Requirement

2.4.26 Draft Policy T2 also sets out the requirement for electric vehicle charging points. Residential applications must demonstrate that *"A charging point for electric vehicles is provided at a ratio of 1 per dwelling as far as is reasonably practicable"*.

2.4.27 Whilst, under non-residential and commercial proposals the requirement includes *"A minimum of 10 per cent of spaces for active and 10 per cent passive Electric Vehicle Charging points"*.

2.4.28 It also identifies potential opportunities for new development to make use of street lighting columns to permit on-street electric vehicle charging.

2.5 Guidance

Travel Plans, Transport Assessment and Statements, 2014

2.5.1 A set of National Planning Practice Guidance (NPPG) has been published to inform how the principle of the NPPF should be practiced. 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).

2.5.2 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.

2.5.3 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. Transport Assessment guidance is now incorporated into the NPPF.

A Charter for Otterpool Park, 2017

2.5.4 Although not planning policy, Folkestone & Hythe District Council has produced a Charter setting out its aspirations for Otterpool Park (2017). The Charter included principles focusing on creating a place that is environmentally, socially and economically sustainable.

2.5.5 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.

Other Guidance

2.5.6 Where appropriate a range of other technical reference documents have been consulted in developing the assessment and mitigation proposals. These include:

- The Kent Design Guide (Kent Design Initiative, December 2005);
- Kent County Council Interim Guidance Notes 1, 2 and 3 (2008);
- The Design Manual for Roads and Bridges, (DfT, various dates);
- The Manual for Streets, (Department for Communities and Local Government (DCLG) / DfT, 2007);
- The Manual for Streets 2, CIHT, 2010 – a companion guide to Manual for Streets (DCLG / DfT, 2010); and
- Travel Plan Guidelines, (DfT, various dates).

2.6 Summary

2.6.1 The policies and guidance in place seek an emphasis on development in locations where sustainable travel modes can be encouraged and of facilitating access by all modes.

2.6.2 The location for the Otterpool Park development is defined by its excellent existing transport connections: by road (M20); by rail (High Speed 1 and local lines); and by air (London Ashford Airport at Lydd). The District is also home to the Channel Tunnel and Eurostar services at Folkestone and is just a short distance from the UK's busiest ferry port at Dover.

2.6.3 The masterplan for Otterpool Park has been developed, through consultation with Folkestone & Hythe District Council, Kent County Council and other key stakeholders, to create a highly-sustainable garden settlement. 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

[1] Guidance on Transport Assessments and Travel Plans (Kent County Council, October 2008)
[2] Guidance on Transport Assessment (DfT, 2007)

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. Further information regarding development proposals and the Transport Strategy are described in Chapter 5.

3 Baseline Conditions for Sustainable Modes

3.1 Introduction

3.1.1 This Chapter describes the existing conditions on the walking, cycling and public transport networks within the study area. The information in this Chapter has been informed by site observations and audits, client liaison meetings and desktop-based analysis and, along with the baseline highway information in Chapter 3, has informed the development of the masterplan and the Transport Strategy for Otterpool Park

3.2 Walking and Cycling

3.2.1 Figure 2 in the Annex of Figures 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[3] 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.

Walking and Cycling Environment

3.2.2 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.

3.2.3 A description of the walking and cycling environment on existing highway routes within and surrounding the site is provided in the following sections.

A20 Ashford Road

3.2.4 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.

3.2.5 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.

3.2.6 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.

3.2.7 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.

3.2.8 The Folkestone & Hythe District Council Walking and Cycling Study (footnote 3) considered a number of possibilities for enhancement of the walking and cycling networks was identified for this route:

[3] *Otterpool Park Garden Town, Kent Walking and Cycling Study (Mott Macdonald, August 2018).*

- 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.

Otterpool Lane

3.2.9 Otterpool Lane routes south of the A20 from a location east of Barrow Hill 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.

3.2.10 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.

Stone Street

3.2.11 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.

3.2.12 Stone Street provides no formal pedestrian crossing or cycling facilities or traffic calming features.

Aldington Road

3.2.13 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.

3.2.14 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.

3.2.15 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

3.2.16 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.

3.2.17 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.

3.2.18 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

3.2.19 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 3 in the Annex of Figures.

3.2.20 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 Chapter 14 of the Environmental Statement (ES). This section provides details of a selection these existing routes.

3.2.21 Photograph 1 presents public footpath HE/275, which 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.

3.2.22 Photographs 3 and 4 show the mixed condition of existing public footways in both the northern and eastern vicinity of Westenhanger Station.

Photograph 1 Access to footpath from the A20 (HE/275)

Photograph 2 Bridleway (HE/271A) underpasses rail line and M20, north-bound

Photograph 3 Footpath (HE/227) Routing parallel the Railway line, Westenhanger

Photograph 4 Footpath (HE/221A) routing eastwards from Westenhanger

3.2.23 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.

3.2.24 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.

3.2.25 The Walking and Cycling Study (footnote 3) 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

3.2.26 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.

3.2.27 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 4 in the Annex of Figures.

3.2.28 Regional on-road cycle route 17, also runs to the east of Otterpool Park providing connections to Canterbury and Dover.

3.2.29 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.

Walking and Cycle Accessibility

3.2.30 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.

3.2.31 It is considered that journeys of up to 1200m (which equates to approximately 15-minutes) represent the preferred maximum acceptable walking distance (Guidelines for Providing Journeys on Foot, IHT, 2000). Figure 4 in the Annex of Figures shows that the majority of the Otterpool Park site is within a 20-minute walk (approximately 1.6km) and areas of Sellindge and Lympne within a 30-minute walk (approximately 2.4km) of a node.

3.2.32 It is widely regarded that cycling has potential to substitute for short car trips, particularly those less than 5km, as well as forming part of a longer journey by public transport. At a speed of 15km/h (the default standard cycling speed within TRACC software) a 5km distance equates to a journey time of around 20 minutes. Figure 3 in the Annex of Figures illustrates that 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. Whilst, a 45-minute cycle accesses National Cycle Network Route 18 and the regional network to Canterbury.

Access to Local Amenities

3.2.33 The proposed Otterpool Park development will provide a new town centre and include local centres, schools, health facilities, community facilities, retail, leisure and employment (see Table 3). In terms of the baseline of local amenities, there are also a number of existing local facilities and services which are accessible within a reasonable walking and cycling distance (within 5km 'crow flies' distance) of the site. The location of these facilities and services is presented in Figure 4 in the Annex of Figures.

Table 3 Existing Accessible Facilities and Services via Walking and Cycling

Ref.	Name	Location	Ref.	Name	Location
Education					
1	Lympne CofE Primary School	Lympne	8	Stowting CofE Primary School	Stowting
2	Sellindge Primary School	Sellindge	9	Aldington Primary School	Aldington
3	Palmarsh Primary School	Palmarsh	10	Brabourne CofE Primary School	Brabourne
4	Hythe Bay CofE Primary School	Hythe	11	Mersham Primary School	Mersham
5	St Augustine's Catholic Primary School	Saltwood	12	Smeeth Community Primary School	Smeeth
6	Saltwood CofE Primary School	Saltwood	13	Brockhill Park Performing Arts College	Saltwood
7	Lyminge CofE Primary School	Lyminge	-	-	-
Child Care Facilities					
14	Punch and Judy Play Group	Lympne	19	Lyminge Pre-School	Lyminge
15	Lullabies Nursery	Palmarsh	20	Rising Fives Nursery	Brabourne
16	Little Learners Pre-School	Sellindge	21	Hythe Baby Children's Nursery	Hythe
17	Badgers Bridge Nursery	Postling	22	Kaleidoscope Childcare	Aldington
18	Play and Learning Centre	Saltwood	23	Stepping Stones Nursery	Hythe
Health Services					
24	Sellindge Surgery	Sellindge	26	New Lyminge Surgery	Lyminge
25	Oaklands Health Centre	Hythe	27	Sun Lane Surgery	Hythe
Community Facilities					
28	Lympne Village Hall	Lympne	36	St Mary's Church	Lyminge
29	St Stephen's Church	Lympne	37	Saltwood Village Hall	Saltwood
30	All Saints Church	Stanford	38	St Peter and St Paul's Church	Saltwood
31	Sellindge Village Hall	Sellindge	39	Newington Village Hall	Newington
32	Methodist Church	Sellindge	40	St Nicholas Church	Newington
33	St Mary's the Virgin Church	Sellindge	41	Hythe Library	Hythe
34	St Mary and St Radegund	Postling	42	St Leonard's Church	Hythe
35	Lyminge Village Hall	Lyminge	43	St Martin's Church	Aldington

Ref.	Name	Location	Ref.	Name	Location
Sports and Recreation					
44	Westenhanger Castle	Westenhanger	49	Saltwood Cricket Club	Hythe
45	Port Lympne Zoo Park	Lympne	50	Folkestone Rugby Club	Newington
46	Royal Military Canal	Hythe	51	Mersham le Hatch, Deer Park	Ashford
47	Harringe Brook Wood		52	Hythe Cricket & Squash Club	Hythe
48	Brockhill County Park	Saltwood	53	Hythe Golf Club	Hythe
Retail					
54	Lympne Village Store	Lympne	57	Aldi Food Store	Hythe
55	Cooperative Food Store	Sellindge	58	Waitrose	Hythe
56	Sainsbury's Food Store	Hythe	59	Hight Street (variety of shops)	Hythe

Source: Quod; Draft Community Facilities Delivery Strategy (February 2019)

3.3 Public Transport Network and Services

Bus Services and Infrastructure

3.3.1 The following range of walking distances in order to access a bus stop on foot for individuals without mobility impairment are set out by the Chartered Institution of Highways & Transportation[4]:

- Desirable (400m);
- Acceptable (800m); and
- Preferred maximum (1.2km).

3.3.2 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 Figure 5 in the Annex of Figures. Table 4 summarises the services which serve the bus stops along these routes. Figure 6 in the Annex of Figures presents the location of bus stops in the vicinity of the site and a 400m walk distance isochrone around each bus stop.

3.3.3 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.

[4] *Guidelines for Providing for Journey on Foot (Institution of Highways & Transportation, 2000)*

Table 4 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

3.3.4 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).

3.3.5 Table 5 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 5 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)

3.4 Summary

3.4.1 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.

3.4.2 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.

3.4.3 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.

3.4.4 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.

4 Baseline Local Highway Conditions

4.1 Introduction

4.1.1 This Chapter describes the existing conditions on the highway network within the highway capacity modelling study area, as shown in Figure 1 in the Annex of Figures, and has been informed by site observations and audits, survey data collection, client liaison meetings, as well as desktop-based analysis.

4.1.2 The information in this Chapter has been used to inform the development of the masterplan and provided the foundation on which the Otterpool Park Transport Strategy described in Chapter 5 has been developed.

4.2 Key Links within the Study Area

4.2.1 Figure 7 in the Annex of Figures presents the local highway network within the vicinity of the site. The following sections describe the nature of the key links within the study area.

M20 Corridor

4.2.2 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.

4.2.3 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.

4.2.4 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.

4.2.5 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.

4.2.6 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. Junction 10A and a link road to the A2070 is currently under construction and due to be completed by summer 2020.

A20 Ashford Road / Barrow Hill / Hythe Road

4.2.7 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.

4.2.8 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. This is discussed in more detail in Chapter 5.

4.2.9 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. A number of residential premises are accessed from the A20 within the Otterpool Park area. Photographs 5 and 6 present two locations on the A20.

Photograph 5 A20 Ashford Road Northbound towards M20 Junction 11

Photograph 6 A20 Ashford Road west of Newingreen

B2067 Otterpool Lane

4.2.10 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.

4.2.11 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 (Photograph 7).

Photograph 7 Ashford Road leading to Otterpool Lane

Photograph 8 Hythe Road approaching Newingreen junction

A261 Hythe Road

4.2.12 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.

4.2.13 It should be noted that there is a sharp double curve in the road alignment through the village of Pedlinge. Photograph 6 presents Hythe Road northbound approaching the junction with the A20 Ashford Road.

Aldington Road

4.2.14 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.

4.2.15 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.

4.2.16 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 (Photographs 9 and 10).

Photograph 9 Aldington Road West-bound

Photograph 10 Aldington Road West-bound

Harringe Lane

4.2.17 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.

4.2.18 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

4.2.19 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).

4.2.20 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.

4.2.21 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.

4.2.22 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 (Photographs 11 and 12).

Photograph 11 Stone Street South-bound, approaching Aldington Road

Photograph 12 Stone Street North-bound, through Lympne

4.3 Baseline Traffic Flows

4.3.1 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.

4.3.2 The data collected in Canterbury in March 2014 was validated against data collected in March 2018, as described in the data validation report in Appendix B. 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.

4.3.3 The data collected in June 2017 was validated against the October 2016 data as described in the data validation report. The AM and PM peak network peak hours were observed to be 08:00 to 09:00 and 17:00 to 18:00, as described in the data validation reports in Appendix C. The 2017 data was growthed to 2018 to provide the baseline for assessment using TEMPro growth factors presented in Chapter 6. Table 6 presents AM and PM peak baseline flows on the key links within the study area.

Table 6 Summary of AM and PM Peak Hour 2018 Baseline Traffic 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**

4.4 Baseline Highway Capacity

Summary of Results

4.4.1 presents the junctions within the study area that were agreed to be included within the capacity assessment. This section presents a summary of the results of the 2018 Baseline junction modelling for all existing junctions within the study area using the latest available software versions, Junctions 9 for the non-signalised junctions and LinSig 3.2.39.0 for signalised junctions. The modelling validation reports are contained in Appendix B (junctions in Canterbury) and Appendix D (all other junctions). Appendix E presents baseline traffic flows through all existing junctions within the highway capacity assessment study area.

4.4.2 Table 7 presents a summary of the results of the highway capacity modelling for the existing junctions within the study area. The outputs from the modelling software are contained in Appendix F. The table presents the highest degree of saturation (DoS) or the maximum ratio of flow to capacity (RFC) on any arm of the junction.

4.4.3 DoS provides an indication of the level of spare capacity on a signalised lane. This is based on the total demand, lane saturation flow and green time available to the lane. Any value greater than 90% but within 100% is considered to be over practical capacity and any value above 100% is considered to be over theoretical capacity. Junctions using sophisticated methods of control such as MOVA or SCOOT can still operate efficiently with a DoS above 90%. RFC is the ratio of flow to capacity which is used for non-signalised junctions. The RFC provides a basis for judging the acceptability of junction designs and typically an RFC of less than 0.85 is considered to indicate satisfactory performance. It takes into account the geometric capacity, traffic demand and available gaps for traffic based upon opposing flow.

4.4.4 Junctions that operate over capacity, i.e. with a DoS above 90% or an RFC above 85%, in either the AM or PM peak hour, are highlighted orange in Table 7. The results tables for all junctions in Table 7 are contained in Appendix G. The table shows that the following junctions are currently operating over capacity:

- A20 Ashford Road / A261 Hythe Road in the AM peak, operating at an RFC of 0.87;
- M20 Junction 9 in the PM peak, operating at a DoS of 92%;
- B2064 Cheriton High Street / A2034 Cherry Garden Avenue in the AM (91% DoS) and PM (94% DoS) peaks;
- Old Dover Road / St Lawrence Road / The Drive in the AM (99% DoS) and PM (100.7% DoS) peaks; and
- Nackington Road / Old Dover Road in the AM peak, operating at a DoS of 97%.

4.4.5 In addition, the B2064 Cheriton High Street / B2063 Risborough Lane junction is approaching capacity in the PM peak, operating at a DoS of 87.2% in the PM peak.

4.4.6 The following sections present the modelling results of the five junctions operating over capacity in more detail. Results are presented for each arm or lane in terms of queue lengths and delays as well as DoS or RFC. For non-signalised junctions, queue lengths are expressed in terms of the number of vehicles and delays in the average delay in seconds experienced by each vehicle. For signalised junctions, queues and delays are measured in terms of passenger car units (PCUs). 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.

Table 7 Summary of Baseline AM and PM Peak Hour Highway Capacity

Junction ID / Name		Maximum DoS / RFC	
		AM Peak	PM Peak
J1	M20 J10	84.5%	83.2%
J2	M20 J11	0.40	0.45
J3	Ashford Road (A20) / Swan Lane	0.40	0.29
J4	Ashford Road (A20) / Stone Hill	0.24	0.14
J5	Hythe Road (A20) / Station Road / Church Road	0.36	0.42
J6	Hythe Road (A20) / Meersham	0.31	0.20
J7a	A2070 Kennington Road / The Street	0.26	0.32
J7b	Hythe Road (A20) / The Street	0.68	0.56
J8	A20 Ashford Road / B2067 Otterpool Lane	47.4%	35%
J9	B2067 Otterpool Lane / Aldington Road	0.22	0.34
J10	Aldington Road / Stone Street	0.39	0.61
J11a	A20 Ashford Road / A261 Hythe Road	0.87	0.72
J11b	A20 Ashford Road / Stone Street	0.72	0.37
J12	Aldington Road / Lympne Hill	0.47	0.47
J13	A261 Hythe Road / Aldington Road	0.42	0.32
J14	A261 London Road / Barrack Hill	0.43	0.31
J15	A259 / Dymchurch Road / Military Road	81%	85%
J16	A259 Prospect Road / A259 East Road / Station Road / High Street	0.69	0.72
J17	A20 Ashford Road / A20 J11 off slip	0.56	0.34
J18	Ashford Road (A20) / Sandling Road	0.49	0.36
J19	M20 J11A	0.28	0.32
J20	M20 J12	0.55	0.47
J21a	M20 J13	0.51	0.51
J21b	M20 J13	0.48	0.51
J22	A20 Ashford Road / Stone Street	0.11	0.28
J23	M20 J9	75.3%	92.0%
J24	B2064 Cheriton High Street / B2063 Risborough Lane	77.0%	87.2%
J25	B2064 Cheriton High Street / A2034 Cherry Garden Avenue	91.0%	94.0%
J26	A259 Prospect Road / Stade Street	0.57	0.72
J27	Barrow Hill 1-way	53.4%	49.4%
SH18	A260 Spitfire Way / White Horse Hill / A20 Slip Roads	0.70	0.73
SH19	Alkham Valley Road / A20 slip roads	0.84	0.74
SH16	A260 Canterbury Road / Alkham Valley Road	0.61	0.46
J44	Nackington Road / Old Dover Road / St Lawrence Road / The Drive	99.4%	100.7%

A20 Ashford Road / A261 Hythe Road and A20 Ashford Road / Stone Street

4.4.7 Table 8 presents the results of the baseline highway capacity assessments for the two adjacent priority junctions at A20 Ashford Road / A261 Hythe Road and A20 Ashford Road / Stone Street.

Table 8 A20 Ashford Road / A261 Hythe Road and A20 Ashford Road / Stone Street Baseline Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Hythe Road	1	0.75	2.5	77.35	0.39	0.6	22.15
	2	0.87	5.7	88.64	0.72	2.4	49.08
Stone Street	1	0.12	0.1	15.58	0.03	0.0	8.59
	2	0.72	2.5	36.54	0.37	0.6	16.48
A20 Ashford Road	1	0.02	0.0	7.80	0.05	0.0	7.77
	2	0.18	0.2	7.92	0.35	0.5	10.50

4.4.8 Table 8 shows that Hythe Road is operating above practical capacity in the AM peak, as Hythe Road has an RFC of 0.87, with an average delay of approximately 88.6 seconds per vehicle. This is due to high traffic flows on the A20 Ashford Road preventing traffic from Hythe Road turning right into A20 Ashford Road Eastbound.

Planned improvement

4.4.9 It should be noted that an improvement is proposed at this junction as part of the planning application for the Land East of Ashford Road[5]. The Transport Assessment for this application noted that contributions have been collected from consented sites in the area to provide a scheme to improve the performance of this junction. The scheme includes a redesign of the A20 Ashford Road/ A261 Hythe Road and the A20 Ashford Road / Stone Street priority junctions to a single signalised junction. Further details are provided in Chapter 5. However, it is understood that the total contributions required to implement the scheme have not been secured. The Land East of Ashford Road application was approved based on a 'nil detriment' impact approach for which a scheme involving a minor increase in the flare length on the A261 Hythe Road was required.

M20 Junction 9

4.4.10 Table 9 presents the results of the baseline highway capacity assessment for the M20 Junction 9. Table 9 shows that both the M20 eastbound off-slip ahead movement and the Trinity Road arm are operating over practical capacity in the PM peak with DoS values of 91.3% and 92% respectively. Trinity Road operates with average delays of approximately 45 seconds per PCU on the left-turn. However, a mean maximum queue of 16 PCUs would not block back into the next junction. The M20 eastbound off-slip is subject to average delays of up to 36.7 seconds per PCU. The mean maximum queue of 10.4 PCU is not predicted to block back onto the M20.

[5] Land East of Ashford Road (A20), Sellindge, Kent Transport Assessment (September 2016, Consulting Engineers Ltd) (Planning Ref. Y16/1122/SH)

Table 9 M20 Junction 9 Baseline Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Trinity Road	1	73.4%	6	29.4	92.0%	16	45
	2 and 3	75.3: 75.3%	6.4	24.3	86.6: 86.6%	10.6	27.3
M20 Slip Road (WB)	1 and 2	67.5: 60.5%	5.6	18.1	67.0: 56.8%	5.2	24.8
	3 and 4	56.5: 49.3%	4.3	16.5	53.9: 56.1%	4.2	23.5
Fougeres Way	1 and 2	65.4%	6.3	17.8	47.0%	4.6	15.3
	3	38.0%	3	13.2	48.8%	4.9	15.6
	4	23.3%	0.6	9.9	23.1%	0.9	12.4
M20 Slip Road (EB)	1 and 2	29.5: 22.8%	1.7	18.1	21.6: 21.6%	1.5	21.6
	3 and 4	57.9: 79.4%	5.7	23.7	81.5: 91.3%	10.4	36.7

4.4.11 The cause of the capacity issue at this junction is the volume of traffic routing from the M20 eastbound slip into Ashford which conflicts with the heavy traffic flows on the associated section of the circulatory. The eastbound slip consists of two left-turn lanes and two ahead lanes, even though the volume of traffic left-turning is low, and the ahead traffic volume is high. The number of ahead lanes is restricted to two lanes because the associated exit arm on Fougeres Way has just two exit lanes.

B2064 Cheriton High Street / A2034 Cherry Garden Avenue

4.4.12 Table 10 presents the results of the baseline highway capacity assessment for the Cheriton High Street / Cherry Garden Avenue junction.

Table 10 B2064 Cheriton High Street / A2034 Cherry Garden Avenue Baseline Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
A20 Cherry Garden Avenue	1	81.5%	15.6	86.2	86.9%	13.4	102.3
	2 and 3	83.7: 83.7%	19.3	81.4	85.7: 85.7%	15	86.8
A2034 Cheriton Road (WB)	1 and 2	78.4: 78.4%	16	78.5	74.1: 94.1%	12.6	76.6
B2034 Beachborough Road	1	91.0%	23.2	99.2	94.0%	26.8	94.7
A2034 Cheriton Road (EB)	1	26.3%	5.4	35.4	30.9%	5.5	40.3

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
	2 and 3	74.5: 74.5%	16.2	73.8	86.5: 86.5%	18.6	82.1

4.4.13 Table 10 shows that Beachborough Road is operating over practical capacity in both the AM and PM peaks. In the PM peak, A20 Cheriton Road westbound and Beachborough Road are operating over capacity for traffic movements. The A20 Cherry Garden Avenue and A20 Cheriton Road eastbound are also approaching practical capacity in the PM peak. The highest delay per PCU at the junction is 102 seconds on the A20 Cherry Garden Avenue southbound left turn in the PM peak hour.

4.4.14 Overall the junction is operating above practical capacity with all approaches experiencing substantial delays and long queues during the AM and PM peak hours. The only exception is on the A20 Cheriton westbound left turn. The cause of the issue is that the volume of traffic routing through the junction exceeds the capacity of the junction in its current layout and method of control.

Nackington Road / Old Dover Road / St Lawrence Road / The Drive

4.4.15 Table 11 presents the results of the baseline highway capacity assessment for the Nackington Road/ Old Dover Road and Old Dover Road / St Lawrence Road / The Drive junctions.

Table 11 Nackington Road / Old Dover Road / The Drive Baseline Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Old Dover Road / St Lawrence Road / The Drive							
Old Dover Road (WB)	1	98.0%	27.2	85.2	82.1%	6	27.5
The Drive	1	49.3%	2.5	65.8	89.1%	6.8	133.3
Old Dover Road (EB)	1	95.3%	14.7	103.4	100.7%	29.1	122.3
St Lawrence Road	1	99.4%	16	142	77.4%	7.5	73.2
Nackington Road / Old Dover Road							
Old Dover Road (WB)	1	63.5%	9.2	53.2	84.7%	10	80.9
Nackington Road	1 and 2	96.8: 96.8%	24.7	93.9	83.8: 83.8%	10.4	68
Old Dover Road (EB)	1 and 2	64.2: 64.2%	9.4	40.4	64.6: 64.5%	6.1	12

4.4.16 Table 11 shows that the Old Dover Road / St Lawrence Road / The Drive junction is operating over capacity on the Old Dover Road and St Lawrence Road arms in the AM peak and Old Dover Road eastbound in the PM peak. This is caused by the high volume of traffic routing through the junction combined with the lack of non-blocking storage on the right-turn into St Lawrence Road which runs opposed to the Old Dover Road eastbound movement.

4.5 M20 Freight Traffic Management

Operation Stack

4.5.1 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.

4.5.2 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.

4.5.3 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[6] 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.

4.5.4 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.

4.5.5 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

4.5.6 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.

4.5.7 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.

4.5.8 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

[6] Solutions to Operation Stack: Managing freight traffic in Kent Public information exercise (Highways England, June 2018)

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

4.5.9 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.

4.5.10 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.

4.6 Road Safety

Personal Injury Accident Data

4.6.1 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 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 H.

4.6.2 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 12 provides a summary of the number of accidents by location and severity.

Table 12 All Accidents by Location and Severity

Location	Number of Accidents			
	Fatal	Serious	Slight	Total
M20 (including Stanford Intersection and Stanford Bypass)	1	5	48	**54**
A20 Ashford Road and Barrow Hill	2	7	36	**45**
A261 Hythe Road	0	0	2	**2**
B2067	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**

4.6.3 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).

4.6.4 As shown within Table 13, the 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 13. Where an accident has occurred within 25 metres of a junction it is assumed to have occurred at the junction.

Table 13 Summary of Accident Cluster Locations

Location	Accidents / Severity	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

4.6.5 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

4.6.6 The accident data for A20 Ashford Road roundabout is set out in Table 14. 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 14 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)

4.6.7 The accident data for the A20 Ashford Road (between Hythe Road and Stone Street) is summarised in Table 15. The data indicates that six accidents over the five-year period involved a single vehicle (including four motorcycles), two were serious in severity.

4.6.8 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, an alignment deficiency, poor drainage or poor road surface friction properties with the carriageway along this section of the A20.

Table 15 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.

Road Safety Summary

4.6.9 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.

4.6.10 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.

4.7 Westenhanger Station Vehicle Parking

4.7.1 Westenhanger Rail Station represents the main generator of parking demand within the development site, which is predominantly rural and of a low parking demand. As such, a parking beat survey was undertaken on Thursday 19th April 2018 within school term time, to determine the current levels of associated parking at Westenhanger Rail Station. In agreement with Kent County Council, parking beats were carried out at three-hour intervals between 07:00, 10:00, 13:00, 16:00 and 19:00.

4.7.2 The parking within the areas surrounding the station is predominantly unmarked, unrestricted kerbside parking with a small provision (eight spaces) at the station car park. There is also an adjoining private car park comprising approximately 18 spaces serving a local Auctioneers. The parking survey included the following areas:

- Westenhanger Station car park: hardstanding area directly to the east of the Westenhanger Station building;
- Auctioneers private car park: hardstanding area directly to the west of the Westenhanger Station building;
- Westenhanger Station access road: road linking the Westenhanger Station car park to Stone Street; and

- Stone Street between Westenhanger Station car park access road and Meadow Court to the south.

4.7.3 The parking survey results and Photographs illustrating the surveyed conditions, are provided in Appendix I. Table 16 presents the number of parking spaces at each location and the number of vehicles parked in the spaces at the time of each beat survey.

Table 16 Parking Beat Survey Results

Location	Number of Spaces	Number of Vehicles Parked by Time Period				
		07:00	10:00	13:00	16:00	19:00
Westenhanger Station car park *unmarked, unrestricted*	7	7	7	5	5	1
Westenhanger Station car park *Blue Badge only*	1	0	0	0	1	0
Auctioneers private car park *private*	18	2	3	4	3	1
Westenhanger Station access road *unmarked, unrestricted*	20	17	20	19	18	10
Stone Street *unmarked, unrestricted*	38	14	25	24	23	11
Total	**84**	**40**	**55**	**52**	**50**	**12**

4.7.4 The Westenhanger Station car park was found to have high parking utilisation (100%) during the AM periods with the car park fully occupied and just two spaces available throughout the day time (71.4% stress levels), which lowered significantly at the final beat (see Photograph 13).

Photograph 13 Westenhanger Station Car Park

Photograph 14 Westenhanger Station Access Road

4.7.5 The Auctioneers private car park was observed to have low parking stress levels during the time of the surveys (daily average of 14.4%, approximately 3 spaces). The parking demand would be considerably higher during the day of an Auction.

4.7.6 The access road was observed to have high levels of parking stress (ranging between 85-100% for the three central beats), which typically make up a working day. Vehicles are shown to park along both sides of the carriageway (see Photograph 1). This is not adequate as two-way vehicle movements are obstructed by the parked vehicles.

4.7.7 There is no designated station parking on Stone Street, which experienced low to medium levels of parking demand throughout the day. The road is narrow and not supposed to be parked on. All vehicles shown to park on it, are inappropriate unless associated with the neighbouring housing.

4.7.8 In summary, the parking provision at the station is found to provide insufficient capacity to accommodate demand.

5 Proposed Development

5.1 Introduction

5.1.1 This Chapter sets out the quantum of proposed development assessed in each scenario for Otterpool Park and establishes the strategy for access and travel for the development. This has informed the Illustrative Masterplan and the Movement and Access Parameter Plans (Drawing OPM(P)1010F) and forms the basis of the assessment of impacts.

5.2 Development Quantum

5.2.1 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.

5.2.2 Table 17 to Table 19 represent the development schedules for each of the future year assessment scenarios based on the development schedules provided by the project team. This includes: the 6,000 homes scenario by the end of the emerging Core Strategy period; 8,500 homes scenario for 2044 (the main assessment of the application) and the wider Masterplan 10,000 homes scenario in 2046.

Table 17 Otterpool Park Development Schedule (2037)

Land Use	Development Quantum			
	GIA (sqm)	Homes	Rooms	Schools
C3 Residential		6,000		
C2 Extra Care Housing		375		
C1 Hotel	7,001		117	
B1 Commercial business in hubs	7,600			
B1 Commercial business park	15,500			
B2 Light Industrial business park	2,222			
A1 Retail	11,950			
A2 Business	8,450			
A3 Café / Restaurant				
A4 Pub / Takeaway				
D1 Secondary schools	10,050			1
D1 Primary School	9,160			4
D1 Nursery	3,150			9
D1 Community Centre	5,800			
D1 Health	6,200			
D2 Sports pavilion	750			
D2 Indoor sports hall	6,750			
		6,375		

Source: Otterpool_Land use Phasing_8.5k &_10K_16-06-18 and Otterpool Development Accommodation 8.5k &10k yearly phases_GY_16-06-18

Table 18 Otterpool Park Development Schedule (2044)

Land Use	Development Quantum			
	GIA (sqm)	Homes	Rooms	Schools
C3 Residential		7,859		
C2 Extra Care Housing		642		
C1 Hotel	7,001		117	
B1 Commercial business in hubs	13,200			
B1 Commercial business park	53,460			
B2 Light Industrial business park	8,265			
A1 Retail	16,175			
A2 Business	10,075			
A3 Café / Restaurant				
A4 Pub / Takeaway				
D1 Secondary schools	10,050			1
D1 Primary School	11,450			5
D1 Nursery	4,200			12
D1 Community Centre	7,200			
D1 Health	11,800			
D2 Sports pavilion	750			
D2 Indoor sports hall	6,750			
		8,500		

Source: Otterpool_Land use Phasing_8.5k &_10K_16-06-18 and Otterpool Development Accommodation 8.5k &10k yearly phases_GY_16-06-18 with reduction to 1 Secondary school

Table 19 Otterpool Park Development Schedule (2046)

Land Use	Development Quantum			
	GIA (sqm)	Homes	Rooms	Schools
C3 Residential		8,709		
C2 Extra Care Housing		1,293		
C1 Hotel	7,001		117	
B1 Commercial business in hubs	13,200			
B1 Commercial business park	53,460			
B2 Light Industrial business park	8,265			
A1 Retail	16,175			
A2 Business	10,075			
A3 Café / Restaurant				

Land Use	Development Quantum			
	GIA (sqm)	Homes	Rooms	Schools
A4 Pub / Takeaway				
D1 Secondary schools	10,050			1
D1 Primary School	13,740			6
D1 Nursery	4,550			13
D1 Community Centre	7,200			
D1 Health	11,800			
D2 Sports pavilion	750			
D2 Indoor sports hall	6,750			
		10,001		

Source: Otterpool_Land use Phasing_8.5k &_10K_16-06-18 and Otterpool Development Accommodation 8.5k &10k yearly phases_GY_16-06-18 with reduction to 1 Secondary school

5.3 Otterpool Park Transport Strategy

5.3.1 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.

5.3.2 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.

5.3.3 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.

Principles of the Transport Strategy

5.3.4 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

5.3.5 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)1035E);
- 700 metres of a MUGA (multi use games area) (Drawing OPM(P)1033E);
- 800 metres of a primary school (Drawing OPM(P)1030E) and local centre (Drawing OPM(P)1031E); and
- 1,000 metres of allotments and community orchards (Drawing OPM(P)1036D), sports pitches (Drawing OPM(P)1032E) and a NEAP (neighbourhood play area) (Drawing OPM(P)1034E).

5.3.6 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

Otterpool Park Network

5.3.7 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 Mott MacDonald Walking and Cycling Study (footnote 3) as discussed in Chapter 3.

5.3.8 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)1010F.

5.3.9 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.

5.3.10 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.

5.3.11 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 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, the well-designed routes will provide an attractive and more sustainable alternative to the car.

5.3.12 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).

5.3.13 All walking and cycling routes will be of a high-quality with all-weather surfacing, well-lit and easily maintained, taking into account environmental considerations. 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.

Off-site Connections

5.3.14 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 by Mott Macdonald for Folkestone & Hythe DC (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.

5.3.15 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

Westenhanger Station and Rail Services

5.3.16 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.

5.3.17 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.

5.3.18 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.

Bus Network and Services

5.3.19 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.

5.3.20 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.

5.3.21 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.

5.3.22 Figure 8 in the Annex of Figures illustrates the proposed bus routing and walking distances from bus stops, demonstrating that the majority of residents would be within no more than 400 metres walking distance (less than five minutes at average DfT walking speeds).

5.3.23 The strategy plan (Drawing OPM(P)1010F) 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).

5.3.24 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.

5.3.25 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.

5.3.26 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

5.3.27 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.

Upgrade of the A20 Ashford Road

5.3.28 The A20 Ashford Road is currently dual carriageway to the south of the motorway junction for a distance of approximately 300 metres. Along this dual carriageway section, to the south of the M20 junction there is an at grade Give Way junction for the A20 Ashford Road. This is a restricted access junction providing for left in and left out movements with Ashford Road to and from the southbound carriageway. A roundabout junction to the south provides for vehicles to make a U-Turn movement and return north to the motorway junction.

5.3.29 South of the roundabout junction, the A20 is single carriageway for around 1,100 metres to a point 145 metres to the north of the Newingreen junction where it is a dual carriageway with a hatched out wide northbound one lane carriageway and a southbound two-lane carriageway. The single carriageway route varies in width, with a section where it is less than 6.5m wide where it traverses through the wooded area to the north of Stone Street (a distance of approximately 700 metres). The existing geometry and road safety performance appear to be below standard in this section.

5.3.30 In relation to existing capacity, as a guide, the Design Manual for Roads and Bridges gives an annual average daily traffic flow (AADT) for this is type of road (Rural S2 road) as up to 13,000 vehicles (TA 46/97 paragraph 2.4 & Table 2.1).

5.3.31 Table 20 sets out the peak hour and AADT flows from a 2016 DfT survey, the 2018 baseline situation and indicative forecasts without (DM) and with (DS) Otterpool Park development of 8,500 homes (2044 assessment year) as well for the 10,000 homes of the OPFM (2046). The forecast method to derive peak hour background flows is described in Chapter 6, while Chapters 7 to 9 describe the method for calculating Otterpool Park traffic flows. Daily totals have been derived from peak hour flows by considering existing peak hour to daily flow conversion factors.

Table 20 A20 Ashford Road Base and Future Year Traffic Flows

Assessment Year	Number of Vehicles						
	AM Peak Hour			PM Peak Hour			AADT
	NB	SB	Total	NB	SB	Total	Total
2016 Survey	-	-	-	-	-	-	13,720*
2018 Base Year	762	664	1,426	700	746	1,446	18,061
2044 DM	850	779	1,629	808	1,003	1,811	21,633
2044 DS	1,710	1,664	3,374	1,669	1,693	3,362	42,895
2046 DM	857	791	1,648	818	1,007	1,825	21,840
2046 DS	1,795	1,678	3,473	1,643	1,505	3,148	43,800

* *DfT AADF counter*

5.3.32 Based on the 2016 and 2018 AADT totals, the A20 appears to be already be operating above the typical daily flow capacity of 13,000 for a rural road of this current character. The expected future increases in traffic without development will exacerbate capacity issues on this link. The future year

DS scenarios that include Otterpool Park development traffic would require the A20 to accommodate a daily flow of 42,895 vehicles for the application scheme. In conclusion, the existing link is not anticipated to have sufficient capacity to deal with the level of future traffic even without Otterpool Park.

5.3.33 Design discussions have taken place with Kent County Council and Folkestone & Hythe District Council as to the future character of the link between the roundabout south of the M20 junction and Newingreen junction. Given the requirement to provide two access junctions into the development from the new link road and the changing nature of the land uses to the west of the A20 that would form the development, it has been agreed with Kent County Council and Folkestone & Hythe District Council that the A20 would most appropriately become an urban road with a 40mph speed limit. There has also been the need to minimise land requirements for road infrastructure.

5.3.34 The traffic capacity of urban roads is identified in the Design Manual for Roads and Bridges (DMRB) Vol 5.1 TA 79/99 road types. It is considered that in future the A20 in this location would be a UAP1 road which is categorised as a 'High standard single or dual carriageway carrying predominately through traffic with limited access and a 40 to 60mph speed limit'.[7]

5.3.35 The busiest direction capacity of a 7.3mm wide UPA1 single carriageway road is identified in TA 79/99 as 1,590 peak hour vehicles in one direction and a 2,650 two-way flow. The forecast flows With Development in the Table 1 above show that this would not provide sufficient capacity.

5.3.36 The capacity of a dual carriageway (i.e. two 7.3m wide carriageways) UAP1 road is 3,600 vehicles in each direction and a 7,200 two-way flow. The forecast flows With Development (DS) in Table 20 above show that this should provide sufficient capacity.

5.3.37 It is therefore proposed to upgrade the A20 between the roundabout south of the M20 J11 and north of the Newingreen junction 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.

5.3.38 Drawing OP-ARC-XXX-DR-T-001 Rev P03 shows the A20 alignment plan and profile, together with typical sections.

5.3.39 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.

5.3.40 At the southern end of the A20, there will be a new traffic signalised junction connecting to the proposed Newingreen Link.

Newingreen Link

5.3.41 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.

5.3.42 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

[7] http://www.dft.gov.uk/ha/standards/dmrb/vol5/section1/ta7999.pdf

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.

5.3.43 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.

Primary Roads

5.3.44 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)1010F).

Car Parking Provision

5.3.45 Parking for cars will be provided as part of the development in accordance with the emerging policy T2 of the Places and Policies Local Plan (Submission Draft, 2018) as set out in Chapter 2.

5.3.46 For residential parking, as a new Garden Town settlement, Otterpool is a bespoke development. Through discussion with Kent County Council, it is therefore proposed that the category of area for which parking levels apply are agreed for each area of the site as it comes forward, in accordance with the policy.

5.3.47 For the non-residential uses within the town centre and local centres, each development would require detailed consideration of linked visits in order that parking provision reflects the mix of land uses and locational characteristics.

Cycle Parking Provision

5.3.48 Parking for cycles will be provided in the development in accordance with the emerging policy T5 of the Places and Policies Local Plan (Submission Draft, 2018), as shown in **Error! Reference source not found.** in Chapter 2, which provides 1 space per bedroom for individual residential developments. These are based on Kent County Council's Supplementary Policy Guidance SPG4 (2006) and seek to encourage the use of bicycles by:

- Making them more easily accessible to users;
- Protecting them from theft; and
- Ensuring parking facilities are well-integrated into the design of the development.

Sustainable Travel and Low Carbon Measures

5.3.49 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.

5.3.50 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.

6 Future Baseline Highway Conditions

6.1 Introduction

6.1.1 In order to undertake impact assessments for the required future assessment years, it is necessary to establish the expected changes to background traffic volumes and the highway network for the assessment years.

6.1.2 This Chapter describes the agreed method with Kent County Council and Highways England for forecasting background traffic growth to the assessment years of 2037, 2044 and 2046. It also describes the changes to the highway network that are expected to influence traffic volumes, as advised by Kent County Council and Highways England.

6.2 Background Traffic Forecasting

Introduction

6.2.1 Since detailed information of the scale, type and location of new development within the study area between 2018 and the assessment years of 2037, 2044 and 2046 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.

6.2.2 In addition to the use of TEMPro, specific developments for which traffic generation and routing assumptions were available are included in the assessment separately and heavy goods vehicle (HGV) traffic growth on the M20 was calculated using national freight traffic growth data.

6.2.3 The following sections describe the application of this method in detail.

Committed/Planned Developments

6.2.4 This section provides an overview of the committed or planned developments which have been included within the assessment, for which traffic generation and routing information was available. The following developments have been included in this way, as requested by Kent County Council:

- Land East of Ashford Road (A20);
- Site South of A20;
- Land at Willesborough Lees; and
- Mountfield Park, South Canterbury.

6.2.5 Traffic volume and routing information related to these developments in provided in Appendix J.

Land East of Ashford Road (A20)

6.2.6 An outline planning application (Planning Ref. Y16/1122/SH) pending decision for the proposed mixed-use development comprising 162 homes (including affordable, self-build and retirement housing) and up to 929 square metre B1 business floorspace equivalent to 77 jobs (full time). The Transport Assessment accompanying the application forecast development traffic for a future year of 2022.

Site South of A20

6.2.7 Reserved matters approval granted January 2016, for the Hybrid application (Planning Ref. Y14/0873/SH) comprising the redevelopment of land between the A20 and M20 at Sellindge for the construction of 250 homes. The indicative build programme within the Transport Assessment proposes a full build-out anticipated for 2019/20.

Land at Willesborough Lees

6.2.8 Full planning was granted March 2018 (Planning Ref. 16/01722/AS) for a new link road to the rear of William Harvey Hospital from the A20 and 207 homes, located in Ashford. The supporting Transport Assessment included a 2021 future year.

Mountfield Park, South Canterbury

6.2.9 A planning application pending decision was submitted March 2016 for the proposed South Canterbury urban extension, for up to 4,000 homes and 70,000 square metre commercial floorspace which is equivalent to 5,833 jobs (full time), on land north and south of New Dover Road, Canterbury (Planning Ref. CA/16/00600). The supporting Transport Assessment has assessed a 2031 future year assessment, when the development is anticipated to be fully built out and occupied.

TEMPro Growth Factors

Household and employment forecasts

6.2.10 TEMPro utilises forecast household and employment numbers within local districts to forecast traffic growth on the network on a district-wide basis. To calculate growth between a base assessment year and a future assessment year, the software calculates the forecast increase in the number of homes and jobs between the two years and applies trip rates to determine the corresponding expected increase in trips the increase in the number of homes and jobs would generate. The increase is represented by a growth rate that can be applied to base year traffic flow information to generate the expected future year traffic flows.

6.2.11 Different growth rates are generated for different classes of road and are generated on a district-or regional-wide scale. Thus, this method of forecasting applies uniform growth across a region and does not take into account localised growth that would occur most prominently around the immediate vicinity of where a development is located.

6.2.12 Highways England advised that the household and employment figures contained in TEMPro v7.2 are incomplete and should be updated with forecasts consistent with the development requirements of the relevant local authorities in order to reflect anticipated traffic growth.

6.2.13 Following consultation with Kent County Council and Folkestone & Hythe District Council, most recent housing and job forecasts were obtained for the three areas within the assessment study area; Ashford, Folkestone & Hythe and Canterbury. Table 21 presents the forecast information provided for each assessment year.

Table 21 Forecast Household and Job Numbers for Ashford, Folkestone & Hythe and Canterbury by Year

Year	Ashford		Folkstone & Hythe		Canterbury	
	Households	Jobs	Households	Jobs	Households	Jobs
2017	52,769	62,736	49,165	48,530		
2018	53,562	62,783	49,665	48,860	66,596	72,465
2037	66,946	68,806	61,692	54,833	81,522	77,811
2044	70,870	71,186	66,123	57,143	86,055	80,432
2046	71,837	71,767	67,389	57,803	87,133	81,063

Application of the household and employment forecasts within TEMPro

6.2.14 The use of housing and employment forecasts in this way within TEMPro is intended to provide an indication of the likely growth in traffic on the network across the corresponding regions based on the local authorities meeting their housing and job requirements. For Ashford, Folkestone & Hythe and Canterbury, this requires yearly housing completion rates of 653, 633 and 733 houses per year respectively for 28 consecutive years between 2018 and 2046.

6.2.15 These housing and job forecasts include those that will be provided by already committed developments, including the four developments described earlier in this section. As described above, this Transport Assessment takes account of the traffic growth forecast for these four developments by applying the traffic flow volume and routing information available within the relevant planning applications. Inclusion of traffic from those developments in this way removes the need to forecast traffic growth for these developments within TEMPro. The number of houses and jobs provided by these developments, as detailed in the corresponding planning applications, was therefore deducted from the forecasts in Table 21 according to the location of the developments before the totals were input the TEMPro software.

6.2.16 Since the forecasts for Folkestone & Hythe in Table 21 would growth that is proposed to be delivered by Otterpool Park, the number of houses and jobs that would be provided by Otterpool Park must also be deducted from the Folkestone & Hythe forecasts for any assessment scenario for which traffic generated by Otterpool Park, as described in Chapter 9, is added. This is the case for all DS scenarios.

6.2.17 For the DM scenarios, it could be assumed that if Otterpool Park did not take place, there would still be corresponding growth in the region, but in yet unspecified sites. By this method, the number of houses and jobs provided by Otterpool Park would not be deducted from the DM scenarios. This means that different TEMPro growth rates would be required for the DM and DS scenarios.

6.2.18 As described in Chapter 5, the Otterpool Park development proposals include significant provision for sustainable travel and sustainable living, with the result that less travel outside of the site on existing transport networks is expected compared to smaller developments that are not able to provide the on-site level of services and infrastructure that is necessary to minimise external travel. It is therefore a fair assumption that Otterpool Park would have a lower external trip rate than these type of small developments.

6.2.19 As a result of the above, and the significant number of homes and jobs proposed for Otterpool Park, the result would be that a significantly lower growth rate would be applied to the DS scenario than to the DM to calculate future baseline traffic flows for each scenario. In the 2037 assessment year, growth factors for the Folkestone & Hythe area would be around 10% greater in the DM case compared to the DS. For the 2044 and 2046 assessment years, the DM growth rate would be around 15% greater than for the DS scenario.

6.2.20 Since the assumptions regarding travel for housing and jobs in TEMPro is closer to that which would be expected for the smaller, less sustainable developments than for Otterpool Park, the effect on a region-wide basis in which TEMPro considers traffic growth is likely to be that the DM scenario would have a greater total number of trips on the highway network than the DS scenario once Otterpool Park development traffic is added to the DS scenario.

6.2.21 As the highway impact in this Transport Assessment is undertaken at a local level, the effect this would have on the modelling results should be considered. As mentioned previously, TEMPro applies a uniform growth rate across a region. The assumptions for traffic growth generated by Otterpool Park assume a routing pattern in which growth is greatest in the immediate vicinity of the site at the local access points and less at a distance from the site as traffic dissipates across the network. The effect on traffic growth in the DM and DS scenarios is therefore likely to be that traffic growth in the area around the Otterpool Park site would be greater in the DS scenario, but traffic growth further from the site, for example in Folkestone, can be expected to be greater in the DM scenario.

6.2.22 There is logic to using a method of forecasting traffic growth that deducts the number of Otterpool Park homes and jobs from TEMPro forecasts for the DS case but not for the DM. This would be applied in order to reflect the unique opportunity the creation of a large garden settlement on the proposed site would have on sustainable growth within Folkestone & Hythe. However, since the emerging Core Strategy for Folkestone & Hythe suggests that alternative sites to Otterpool Park for the provision of such a large number of homes and jobs are limited, it is perhaps more pertinent to consider a DM scenario where Otterpool Park is not developed and the achievable forecast for housing and jobs in the district is reduced. This enables a clear assessment to be undertaken of the impact of Otterpool Park on the surrounding network.

6.2.23 For the purposes of this assessment therefore, the homes and jobs that would be provided by the Otterpool Park development have been deducted when generating baseline traffic growth rates for both the DS and DM scenarios. This means that comparison between the results of DM and DS capacity testing would show an absolute worst case in terms of any increases in highway network delay and queuing in the DS scenario and that the DM scenario results would under-estimate network impacts without Otterpool Park if the housing and job forecasts for Folkestone & Hythe shown in Table 21 are met without Otterpool Park.

TEMPro growth rates used in the assessment

6.2.24 TEMPro growth factors have been derived for the following highway capacity modelling purposes:

- **'**All-purpose origin/ destination' factors to be applied to traffic within Ashford and Folkestone & Hythe;
- 'Rural Motorway' factors to represent forecast traffic growth on the M20 within Ashford and Folkestone & Hythe, utilising the NTEM (v7.2) datasets; and
- **'**All road types' factors using the NTEM (v7.2) dataset for traffic in the geographic area of Canterbury.

6.2.25 Table 22 presents the peak period all-purpose growth factors by origin/ destination, applied to the VISUM modelling area, including the operational modelling, for the Ashford and Folkstone & Hythe regions respectively.

Table 22 TEMPro All Purpose Growth factors (Origin/ Destination) for Ashford and Folkestone & Hythe

Period	TEMPro Growth Factors							
	Ashford				Folkestone & Hythe			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Origin	Destination	Origin	Destination	Origin	Destination	Origin	Destination
2017 to 2018	1.0131	1.0092	1.0097	1.0125	1.0111	1.0141	1.0131	1.0112
2017 to 2037	1.1814	1.1984	1.1982	1.1888	1.0703	1.1414	1.1297	1.085
2017 to 2044	1.2307	1.266	1.259	1.2376	1.1044	1.1221	1.1214	1.1127
2017 to 2046	1.2434	1.2839	1.2748	1.2501	1.1053	1.1399	1.1342	1.1143

6.2.26 Table 23 sets out the calculated growth factors focused on rural motorways within the geographic areas of Ashford and Folkestone & Hythe, which have been selected to represent the M20 links within the modelling area.

Table 23 Forecast TEMPro Growth factors (Rural Motorway) for Ashford and Folkestone & Hythe

Period	TEMPro Growth Factors			
	Ashford		Folkstone & Hythe	
	AM Peak	PM Peak	AM Peak	PM Peak
2017 to 2018	1.0143	1.0142	1.0157	1.0153
2017 to 2037	1.2667	1.2705	1.1772	1.1788
2017 to 2044	1.3076	1.3098	1.1910	1.1935
2017 to 2046	1.3303	1.3327	1.2051	1.2078

6.2.27 Table 24 presents the growth factors used for the Canterbury junction capacity assessment.

Table 24 Forecast TEMPro Growth factors (All Road Types) for Canterbury

Period	Canterbury	
	AM Peak	PM Peak
2017 to 2018	1.0143	1.0142
2017 to 2037	1.2667	1.2705
2017 to 2044	1.3076	1.3098
2017 to 2046	1.3303	1.3327

6.2.28 At the Old Dover Road / St Lawrence Road / The Drive junction in Canterbury, no growth was applied to The Drive, as agreed with Kent County Council. This is because The Drive is a 'no through' road serving a residential cul-de-sac which is not expected to experience further growth.

Freight on the M20

6.2.29 Highways England recommended that the growth of freight traffic on the M20 should be calculated by considering data in the National Road Traffic Forecasts (NRTF).

6.2.30 With regard to HGVS; the NRTF suggests the following:

- HGVs made up 6% [of total traffic] in 2010 and this is forecast to be in the range 4% to 6% in 2040; and
- Average annual HGV growth rate was calculated as 0.6% for three scenarios tested, 0.1% for one scenario and 1.5% for another scenario.

6.2.31 It was subsequently agreed that an annual growth rate of 0.6% should be assumed for heavy goods vehicle traffic on the M20.

Forecast Flows on Key Roads

6.2.32 Table 25 to Table 27 present the forecast traffic flows without Otterpool Park development on a number of key roads within the study area that result from the forecasting method described in this chapter.

Table 25 2037 Forecast Traffic Flows on Key Roads without Otterpool Park Development

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	261	270	**531**	388	151	**539**
A20 Ashford Road b/w Otterpool Lane & Newingreen	320	392	**712**	471	351	**822**
old A20 Ashford Road at Newingreen	303	490	**793**	497	373	**870**
A20 Ashford Road b/w Newingreen & M20	804	777	**1,581**	789	939	**1,728**
A20 Ashford Road at Barrow Hill	469	400	**869**	486	390	**876**
Aldington Road b/w Otterpool Lane & Stone Street	121	165	**286**	171	106	**277**
Stone Street	329	123	**452**	76	197	**273**
B2067 Aldington Road west of Otterpool Lane	173	125	**298**	123	106	**229**
Lympne Hill	261	141	**402**	102	276	**378**
B2068 Stone Street	329	123	**452**	76	197	**273**
M20 east of J11	2,762	2,593	**5,355**	2,592	3,027	**5,619**
M20 west of J11	2,766	2,624	**5,390**	2,428	3,163	**5,591**
Cheriton Road	679	376	**1,055**	683	391	**1,074**
A261 Hythe Road	345	369	**714**	534	348	**882**
A259 Military Road	1,206	-	**1,206**	1,113	-	**1,113**
A259 Prospect Road	939	542	**1,481**	872	806	**1,678**
Swan Lane	113	153	**266**	206	114	**320**
A20 Hythe Road west of Swan Lane	527	356	**883**	418	453	**871**
A2070 Kennington Road	864	471	**1,335**	493	742	**1,235**
A262 Hythe Road	440	419	**859**	686	481	**1,167**
A260 Spitfire Way	657	1,128	**1,785**	1,152	753	**1,905**
A260 Canterbury Road	506	1,721	**2,227**	873	1,377	**2,250**
Alkham Valley Road	1,170	229	**1,399**	1,174	116	**1,290**
Nackington Road	594	413	**1,008**	359	584	**942**
Old Dover Road	676	357	**1,032**	316	601	**917**

Table 26 2044 Forecast Traffic Flows on Key Roads without Otterpool Park Development

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	267	264	**531**	351	149	**500**
A20 Ashford Road b/w Otterpool Lane & Newingreen	321	416	**737**	473	375	**848**
old A20 Ashford Road at Newingreen	307	516	**823**	510	410	**920**
A20 Ashford Road b/w Newingreen & M20	850	779	**1,629**	808	1,003	**1,811**
A20 Ashford Road at Barrow Hill	497	393	**890**	485	402	**887**
Aldington Road b/w Otterpool Lane & Stone Street	116	164	**280**	179	82	**261**
Stone Street	345	126	**471**	111	210	**321**
B2067 Aldington Road west of Otterpool Lane	177	125	**302**	123	108	**231**
Lympne Hill	266	140	**406**	102	282	**384**
B2068 Stone Street	345	126	**471**	111	210	**321**
M20 east of J11	2,939	2,569	**5,508**	2,601	3,181	**5,782**
M20 west of J11	3,002	2,575	**5,577**	2,415	3,374	**5,789**
Cheriton Road	692	381	**1,073**	699	418	**1,117**
A261 Hythe Road	332	406	**738**	570	342	**912**
A259 Military Road	1,192	-	**1,192**	1,144	-	**1,144**
A259 Prospect Road	933	556	**1,489**	890	805	**1,695**
Swan Lane	112	157	**269**	210	114	**324**
A20 Hythe Road west of Swan Lane	561	346	**907**	415	471	**886**
A2070 Kennington Road	921	488	**1,409**	511	785	**1,296**
A262 Hythe Road	468	432	**900**	710	508	**1,218**
A260 Spitfire Way	653	1,153	**1,806**	1,175	752	**1,927**
A260 Canterbury Road	511	1,748	**2,259**	874	1,394	**2,268**
Alkham Valley Road	1,206	220	**1,426**	1,179	119	**1,298**
Nackington Road	619	431	**1,050**	373	607	**981**
Old Dover Road	703	371	**1,073**	327	624	**951**

Table 27 2046 Forecast Traffic Flows on Key Roads without Otterpool Park Development

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	263	267	**530**	355	147	**502**
A20 Ashford Road b/w Otterpool Lane & Newingreen	325	418	**743**	483	380	**863**
old A20 Ashford Road at Newingreen	310	519	**829**	520	415	**935**
A20 Ashford Road b/w Newingreen & M20	857	791	**1,648**	818	1,007	**1,825**
A20 Ashford Road at Barrow Hill	493	399	**892**	491	408	**899**
Aldington Road b/w Otterpool Lane & Stone Street	117	160	**277**	177	83	**260**
Stone Street	351	128	**479**	112	214	**326**
B2067 Aldington Road west of Otterpool Lane	178	126	**304**	124	109	**233**
Lympne Hill	268	142	**410**	103	283	**386**
B2068 Stone Street	351	128	**479**	112	214	**326**
M20 east of J11	2,954	2,619	**5,573**	2,641	3,204	**5,845**
M20 west of J11	3,013	2,635	**5,648**	2,460	3,388	**5,848**
Cheriton Road	705	384	**1,089**	702	424	**1,126**
A261 Hythe Road	339	404	**743**	569	344	**913**
A259 Military Road	1,207	-	**1,207**	1,148	-	**1,148**
A259 Prospect Road	943	558	**1,501**	894	812	**1,706**
Swan Lane	113	158	**271**	211	115	**326**
A20 Hythe Road west of Swan Lane	556	352	**908**	421	476	**897**
A2070 Kennington Road	930	496	**1,426**	517	792	**1,309**
A262 Hythe Road	472	439	**911**	719	513	**1,232**
A260 Spitfire Way	661	1,159	**1,820**	1,180	759	**1,939**
A260 Canterbury Road	514	1,762	**2,276**	880	1,405	**2,285**
Alkham Valley Road	1,211	222	**1,433**	1,189	116	**1,305**
Nackington Road	627	436	**1,063**	378	615	**993**
Old Dover Road	711	375	**1,086**	331	631	**962**

6.3 Committed Highway Schemes

6.3.1 The following committed transport infrastructure/improvement schemes have been taken into account in the DM and DS road network for the assessment:

- New M20 Junction 10A and associated changes to the surrounding road network, including M20 Junction 10;
- New signalised site access junction on A20 Hythe Road for Willesborough Lees development;
- Traffic calming proposals and new site access points through Sellindge Village proposed for the Sellindge residential development;
- Adjustments to the flare length on the A261 Hythe Road at the junction with A20 Ashford Road required for the Land East of Ashford Road development;
- A2034 Cheriton Road/ A20 Cherry Garden Avenue junction and link proposals for the Folkestone Seafront masterplan; and
- Nackington Road/ Old Dover Road and Old Dover Road/ St Lawrence Road/ The Drive proposals for the Mountfield Park development.

6.3.2 An overview of these scheme is provided in the subsequent sections. Further information is provided in Appendix K.

New M20 Junction 10A and associated network changes

6.3.3 Highways England is currently constructing a new Junction 10A on the M20 and link road to the A2070 at Ashford in Kent, due to be completed by summer 2020. A Transport Assessment[8] has been produced, assessing the associated impact of the proposed improvement scheme. The key features of the scheme include:

- A new interchange junction approximately 700m east of Junction 10 over the M20;
- New dual carriageway link road to the existing A2070 Southern Orbital Road;
- A20 Hythe Road connection;
- New footway linking the A20 Hythe Road to the Church Road Footbridge across the A2070;
- New Kingsford Street footbridge across the M20 and a new Church Road footbridge; and
- New Kingsford Street retaining wall.

6.3.4 The key features of the proposed M20 Junction 10A gyratory are:

- A new three lane gyratory roundabout connected to a new southern link road and the existing A20 Hythe Road. Partially signalised with new east and west facing slip roads;
- Street lighting proposed on the gyratory carriageway and on the four slip roads;
- New Kingsford Street footbridge/ cycleway to allow safe access over the motorway for non-motorists; and
- Kingsford Street improvements to include a new safety barrier, 350m footway, acoustic barrier and planting.

6.3.5 The proposed revisions to the M20 Junction 10 are:

- East facing slip roads will become redundant;
- Traffic signals, white lining and signing will be amended to follow removal of the slip roads; and
- There will be no access to the M20 going south east towards Folkestone and no access to Junction 10 from the M20 London-bound carriageway.

[8] M20 Junction 10A TR010006 7.2 Transport Assessment Report

6.3.6 The proposed A2070 Southern Orbital Road will feature:

- A new dual carriageway link road with a 40mph speed limit located between the proposed new Junction 10A and the A2070;
- A new three-armed roundabout joining the new link road to the existing A2070;
- A realignment of the existing A2070 where it joins the link road;
- New Church Road footbridge/ cycleway replacing the old bridge; and
- Minor improvements to the A2070/ Barrey Road junction.

New signalised site access junction on A20 Hythe Road

6.3.7 The Willesborough Lees development proposals include provision for a new signalised site access junction on the A20 Hythe Road, located opposite the Tesco service access.

6.3.8 The signalised junction arrangement includes the following design measures:

- A single eastbound carriageway approach for left turning and ahead traffic (3.0m lane width);
- A single westbound carriageway approach with a three PCU right turn storage area to the Tesco service yard and Summer Hill House access (3.5m lane widths);
- A single site access approach with 10 PCU left turn flare (3.5m lane widths); and
- A pedestrian crossing on the western arm of the junction only.

6.3.9 The Transport Assessment report associated with the development application noted that there is also the opportunity for the provision of queue detection loops at the junction arrangement, which would place a hurry call or a stage extension to manage the queue on the eastern approach and afford more protection in the event that occasional queuing extends for the full distance between the stop line and the Tesco roundabout. However, this would be infrequent and only impact the development access arm.

Sellindge Village traffic calming proposals and new site accesses

6.3.10 A number of traffic calming measures have been illustrated within the 'Site South of A20' development supporting Transport Assessment, which includes the following improvements to the A20 in Sellindge:

- Narrowing of the carriageway to the specified minimum width of 6.1m;
- Improving footway and crossing facilities;
- Clearly defined parking facilities along A20 Ashford Road;
- Widening footways and the provision of segregates pedestrian/ cycleway between Swan Lane and Primary School; and
- Provision of 30mph gateway to reduce vehicle speeds.

A20 Ashford Road / A261 Hythe Road / Stone Street junction (Newingreen junction)

Committed Scheme

6.3.11 A Technical Note was prepared following post application discussions with Kent County Council in relation to the Land East of Ashford Road (A20) development. This considered amendments to the junction mitigation set out in accompanying Transport Assessment.

6.3.12 The proposed amendment to the junction includes extension of the flare length of A261 Hythe Road by realigning the southern kerb edge.

Alternative Schemes

6.3.13 The original Transport Assessment (September 2016) accompanying the Land East of Ashford Road (A20) application (Planning Ref. Y16/1122/SH) concluded that mitigation was required to accommodate the additional development flows. It proposed the redesign of the existing priority layout to a signalised junction arrangement. However, this scheme was subsequently rejected by Kent County Council for the following main reasons:

- The geometry was insufficient to accommodate the abnormal load vehicles used by businesses at Link Park at the southern end of Otterpool Lane;
- It did not provide sufficient capacity to accommodate future traffic growth; and
- Insufficient monetary contributions were available to fund the scheme.

6.3.14 In addition, it is also understood that Kent County Council has considered a further signalised scheme taking account of the issues raised above, to improve the performance of this junction. Enhancement features include:

- Full signalisation of the junction;
- Widening on Stone Street to provide two entry lanes and one exit lane;
- Utilisation of the existing central reservation on A20 Ashford Road southbound arm to provide three entry arms and two exit arms; and
- Widening on Hythe Road.

6.3.15 The scheme is not currently programmed for implementation due to insufficient funds.

A2034 Cheriton Road / A20 Cherry Garden Avenue junction

6.3.16 The Folkestone Seafront development's (Planning Ref.Y12/0897/SH) accompanying S106 Agreement, sets out a package of committed highway measures on A2034 Cheriton Road arm (east). The proposed measures include:

- Removal of the existing pedestrian crossing and extension of right turning lane into Cherry Garden Avenue to improve straight-on movements; and
- Improvements to The Harvey Grammar School access arrangement through implementation of a one-way system with separate entry and exit points and removal of
- The existing hatching and replace with an extended right turning lane; and the existing hatching and replace with an extended right turning lane.

Nackington Road / Old Dover Road and Old Dover Road / St Lawrence Road / The Drive

6.3.17 The Mountfield Park South Canterbury Transport Assessment sets out a package of proposed junction improvements to Old Dover Road junctions with Nackington Road and St Lawrence Road to increase capacity.

6.3.18 The proposed capacity improvements to increase operational capacity include:

- The provision of a right turn facility from Old Dover Road in St Lawrence Road, mirroring that provided from Old Dover Road into Nackington Road in the opposite direction. The right turn would remove the obstruction caused by vehicles wishing to turn right into St Lawrence;
- Proposed changes to the signal phasing, with The Drive and St Lawrence Road proposed to operate within the same stage as opposing arms;
- Removal of existing on-street parking bays (13 spaces) along the northern extent of Old Dover Road; and
- Realignment of the existing kerb-line to allow a left turn out of Nackington Road to be phased at the same time as the right turn into Nackington Road.

7 Development Trip Generation

7.1 Introduction

7.1.1 Discussions relating to the method of calculating trip generation were held with Kent County Council, Folkestone & Hythe District Council and Highways England between April 2017 and March 2018. The trip generation method technical note[9] in Appendix L documents the discussions and describes the agreed method in detail.

7.1.2 This Chapter provides an overview of the agreed method and a summary of the number of trips expected to be generated by each land use for each assessment scenario.

7.2 Overview of Methodology

Trips by Land Use

7.2.1 As described in Chapter 4.7.5, the aspiration for the development is that the site will provide a sufficient scale and range of services that will meet the demands of the local population such that the need to travel long distances by non-sustainable modes of transport will be minimised. 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. The development quantum has therefore been optimised to match on-site supply to on-site demand such that the number of external trips should be minimised.

7.2.2 By this definition, the majority of trips generated by the A-class (Retail/ commercial) and D-class (Community services) land uses are expected to originate from the on-site C-class (Residential) land uses. Along with the B-class (employment) land use, the C-class land use is therefore expected to be the main driver for trip generation. Trip rates for the B- and C-class land uses were calculated by deriving trip rates from comparator sites within the TRICS 7.5.1 database.

7.2.3 Since the majority of trips generated by the retail and community land uses are expected to originate from on-site residential land uses, the number of trips generated by the retail and community land uses were calculated by considering the demand for these land uses generated by the on-site Residential land uses. To achieve this, the on-site Residential land use trip generation was disaggregated by trip purpose and each purpose was assigned to an associated land use, e.g. shopping trips were assigned to retail land use, education trips were assigned to education land uses.

7.2.4 This 'internal' demand for retail and community land uses was uplifted by a suitable percentage to account for a small number of trips made to these land uses from outside Otterpool Park (external trips). This percentage was derived by considering the likely ratio of internal to external trips the land use would generate based on the propensity of each land use to attract trips from off-site locations compared to on-site locations, e.g. for the education land uses, the ratio was derived from the proportion of school spaces likely to be filled by on-site residents compared to the number filled by off-site residents.

7.2.5 Trip rates for all land uses were derived for the local AM and PM peak hours, which have been found to be 8-9am and 5-6pm based on local traffic count data, as described in Chapter 3.

Trip Rate Reductions

7.2.6 Some of the trips assigned to different land uses will be made by a single person in a single journey as part of a chain of linked trips. For example, a person may leave home and make a trip to the health centre before going to work and then make a trip to the shops after leaving work before arriving home. Using the method described above, each visit to the four land uses – home (C3), the health centre (D1), work (B1/B2) and retail (A1) – would generate 1 arrival and 1 departure trip for each land use, thus registering a total of 8 one-way trips. However, as each visit is made as part of a chain of linked trips, the actual number of one-way trips made would be 4. When considering the

[9] Otterpool Park Trip Generation Calculation Method Technical Note (Arcadis, 2018)

number of trips made by people living externally to the site, this would have the effect of over estimating the number of external trips as some trips would be made internally as linked trips.

7.2.7 In addition, some of the trips originating from external locations are likely to already be present on the transport networks and will in future be transferred to the Otterpool Park site. These trips would have the effect of over estimating the number of external trips if they were counted as new trips on the networks. These trips must therefore be discounted from the trip generation before an impact assessment is undertaken.

7.2.8 The level of trip reduction applied was determined using linked trip information from National Travel Survey (NTS) data, which considers what is the next trip purpose for a traveller having completed their main trip purpose. To calculate the trip reductions that this data suggests is applicable, we have considered what trip reduction is applicable to other trip purposes for each main trip purpose. For example, the NTS data suggests that 5% of all trips where the main trip purpose is Commuting / Business includes a linked Shopping trip. The number of Shopping trips linked to Commuting trips is therefore equal to 5% of the total number of Commuting trips. A reduction in Shopping trips to the value of 5% of the total number of Commuting trips is therefore applicable.

7.2.9 This calculation was applied to all trip purposes to derive the applicable trip reduction numbers for each trip purpose. Since the percentage trip reduction for each trip purpose is influenced by the type and scale of land use provision, and since the scale of land use provision varies in each assessment year, the trip reductions for each assessment year also vary.

7.3 Development Quantum

7.3.1 Table 17 to Table 19 in Chapter 4.7.5 present the development schedules for each of the future year assessment scenarios. At the time of undertaking the trip generation and impact assessments described in this report, two Secondary schools were proposed in the 2044 and 2046. This has now been reduced to one.

7.3.2 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.

7.4 Trip Generation by Land Use

7.4.1 Table 28 to Table 30 present the total all-mode trip generation by land use for the three assessment years.

Table 28 Total All-Mode Trip Generation by Land Use (2037)

Land Use	Total Trips (All Modes)					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	Total	Arr	Dep	Total
C3 Residential	1,109	3,804	4,845	2,963	1,598	4,554
C2 Extra Care Housing	14	28	42	82	51	133
C1 Hotel	12	30	43	33	12	45
B1 Commercial business in hubs	136	13	149	9	107	116
B1 Commercial business park	401	29	471	20	543	823
B2 Light Industrial business park	19	2	22	1	17	21

Land Use	Total Trips (All Modes)					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	Total	Arr	Dep	Total
A1 Retail	255	83	338	460	607	1,067
A2 Business	184	50	234	260	361	622
A3 Café / Restaurant						
A4 Pub / Takeaway						
D1 Secondary schools	397	145	542	14	31	45
D1 Primary School	807	296	1,103	26	62	88
D1 Nursery	266	88	353	9	45	53
D1 Community Centre	9	0	9	0	9	9
D1 Health	62	11	73	29	68	97
D2 Sports pavilion	12	0	12	2	19	21
D2 Indoor sports hall						
	3,683	**4,579**	**8,235**	**3,909**	**3,530**	**7,694**

Table 29 Total All-Mode Trip Generation by Land Use (2044)

Land Use	Total Trips (All Modes)					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	Total	Arr	Dep	Total
C3 Residential	1,432	4,921	6,287	3,904	2,087	5,984
C2 Extra Care Housing	24	46	70	145	87	231
C1 Hotel	13	17	30	23	12	36
B1 Commercial business in hubs	237	23	261	18	189	206
B1 Commercial business park	1,212	107	1,383	82	1,316	1,801
B2 Light Industrial business park	70	7	79	5	59	69
A1 Retail	341	112	454	610	808	1,419
A2 Business	232	65	297	343	452	795
A3 Café / Restaurant						
A4 Pub / Takeaway						
D1 Secondary schools	749	282	1,031	21	53	74
D1 Primary School	1,027	376	1,403	35	79	114
D1 Nursery	356	117	473	12	61	72
D1 Community Centre	12	0	12	0	12	12
D1 Health	109	18	127	41	111	152
D2 Sports pavilion	13	0	13	2	19	21

Land Use	Total Trips (All Modes)					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	Total	Arr	Dep	Total
D2 Indoor sports hall						
	5,829	**6,092**	**11,920**	**5,242**	**5,344**	**10,986**

Table 30 Total All-Mode Trip Generation by Land Use (2046)

Land Use	Total Trips (All Modes)					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	Total	Arr	Dep	Total
C3 Residential	1,611	5,457	6,995	4,321	2,331	6,644
C2 Extra Care Housing	49	94	143	288	177	464
C1 Hotel	13	16	28	21	12	33
B1 Commercial business in hubs	236	23	259	18	188	205
B1 Commercial business park	1,227	106	1,414	82	1,389	1,945
B2 Light Industrial business park	70	7	79	5	60	70
A1 Retail	364	139	503	717	912	1,630
A2 Business	244	76	321	394	503	897
A3 Café / Restaurant						
A4 Pub / Takeaway						
D1 Secondary schools	760	283	1,043	22	55	77
D1 Primary School	1,215	447	1,662	38	91	129
D1 Nursery	383	126	510	12	64	77
D1 Community Centre	12	0	12	0	11	11
D1 Health	110	19	130	46	116	162
D2 Sports pavilion	12	0	12	2	20	21
D2 Indoor sports hall						
	6,305	**6,795**	**13,110**	**5,966**	**5,928**	**12,366**

7.5 Trip Generation Summary

7.5.1 Table 31 presents a summary of the total, internal and external all-mode trip generation for each assessment year.

Table 31 Summary of Trip Generation by Assessment Year

Assessment Year	Total Trips (All Modes)					
	AM Peak Hour			PM Peak Hour		
	Total	External	Internal	Total	External	Internal
2037	8,235	3,134	5,101	7,694	3,116	4,578
2044	11,920	5,030	6,890	10,986	4,658	6,328
2046	6,305	5,513	7,597	12,366	5,172	7,194

8 Development Trips by Mode

8.1 Introduction

8.1.1 This Chapter describes how mode split information has been applied to the trip generation in Chapter 7 to calculate trip generation by mode.

8.1.2 The method used has required separate mode splits to be derived for internal and external trips as well as for each trip purpose, in acknowledgement that people are likely to travel using different modes for different trip purposes.

8.2 Overview of Methodology

8.2.1 Appendix M contains a technical note[10] describing the method of derivation of the mode splits in detail. The method described was agreed with Kent County Council, Folkestone & Hythe District Council and Highways England during discussions held between May 2017 and November 2017. In summary the method is as follows:

Work Related Trips:

a) The mode split for work related trips is based on Census 2011 travel to work data for Shepway (the mid-layer Super Output Area (SOA) that represents the district of Folkestone & Hythe);

b) For internal trips: Census travel to work data for trips made over distances up to 2km has been used. The distance of 2km is the shortest distance for which mode split information is presented within Census data. It is also approximately the distance from the centre of the Otterpool Park site to the nearest settlements outside the site boundary. It is therefore assumed that trips made up to 2km in distance are likely to be internal to the site, while trips that are over 2km in distance would be external to the site;

c) For external trips: Census travel to work data for trips made over distances greater than 2km was used.

Non-Work Related Trips:

a) Non-work related mode splits from the National Travel Survey (NTS) were used;

b) The national average mode splits provided by the NTS were adjusted to reflect travel conditions in Folkestone & Hythe by considering the difference between the Census 2011 travel to work mode split for Folkestone & Hythe and the NTS Commuter mode split. An 'NTS to Census' adjustment factor was derived and applied to the NTS mode splits;

c) For internal trips: the adjustment factor was derived using Census travel to work data for trips made over distances up to 2km;

d) For external Education trips: Census travel to work data for trips made over distances between 2km and 10km was used to derive the adjustment factor. Up to 10km is expected to represent the maximum distance most people are likely to travel for education purposes;

e) For all other external trips: Census travel to work data for trips made over distances greater than 2km was used to derive the adjustment factor.

[10] Otterpool Park Method for deriving Mode Splits (October 2018)

8.3 Internal and External Trip Mode Splits by Trip Purpose

8.3.1 Table 32 and Table 33 present the mode splits by trip purpose for internal and external trips respectively used in this assessment, derived from the Census and NTS data as described in the technical note in Appendix M.

Table 32 Mode Splits by Trip Purpose for Internal Trips

Period	Mode Split					
	Commuting	Education	Shopping	Personal Business	Leisure	Education escort
Driver	24%	5%	10%	21%	9%	5%
Passenger	3%	2%	7%	13%	9%	2%
Taxi	0%	0%	0%	0%	0%	0%
Motorcycle	1%	0%	0%	0%	0%	0%
Train	0%	0%	0%	0%	0%	0%
Bus / Minibus / Coach	5%	2%	3%	2%	3%	2%
Light Rail	0%	0%	0%	0%	0%	0%
Bicycle	11%	3%	3%	2%	5%	3%
Walk	56%	87%	76%	62%	75%	87%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 33 Mode Splits by Trip Purpose for External Trips

Period	Mode Split					
	Commuting	Education	Shopping	Personal Business	Leisure	Education escort
Driver	80%	51%	62%	69%	54%	51%
Passenger	6%	16%	23%	25%	32%	16%
Taxi	0%	0%	0%	0%	0%	0%
Motorcycle	1%	1%	1%	0%	1%	1%
Train	3%	1%	0%	0%	1%	1%
Bus / Minibus / Coach	5%	10%	6%	2%	5%	10%
Light Rail	0%	0%	0%	0%	0%	0%
Bicycle	2%	3%	1%	0%	1%	3%
Walk	3%	18%	7%	3%	7%	18%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

8.4 Allocation of Mode Splits

8.4.1 In Chapter 7 we described how the residential trip purposes were allocated to on- and of-site land uses to determine the number of AM and PM peak trips each land use is expected to generate. In Table 34 we have combined the land uses, trip purposes and mode split categories to show how the mode splits in Table 32 and Table 33 were applied to the trips generated by each land use to determine the number of trips by mode generated by each land use.

Table 34 Allocation of Mode Splits by Trip Purpose to Land Uses

Land Use	Trip Purpose	Mode Split Allocation
C2/C3 Residential	Commuting	Commuting
	Business	Commuting
	Commuting	Commuting
	Education	Education
	Escort education	Education escort
	Shopping	Shopping
	Shopping	Shopping
	Other escort	Other escort
	Personal business	Personal Business
	Personal Business	Personal Business
	Visiting friends at private home	Leisure
	Visiting friends elsewhere	Leisure
	Entertainment / public activity	Leisure
	Sport: participate	Leisure
	Holiday: base	Leisure
	Day trip	Leisure
	Other including just walk	Leisure
	Leisure	Leisure
C1 Hotel	Holiday: base	Leisure
B1 Commercial business in hubs	Commuting / Business	Commuting
B1 Commercial business park	Commuting / Business	Commuting
B2 Light Industrial business park	Commuting / Business	Commuting
A1 Retail	Shopping	Shopping
A2 Business	Personal business	Leisure
A3 Café / Restaurant	Entertainment / public activity	Leisure
A4 Pub / Takeway	Entertainment / public activity	Leisure
D1 secondary schools	Education	Education
D1 Primary School	Education	Education
D1 Nursery	Education	Education
All Non-Residential Land Uses	Commuting (staff)	Commuting
	Escort education	Education escort
D1 Community Centre	Entertainment / public activity	Leisure
D1 Health	Personal Business	Personal Business
D2 Sports pavilion	Sport: participate	Leisure
D2 Indoor sports hall	Sport: participate	Leisure
All Non-Residential Land Uses	Commuting (staff)	Commuting
	Other escort	Other escort

8.5 Total Internal and External Trips by Mode

8.5.1 The mode splits in Table 32 and Table 33 were applied to the trips by purpose by land use as shown in Table 34. The resulting number of internal and external trips by mode for each assessment scenario are presented in Table 35 to Table 37. Table 38 to Table 40 present the corresponding mode splits by assessment scenario.

8.5.2 The combined mode splits in 2044 shown in Table 39 have been used as the forecast mode share for the proposed development in the draft Framework Travel Plan.

Table 35 Internal, External and Combined Trips by Mode (2037)

Period	Internal Trips						External Trips						Combined					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
	Arr	Dep	A + D	Arr	Dep	A + D	Arr	Dep	A + D	Arr	Dep	A + D	Arr	Dep	A + D	Arr	Dep	A + D
Driver	166	46	**212**	103	178	**281**	811	1,383	**2,193**	1,181	907	**2,089**	977	1,428	**2,405**	1,285	1,085	**2,370**
Passenger	60	23	**83**	64	80	**143**	128	262	**390**	321	269	**591**	188	285	**472**	385	349	**734**
Taxi	1	0	**1**	0	0	**1**	4	7	**11**	5	4	**9**	5	7	**12**	5	4	**10**
Motorcycle	5	1	**7**	1	4	**5**	15	26	**41**	20	15	**35**	20	28	**48**	21	19	**40**
Train	0	0	**0**	0	0	**0**	22	35	**57**	26	19	**45**	22	35	**57**	26	19	**45**
Bus	52	16	**68**	21	36	**57**	68	127	**195**	83	65	**148**	119	143	**262**	104	101	**205**
Light Rail	0	0	**0**	0	0	**0**	1	1	**1**	1	0	**1**	1	1	**1**	1	0	**1**
Bicycle	78	20	**98**	22	54	**75**	23	41	**64**	27	21	**47**	101	61	**162**	48	74	**123**
Walk	1,453	528	**1,981**	547	755	**1,303**	82	168	**250**	88	72	**160**	1,535	696	**2,230**	635	827	**1,462**
Total	**1,815**	**634**	**2,449**	**759**	**1,106**	**1,865**	**1,153**	**2,049**	**3,202**	**1,751**	**1,372**	**3,124**	**2,967**	**2,683**	**5,650**	**2,510**	**2,478**	**4,989**

Table 36 Internal, External and Combined Trips by Mode (2044)

Period	Internal Trips						External Trips						Combined					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
	Arr	Dep	A + D	Arr	Dep	A + D	Arr	Dep	A + D	Arr	Dep	A + D	Arr	Dep	A + D	Arr	Dep	A + D
Driver	236	60	**296**	137	247	**384**	1,744	1,807	**3,552**	1,542	1,658	**3,200**	1,980	1,868	**3,847**	1,679	1,905	**3,584**
Passenger	80	30	**111**	84	106	**191**	237	339	**577**	416	387	**803**	318	370	**687**	501	493	**994**
Taxi	1	0	**1**	0	1	**1**	8	9	**17**	7	7	**14**	9	9	**18**	7	8	**15**
Motorcycle	8	2	**9**	2	5	**7**	32	34	**67**	26	28	**54**	40	36	**76**	28	34	**61**
Train	0	0	**0**	0	0	**0**	50	46	**96**	34	40	**74**	50	46	**96**	34	40	**74**
Bus	71	22	**93**	28	50	**78**	138	167	**305**	107	112	**220**	209	189	**398**	135	162	**298**
Light Rail	0	0	**0**	0	0	**0**	1	1	**2**	1	1	**2**	1	1	**2**	1	1	**2**
Bicycle	111	27	**138**	29	77	**106**	48	54	**102**	35	38	**73**	159	81	**240**	64	115	**179**
Walk	1,956	701	**2,656**	726	1,025	**1,751**	156	222	**378**	113	111	**224**	2,112	923	**3,034**	840	1,136	**1,975**
Total	**2,463**	**842**	**3,304**	**1,006**	**1,512**	**2,518**	**2,416**	**2,680**	**5,095**	**2,281**	**2,383**	**4,665**	**4,879**	**3,521**	**8,400**	**3,288**	**3,895**	**7,183**

Table 37 Internal, External and Combined Trips by Mode (2046)

Period	Internal Trips						External Trips						Combined					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
	Arr	Dep	A + D	Arr	Dep	A + D	Arr	Dep	A + D	Arr	Dep	A + D	Arr	Dep	A + D	Arr	Dep	A + D
Driver	249	69	**319**	158	270	**428**	1,823	2,054	**3,877**	1,766	1,770	**3,536**	2,072	2,124	**4,195**	1,924	2,040	**3,964**
Passenger	88	35	**123**	98	121	**218**	259	381	**641**	474	435	**909**	348	417	**764**	572	555	**1,127**
Taxi	1	0	**1**	0	1	**1**	9	10	**19**	8	8	**16**	10	10	**20**	8	9	**16**
Motorcycle	8	2	**10**	2	6	**8**	34	39	**73**	30	30	**60**	42	41	**83**	32	36	**68**
Train	0	0	**0**	0	0	**0**	52	52	**104**	39	42	**81**	52	52	**104**	39	42	**81**
Bus	77	25	**101**	33	55	**87**	148	189	**336**	123	122	**244**	224	213	**437**	155	176	**331**
Light Rail	0	0	**0**	0	0	**0**	1	1	**3**	1	1	**2**	1	1	**3**	1	1	**2**
Bicycle	117	30	**147**	33	82	**115**	51	61	**112**	40	41	**81**	168	91	**259**	73	122	**195**
Walk	2,141	788	**2,929**	840	1,146	**1,986**	171	250	**421**	130	123	**252**	2,312	1,038	**3,350**	969	1,268	**2,238**
Total	**2,681**	**949**	**3,631**	**1,164**	**1,679**	**2,843**	**2,547**	**3,038**	**5,585**	**2,609**	**2,570**	**5,179**	**5,229**	**3,987**	**9,216**	**3,773**	**4,249**	**8,022**

Table 38 Internal, External and Combined AM and PM Peak Mode Splits (2037)

Period	Mode Split					
	Internal Trip		External Trips		Combined	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Driver	9%	15%	68%	67%	43%	48%
Passenger	3%	8%	12%	19%	8%	15%
Taxi	0%	0%	0%	0%	0%	0%
Motorcycle	0%	0%	1%	1%	1%	1%
Train	0%	0%	2%	1%	1%	1%
Bus	3%	3%	6%	5%	5%	4%
Light Rail	0%	0%	0%	0%	0%	0%
Bicycle	4%	4%	2%	2%	3%	2%
Walk	81%	70%	8%	5%	39%	29%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 39 Internal, External and Combined AM and PM Peak Mode Splits (2044)

Period	Mode Split					
	Internal Trip		External Trips		Combined	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Driver	9%	15%	70%	69%	46%	50%
Passenger	3%	8%	11%	17%	8%	14%
Taxi	0%	0%	0%	0%	0%	0%
Motorcycle	0%	0%	1%	1%	1%	1%
Train	0%	0%	2%	2%	1%	1%
Bus	3%	3%	6%	5%	5%	4%
Light Rail	0%	0%	0%	0%	0%	0%
Bicycle	4%	4%	2%	2%	3%	2%
Walk	80%	70%	7%	5%	36%	28%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 40 Internal, External and Combined AM and PM Peak Mode Splits (2046)

Period	Mode Split					
	Internal Trip		External Trips		Combined	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Driver	9%	15%	69%	68%	46%	49%
Passenger	3%	8%	11%	18%	8%	14%
Taxi	0%	0%	0%	0%	0%	0%
Motorcycle	0%	0%	1%	1%	1%	1%
Train	0%	0%	2%	2%	1%	1%
Bus	3%	3%	6%	5%	5%	4%
Light Rail	0%	0%	0%	0%	0%	0%
Bicycle	4%	4%	2%	2%	3%	2%
Walk	81%	70%	8%	5%	36%	28%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

9 Development Trip Distribution

9.1 Introduction

9.1.1 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 approved method utilises a combination of gravity modelling and a VISUM model. This Chapter summarises the method used for the distribution of internal and external trips.

9.2 Vehicle Trip Distribution

External vehicle trip distribution

9.2.1 External vehicle trips generated by the Otterpool Park development have been distributed by identifying off-site origins and destinations (ODs) that are expected to attract/generate trips and then using a gravity modelling approach to determine the number of trips that are expected to route to/from the ODs from each of the on-site development zones. The route the trips are expected to take on the network is then determined through use of a VISUM model.

9.2.2 The gravity model method assumes that the number of trips routing to/from an OD declines with increasing distances and time of travel (deterrence functions) but is positively correlated with the size of the attractor/generator at the OD.

9.2.3 Separate gravity models have been developed to distribute work-related and non-work trips between the site and primary off-site locations. A total of four gravity distribution models were developed, as follows:

1. Distribution of non-work trips made by Otterpool Park residents to/from off-site ODs and off-site residents to/from on-site non-work land uses;
2. Distribution of commuter trips made by Otterpool Park residents to/from off-site ODs;
3. Distribution of commuter trips made by off-site residents to/from the Otterpool Park Business park; and
4. Distribution of commuter trips made by off-site residents to/from the Otterpool Park Business hubs and other employment land uses.

9.2.4 For the work trip gravity models, the activity is represented by Census 2011 origin/destination data (i.e. the number of incoming/outgoing commuter vehicle trips), while the activity for non-work trips is represented by the resident population of the location. For the purposes of the gravity model, the relationship between the number of trips attracted to a location and the scale of activity is linear assuming all other factors (i.e. distance, cost) are equal.

9.2.5 All gravity models also utilise a value of time which represents the travel time between the site and the location on the highway network. The method for calculating the by which the gravity models were created along with the input assumptions proposed is described in more detail in the technical note[11] contained in Appendix N.

9.2.6 The distribution of development vehicle flows between the site and a number of off-site ODs from the gravity models has been input a VISUM model, which has been used to distribute the development flow on the network and identify the likely future routing of traffic taking into account background traffic growth as well as Otterpool Park development traffic. The VISUM model area covers a variety of route choice, including the choice between the M20 or other A-class roads to the east and west, and has been validated against the observed turning counts and journey time captured on site. The VISUM analysis will determine the volume of traffic on the route network within the modelling study area. The proposed extent of the VISUM model is shown in the technical note in Appendix N.

9.2.7 Table 41 to Table 43 present the resulting number of AM and PM peak development trips on the key roads in the study area.

[11] Otterpool Park Method for the Distribution of External Vehicle Trips

Table 41 AM and PM Peak Otterpool Park Development Trips on Key Roads in the Study Area (2037)

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	73	109	**182**	159	73	**232**
A20 Ashford Road b/w Otterpool Lane & Newingreen	184	172	**356**	178	166	**344**
Newingreen Link Road	199	341	**540**	207	398	**605**
old A20 Ashford Road at Newingreen	281	159	**440**	209	170	**379**
A20 Ashford Road b/w Newingreen & M20	557	313	**870**	533	335	**868**
A20 Ashford Road at Barrow Hill	262	152	**414**	282	132	**414**
Aldington Road b/w Otterpool Lane & Stone Street	113	37	**150**	108	37	**145**
Stone Street	59	50	**109**	59	55	**114**
B2067 Aldington Road west of Otterpool Lane	3	3	**6**	3	3	**6**
Lympne Hill	80	112	**192**	80	112	**192**
B2068 Stone Street	59	50	**109**	59	55	**114**
M20 east of J11	318	390	**708**	318	390	**708**
M20 west of J11	119	72	**191**	100	92	**192**
Cheriton Road	168	62	**230**	168	62	**230**
A261 Hythe Road	75	44	**119**	75	39	**114**
A259 Military Road	116	-	**116**	116	-	**116**
A259 Prospect Road	76	30	**106**	76	27	**103**
Swan Lane	6	4	**10**	6	4	**10**
A20 Hythe Road west of Swan Lane	257	148	**405**	276	128	**404**
A2070 Kennington Road	36	23	**59**	36	23	**59**
A262 Hythe Road	33	22	**55**	33	22	**55**
A260 Spitfire Way	5	5	**10**	5	5	**10**
A260 Canterbury Road	0	32	**32**	0	32	**32**
Alkham Valley Road	32	0	**32**	32	0	**32**
Nackington Road	20	7	**27**	10	19	**28**
Old Dover Road	8	3	**10**	4	7	**11**

Table 42 AM and PM Peak Otterpool Park Development Trips on Key Roads in the Study Area (2044)

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	77	85	**162**	101	175	**276**
A20 Ashford Road b/w Otterpool Lane & Newingreen	281	106	**387**	176	187	**363**
Newingreen Link Road	284	483	**767**	457	421	**878**
old A20 Ashford Road at Newingreen	293	140	**433**	56	292	**348**
A20 Ashford Road b/w Newingreen & M20	802	390	**1,192**	434	767	**1,201**
A20 Ashford Road at Barrow Hill	334	140	**474**	227	314	**541**
Aldington Road b/w Otterpool Lane & Stone Street	140	50	**190**	63	124	**187**
Stone Street	136	54	**190**	50	123	**173**
B2067 Aldington Road west of Otterpool Lane	7	4	**11**	3	7	**10**
Lympne Hill	170	146	**316**	129	164	**293**
B2068 Stone Street	136	54	**190**	50	123	**173**
M20 east of J11	626	504	**1,130**	478	564	**1,042**
M20 west of J11	130	162	**292**	146	148	**294**
Cheriton Road	209	103	**312**	159	129	**288**
A261 Hythe Road	112	89	**201**	83	96	**179**
A259 Military Road	143	-	**143**	90	-	**90**
A259 Prospect Road	93	44	**137**	44	81	**125**
Swan Lane	8	10	**18**	9	6	**15**
A20 Hythe Road west of Swan Lane	326	130	**456**	218	308	**526**
A2070 Kennington Road	43	28	**71**	38	45	**83**
A262 Hythe Road	40	26	**66**	36	43	**79**
A260 Spitfire Way	6	11	**17**	10	5	**15**
A260 Canterbury Road	0	74	**74**	0	31	**31**
Alkham Valley Road	74	0	**74**	31	0	**31**
Nackington Road	26	13	**39**	15	24	**39**
Old Dover Road	10	5	**15**	7	9	**16**

Table 43 AM and PM Peak Otterpool Park Development Trips on Key Roads in the Study Area (2046)

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	155	97	**252**	143	228	**371**
A20 Ashford Road b/w Otterpool Lane & Newingreen	301	102	**403**	177	198	**375**
Newingreen Link Road	267	474	**741**	477	416	**893**
old A20 Ashford Road at Newingreen	374	138	**512**	100	296	**396**
A20 Ashford Road b/w Newingreen & M20	894	391	**1,285**	485	866	**1,351**
A20 Ashford Road at Barrow Hill	392	159	**551**	261	366	**627**
Aldington Road b/w Otterpool Lane & Stone Street	203	76	**279**	87	237	**324**
Stone Street	129	48	**177**	38	174	**212**
B2067 Aldington Road west of Otterpool Lane	8	5	**13**	4	7	**11**
Lympne Hill	173	167	**340**	148	172	**320**
B2068 Stone Street	129	48	**177**	38	174	**212**
M20 east of J11	638	576	**1,214**	545	648	**1,193**
M20 west of J11	139	150	**289**	150	164	**314**
Cheriton Road	241	107	**348**	171	148	**319**
A261 Hythe Road	109	88	**197**	82	95	**177**
A259 Military Road	166	-	**166**	97	-	**97**
A259 Prospect Road	107	46	**153**	48	95	**143**
Swan Lane	9	11	**20**	9	7	**16**
A20 Hythe Road west of Swan Lane	383	148	**531**	252	359	**611**
A2070 Kennington Road	49	28	**77**	42	52	**94**
A262 Hythe Road	45	26	**71**	40	50	**90**
A260 Spitfire Way	7	12	**19**	10	6	**16**
A260 Canterbury Road	0	75	**75**	0	35	**35**
Alkham Valley Road	75	0	**75**	35	0	**35**
Nackington Road	30	14	**44**	17	28	**45**
Old Dover Road	11	6	**17**	7	11	**18**

Internal vehicle trip distribution

9.2.8 Internal vehicle trips are defined as vehicle trips between on-site development zones. The number of internal vehicle trips generated by each development zone was calculated as described in Chapters 7 and 8.

9.2.9 Internal vehicle trip generation by purpose was calculated for each development zone. The distribution of these trips was then determined by considering the likely origin/destination of trips routing into and out of each development zone. This was achieved by considering each trip purpose individually. For example, primary school education trips were distributed only to development zones that contained a primary school. The proportion of primary school trips attracted to a development zone was considered to be proportional to the number of primary schools within the development zone. Likewise, the distribution of commuting vehicle trips from one development zone was distributed to other development zones by proportion according to the number of jobs available in each development zone.

9.2.10 Once the number of vehicle trips between each development zone was calculated, the VISUM model was used to distribute the trips on the highway network, including the proposed internal access roads to each zone. Each development zone was represented by a zone within the VISUM and the trips between each zone was assigned to the highway network.

9.3 Trip Distribution of Non-Car Modes

External Trips

9.3.1 The distribution of trips made by Bus, Train, Cycle and Walk modes on the associated networks was calculated by considering the likely distribution of these trips in three categories:

- Distribution of non-work trips made by Otterpool Park residents to/from off-site ODs and off-site residents to/from on-site non-work land uses;
- Distribution of commuter trips made by Otterpool Park residents to/from off-site ODs;
- Distribution of commuter trips made by off-site residents to/from Otterpool Park employment land uses.

9.3.2 The distribution of non-work trips was calculated using a gravity model using a similar method as was used in the gravity modelling for non-work vehicle trips. The attractor/generator function was assumed to be the population at the OD, as used in the vehicle trip gravity models. A deterrence function was calculated by considering journey time to/from the same ODs used in the assessment of vehicle trips. The journey time for Bus trips was determined using the bus journey planner on the Stagecoach website[12]. Journey time for Train trips was calculated using the National Rail Enquires journey planner[13]. Where journeys required changes between services and/or modes, additional time was added to the overall journey time to account for interchange/wait times. The journey times for Walk and Cycle trips were calculated by considering the distance of the most likely direct route between ODs and calculating journey time using an average walk speed of 1.4 metres/second and Cycle speed of 15 km/hour.

9.3.3 The distribution of commuter trips was calculated using Bus and Train trip distributions derived from Census 2011. Appendix O contains the non-work trip gravity model and commuter trip distributions for trips made by non-Car modes utilised in this assessment.

9.3.4 The number of external trips by each mode by origin/ destination for the main assessment year are shown in Tables 53 to 56 (Bus (Table 44), Train (Table 45), Cycle (Table 46) and Walk (Table 47)).

[12] https://www.stagecoachbus.com/

[13] http://www.nationalrail.co.uk/

Table 44 AM and PM Peak External Bus Trips by Origin/Destination (2044)

Link Name	Number of Trips					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	2-Way	Arr	Dep	2-Way
Lympne	22	37	**60**	21	19	**40**
Stanford	1	1	**2**	1	1	**2**
Sellindge	27	45	**72**	26	23	**49**
Lyminge	0	0	**0**	0	0	**0**
Hythe	8	11	**19**	8	7	**15**
Palmarsh (west)	2	2	**4**	1	1	**2**
Folkestone	43	38	**81**	28	33	**61**
East and north of Otterpool	1	2	**3**	1	1	**2**
Old Hawkinge	5	1	**6**	1	4	**5**
Dymchurch	1	0	**1**	0	1	**1**
Burmarsh	1	0	**1**	0	1	**1**
North of Hawkinge	0	0	**0**	0	0	**0**
North East Folkestone & Hythe	0	0	**0**	0	0	**0**
Central Folkestone & Hythe	2	1	**3**	1	1	**2**
North Folkestone & Hythe	1	0	**1**	0	0	**0**
New Romney	2	2	**4**	1	1	**2**
South East Folkestone & Hythe	1	0	**1**	0	1	**1**
Lydd	2	1	**3**	1	2	**3**
Ashford	8	14	**22**	8	7	**15**
Canterbury	3	7	**10**	5	2	**7**
Dover	8	3	**11**	2	6	**8**
Maidstone	0	0	**0**	0	0	**0**
Rother	0	0	**0**	0	0	**0**
Dartford	0	0	**0**	0	0	**0**
Tonbridge and Malling	0	0	**0**	0	0	**0**
Medway	0	0	**0**	0	0	**0**
Tunbridge Wells	0	0	**0**	0	0	**0**
Swale	0	0	**0**	0	0	**0**
Thanet	1	1	**2**	0	1	**1**
London	0	0	**0**	0	0	**0**
Other UK	0	0	**0**	0	0	**0**
Total	**138**	**167**	**305**	**107**	**112**	**220**

Table 45 AM and PM Peak External Train Trips by Origin/Destination (2044)

Link Name	Number of Trips					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	2-Way	Arr	Dep	2-Way
Lympne	0	0	**0**	0	0	**0**
Stanford	0	0	**0**	0	0	**0**
Sellindge	0	0	**0**	0	0	**0**
Lyminge	0	0	**0**	0	0	**0**
Hythe	1	0	**1**	0	1	**1**
Palmarsh (west)	0	0	**0**	0	0	**0**
Folkestone	7	5	**12**	4	6	**10**
East and north of Otterpool	1	0	**1**	0	0	**0**
Old Hawkinge	0	0	**0**	0	0	**0**
Dymchurch	0	0	**0**	0	0	**0**
Burmarsh	0	0	**0**	0	0	**0**
North of Hawkinge	0	0	**0**	0	0	**0**
North East Folkestone & Hythe	0	0	**0**	0	0	**0**
Central Folkestone & Hythe	0	0	**0**	0	0	**0**
North Folkestone & Hythe	0	0	**0**	0	0	**0**
New Romney	0	0	**0**	0	0	**0**
South East Folkestone & Hythe	0	0	**0**	0	0	**0**
Lydd	1	0	**1**	0	0	**0**
Ashford	10	10	**20**	7	8	**15**
Canterbury	1	0	**1**	0	1	**1**
Dover	15	3	**18**	3	11	**14**
Maidstone	1	1	**2**	1	1	**2**
Rother	0	0	**0**	0	0	**0**
Dartford	0	0	**0**	0	0	**0**
Tonbridge and Malling	1	0	**1**	0	1	**1**
Medway	0	0	**0**	0	0	**0**
Tunbridge Wells	0	0	**0**	0	0	**0**
Swale	0	1	**1**	0	0	**0**
Thanet	3	1	**4**	1	3	**4**
London	6	20	**26**	15	4	**19**
Other UK	4	2	**6**	2	3	**5**
Total	**50**	**46**	**96**	**34**	**40**	**74**

Table 46 AM and PM Peak External Cycle Trips by Origin/Destination (2044)

Link Name	Number of Trips					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	2-Way	Arr	Dep	2-Way
Lympne	4	7	**11**	4	3	**7**
Stanford	1	2	**3**	1	1	**2**
Sellindge	5	9	**14**	5	4	**9**
Lyminge	0	1	**1**	1	0	**1**
Hythe	6	7	**13**	4	4	**9**
Palmarsh (west)	1	1	**2**	1	1	**1**
Folkestone	17	14	**31**	10	13	**23**
East and north of Otterpool	2	2	**4**	1	1	**2**
Old Hawkinge	1	0	**1**	0	1	**1**
Dymchurch	0	1	**1**	1	0	**1**
Burmarsh	0	1	**1**	1	0	**1**
North of Hawkinge	0	0	**0**	0	0	**0**
North East Folkestone & Hythe	0	0	**0**	0	0	**0**
Central Folkestone & Hythe	1	0	**1**	0	1	**1**
North Folkestone & Hythe	1	0	**1**	0	0	**0**
New Romney	3	2	**5**	2	2	**4**
South East Folkestone & Hythe	0	0	**0**	0	0	**0**
Lydd	2	2	**4**	1	2	**3**
Ashford	1	1	**2**	1	1	**2**
Canterbury	0	1	**1**	1	0	**1**
Dover	1	1	**2**	1	1	**2**
Maidstone	0	0	**0**	0	0	**0**
Rother	0	0	**0**	0	0	**0**
Dartford	0	0	**0**	0	0	**0**
Tonbridge and Malling	0	0	**0**	0	0	**0**
Medway	0	0	**0**	0	0	**0**
Tunbridge Wells	0	0	**0**	0	0	**0**
Swale	0	0	**0**	0	0	**0**
Thanet	0	1	**1**	0	0	**0**
London	0	0	**0**	0	0	**0**
Other UK	1	0	**1**	0	1	**1**
Total	**48**	**54**	**102**	**35**	**38**	**73**

Table 47 AM and PM Peak External Walk Trips by Origin/Destination (2044)

Link Name	Number of Trips					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	2-Way	Arr	Dep	2-Way
Lympne	13	22	**35**	10	9	**19**
Stanford	1	1	**2**	0	0	**1**
Sellindge	94	159	**252**	73	64	**137**
Lyminge	0	0	**0**	0	0	**0**
Hythe	4	4	**8**	3	3	**6**
Palmarsh (west)	0	0	**0**	0	0	**0**
Folkestone	36	29	**65**	22	28	**50**
East and north of Otterpool	1	1	**2**	0	1	**1**
Old Hawkinge	1	1	**2**	1	1	**2**
Dymchurch	0	0	**0**	0	0	**0**
Burmarsh	0	0	**0**	0	0	**0**
North of Hawkinge	0	0	**0**	0	0	**0**
North East Folkestone & Hythe	0	0	**0**	0	0	**0**
Central Folkestone & Hythe	0	1	**1**	1	0	**1**
North Folkestone & Hythe	0	1	**1**	0	0	**0**
New Romney	3	2	**5**	2	2	**4**
South East Folkestone & Hythe	0	0	**0**	0	0	**0**
Lydd	1	1	**2**	1	1	**2**
Ashford	0	0	**0**	0	0	**0**
Canterbury	0	0	**0**	0	0	**0**
Dover	0	0	**0**	0	0	**0**
Maidstone	0	0	**0**	0	0	**0**
Rother	0	0	**0**	0	0	**0**
Dartford	0	0	**0**	0	0	**0**
Tonbridge and Malling	0	0	**0**	0	0	**0**
Medway	0	0	**0**	0	0	**0**
Tunbridge Wells	0	0	**0**	0	0	**0**
Swale	0	0	**0**	0	0	**0**
Thanet	0	0	**0**	0	0	**0**
London	0	0	**0**	0	0	**0**
Other UK	0	0	**0**	0	0	**0**
Total	**156**	**222**	**378**	**113**	**111**	**224**

Internal Trips

9.3.5 The distribution of internal trips by non-car modes between each development zone was calculated by first determining the likely origin/destination of trips routing into and out of each development zone using the same method as described in the distribution of internal vehicle trips. The trips where then manually assigned to the most appropriate cycle/pedestrian network and bus service that provides the most direct route between each development zone.

10 Effects on Sustainable Transport Modes

10.1 Introduction

10.1.1 This Chapter describes the effects of the development proposals on the sustainable transport networks. The assessment focuses on the 2044 main assessment scenario, which represents full-build out of the Otterpool Park development for which this application is being submitted.

10.2 Effects on Pedestrian Network

External network

10.2.1 Table 36 in Chapter 8 presented the total number of external Otterpool Park trips by mode in 2044. The Table shows that there are expected to be over 5,000 one-way external trips in the AM peak and around 4,600 in the PM peak. Based on existing trip patterns for various trip purposes for journeys greater than 2km (between 2km and 10km for Education trips), it is anticipated that between 5% and 7% of these trips would be made on foot. This equates to 378 1-way trips in the AM peak and 224 in the PM peak. Table 48 presents the purposes for which these trips are expected to be made.

Table 48 AM and PM Peak External Walk Trips by Purpose (2044)

Link Name	Number of Trips					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	2-Way	Arr	Dep	2-Way
Commuting	48	40	**88**	30	38	**68**
Education	97	158	**255**	11	9	**20**
Shopping	3	5	**8**	12	10	**22**
Leisure	6	16	**23**	56	50	**106**
Personal Business	1	2	**3**	5	3	**8**
Total	**155**	**221**	**376**	**114**	**111**	**224**

10.2.2 The number of AM peak hour external Walk trips is expected to be dominated by trips made for Education purposes, with trips for other purposes relatively low in comparison. Education trips include escort trips, for which each trip generates one arrival and one departure in each peak period. In total, the number of on-site Primary, Secondary and Nursery school places on which the trip generation calculations are based generates over 1,000 external trips in the AM peak. Since Walk trips account for 18% of external Education and Education escort trips (Table 33 in Chapter 8), this results in over 250 external Education Walk trips in the AM peak. As explained in Chapter 7, these calculations are based on masterplan proposals that included two Secondary schools, whereas the proposals at the time of submission include only one Secondary school. Since this reduces the number of pupil places for external pupils, the actual number of external Education trips is therefore expected to be less than this.

10.2.3 The relatively low number of external Walk trips made for other trip purposes in the AM peak reflects both the distance of other residential districts from the site, which supresses the propensity for people to make the journey to/from the site on foot, and the fact that trips made for Shopping and Leisure purposes are generally low in the AM peak.

10.2.4 The trip purpose trend in the PM peak is more evenly split, with the majority made for Leisure purposes.

10.2.5 The external Walk trip generation has been based on current travel behaviour patterns and Walk mode shares derived from Census and NTS data, which are influenced by the current conditions on the existing pedestrian network. Since changes to the sustainable transport networks are proposed, together with off-site links and travel behavioural measures, this travel behaviour is expected to change to increase sustainable mode use. Although significant changes are proposed to the internal pedestrian network, in the form of enhancements that can be expected to increase the number of internal walk trips, the most significant change to external transport networks in the very local area in which Walk trips are expected to be made is proposed for the bus network. The proposed bus service frequency increases are anticipated to make it much easier to make time savings on local, short range journeys by using bus services. Thus, it is anticipated that a number of external trips than would otherwise be made on foot may in future change to Bus mode.

10.2.6 Table 47 in Chapter 9 presented the expected distribution of these external Walk trips between the external ODs. The table shows that the number of external Walk trips with ODs outside of Folkestone & Hythe is expected to be negligible. In Table 49, these external Walk trips have been consolidated into six links/directions adjacent to the site which represent the local routing pattern of all the Walk trips in Table 47.

Table 49 AM and PM Peak External Walk Trips by Local Routing (2044)

Route	Number of Trips					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	2-Way	Arr	Dep	2-Way
Bridge over M20 at Stone Street	1	1	**2**	1	1	**2**
A261 Hythe Road / PRoWs to Hythe	43	36	**79**	27	33	**60**
A20 Stone Street	6	11	**17**	5	4	**9**
B2067 Otterpool Lane	6	11	**17**	5	4	**9**
Lympne Hill	4	3	**7**	3	3	**6**
B2067 Aldington Road	1	1	**2**	1	0	**1**
A20 Barrow Hill	94	159	**253**	73	64	**137**
Total	**155**	**222**	**377**	**115**	**109**	**224**

10.2.7 Table 49 predicts that the majority of external Walk trips are likely to route along Barrow Hill to/from Sellindge, which is a settlement with the largest population within walking distance, with a peak of 253 trips, equivalent to around four trips per minute. This route along the A20 currently has footways on both sides of the road, including on the section under the bridge which narrows to one lane of traffic controlled by traffic signals, which acts as a method of traffic calming. Analysis of the accident records along this route suggests there is not currently an issue with accidents, with three slight and two serious accidents over a five-year period, with causes of the accidents attributed to driver error or weather conditions rather than issues with road alignment and with no accidents involving pedestrians.

10.2.8 This route is not currently identified as a priority for improvement in the Walking and Cycling Strategy commissioned by Folkestone & Hythe District Council, but a number of proposals for the Otterpool Park development described in Chapter 4.7.5 will provide benefit to pedestrians using this route, including an additional signal-controlled pedestrian crossing at the crossroads between development zones 1B and 7 and the A20. There is also a proposed reduction in speed limit to 30mph along the A20 Ashford Road leading up to Barrow Hill from the site, which ties in with the committed traffic calming scheme through Sellindge Village (which includes a speed reduction to 30mph, additional controlled and uncontrolled crossing points and narrowing of the carriageway). Feedback from

Sellindge Parish Councillors suggests that the Sellindge Village traffic calming scheme has reduced the number of HGV movements through the village. The extension of the 30mph speed limit along Barrow Hill can be expected to have a further positive affect in reducing HGV traffic through Sellindge. In addition, the provision of the Newingreen Link would provide improved access to the M20 via Junction 11 for HGVs as well as other traffic by relieving the congestion at the existing A20 Ashford Road junction with Stone Street and the A261 Hythe Road.

10.2.9 A number of the few accidents along this route were caused by vehicles losing control in icy or wet weather conditions. The proposed reduction in speed limit should have a positive effect in reducing the likelihood of this happening in future. This route may also benefit from re-surfacing with replacement and extension of the existing anti-skid surfacing on approach to the stop-lines at the signalised section under the bridge, which is showing signs of wear. Re-surfacing would also provide some mitigation to the noise issues which, during consultation, some residents of Barrow Hill suggest is currently generated by vehicles routing along this section of the A20.

10.2.10 Table 49 suggests that the route that would experience the next greatest increase in pedestrian movements is the route to/from Hythe, with a peak of between one and two trips per minute. in Chapter 3 shows that there is currently a choice of routes between the site and Hythe:

- Two PRoW;
  - HE/281: routing through Sandling Park in the Kent Downs AONB from the north-eastern boundary of the site; and
  - HE/293: extending from the south-east boundary of the site just north of Lympne.
- The A261 Hythe Road.

10.2.11 At present, the A261 Hythe Road has little or no footway provision along its length, which, along with steep gradients, make this a difficult route for pedestrians. The number of accidents recorded on this road in the five-year period analysed is low, with just two accidents, both slight and neither involving pedestrians or cyclists. The Folkestone & Hythe Walking and Cycling Study identifies this route as a priority route for improvement for pedestrians and cyclists. While the volume of traffic along Hythe Road is expected to increase in future, with and without the effect of the Otterpool Park development, the proposed Newingreen Link road would serve to significantly reduce the total amount of traffic routing through the A261 Hythe Road junction with the A20 by providing an alternative route to the M20 Junction 11 that does not require vehicles to route through the existing junction. This means the traffic flows on the existing section of the A20 that will run parallel to and south of the Newingreen Link should experience significantly lower traffic volumes than would be experienced in the future case without Otterpool Park proposals.

10.2.12 The two PRoWs provide a safer and more attractive route for people wishing to walk the route for to Hythe. However, as described in Chapter 3, PRoW HE/281 currently crosses the A20 Ashford Road without the provision of a designated crossing point. The width of the road prohibits the provision of central refuges, and the road alignment is such that visibility for drivers is below guidance at some locations. As part of the upgrade to the A20 between the Newingreen Link and the M20 J11, a significant improvement is proposed for pedestrians to mitigate the expected increase in traffic flow along the A20 at this location. Although the dualling of this section of the A20 will increase pedestrian crossing distance, a signalised pedestrian crossing is proposed at the point PRoW HE/281 crosses the A20. A staggered crossing arrangement would provide safe passage across the A20 while minimising delay to vehicular traffic. Signalised pedestrian crossing facilities on the Business Park arm of the access junction to the Business Park as well as across the Newingreen Link where these two junctions meet the A20 would provide safe passage to the controlled crossing point over the A20.

10.2.13 As a result of transport measures, the number of pedestrian trips between Otterpool Park and Hythe during peak periods is expected to be low, especially with the proposed improvement to bus services, which will provide a frequent, attractive travel option to this destination.

10.2.14 Trips to Lympne, expected to be split along Otterpool Lane and Stone Street, are expected to generate one trip every three or four minutes along these two routes. Trips south along Lympne Hill,

east along Aldington Road and north on the bridge over the M20 at Stone Street, are expected to be very low.

Internal Pedestrian Network

10.2.15 Table 36 in Chapter 8 showed that there is expected to be almost 3,000 one-way walk trips between internal ODs in the AM peak and just under 2,000 in the PM peak. As with external AM peak hour trips, the predominate source of these walk trips is expected to be Education trips, as around 4,000 school children, some with accompanying escorts, journey to school, with the majority expected to make the journey on foot.

10.2.16 As described above, trip generation by mode has been based on existing travel patterns, with internal Walk trips derived from current travel behaviour for trips made over distances less than 2km. For short-distance journeys, the area in the vicinity of Otterpool Park currently offers little alternative to travel by modes other than Walk; bus services are infrequent with limited passenger facilities at bus stops, cycle infrastructure is poor, with cyclists required to share road space with vehicular traffic, and parking opportunities at destinations such as Westenhanger Station are restricted. Travel mode shares for these other sustainable modes are currently low. It therefore follows that the limited number of short-distance journeys that are currently undertaken in the area are most likely to be Walk trips.

10.2.17 The development proposals for pedestrians described in the Otterpool Park Transport Strategy in Chapter 4.7.5 are expected to offer attractive, frequent modal alternatives for short-distance travel as well as significantly enhancing the environment in which pedestrians can travel. The provision of bus services with service frequency of one bus every 15 minutes, which could include a “loop” serving key destinations within the site, is likely to invite a shift to Bus mode from Walk as well as car. The provision of cycle infrastructure may also create a shift from Walk to Cycle mode, especially for Secondary school trips. The mode share for Walk trips may, therefore, reduce from the percentage suggested by current trip patterns.

10.2.18 However, the on-site pedestrian infrastructure would be capable of accommodating such high Walk trips as are predicted within the trip generation. As explained in Chapter 4.7.5, the planned walking routes would link residential areas to key destinations, providing a mix of routes that are adjacent to the road network and off-road connections where they are more direct. Strategic and Primary streets will have 3-4m width footpaths on one side, while Secondary streets would have 3-4m path on one side and 2m footway on the other. In some cases, footway width would be shared with cyclists.

10.2.19 The provision of amenities such as schools, shops, play areas, community facilities and employment hubs would be distributed across the site. This means that, rather than focussing Walk trips on just a few locations that provide all amenities for the site, walk trips would be distributed across the site. The provision of footway widths as described is therefore expected to be sufficient to accommodate pedestrian flows at a good level of service.

10.2.20 Where pedestrian routes cross the A20 Ashford Road on key desire lines, signal-controlled pedestrian crossings would be provided along with refuges where appropriate to ensure safe passage.

10.3 Effects on Cycle Network

External Cycle Network

10.3.1 Table 39 in Chapter 8 showed that the percentage of total external trips expected to be made by Cycle is 2% in both the AM and PM peak hours. This low mode share for cycling is commensurate with the lack of existing cycle infrastructure in the local area and the severe gradients experienced within 1-2km of the site boundary in all directions. Nevertheless, Table 36 showed that this level of cycling equates to around 112 cycle trips in the AM peak and 81 in the PM peak. Although the severe gradient on most of the external network will always be a barrier to cycling from some people,

the significant level of cycling infrastructure proposed on the Otterpool Park site is expected to lead to an increase in peak and off-peak Cycle trips above these amounts.

10.3.2 The primary trip purpose for external Cycle trips is expected to be Commuting in both peak periods, with Education trips also prominent in the AM peak and Leisure trips in the PM peak. Cycle trips for Shopping and Personal Business are expected to be negligible.

10.3.3 The likely local routing of external Cycle trips to/from ODs was presented in Table 46. Table 50 presents the likely local routing of external Cycle trips to/from those ODs.

Table 50 AM and PM Peak External Cycle Trips by Local Routing (2044)

Route	Number of Trips					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	2-Way	Arr	Dep	2-Way
A20 Ashford Road s/o M20 J11	7	8	**15**	5	5	**10**
M20 Westbound	1	1	**2**	1	0	**1**
M20 Eastbound	0	1	**1**	0	0	**0**
B2068 Stone Street	3	3	**6**	2	2	**4**
Sandling Road	3	3	**6**	2	2	**4**
A261 Hythe Road	25	24	**49**	17	20	**37**
B2067 Otterpool Lane	4	7	**11**	4	3	**7**
B2067 Aldington Road	1	1	**2**	1	1	**2**
Lympne Hill	5	4	**9**	3	4	**7**
A20 Barrow Hill	6	10	**16**	6	5	**11**

10.3.4 The A261 Hythe Road is expected to attract the greatest number of external Cycle trips, albeit less than one additional trip per minute in both peak periods. As described in Chapter 3, this is currently an unattractive route for cyclists as it is heavily trafficked and is characterised by a winding road alignment with restricted visibility at some locations. The width of carriageway along with the absence of footways and presence of trees and bushes at the side of the road make the provision of cycleways difficult. The Folkestone & Hythe Walking and Cycling Study has identified this road as a priority for improvement for cyclists as well as pedestrians. PRoW described above in the pedestrian effects section provide routes to Hythe, but the condition of the routes makes them currently unsuitable for practical use by cyclists.

10.3.5 The Otterpool Park proposals offer a measure of improvement for cyclists that would make the future use of an enhanced route for cyclists along the A261 a more attractive option. In the future without the Otterpool Park development, the A261 Hythe Road junction with the A20 Ashford Road would experience significant congestion. It would need to carry all HGV traffic routing south from the M20 and, as an unsignalised priority junction confined for road space, would not be able to provide any cycle priority measures. The improvements identified for this junction to provide the necessary enhanced safety and capacity if the Otterpool Park development did not go ahead have proven to be too prohibitively expensive to implement to date.

10.3.6 The Otterpool Park proposals would offer many tangible benefits for cyclists and other road users compared to the current arrangement. The proposed Newingreen Link would serve to remove a large proportion of HGV traffic from the junction by providing a less-congested route to/from the west, including Lympne Industrial Estate. By this measure, it would reduce the overall level of traffic routing through the junction and significantly reduce the level of traffic on the western arm of the

junction. The junction would be signalised, thus providing the opportunity to provide cycle priority measures where capacity allows.

10.3.7 The number of additional cyclists routing along the proposed A20 dual carriageway based on current travel behaviour is expected to be low (14 in the AM peak, 10 in the PM peak). The realignment of the A20 along this route together with the new signal-controlled junctions at the new Link Road and the Business Park access, at which cycle advance stop lines could be provided, offer significant safety improvements to all cyclists using this route and can serve to offer encouragement to potential cyclists to switch to Cycle mode from other less-sustainable options.

10.3.8 An additional 16 Cycle trips in the AM peak and 11 in the PM peak are forecast along the A20 at Barrow Hill. While traffic flows along this route are proposed to increase, the implementation of a speed reduction from 40mph to 30mph along the A20 from the current 30mph zone at Sellindge Village to where the A20 meets the A261 would offer significant safety benefits to cyclists.

10.3.9 Additional Cycle trips on other local routes are expected to be low.

Internal Cycle Network

10.3.10 Table 36 suggests that the level of internal Cycle trips is expected to be low, with 138 in the AM peak and 106 in the PM peak, equivalent to just 4% of the internal trip total. This level of cycle usage assumed in the assessment is based on existing cycle usage, as requested by Kent County Council.

10.3.11 The level of cycle infrastructure proposed as part of the development represents a significant upgrade on the current levels across the site and surpasses that provided in other parts of the local area, from which the assessment Cycle mode share is derived. A description of the proposed cycle infrastructure and the principles of access and movement for cyclists is described in detail in Chapter 4.7.5.

10.3.12 Segregated cycle routes away from traffic would provide safe routes through green spaces. Where cycling routes share the highway corridor, segregated cycleways will be provided on one side of Primary streets, while shared cycle/footways will be provided on one side of Secondary streets. Other streets are expected to be lightly trafficked and cyclists will share the road with vehicles. Cycle routes would link in with existing and proposed cycle routes in the external network. Cycle storage facilities in residences and workplaces and cycle parking in public areas would provide the necessary incentives to increase cycle usage and manage impacts.

10.3.13 In addition to the ‘hard’ cycle infrastructure, ‘soft measures’ to promote cycle usage that would be implemented through Residential, School and Workplace Travel Plans, as set out in the Draft Framework Travel Plan, is expected to have a positive influence on cycle usage for residents and visitors. As cycle infrastructure and Travel Plans will be embedded in the planning and design of the streets and communities from the beginning of occupation of the site, it is anticipated that the number of internal cycle trips presented in Table 36 represents a minimum level. As such, the level of cycle infrastructure proposed provides capacity for a much greater level of Cycle trips than is forecast using the method of trip generation calculation requested for this assessment.

10.4 Effects on Bus Network

External Bus Network

10.4.1 The trip generation calculations predict a total of 336 external Bus trips would be generated by the site in the 2044 AM peak hour and 244 trips in the PM peak hour (shown in Table 36). This is based on an external Bus trip mode share of 5%-6%, as requested by Kent County Council, which takes into account levels of Bus usage predicted by existing local and national data. As described in Table 4, the existing frequency of bus services on which this assumption is based, is relatively low. Infrequent bus services along with poor bus stop facilities are chiefly responsible for existing low bus usage.

10.4.2 With the exception of Sellindge and Lympne, both of which are small residential settlements, the existing population within or directly adjacent to the site boundary is very low. The demand for bus

services through this small part of the network is therefore low and it has proven difficult for service providers to sustain a good level of service provision. The introduction of the Otterpool Park development at this location will open up opportunities to support enhanced services that would provide significant benefit to existing local communities as well as support a sustainable Transport Strategy for the new town.

10.4.3 The increases to service provision and improvements to access to services proposed in the Transport Strategy in Chapter 4.7.5 and in the Draft Framework Travel Plan are expected to have a significant positive effect on bus usage and increase demand above the level suggested in Table 36. Initial discussions with local service providers have been positive, and further information regarding development phasing has been provided to them to inform future planning and agreement over service provision requirements and potential financial contributions towards their implementation. Further discussions will be held to investigate options that will provide the necessary routing of services such that they serve bus stops across the site that would be located such that the majority of homes are within 400m of a stop.

10.4.4 Table 44 in Chapter 9 provided a distribution of the predicted number of external Bus trips by OD. Table 51 presents the estimated distribution of these trips on the current bus services that passengers would be required to use to travel to/from the ODs during the AM and PM peak hours. While it is anticipated that Kent County Council will undertake more detailed analysis of bus service impact, the calculation in Table 51 provides an indication of potential impact on each service based on the agreed method of trip generation.

Table 51 AM and PM Peak External Bus Trips by Service Number (2044)

Route Number	Number of Trips					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	2-Way	Arr	Dep	2-Way
10	133	159	**292**	106	110	**217**
10A	3	1	**4**	1	2	**3**
11	2	1	**3**	1	1	**2**
16	2	1	**3**	5	3	**9**
17	1	2	**3**	1	1	**2**
18A	3	6	**9**	0	0	**0**
73	5	1	**6**	1	4	**4**
102	14	7	**21**	5	11	**16**

10.4.5 The impact on services other than service number 10 is expected to be low based on the agreed method of deriving Bus trip generation. Since service number 10 is the most regular service to route through the site, almost all external Bus trips are expected to need to utilise this route to reach their destination or to connect to other routes. The current level of service frequency of one bus per hour for service number 10 would be insufficient to support this level of demand or encourage an increase in demand. The Otterpool Park Transport Strategy proposes an overall bus service frequency enhancement (including all services) to 4 to 6 buses per hour, which is expected to be sufficient to meet the demand predicted in Table 51. The proposed level of provision would provide greater capacity that would accommodate the expected increase in demand above the level predicted by current travel behaviour patterns on which the above calculations are based. Moreover, with bus services, the higher the frequency the more likely that patronage would be attracted as a ‘turn up and go’ service can be achieved.

Internal Bus Network

10.4.6 Table 36 predicts a total of 93 internal Bus-only trips in the AM peak hour and 78 in the PM peak hour. In addition, a proportion of the external Train trips, which number 96 in the AM peak and 74 in the PM peak, could be expected to utilise an internal bus service to access Westenhanger Station. Since the routing required to satisfy this internal demand is not currently met by existing bus services, these trips have not been assigned to existing service numbers.

10.4.7 As described in previous sections, this level of Bus patronage is based on existing local bus usage, which is influenced by a poor level of service provision and is equivalent to a mode share of 3% of total internal trips. The significant increase in local resident and working population that would arise from the Otterpool Park development is expected to justify a marked increase is service provision, which corresponds with the proposals in the Otterpool Park Transport Strategy for an increase to between 4 and 6 buses per hour. Most important is the change to existing bus routing to reach all areas of the site, which could be achieved in a number of ways, through diversion of existing services or the provision of new services that route externally or just internally.

10.5 Effects on Rail Network

10.5.1 Table 45 provided the estimated distribution of the 96 AM peak and 74 PM peak rail trips that the agreed method of trip generation predicted. The distribution of these trips in terms of east/west services is provided in Table 52.

Table 52 AM and PM Peak External Rail Trips by Route Direction (2044)

Direction	Number of Trips					
	AM Peak Hour			PM Peak Hour		
	Arr	Dep	2-Way	Arr	Dep	2-Way
East	28	11	39	8	22	30
West	22	35	57	26	18	44
Total	**50**	**46**	**96**	**34**	**40**	**74**

10.5.2 It is expected that existing service provision would be capable of accommodating the increase in patronage suggested by these calculations. However, since they are based on current levels of rail usage, these trip predictions assume no change in service provision at Westenhanger Station and are constrained by the current poor accessibility to services at the station, which offers limited car parking, no bus service interchange, limited opportunities for cycle parking and restricted walk access for mobility impaired persons.

10.5.3 Even with no change in service provision, the significant improvements to the accessibility of Westenhanger station by all modes would generate an increase in demand. The citing of the Business Park and the highest density of residential housing within walking and cycling distance of the station would provide a large pool of potential passengers that could be encouraged to travel by rail to/from ODs located near stations on the same or connecting routes. This includes Ashford and Dover, which are the two locations from which most commuters currently travel into the area, and London, which currently draws 60% of all commuters out of the area.

10.5.4 The effect on rail patronage that the proposed development and the Transport Strategy would have is difficult to quantify and the implementation of the aspiration to provide access to high speed rail services from Westenhanger would have wider implications. Further assessment work would be undertaken in discussion with Network Rail and changes to rail patronage would be monitored over time as the development phases are built out. The Transport Strategy recognises the importance of providing a greatly improved level of accessibility to the station for early occupation, depending on the outcome of discussions regarding improvements. Equally important is the necessity to upgrade passenger facilities within the station, including a new station building and information services.

11 Junction Capacity Assessments

11.1 Introduction

11.1.1 This section presents the results of local junction capacity assessments for the three assessment years requested during scoping, as follows:

- **2037**: the end of the Folkestone & Hythe District Council Local Plan period;
- **2044**: the forecast year of full build-out for the 8,500 homes and associated development. This represents the main assessment for the Outline Planning Application; and
- **2046** Sensitivity Assessment: representing the year of full build-out for the 10,000 homes and associated development for the OPFM.

11.1.2 Two scenarios have been considered for each of the assessment years:

1) **Do-Minimum**, which includes:
   - committed highway improvement schemes; and
   - forecast baseline traffic flows.
2) **Do-Something**, which includes:
   - committed highway improvement schemes;
   - highway schemes proposed for the Otterpool Park Development;
   - forecast baseline traffic flows; and
   - Otterpool Park development traffic flows.

11.1.3 The results of the two scenarios were compared to determine whether the addition of the Otterpool Park development traffic resulted in a severe impact compared to the DM scenario. A severe impact is classed as occurring when a junction is found to be operating over capacity (i.e. a DoS above 90% or an RFC greater than 0.85) and the increase in delay is greater than an average of 20 seconds per vehicle *or* the increase in mean maximum queue length blocks back to affect another junction of importance.

11.1.4 Where the result of the DS assessment determined that the addition of the Otterpool Park development traffic results in a severe impact, a third scenario is assessed:

3) **Do Something with mitigation**, which includes:
   - committed highway improvement schemes;
   - highway schemes proposed for the Otterpool Park Development;
   - forecast baseline traffic flows;
   - Otterpool Park development traffic flows; and
   - proposed highway schemes to mitigate Otterpool Park development traffic impacts on the wider highway network.

11.1.5 The committed highway schemes included in the DM and DS scenarios have been described in Chapter 6. These schemes, based on information provided by Kent County Council, Highways England and Folkestone & Hythe District Council, are summarised in Table 53.

Table 53 Committed Highway Schemes

Junction		Committed Scheme
J1 & J42	M20 Junction 10 / M20 Junction 10a	The M20 Junction 10a new, large, partially-signalised, grade separated roundabout to the east of the existing M20 Junction 10. The committed scheme involves closing off the M20 eastbound on-slip and westbound off-slip at the M20 J10 and providing them on the M20 J10a.
J11a	A20 Ashford Road / A261 Hythe Road	Minor widening on the A261 Hythe Road to increase the nearside flare length.
J24 & J25	B2064 Cheriton High Street / B2063 Risborough Lane & B2064 Cheriton High Street / A2034 Cherry Garden Avenue	Removal of existing pedestrian crossing and extension of right turning lane into Cherry Garden Avenue; improvements to The Harvey Grammar School access arrangement through implementation of a one-way system with separate entry and exit points and removal of the existing hatching and replace with an extended right turning lane
J44	Nackington Road / Old Dover Road / St Lawrence Road / The Drive	Nackington Road/ Old Dover Road and Old Dover Road/ St Lawrence Road/ The Drive proposals for the Mountfield Park development.

11.1.6 In addition to the committed highway schemes, the DS scenarios include a number of local highway network changes as described in Chapter 5. These are summarised as follows:

- Upgrade of the A20 Ashford Road between the roundabout south of the M20 J11 and north of the Newingreen junction to an urban dual carriageway of 40mph speed limit, with route re-alignment west of the existing route;
- Provision of a new single carriageway 30mph strategic road (the Newingreen Link) west of the new dual carriageway and north of the existing A20 east-west alignment;
- Diversion of the existing A20 Ashford Road west of Newingreen to tie in to the Newingreen Link;
- Stopping-up of Stone Street at the junction with the A20 Ashford Road north of the junction with the A261 Hythe Road;
- Reduction in speed limit on the A20 west of the dual carriageway (on the Newingreen Link) and west of the junction with the A261 Hythe Road to 30mph;
- Provision of a hierarchy of new internal access roads within the site boundary; and
- Provision of a number of new junctions along the A20 Ashford Road and B2067 Otterpool Lane.

11.1.7 The location of the new junctions on the A20 Ashford Road and B2067 Otterpool Lane have previously been noted on . The new junctions are described in Table 54.

11.1.8 The software output files for the results of the DM modelling for all junctions are contained in Appendix P along with the output files for the DS modelling and the output files for junctions were mitigation measures have been tested.

Table 54 Proposed New Access Junctions

Junction	Assessment Year(s)	Proposed Scheme
J31	All	Signalised crossroads on A20 Ashford Road west of junction with B2067 Otterpool Lane providing access into development zones 1B and 7
J32	All	Priority junction on A20 east of junction with B2067 Otterpool Lane providing access into development zone 6
J33	All	Priority junction between Newingreen Link road (major arm) and the diverted A20 Ashford Road (minor arm)
J34	All	Signalised crossroads between existing A20 Ashford Road and new High Street south of the Newingreen Link
J35	All	Signalised T-junction between Newingreen Link and dualled section of A20 Ashford Road
J36	All	Signalised T-junction between dualled section of A20 Ashford Road and access road to the Business Park
J37	All	Priority junction between B2067 Otterpool Lane (major arm) and access into development zone 1B (minor arm)
J38	All	Priority crossroads between B2067 Otterpool Lane (major arm) and access into development zones 2B and 3A (minor arms)
J39	All	Signalised crossroads between the Newingreen Link and new High Street
J40	2046 only	Priority junction between B2067 Otterpool Lane (major arm) and access into development zone 9 (minor arm) to west of B2067 Otterpool Lane
J41	2046 only	Priority junction between B2067 Otterpool Lane (major arm) and access into development zone 9 (minor arm) to east of B2067 Otterpool Lane

11.2 Do-Minimum and Do-Something Traffic Flows

11.2.1 AM and PM peak hour DM and DS traffic flows through all junctions within the highway capacity assessment study area for all years of assessment are contained within Appendix Q.

11.2.2 The method for forecasting background traffic flows was described in Chapter 6. It is worth reminding that growth rates were derived from TEMPro using the latest housing and job forecasts provided by the local authorities with deductions made to account for the number of homes and jobs that would be provided by Otterpool Park, with the resulting growth rate applied to background traffic in both the DM and DS scenarios, with Otterpool Park development traffic then added to the DS scenario. The DS scenario therefore tests significantly greater household and job growth than the DM scenario, with the assumption that the household and job creation targets for Folkstone & Hythe would not be met if the Otterpool Park development is not permitted. This means that the comparison between the DM and DS traffic flows and the results of DM and DS capacity testing as presented in this Chapter show an absolute worst case in terms of any increases in traffic flow, highway network delay and queuing in the DS scenario.

11.2.3 Chapter 6 Table 25 to Table 27 presented the AM and PM peak future base (DM) traffic flows on key roads in the study area. Table 55 to Table 57 present the DM flows alongside the DS flows used in the assessment for key roads and the percentage change in flows between the two scenarios. It should be noted that the total Otterpool Park development traffic flows (previously presented in Table 41 to Table 43) is not equal to the difference between the Tables below and the Tables in Chapter 6 due to an element of dynamic re-routing of background traffic flows in the DS scenario, as calculated in the VISUM model.

Table 55 Summary of Change in AM and PM Peak Traffic Flows between DM and DS Scenarios on Key Roads (2037)

Link Name	Number of Vehicles												Percentage Change in Vehicles (Do-Something – Do-Minimum)					
	Do-Minimum						Do-Something						AM Peak Hour			PM Peak Hour		
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour								
	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way
B2067 Otterpool Lane	261	270	**531**	388	151	**539**	316	291	**607**	545	228	**773**	21%	8%	**14%**	40%	51%	**43%**
A20 Ashford Road b/w Otterpool Lane & Newingreen	320	392	**712**	471	351	**822**	455	389	**844**	537	408	**945**	42%	-1%	**19%**	14%	16%	**15%**
old A20 Ashford Road at Newingreen	303	490	**793**	497	373	**870**	371	273	**644**	304	246	**550**	22%	-44%	**-19%**	-39%	-34%	**-37%**
A20 Ashford Road b/w Newingreen & M20	804	777	**1,581**	789	939	**1,728**	1,449	1,087	**2,536**	1,318	1,275	**2,593**	80%	40%	**60%**	67%	36%	**50%**
A20 Ashford Road at Barrow Hill	469	400	**869**	486	390	**876**	626	503	**1,129**	706	463	**1,169**	33%	26%	**30%**	45%	19%	**33%**
Aldington Road b/w Otterpool Lane & Stone Street	121	165	**286**	171	106	**277**	238	276	**514**	337	194	**531**	97%	67%	**80%**	97%	83%	**92%**
Stone Street	329	123	**452**	76	197	**273**	405	259	**664**	202	275	**477**	23%	111%	**47%**	166%	40%	**75%**
B2067 Aldington Road west of Otterpool Lane	173	125	**298**	123	106	**229**	175	128	**303**	125	109	**234**	1%	2%	**2%**	2%	3%	**2%**
Lympne Hill	261	141	**402**	102	276	**378**	341	253	**594**	183	388	**571**	31%	79%	**48%**	79%	41%	**51%**
B2068 Stone Street	329	123	**452**	76	197	**273**	405	259	**664**	202	275	**477**	23%	111%	**47%**	166%	40%	**75%**
M20 east of J11	2,762	2,593	**5,355**	2,592	3,027	**5,619**	3,084	2,982	**6,066**	2,912	3,411	**6,323**	12%	15%	**13%**	12%	13%	**13%**
M20 west of J11	2,766	2,624	**5,390**	2,428	3,163	**5,591**	2,984	2,745	**5,729**	2,587	3,311	**5,898**	8%	5%	**6%**	7%	5%	**5%**
Cheriton Road	679	376	**1,055**	683	391	**1,074**	886	452	**1,338**	904	492	**1,396**	30%	20%	**27%**	32%	26%	**30%**
A261 Hythe Road	345	369	**714**	534	348	**882**	419	432	**851**	573	338	**911**	21%	17%	**19%**	7%	-3%	**3%**
A259 Military Road	1,206	-	**1,206**	1,113	-	**1,113**	1,321	-	**1,321**	1,225	-	**1,225**	10%	-	**10%**	10%	-	**10%**
A259 Prospect Road	939	542	**1,481**	872	806	**1,678**	1,013	578	**1,591**	943	835	**1,778**	8%	7%	**7%**	8%	4%	**6%**
Swan Lane	113	153	**266**	206	114	**320**	118	157	**275**	212	118	**330**	4%	3%	**3%**	3%	4%	**3%**
A20 Hythe Road west of Swan Lane	527	356	**883**	418	453	**871**	684	458	**1,142**	635	526	**1,161**	30%	29%	**29%**	52%	16%	**33%**
A2070 Kennington Road	864	471	**1,335**	493	742	**1,235**	899	503	**1,402**	532	768	**1,300**	4%	7%	**5%**	8%	4%	**5%**
A262 Hythe Road	440	419	**859**	686	481	**1,167**	473	441	**914**	719	503	**1,222**	8%	5%	**6%**	5%	5%	**5%**
A260 Spitfire Way	657	1,128	**1,785**	1,152	753	**1,905**	661	1,132	**1,793**	1,157	757	**1,914**	1%	0%	**0%**	0%	1%	**0%**
A260 Canterbury Road	506	1,721	**2,227**	873	1,377	**2,250**	506	1,758	**2,264**	873	1,410	**2,283**	0%	2%	**2%**	0%	2%	**1%**
Alkham Valley Road	1,170	229	**1,399**	1,174	116	**1,290**	1,202	224	**1,426**	1,206	116	**1,322**	3%	-2%	**2%**	3%	0%	**2%**
Nackington Road	594	413	**1,008**	359	584	**942**	615	420	**1,035**	368	602	**970**	3%	2%	**3%**	3%	3%	**3%**
Old Dover Road	676	357	**1,032**	316	601	**917**	683	359	**1,043**	320	608	**928**	1%	1%	**1%**	1%	1%	**1%**

Table 56 Summary of Change in AM and PM Peak Traffic Flows between DM and DS Scenarios on Key Roads (2044)

Link Name	Number of Vehicles												Percentage Change in Vehicles (Do-Something – Do-Minimum)					
	Do-Minimum						Do-Something						AM Peak Hour			PM Peak Hour		
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour								
	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way
B2067 Otterpool Lane	267	264	**531**	351	149	**500**	323	292	**615**	512	295	**807**	21%	11%	**16%**	46%	98%	**61%**
A20 Ashford Road b/w Otterpool Lane & Newingreen	321	416	**737**	473	375	**848**	531	337	**868**	558	419	**977**	65%	-19%	**18%**	18%	12%	**15%**
old A20 Ashford Road at Newingreen	307	516	**823**	510	410	**920**	383	252	**635**	182	369	**551**	25%	-51%	**-23%**	-64%	-10%	**-40%**
A20 Ashford Road b/w Newingreen & M20	850	779	**1,629**	808	1,003	**1,811**	1,795	1,168	**2,963**	1,197	1,754	**2,951**	111%	50%	**82%**	48%	75%	**63%**
A20 Ashford Road at Barrow Hill	497	393	**890**	485	402	**887**	695	476	**1,171**	661	629	**1,290**	40%	21%	**32%**	36%	56%	**45%**
Aldington Road b/w Otterpool Lane & Stone Street	116	164	**280**	179	82	**261**	256	292	**548**	258	312	**570**	121%	78%	**96%**	44%	280%	**118%**
Stone Street	345	126	**471**	111	210	**321**	494	228	**722**	185	362	**547**	43%	81%	**53%**	67%	72%	**70%**
B2067 Aldington Road west of Otterpool Lane	177	125	**302**	123	108	**231**	184	129	**313**	126	115	**241**	4%	3%	**4%**	2%	6%	**4%**
Lympne Hill	266	140	**406**	102	282	**384**	436	286	**722**	232	446	**678**	64%	104%	**78%**	127%	58%	**77%**
B2068 Stone Street	345	126	**471**	111	210	**321**	494	228	**722**	185	362	**547**	43%	81%	**53%**	67%	72%	**70%**
M20 east of J11	2,939	2,569	**5,508**	2,601	3,181	**5,782**	3,572	3,073	**6,645**	3,079	3,676	**6,755**	22%	20%	**21%**	18%	16%	**17%**
M20 west of J11	3,002	2,575	**5,577**	2,415	3,374	**5,789**	3,261	2,795	**6,056**	2,613	3,606	**6,219**	9%	9%	**9%**	8%	7%	**7%**
Cheriton Road	692	381	**1,073**	699	418	**1,117**	979	511	**1,490**	978	547	**1,525**	41%	34%	**39%**	40%	31%	**37%**
A261 Hythe Road	332	406	**738**	570	342	**912**	450	513	**963**	648	385	**1,033**	36%	26%	**30%**	14%	13%	**13%**
A259 Military Road	1,192	-	**1,192**	1,144	-	**1,144**	1,332	-	**1,332**	1,229	-	**1,229**	12%	-	**12%**	7%	-	**7%**
A259 Prospect Road	933	556	**1,489**	890	805	**1,695**	1,023	607	**1,630**	930	894	**1,824**	10%	9%	**9%**	4%	11%	**8%**
Swan Lane	112	157	**269**	210	114	**324**	120	167	**287**	219	120	**339**	7%	6%	**7%**	4%	5%	**5%**
A20 Hythe Road west of Swan Lane	561	346	**907**	415	471	**886**	757	421	**1,178**	582	694	**1,276**	35%	22%	**30%**	40%	47%	**44%**
A2070 Kennington Road	921	488	**1,409**	511	785	**1,296**	964	519	**1,483**	551	831	**1,382**	5%	6%	**5%**	8%	6%	**7%**
A262 Hythe Road	468	432	**900**	710	508	**1,218**	507	458	**965**	746	551	**1,297**	8%	6%	**7%**	5%	8%	**6%**
A260 Spitfire Way	653	1,153	**1,806**	1,175	752	**1,927**	660	1,164	**1,824**	1,185	758	**1,943**	1%	1%	**1%**	1%	1%	**1%**
A260 Canterbury Road	511	1,748	**2,259**	874	1,394	**2,268**	512	1,841	**2,353**	876	1,425	**2,301**	0%	5%	**4%**	0%	2%	**1%**
Alkham Valley Road	1,206	220	**1,426**	1,179	119	**1,298**	1,280	202	**1,482**	1,211	121	**1,332**	6%	-8%	**4%**	3%	2%	**3%**
Nackington Road	619	431	**1,050**	373	607	**981**	645	444	**1,089**	389	631	**1,020**	4%	3%	**4%**	4%	4%	**4%**
Old Dover Road	703	371	**1,073**	327	624	**951**	712	376	**1,088**	334	633	**967**	1%	1%	**1%**	2%	1%	**2%**

Table 57 Summary of Change in AM and PM Peak Traffic Flows between DM and DS Scenarios on Key Roads (2046)

Link Name	Number of Vehicles												Percentage Change in Vehicles (Do-Something – Do-Minimum)					
	Do-Minimum						Do-Something						AM Peak Hour			PM Peak Hour		
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour								
	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way	Nb / Eb	Sb / Wb	2-Way
B2067 Otterpool Lane	263	267	**530**	355	147	**502**	388	289	**677**	543	344	**887**	48%	8%	**28%**	53%	134%	**77%**
A20 Ashford Road b/w Otterpool Lane & Newingreen	325	418	**743**	483	380	**863**	541	317	**858**	541	421	**962**	66%	-24%	**15%**	12%	11%	**11%**
old A20 Ashford Road at Newingreen	310	519	**829**	520	415	**935**	464	295	**759**	222	372	**594**	50%	-43%	**-8%**	-57%	-10%	**-36%**
A20 Ashford Road b/w Newingreen & M20	857	791	**1,648**	818	1,007	**1,825**	1,882	1,182	**3,064**	1,263	1,852	**3,115**	120%	49%	**86%**	54%	84%	**71%**
A20 Ashford Road at Barrow Hill	493	399	**892**	491	408	**899**	752	498	**1,250**	690	673	**1,363**	53%	25%	**40%**	41%	65%	**52%**
Aldington Road b/w Otterpool Lane & Stone Street	117	160	**277**	177	83	**260**	320	293	**613**	294	430	**724**	174%	83%	**121%**	66%	418%	**178%**
Stone Street	351	128	**479**	112	214	**326**	487	199	**686**	186	415	**601**	39%	55%	**43%**	66%	94%	**84%**
B2067 Aldington Road west of Otterpool Lane	178	126	**304**	124	109	**233**	185	131	**316**	127	115	**242**	4%	4%	**4%**	2%	6%	**4%**
Lympne Hill	268	142	**410**	103	283	**386**	441	309	**750**	251	455	**706**	65%	118%	**83%**	144%	61%	**83%**
B2068 Stone Street	351	128	**479**	112	214	**326**	487	199	**686**	186	415	**601**	39%	55%	**43%**	66%	94%	**84%**
M20 east of J11	2,954	2,619	**5,573**	2,641	3,204	**5,845**	3,601	3,194	**6,795**	3,186	3,813	**6,999**	22%	22%	**22%**	21%	19%	**20%**
M20 west of J11	3,013	2,635	**5,648**	2,460	3,388	**5,848**	3,280	2,845	**6,125**	2,671	3,650	**6,321**	9%	8%	**8%**	9%	8%	**8%**
Cheriton Road	705	384	**1,089**	702	424	**1,126**	1,023	535	**1,558**	1,003	572	**1,575**	45%	39%	**43%**	43%	35%	**40%**
A261 Hythe Road	339	404	**743**	569	344	**913**	453	500	**953**	647	397	**1,044**	34%	24%	**28%**	14%	15%	**14%**
A259 Military Road	1,207	-	**1,207**	1,148	-	**1,148**	1,371	-	**1,371**	1,240	-	**1,240**	14%	-	**14%**	8%	-	**8%**
A259 Prospect Road	943	558	**1,501**	894	812	**1,706**	1,049	612	**1,661**	938	916	**1,854**	11%	10%	**11%**	5%	13%	**9%**
Swan Lane	113	158	**271**	211	115	**326**	122	168	**290**	220	122	**342**	8%	6%	**7%**	4%	6%	**5%**
A20 Hythe Road west of Swan Lane	556	352	**908**	421	476	**897**	812	443	**1,255**	612	737	**1,349**	46%	26%	**38%**	45%	55%	**50%**
A2070 Kennington Road	930	496	**1,426**	517	792	**1,309**	979	525	**1,504**	562	846	**1,408**	5%	6%	**5%**	9%	7%	**8%**
A262 Hythe Road	472	439	**911**	719	513	**1,232**	517	465	**982**	759	562	**1,321**	10%	6%	**8%**	6%	10%	**7%**
A260 Spitfire Way	661	1,159	**1,820**	1,180	759	**1,939**	668	1,171	**1,839**	1,191	765	**1,956**	1%	1%	**1%**	1%	1%	**1%**
A260 Canterbury Road	514	1,762	**2,276**	880	1,405	**2,285**	514	1,837	**2,351**	882	1,437	**2,319**	0%	4%	**3%**	0%	2%	**1%**
Alkham Valley Road	1,211	222	**1,433**	1,189	116	**1,305**	1,286	221	**1,507**	1,224	121	**1,345**	6%	0%	**5%**	3%	4%	**3%**
Nackington Road	627	436	**1,063**	378	615	**993**	657	450	**1,107**	395	643	**1,038**	5%	3%	**4%**	5%	4%	**4%**
Old Dover Road	711	375	**1,086**	331	631	**962**	722	381	**1,103**	338	642	**980**	2%	2%	**2%**	2%	2%	**2%**

11.3 Overview of Junction Capacity Assessment Results

11.3.1 An analysis of how existing junctions are operating in the 2018 baseline scenario was provided in Chapter 3. Table 58 presents a summary of the results of the DM and DS highway capacity modelling for the existing, committed and proposed junctions within the study area for all scenarios of assessment. The location of each junction has been presented in .

11.3.2 The table presents the highest DoS or RFC on any arm of the junction, with junctions that are predicted to operate over capacity in any scenario (i.e. with a DoS above 90% or an RFC above 0.85) in either the AM or PM peak hour highlighted red.

11.3.3 The subsequent sections of this Chapter provide detailed analysis of any junction that is predicted to operate over capacity in any peak period in any scenario.

Table 58 Summary of AM and PM Peak Hour Do-Nothing & Do-Something Highway Capacity Results for all Assessment Years

Junction ID / Name		Maximum Degree of Saturation / Ratio of Flow to Capacity													
		2018		2037				2044				2046			
		Baseline		Do-Minimum		Do-Something		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
J1	M20 J10	84.5%	83.2%	70.7%	78.4%	75.0%	77.6%	70.0%	77.8%	75.3%	80.7%	71.8%	76.4%	77.5%	83.2%
J2	M20 J11	0.40	0.45	0.43	0.47	0.69	0.86	0.45	0.57	0.94	1.27	0.46	0.57	0.96	1.37
J3	Ashford Road (A20) / Swan Lane	0.40	0.29	0.47	0.37	0.54	0.41	0.48	0.35	0.56	0.46	0.48	0.35	0.59	0.49
J4	Ashford Road (A20) / Stone Hill	0.24	0.14	0.33	0.20	0.40	0.23	0.35	0.20	0.42	0.26	0.36	0.20	0.46	0.27
J5	Hythe Road (A20) / Station Road / Church Road	0.36	0.42	0.50	0.57	0.58	0.67	0.53	0.59	0.61	0.69	0.54	0.60	0.66	0.72
J6	Hythe Road (A20) / Mersham	0.31	0.20	0.41	0.24	0.48	0.27	0.44	0.25	0.52	0.27	0.45	0.25	0.56	0.30
J7a	A2070 Kennington Road / The Street	0.26	0.32	0.21	0.30	0.21	0.31	0.23	0.32	0.23	0.33	0.23	0.32	0.23	0.34
J7b	Hythe Road (A20) / The Street	0.68	0.56	0.68	0.61	0.74	0.75	0.76	0.77	0.63	0.72	0.79	0.75	0.89	1.05
J8	A20 Ashford Road / B2067 Otterpool Lane	47.4%	35%	63.4%	68.1%	67.2%	80.0%	64.5%	67.3%	62.2%	82.5%	64.6%	66.5%	66.9%	88.7%
J9	B2067 Otterpool Lane / Aldington Road	0.22	0.34	0.33	0.38	0.58	0.67	0.32	0.37	0.60	0.55	0.32	0.37	0.73	0.73
J10	Aldington Road / Stone Street	0.39	0.61	0.37	0.43	0.84	0.65	0.38	0.43	0.78	0.85	0.39	0.44	0.71	1.06
J11a	A20 Ashford Road / A261 Hythe Road	0.87	0.72	0.96	0.99	1.41	0.91	1.09	1.02	1.70	1.02	1.10	1.05	1.18	1.29
J11b	A20 Ashford Road / Stone Street	0.72	0.37	0.92	0.23	0.97	0.43	1.00	0.31	1.21	0.39	0.96	1.02	1.27	0.44
J12	Aldington Road / Lympne Hill	0.47	0.47	0.53	0.42	0.71	0.69	0.54	0.43	0.90	0.80	0.55	0.43	0.92	0.84
J13	A261 Hythe Road / Aldington Road	0.42	0.32	0.38	0.25	0.59	0.52	0.38	0.26	0.62	0.35	0.39	0.26	0.72	0.39
J14	A261 London Road / Barrack Hill	0.43	0.31	0.45	0.49	0.58	0.49	0.44	0.42	0.74	0.59	0.45	0.41	0.74	0.64
J15	A259 / Dymchurch Road / Military Road	81%	85%	94.0%	93.3%	102.8%	101.6%	93.4%	95.3%	103.2%	102.0%	94.7%	95.6%	101.9%	102.9%
J16	A259 Prospect Road / A259 East Road / Station Road / High Street	0.69	0.72	0.80	0.70	0.87	0.76	0.80	0.72	0.88	0.76	0.81	0.73	0.90	0.76
J17	A20 Ashford Road / A20 J11 off slip	0.56	0.34	0.58	0.23	0.68	0.39	0.62	0.30	0.80	0.45	0.62	0.31	0.84	0.45
J18	Ashford Road (A20) / Sandling Road	0.49	0.36	0.59	0.47	0.56	0.51	0.61	0.50	0.54	0.58	0.61	0.50	0.55	0.55

Junction ID / Name		Maximum Degree of Saturation / Ratio of Flow to Capacity													
		2018		2037				2044				2046			
		Baseline		Do-Minimum		Do-Something		Do-Minimum		Do-Something		Do-Minimum		Do-Something	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
J19	M20 J11A	0.28	0.32	0.31	0.34	0.31	0.34	0.31	0.35	0.30	0.36	0.31	0.35	0.30	0.36
J20	M20 J12	0.55	0.47	0.60	0.56	0.67	0.62	0.60	0.56	0.69	0.68	0.61	0.57	0.71	0.69
J21a	M20 J13	0.51	0.51	0.78	0.84	0.82	0.89	0.79	0.87	0.88	0.95	0.80	0.87	0.88	0.96
J21b	M20 J13	0.48	0.51	0.55	0.64	0.59	0.68	0.55	0.66	0.62	0.76	0.56	0.66	0.62	0.77
J22	A20 Ashford Road / Stone Street	0.11	0.28	0.13	0.31			0.14	0.37			0.15	0.38		
J23	M20 J9	75.3%	92%	83.9%	95.1%	83.9%	93.3%	88.3%	97.9%	88.3%	99.0%	89.1%	99.5%	89.7%	101.7%
J24	B2064 Cheriton High Street / B2063 Risborough Lane	77.0%	87.2%	106.3%	126.9%	127.9%	156.7%	108.6%	130.7%	142.2%	178.4%	110.4%	133.4%	147.9%	189.9%
J25	B2064 Cheriton High Street / A2034 Cherry Garden Avenue	91.0%	94.0%	96.4%	103.9%	117.0%	125.4%	97.8%	106.2%	127.0%	132.4%	99.4%	107.0%	131.9%	136.0%
J26	A259 Prospect Road / Stade Street	0.57	0.72	0.84	1.05	0.96	1.24	0.86	1.10	1.04	1.56	0.88	1.14	1.09	1.77
J27	Barrow Hill 1-way	53.4%	49.4%	83.2%	81.3%	104.8%	104.4%	83.1%	81.4%	107.7%	117.3%	84.4%	82.4%	112.5%	122.2%
SH18	A260 Spitfire Way / White Horse Hill / A20 Slip Roads	0.70	0.73	0.87	0.84	0.88	0.88	0.88	0.88	0.90	0.95	0.89	0.89	0.91	0.96
SH19	Alkham Valley Road / A20 slip roads	0.84	0.74	1.06	0.85	1.09	0.87	1.11	0.86	1.19	0.88	1.12	0.87	1.19	0.89
SH16	A260 Canterbury Road / Alkham Valley Road	0.61	0.46	1.08	0.96	1.16	0.99	1.19	0.97	1.42	1.00	1.22	0.99	1.41	1.03
J42	M20 J10A			41.0%	45.0%	68.3%	75.0%	71.3%	75.3%	78.8%	85.1%	70.7%	74.0%	78.1%	87.1%
J43	A20 Ashford Road small roundabout			0.55	0.50	0.89	0.78	0.56	0.52	1.04	0.94	0.57	0.53	1.09	0.97
J44	Nackington Road / Old Dover Road / St Lawrence Road / The Drive	99.4%	100.7%	76.2%	90.9%	77.5%	92.0%	79.1%	94.6%	80.9%	97.2%	80.0%	96.1%	81.8%	98.4%

11.4 M20 Junction 11

11.4.1 The M20 J11 is the main gateway to the Otterpool Park site from the wider highway network. The 2018 baseline results indicate that the junction is currently operating with spare capacity. The junction modelling results for the DM 2037 forecast scenarios, shown in Table 59.

Table 59 M20 J11 2037 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
M20 Westbound Off-Slip	0.40	0.7	3.6	0.40	0.7	3.7
A20 Ashford Road	0.43	0.7	2.3	0.35	0.5	2.0
Services	0.17	0.2	4.4	0.14	0.2	3.5
M20 Eastbound Off-Slip	0.42	0.7	4.4	0.47	0.9	4.5
B2068 Stone Street	0.30	0.4	3.7	0.36	0.6	4.5

11.4.2 The results indicate that the junction is predicted to operate within practical capacity in the DM 2037 AM and PM peak hours. The maximum RFC for the DM 2037 scenario is predicted to be 0.47 on the M20 eastbound off-slip in the DM 2037 PM peak hour. There are no substantial queues predicted in the DM 2037 scenarios.

11.4.3 The results for the DS 2037 are presented in Table 60. The results indicate that with the addition of the Otterpool Park development traffic, the junction is predicted to operate just above practical capacity in the PM peak hour.

Table 60 M20 J11 2037 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
M20 Westbound Off-Slip	0.66	1.9	6.8	0.76	3.0	11.1
A20 Ashford Road	0.67	2.0	3.9	0.58	1.4	3.1
Services	0.31	0.4	9.5	0.22	0.3	6.0
M20 Eastbound Off-Slip	0.69	2.1	11.0	0.86	5.7	22.7
B2068 Stone Street	0.46	0.9	7.5	0.70	2.2	17.6

11.4.4 The highest RFC of 0.86 is predicted on the M20 eastbound off-slip in the DS 2037 PM peak hour. Although this approach is predicted to operate just over practical capacity, the predicted queue is only 5.7 vehicles which can be stored easily on the slip road without causing any issue to the M20 mainline. The increase in delay comparative to the DM scenario is also less than 20 seconds per vehicle and is therefore not considered a severe impact.

11.4.5 Table 61 presents the DM 2044 junction capacity results. The results indicate that the junction is still predicted to operate within practical capacity in the DM 2044 AM and PM peak hours.

Table 61 M20 J11 2044 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
M20 Westbound Off-Slip	0.41	0.7	3.7	0.46	0.8	4.5
A20 Ashford Road	0.45	0.8	2.4	0.35	0.5	2.0
Services	0.18	0.2	4.7	0.14	0.2	3.6
M20 Eastbound Off-Slip	0.41	0.7	4.5	0.57	1.3	5.6
B2068 Stone Street	0.30	0.4	3.8	0.40	0.7	5.4

11.4.6 In the DS 2044 scenario (Table 62), the issues on the M20 eastbound off-slip are predicted to worsen. The modelling results indicate that it will be operating over practical capacity in the DS 2044 AM peak hour and over theoretical capacity in the PM peak hour. In addition to this, the M20 westbound off-slip is also predicted to operate above practical capacity in the DS 2044 AM and PM peak hours. The B2068 Stone Street is also predicted to operate above practical capacity in the DS 2044 PM peak hour.

Table 62 M20 J11 2044 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
M20 Westbound Off-Slip	0.94	12.1	34.3	0.96	14.5	46.1
A20 Ashford Road	0.76	3.2	5.4	0.69	2.2	4.1
Services	0.45	0.8	16.8	0.30	0.4	9.1
M20 Eastbound Off-Slip	0.87	6.0	28.7	1.27	119.8	360.3
B2068 Stone Street	0.64	1.7	14.1	0.94	9.1	72.8

11.4.7 Based on the local junction modelling results an intervention would be required at the M20 Junction 11 in the DS scenarios between the DS 2037 and DS 2044 design years.

Proposed Mitigation

11.4.8 Initial discussions regarding potential mitigation at this junction have been held with Kent County Council, Folkestone & Hythe District Council and Highways England. The mitigation discussed requires that the M20 eastbound off-slip approach and associated circulatory are signalised and the lane markings extended further back to provide two full lanes on each approach. In addition to signalising the M20 eastbound off-slip, it is proposed that the M20 eastbound on-slip is made into a two-lane exit and that lane markings are added to the north east circulatory. This would allow three lanes to be used through this section, with the middle lane shared for the M20 eastbound on-slip and ahead movements. These measures could be implemented without any carriageway widening.

11.4.9 The effect this proposed intervention would have on capacity results for the DS 2037 and DS 2044 scenarios are shown in Table 63 and Table 64 and indicate that the junction would operate within practical capacity on all approaches. The signalisation of the M20 eastbound off-slip would benefit the B2068 Stone Street and M20 westbound give-way approaches by increasing the number of gap opportunities available. It should be noted that signals may cause additional delay to vehicles when the junction is not heavily trafficked, therefore it is advised that the operation of the junction is monitored so that such an intervention is implemented at an appropriate time.

Table 63 M20 J11 2037 DS with Mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
M20 Westbound Off-Slip	1	54.5%	4.4	2.5	60.3%	6.8	4.9
Eastern Circulatory	1	20.5%	0.1	1.2	28.9%	0.2	1.3
	2	31.4%	0.2	1.4	35.0%	0.3	1.5
A20 Ashford Road	1	60.0%	0.7	1.5	51.9%	0.5	1.3
Southern Circulatory	1	6.1%	0.0	1.0	9.3%	0.1	1.0
	2	10.3%	0.1	1.1	11.3%	0.1	1.1
Services Ahead	1	18.5%	0.1	2.0	14.5%	0.1	1.7
South West Circulatory	1	68.8%	1.1	3.0	57.7%	0.7	2.2
	2	33.1%	0.2	1.4	30.2%	0.2	1.4
M20 Eastbound Off-Slip	1	65.7%	5.8	26.5	66.1%	6.8	22.3
	2	66.4%	5.9	26.7	67.9%	7.0	22.8
Western Circulatory	1	59.3%	6.8	13.3	71.0%	8.7	18.9
	2	64.4%	7.9	14.3	71.3%	8.8	19.3
B2068 Stone Street	1	36.7%	1.7	3.9	48.9%	2.7	7.1

Table 64 M20 J11 2044 DS with Mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
M20 Westbound Off-Slip	1	77.0%	14.5	8.0	84.9%	16.9	15.5
Eastern Circulatory	1	25.3%	0.2	1.3	39.3%	6.2	1.6
	2	32.9%	0.2	1.4	39.5%	0.3	1.6
A20 Ashford Road	1	68.1%	1.1	1.9	61.9%	0.8	1.6
Southern Circulatory	1	6.1%	0.0	1.0	9.5%	0.1	1.0
	2	10.7%	0.1	1.1	11.2%	0.1	1.1
Services Ahead	1	22.5%	0.1	2.6	17.8%	0.1	2.0

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
South West Circulatory	1	78.3%	1.8	4.3	66.2%	1.0	2.8
	2	36.5%	0.3	1.5	36.5%	0.3	1.5
M20 Eastbound Off-Slip	1	68.7%	7.7	30.3	78.7%	10.6	32.0
	2	70.0%	7.9	30.8	80.4%	11.1	33.2
Western Circulatory	1	63.3%	9.5	15.4	78.2%	13.4	22.1
	2	69.6%	10.9	17.1	77.6%	13.0	22.2
B2068 Stone Street	1	45.9%	3.1	6.9	68.8%	5.0	16.5

2046 Sensitivity Assessment

11.4.10 Table 65 shows the results of the sensitivity test for the proposed mitigation for the DS with mitigation 2046 scenario. The results indicate that the junction is still predicted to operate within practical capacity in the DS with mitigation 2046 AM and PM peak hour scenarios.

Table 65 M20 J11 2046 DS with Mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
M20 Westbound Off-Slip	1	78.4%	15.5	8.4	84.9%	17.8	14.7
Eastern Circulatory	1	26.1%	0.2	1.3	37.4%	7.8	1.8
	2	32.5%	0.2	1.4	38.9%	0.3	1.5
A20 Ashford Road	1	71.4%	1.2	2.1	63.7%	0.9	1.7
Southern Circulatory	1	6.1%	0.0	1.0	9.6%	0.1	1.0
	2	10.6%	0.1	1.1	11.3%	0.1	1.1
Services Ahead	1	24.8%	0.2	2.9	18.6%	0.1	2.1
South West Circulatory	1	80.7%	2.1	4.9	68.0%	1.1	3.0
	2	39.1%	0.3	1.6	37.4%	0.3	1.5
M20 Eastbound Off-Slip	1	69.0%	7.7	30.4	79.9%	11.0	32.8
	2	70.4%	8.1	31.0	83.4%	12.0	35.6
Western Circulatory	1	67.3%	10.6	16.4	80.0%	13.9	22.9
	2	73.7%	12.2	18.4	79.8%	13.7	23.3
B2068 Stone Street	1	49.4%	3.5	8.4	74.4%	5.7	19.9

11.5 Hythe Road (A20) / The Street

11.5.1 This junction is predicted to operate within practical capacity for the 2037 and 2044 DM and DS scenarios, therefore no mitigation is proposed.

2046 Sensitivity Assessment

11.5.2 The 2046 DM results shown in Table 66 predicts that the junction will still operate with practical capacity in the 2046 DM scenarios. Table 67 presents the results for the 2046 DS scenarios. With the addition of the Otterpool Park development traffic, it is predicted that The Street could operate above practical capacity in the DS 2046 AM peak with an RFC of 0.89 and over theoretical capacity in the DS 2046 PM peak with an RFC of 1.05. The average delay per PCU is predicted to increase substantially in the PM peak hour.

Table 66 Hythe Road (A20) / The Street 2046 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A20 Hythe Road Westbound	0.51	1.0	4.9	0.38	0.6	4.1
Tesco Access	0.35	0.5	5.3	0.52	1.1	6.0
A20 Hythe Road Eastbound	0.40	0.7	3.7	0.60	1.5	5.4
The Street	0.79	3.3	37.9	0.75	2.7	50.0

Table 67 Hythe Road (A20) / The Street 2046 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A20 Hythe Road Westbound	0.61	1.5	6.2	0.42	0.7	4.5
Tesco Access	0.39	0.6	6.1	0.55	1.2	6.8
A20 Hythe Road Eastbound	0.47	0.9	4.2	0.71	2.4	7.3
The Street	0.89	6.2	71.8	1.05	12.2	211.3

Mitigation Discussions

11.5.3 Discussions regarding the need for mitigation at this junction have been held with Kent County Council and Folkestone & Hythe District Council.

11.5.4 The Street is a one-way residential road that accesses the A20 Hythe Road. As described in Chapter 6, the committed Willesborough Lees development will create a new signal-controlled junction on the A20 Hythe Road around 100m east of The Street. The Willesborough Lees Transport Assessment states that the new signalised junction will provide an alternative route for drivers who currently access the A20 from The Street and thus predicts that a proportion of traffic that would use The Street will in future use the new junction instead. The Transport Assessment also makes assumptions regarding the future routing of traffic that will result from the implementation of the new M20 Junction 10A, which could affect traffic flows on this location on the network.

11.5.5 The actual effect that the new Willesborough Lees junction in conjunction with the new M20 Junction 10A will have on The Street will only be determined once the schemes have been implemented. Since both schemes will be in place prior to the opening of Otterpool Park, it is suggested that impacts at this junction are re-assessed once the actual future network conditions are known.

11.6 Aldington Road / Stone Street

11.6.1 The Aldington Road / Stone Street junction will operate within practical capacity in the 2037 and 2044 DM and DS scenarios.

2046 Sensitivity Assessment

11.6.2 The results of the 2046 sensitivity test are presented in Table 68 and Table 69. Table 69 modelling results show that this junction could operate over theoretical capacity in the 2046 DS PM peak with an RFC of 1.06 and with a substantial increase of the average delay per PCU in that peak hour compared to the DM scenario.

Table 68 Aldington Road / The Street 2046 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Aldington Road Eastbound	0.39	0.6	12.0	0.44	0.8	12.3
Stone Street	0.34	0.6	8.3	0.11	0.1	6.8

Table 69 Aldington Road / The Street 2046 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Aldington Road Eastbound	0.71	2.3	31.5	1.06	22.9	178.2
Stone Street	0.63	2.2	13.4	0.19	0.3	7.1

11.6.3 Significant highway network changes are proposed for the Otterpool Park development, including the upgrade of the A20 Ashford Road junctions with Stone Street and the A261 Hythe Road. Since the modelling results suggest that the development would not have a severe impact on this junction until after 2044, it is suggested that network conditions at the junction between The Street and Aldington Road are monitored during the implementation of the Otterpool Park scheme to determine whether mitigation would be required.

11.7 A20 Ashford Road / A261 Hythe Road and A20 Ashford Road / Stone Street

11.7.1 For the forecast DM and DS 2037 scenarios the committed highway scheme for Hythe Road, which involves a minor extension of the flare length on Hythe Road by widening on the nearside, has been adopted as the future layout of the junction. An indicative design for the proposed future layout, provided by Kent County Council, is included in Appendix K.

11.7.2 Table 70 and Table 71 present the results of the 2037 DM and DS highway capacity assessment for the A20 Ashford Road / A261 Hythe Road junction and for the A20 Ashford Road / Stone Street junction. The tables show that Hythe Road is predicted to operate above practical capacity in the AM and PM peak hours in both the DM and DS 2037 scenarios. The 2018 baseline modelling results showed that the Hythe Road approach is already operating above practical capacity with an RFC of 0.87 in the Base AM peak hour. Despite the committed intervention, the approach is predicted to still operate well above practical capacity in the DM 2037 AM and PM peak hours. The average delay per PCU is predicted to increase substantially which indicates that the committed scheme is insufficient to cope with the forecast demand even without the addition of the Otterpool Park development traffic.

Table 70 A20 Ashford Road / A261 Hythe Road and the A20 Ashford Road/ Stone Street junction 2037 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A261 Hythe Road	1	0.95	5.4	164.01	0.99	4.5	224.25
	2	0.96	9.2	122.80	0.98	10.9	130.86
Stone Street	1	0.38	0.5	116.54	0.00	0.0	7.54
	2	0.92	7.3	81.88	0.23	0.3	12.92
A20 Ashford Road	1	0.01	0.0	7.20	0.03	0.0	7.12
	2	0.15	0.2	7.55	0.15	0.2	8.12

Table 71 A20 Ashford Road / A261 Hythe Road and the A20 Ashford Road/ Stone Street junction 2037 DS Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A261 Hythe Road	1	1.26	6.20	951.07	0.55	1.00	90.39
	2	1.41	74.40	717.78	0.91	6.90	81.66
Stone Street	1	0.89	3.30	233.13	0.08	0.10	8.15
	2	0.97	11.20	106.61	0.43	0.80	15.02
A20 Ashford Road	1	0.08	0.10	7.18	0.10	0.10	7.24
	2	0.20	0.30	7.92	0.17	0.20	8.04

11.7.3 In the 2044 forecast year the capacity issues on Hythe Road and Stone Street are predicted to increase in the DM 2044 scenarios. Table 72 indicates that Hythe Road is predicted to operate over theoretical capacity in the DM 2044 AM and PM scenarios with RFCs of 1.09 and 1.02 respectively. Delays are also predicted to increase exponentially with average delays per vehicle above 4 minutes. Stone Street is predicted to operate at theoretical capacity in the DM 2044 AM peak hour with an RFC of 1 and delays of 405 seconds per vehicle.

Table 72 A20 Ashford Road / A261 Hythe Road and the A20 Ashford Road/ Stone Street junction 2044 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A261 Hythe Road	1	1.09	9.6	265.97	1.02	5.0	244.12
	2	1.08	18.9	215.28	1.02	13.0	157.66
Stone Street	1	1.00	2.0	405.10	0.03	0.0	7.94
	2	0.98	11.9	123.10	0.31	0.4	14.69
A20 Ashford Road	1	0.01	0.0	7.31	0.03	0.0	7.26
	2	0.01	0.0	7.20	0.03	0.0	7.12

11.7.4 As part of the Otterpool Park development the Newingreen Link road to the north of the A20 Ashford Road / A261 Hythe Road junction is proposed. This will tie back into the A20 further west of the junction and would divert a substantial amount of traffic routing along the A20 away from the junction, which will have a significant positive benefit on conditions at the A20 Ashford Road / A261 Hythe Road and the A20 Ashford Road/ Stone Street junction.

11.7.5 The Otterpool Park development would attract an increased number of trips along both Hythe Road and Stone Street. As these two approaches are already over capacity in the DM 2037 scenarios the addition of development traffic along these roads in the AM peak hour, in particular to the proposed Business Park, is predicted to further exacerbated the delays at the junction despite the diversion of A20 through traffic on to the Newingreen link road. This is shown by the increase in RFC and delay in the DS 2037 AM peak hour in Table 73. In the DS 2037 PM peak hour, the benefits of the Newingreen Link road are evident as there is a reduction in the RFC and delays in the along both Hythe Road and Stone Street in comparison to the DM case.

Table 73 A20 Ashford Road / A261 Hythe Road and the A20 Ashford Road/ Stone Street junction 2044 DS Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A261 Hythe Road	1	1.60	11.90	1535.01	1.02	6.20	222.25
	2	1.70	149.60	1374.53	1.02	13.70	155.23
Stone Street	1	1.21	5.70	529.23	0.10	0.10	8.61
	2	1.19	48.50	370.13	0.39	0.60	14.53
A20 Ashford Road	1	0.07	0.10	6.99	0.07	0.10	7.84
	2	0.25	0.30	8.22	0.23	0.30	9.74

Proposed Mitigation

11.7.6 Options for mitigation at this junction have been discussed with Kent County Council and Folkestone & Hythe District Council, with discussions ongoing at the time of submission of the Application.

11.7.7 As mentioned in Chapter 6, 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 which has investigate a major intervention at this junction which has not been implemented due to monetary constraints.

11.7.8 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.

11.7.9 The mitigation designed to address the potential impacts and mitigate the predicted delays along Hythe Road and Stone Street in the DS 2037 and 2044 AM peak hour requires signalisation of the junction existing two priority junctions together. The results for the proposed mitigation for the DS 2037 scenario are shown in Table 74 and show that the junction would operate within capacity on all arms.

Table 74 A20 Ashford Road / A261 Hythe Road / Stone Street 2037 DS with Mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Ashford Road Southbound	1	44.5%	6.1	20.7	44.2%	6.2	11.6
	2 and 3	82.3: 77.1%	7.5	51.0	57.9: 57.9%	7.4	29.4
A261 Hythe Road	1 and 2	84.9: 84.9%	12.7	50.2	60.9: 60.9%	7.2	33.4
Stone Street	1 and 2	82.0%	11.6	49.5	44.3%	2.2	55.9
A20 Ashford Road Eastbound	1 and 2	71.6: 71.6%	6.2	42.0	60.4: 60.4%	9.1	26.4

11.7.10 The results for the DS 2044 scenario with proposed signalised intervention (Table 75), in conjunction with the Newingreen link road, indicate that the junction will operate at practical capacity in the DS with mitigation 2044 AM peak hour and within practical capacity in the PM peak hour.

Table 75 A20 Ashford Road / A261 Hythe Road / Stone Street 2044 DS with Mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Ashford Road Southbound	1	44.9%	8.1	26.1	57.6%	8.9	19.8
	2 and 3	89.2: 87.0%	10.0	80.1	63.0: 63.0%	6.2	39.3
A261 Hythe Road	1 and 2	89.0: 89.0%	19.9	62.2	61.1: 61.1%	7.4	34.1
Stone Street	1 and 2	89.5%	19.5	67.5	59.4%	5.3	45.7
A20 Ashford Road Eastbound	1 and 2	90.1: 90.1%	13.2	78.5	61.9: 61.9%	3.9	36.2

11.7.11 The results for the proposed mitigation at the A20 Ashford Road / A261 Hythe Road / Stone Street junction show that the junction is predicted to operate with practical capacity on all approaches. The signalisation of the Hythe Road and Stone Street approaches increases capacity and reduces the predicted delay substantially compared to the DM scenario results. It is considered that this proposed intervention, in combination with the proposed Newingreen Link road, would mitigate the potential impacts of the Otterpool Park development traffic at this location and also improve conditions in comparison to the forecast DM scenarios.

2046 Sensitivity Assessment

11.7.12 As a sensitivity test the 2046 DS with mitigation scenario (Table 77) for the junction was also tested and compared to the 2046 DM scenario results (Table 76). The results shown in Table 77 indicate that the junction would operate just above practical capacity in the 2046 DS with mitigation AM peak hour. Stone Street is predicted to operate with a DoS of 90.9% and the A20 Ashford Road is predicted to operate with a DoS of 90.8%. However, comparing the difference in delays between the DS with mitigation 2046 and DM 2046 show that there is a substantial reduction in delay on Stone Street and Hythe Road. It is therefore considered that the proposed mitigation would be an improvement in compared with the DM case. Any further capacity improvements may draw traffic away from the Newingreen Link road and is also likely to require land take and would therefore be considerably more difficult to deliver.

Table 76 A20 Ashford Road / A261 Hythe Road / Stone Street 2046 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A261 Hythe Road	1	1.1	10.1	280.6	1.1	5.3	273.9
	2	1.1	20.0	228.6	1.1	15.7	183.6
Stone Street	1	0.9	1.6	354.2	1.0	2.0	417.9
	2	1.0	9.9	114.5	1.0	14.1	140.3
A20 Ashford Road	1	0.0	0.0	7.9	0.0	0.0	7.3
	2	0.0	0.0	7.2	0.0	0.0	7.1

Table 77 A20 Ashford Road / A261 Hythe Road / Stone Street 2046 DS with Mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Ashford Road Southbound	1	43.5%	7.9	24.5	56.8%	9.1	15.8
	2 and 3	90.3: 90.3%	12.3	80.8	76.1: 76.1%	10.7	35.0
A261 Hythe Road	1 and 2	89.4: 89.4%	19.8	64.0	76.2: 76.2%	9.4	42.6
Stone Street	1 and 2	90.9%	19.8	72.0	73.1%	5.8	61.2
A20 Ashford Road Eastbound	1 and 2	90.8: 90.8%	17.2	74.2	56.9: 56.9%	3.4	37.0

11.8 Aldington Road / Lympne Hill

11.8.1 The junction modelling results indicate that the Aldington Road / Lympne Hill will operate within practical capacity in the 2037 DM and DS scenarios. Table 78 presents the results of the 2044 DM highway capacity assessment and shows it would still operate within practical capacity in this scenario.

Table 78 Aldington Road / Lympne Hill junction 2044 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Aldington Road	0.27	0.4	7.6	0.43	0.8	10.1
Lympne Hill	0.54	1.2	14.6	0.22	0.3	8.9

11.8.2 The 2044 DS scenarios results (Table 79) suggest that Lympne Hill would operate above practical capacity in the AM peak hour. A similar situation is expected in the 2046 assessment year sensitivity test, with the junction operating within capacity in the DM scenario (Table 80) and over practical capacity in the DS scenario (Table 81).

Table 79 Aldington Road / Lympne Hill junction 2044 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Aldington Road	0.56	1.5	12.2	0.80	4.0	29.6
Lympne Hill	0.90	7.0	56.7	0.50	1.0	14.4

Table 80 Aldington Road / Lympne Hill junction 2046 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Aldington Road	0.27	0.4	7.6	0.43	0.8	10.1
Lympne Hill	0.55	1.2	14.8	0.22	0.3	8.9

Table 81 Aldington Road / Lympne Hill junction 2046 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Aldington Road	0.63	1.9	14.0	0.84	4.9	35.0
Lympne Hill	0.92	8.2	65.4	0.55	1.2	16.1

Mitigation Discussions

11.8.3 Capacity testing at the Aldington Road / Lympne Hill junction has also been undertaken by Folkstone & Hythe District Council (November 2017) as part of the emerging Local Plan. The results of which suggested that the junction could operate over practical capacity in the 2031 Do-Something Places and Polices Local Plan scenario.

11.8.4 The cause of the capacity issue on Lympne Hill is that the predominant traffic flow volume occurs not on the priority arm of the junction on Aldington Road, but between the minor arm on Lympne Hill and the Aldington Road arm to the east. Traffic entering the junction from Lympne Hill is therefore required to give-way at the junction, despite the fact that opposing flows are very low. The junction would ideally be set out such that the Lympne Hill-Aldington Road east arms would form the priority arm. However, the left-turn from Lympne Hill into Aldington Road has a small radius and a step upward gradient, thus visibility is poor and traffic speed must be kept low.

11.8.5 Discussions regarding the need for mitigation at this junction has been held with Kent County Council and Folkestone & Hythe District Council. 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 that are currently using the route to avoid the alternative route to/from destinations in the south of the District via Hythe. This is expected to have a positive effect on the capacity of the Aldington Road / Lympne Hill junction. As the junction is predicted to be operating at practical capacity in the 2044 DS scenario and just over practical capacity in the 2046 DS scenario, it is likely that a reduction in flow on the route between Lympne Hill and Aldington Road east arm could mean the junction would operate within capacity.

11.8.6 It has been agreed that no mitigation is to be proposed for this junction at this time. If the Otterpool Park development is permitted, the operation of the junction is to be monitored and mitigation proposed if required.

11.9 A259/ Dymchurch Road/ Military Road

11.9.1 The 2018 baseline junction capacity assessment indicated that the A259/ Dymchurch Road/ Military Road junction is currently approaching practical capacity at the pedestrian crossing located adjacent to the Sainsbury's supermarket on Military Road. This pedestrian crossing represents one of the key pinch points on the gyratory as Military Road is lined two lanes but operates as a single lane only due to parked vehicles on the right-hand side of the road. The parked vehicles cause a merge issue at the eastern end of Military Road as two streams of traffic enter from Scalons Bridge north and south. Only a single lane of traffic can continue along Military Road and through the pedestrian crossing. This results in long queues forming when the pedestrian crossing is called.

11.9.2 As the forecast traffic flows increase this issue is exacerbated. This is evident in the DM 2037 junction capacity results in Table 82 which indicate that the Military Road stop line will operate above practical capacity with a DoS of 94% and 93.3% in the AM and PM peak hours respectively.

Table 82 A259/ Dymchurch Road/ Military Road M20 J11 2037 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
London Road	1 and 2	70.7: 70.7%	5.2	16.5	70.5: 70.5%	5.2	14.3
St John Moore Avenue	1	35.3%	0.3	6.2	65.8%	2.8	11.5
Portland Road	1	51.5%	0.5	6.6	52.6%	0.6	7.5
Dymchurch Road Northbound	1 and 2	80.5: 80.5%	11.0	17.5	64.8: 64.8%	7.2	15.4
	2 and 3	75.6: 75.6%	7.5	33.0	60.8: 60.8%	5.8	22.9
Dymchurch Road Westbound	1	54.6%	5.9	6.8	78.1%	12.1	12.6
Green Lane	1	22.3%	0.9	48.9	19.0%	0.7	37.5
Scalons Bridge Road Northbound	1	46.0%	5.0	5.2	41.6%	3.9	5.6
Scalons Bridge Road Right Turn	1	71.4%	12.9	17.6	70.8%	9.9	19.8

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Scalons Bridge Road Southbound	1	44.5%	3.4	28.8	60.3%	4.4	34.8
Military Road	1	94.0%	27.1	26.7	93.3%	23.1	25.7

11.9.3 The DS 2037 results shown in Table 83 indicate that this issue is predicted to worsen with the addition of the Otterpool Development traffic to the network. The junction is predicted to operate over theoretical capacity in the AM and PM peak hours with a DoS of 102.8% and 101.6% respectively on Military Road. In the DS 2037 PM peak, the Scalons Bridge right-turn into Military Road would also be over theoretical capacity due to the signal timing optimiser restricting the volume of traffic entering Military Road by reducing the available green time.

Table 83 A259/ Dymchurch Road/ Military Road M20 J11 2037 DS Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
London Road	1 and 2	71.0: 71.0%	5.3	14.1	57.3: 57.3%	3.9	7.7
St John Moore Avenue	1	37.6%	0.3	6.8	69.1%	3.6	14.0
Portland Road	1	57.4%	0.7	7.7	59.1%	0.7	8.9
Dymchurch Road Northbound	1 and 2	84.1: 84.1%	12.1	21.0	66.4: 66.4%	7.6	16.4
	2 and 3	80.3: 80.4%	9.1	34.0	67.4: 67.5%	6.9	23.9
Dymchurch Road Westbound	1	60.1%	7.1	7.5	83.4%	14.7	15.0
Green Lane	1	22.3%	0.9	48.9	19.0%	0.7	37.5
Scalons Bridge Road Northbound	1	50.5%	5.9	5.6	45.7%	4.5	5.9
Scalons Bridge Road Right Turn	1	71.4%	12.9	17.6	101.5%	26.2	110.3
Scalons Bridge Road Southbound	1	44.5%	3.4	28.8	60.3%	4.4	34.8
Military Road	1	102.8%	56.7	90.9	101.6%	46.1	76.7

11.9.4 The capacity issues experienced at this junction are exacerbated as traffic flows increase in the 2044 and 2046 DM and DS scenarios.

Proposed Mitigation

11.9.5 Kent County Council has indicated that the vehicles parked on Military Road are likely to be associated with the Sainsbury's supermarket. It is understood that, although the Sainsbury's site has sufficient parking capacity to accommodate demand for parking from customers, Sainsbury's staff are prevented from using the on-site car park. Thus, it is believed that staff parking occurs on Military Road. This assumption is perhaps supported by the fact that parking on Military Road is reduced overnight outside of Sainsbury's working hours.

11.9.6 To mitigate the impacts of the development traffic and also bring the junction within capacity it is proposed that parking restrictions on Military Road be implemented along the southern side of the carriageway between the Sainsbury's car park exit and the pedestrian crossing (approximately 55m). The restrictions should then continue between the pedestrian crossing and the bus stand on the eastern end of Military Road (approximately 180m). This would provide a continuous two-lane carriageway section from the Sainsbury's car park exit to the end of Military Road and should not result in any merge issues after the pedestrian crossing.

11.9.7 The results of the testing for this proposed intervention, shown in the Table 84, Table 85 and Table 86, indicate that the DS with mitigation 2037, 2044 and 2046 scenarios would all operate within practical capacity.

Table 84 A259/ Dymchurch Road/ Military Road M20 J11 2037 DS with Mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
London Road	1 and 2	71.0: 71.0%	5.3	14.1	70.8: 70.8%	5.2	12.4
St John Moore Avenue	1	33.1%	0.2	5.6	62.5%	2.5	10.0
Portland Road	1	57.6%	0.7	7.8	59.2%	0.7	9.0
Dymchurch Road Northbound	1 and 2	84.1: 84.1%	12.1	21.0	66.4: 66.4%	7.6	16.4
	2 and 3	80.4: 80.4%	9.1	34.1	67.5: 67.5%	7.0	23.9
Dymchurch Road Westbound	1	60.6%	7.4	7.6	83.7%	14.8	15.4
Green Lane	1	22.3%	0.9	48.9	19.0%	0.7	37.5
Scalons Bridge Road Northbound	1	50.5%	5.9	5.6	45.8%	4.5	5.9
Scalons Bridge Road Right Turn	1	71.4%	12.9	17.6	70.8%	9.9	19.8
Scalons Bridge Road Southbound	1	44.5%	3.4	28.8	60.3%	4.4	34.8
Military Road	1	80.9%	14.8	12.4	80.2%	13.3	12.6

Table 85 A259/ Dymchurch Road/ Military Road M20 J11 2044 DS with Mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
London Road	1 and 2	77.2: 77.2%	6.1	16.3	79.8: 79.8%	6.6	16.5
St John Moore Avenue	1	30.1%	0.2	4.7	51.5%	1.5	6.2
Portland Road	1	64.8%	0.9	9.6	68.0%	1.0	11.8
Dymchurch Road Northbound	1 and 2	89.1: 89.1%	19.8	29.3	72.7: 72.7%	9.2	21.0
	2 and 3	88.8: 88.8%	15.1	47.4	77.2: 77.2%	9.7	22.5
Dymchurch Road Westbound	1	59.7%	7.9	6.4	85.2%	18.1	16.5
Green Lane	1	25.9%	1.0	55.2	20.7%	0.8	41.9
Scalons Bridge Road Northbound	1	55.2%	2.4	4.4	51.9%	5.3	6.7
Scalons Bridge Road Right Turn	1	68.1%	18.5	15.1	67.9%	13.4	33.6
Scalons Bridge Road Southbound	1	24.6%	0.6	7.9	65.9%	5.8	38.6
Military Road	1	80.5%	14.7	12.2	80.2%	13.3	12.6

Table 86 A259/ Dymchurch Road/ Military Road M20 J11 2046 DS with Mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
London Road	1 and 2	77.2: 77.2%	6.1	16.3	79.8: 79.8%	6.6	16.5
St John Moore Avenue	1	30.1%	0.2	4.7	51.5%	1.5	6.2
Portland Road	1	64.8%	0.9	9.6	68.0%	1.0	11.8
Dymchurch Road Northbound	1 and 2	89.1: 89.1%	19.8	29.3	72.7: 72.7%	9.2	21.0
	2 and 3	88.8: 88.8%	15.1	47.4	77.2: 77.2%	9.7	22.5
Dymchurch Road Westbound	1	59.7%	7.9	6.4	85.2%	18.1	16.5
Green Lane	1	25.9%	1.0	55.2	20.7%	0.8	41.9

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Scalons Bridge Road Northbound	1	55.2%	2.4	4.4	51.9%	5.3	6.7
Scalons Bridge Road Right Turn	1	68.1%	18.5	15.1	67.9%	13.4	33.6
Scalons Bridge Road Southbound	1	24.6%	0.6	7.9	65.9%	5.8	38.6
Military Road	1	84.7%	20.8	10.7	78.6%	9.1	8.7

11.9.8 This mitigation has been discussed with Kent County Council and Folkestone & Hythe District Council and is subject to further discussion and agreement. It should be noted that the gyratory would also benefit from an extension of the double yellow lines on the entry to the western end of Military Road. This would reduce the conflict between the two streams of traffic entering Military Road from Scalons Bridge north and south.

11.10 A259 Prospect Road / Station Road / High Street

11.10.1 The A259 Prospect Road/ Station Road/ High Street roundabout is located to the east of the Dymchurch gyratory. It is a four-arm roundabout with the high street arm operating as exit only. The nearside lane of the A259 Prospect Road arm that starts approximately 40m back from the stop line is indicated for use by buses and contains a bus stop cage and has a dedicated entry to the roundabout separate from general traffic. Within the capacity modelling, the nearside lane has been assumed to be for use by buses only and has therefore not been included as capacity for general traffic. This is therefore considered to represent a worst-case scenario for the junction.

11.10.2 The local junction modelling results for the 2037 DM and DS scenarios are presented in Table 87 and Table 88 respectively.

Table 87 A259 Prospect Road / Station Road / High Street 2037 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Station Road	0.40	0.7	5.4	0.46	0.8	6.0
A259 Seabrook Road	0.42	0.7	4.2	0.53	1.1	5.1
Prospect Road	0.80	4.0	14.2	0.70	2.3	9.0

Table 88 A259 Prospect Road / Station Road / High Street 2037 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Station Road	0.43	0.8	5.9	0.47	0.9	6.4
A259 Seabrook Road	0.44	0.8	4.3	0.54	1.2	5.3
Prospect Road	0.87	6.1	20.6	0.76	3.1	11.0

11.10.3 The results indicate that the junction is predicted to operate within capacity in the DM 2037 AM and PM peak hours. The highest RFC of 0.80 is predicted to be on the Prospect Road approach in the AM peak hour. In the 2037 DS scenario, the junction is predicted to operate just over practical capacity on the Prospect Road approach in the AM peak hour with an RFC of 0.87. Whilst the junction is predicted to operate over practical capacity, the predicted increase in queue length and delay on the Prospect Road approach compared with the DM case is not considered to be severe. The queue is predicted to increase from 4 vehicles in the DM 2037 AM peak hour to 6.1 in the DS 2037 AM peak hour with a predicted delay increase of approximately 6 seconds per vehicle.

11.10.4 The local junction modelling results for the 2044 capacity assessments are presented in Table 89 and Table 89 for the DM and DS scenarios respectively.

Table 89 A259 Prospect Rd / Station Rd / High Street 2044 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Station Road	0.41	0.7	5.5	0.46	0.8	6.1
A259 Seabrook Road	0.43	0.7	4.3	0.53	1.1	5.1
Prospect Road	0.80	3.9	13.9	0.72	2.6	9.6

Table 90 A259 Prospect Rd / Station Rd / High Street 2044 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Station Road	0.45	0.8	6.2	0.49	1.0	6.6
A259 Seabrook Road	0.46	0.8	4.5	0.58	1.4	5.9
Prospect Road	0.88	6.6	22.1	0.76	3.0	10.8

11.10.5 The results indicate that the junction is predicted to operate within capacity in the DM scenario. The highest RFC of 0.80 is predicted to be on the Prospect Road approach in the DM 2046 AM peak hour. The junction is predicted to operate within capacity in the DS PM peak hour forecast scenario and over practical capacity for the AM peak hour scenario. The highest RFC predicted is 0.88 on the

Prospect Road approach in the DS AM peak hour. The largest predicted increase in queue and delay, compared with the DM scenario, is also on this approach. The predicted increase in queue length is 3 vehicles and an increase in delay of approximately 8 seconds per vehicle. This is not considered to be severe.

Mitigation Discussions

11.10.6 The requirement for mitigation at this junction was discussed with Kent County Council and Folkestone & Hythe District Council, during which it was acknowledged that the increase in delay and queue was not considered severe.

11.10.7 Kent County Council requested a review of accident data to be carried out to determine whether there are any existing issues relating to safety in the vicinity that might be exacerbated by an increase in traffic flow at the junction. Table 91 presents the accidents recorded within 50m of the junction over the most recent five years of data available (2013-17).

Table 91 A259 Prospect Road / Station Road / High Street Crash Map Data

Year	Location	Severity	Description
2013	Centre of junction	Slight	2 vehicles involved along with 2 casualties.
2014	Prospect Road, 30m south of junction	Slight	2 vehicles, 1 casualty
2015	Unclear, possibly on High Street	Serious	1 vehicle, 1 casualty
2016	Unclear, possibly on Prospect Road at the junction	Slight	1 vehicle, 1 casualty

Source: crashmap.co.uk

11.10.8 The data indicates that four collisions have been recorded within 50m of the junction during the most recent five years for which data is available, of which two appear to have been located at or on the junction. Although it has not been possible to interrogate the precise locations and causes of the accidents, the frequency of accident occurrence suggests there is not an existing issue with road safety at the junction.

11.10.9 Since the effect of the Otterpool Park development traffic does not present a severe impact at this junction and there does not appear to be an existing safety issue, no mitigation is proposed at this junction.

2046 Sensitivity Assessment

11.10.10 The results of the 2046 DM and DS sensitivity test at the A259 Prospect Road / Station Road / High Street junction are presented in Table 92 and Table 93.

Table 92 A259 Prospect Road / Station Road / High Street 2046 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Station Road	0.41	0.7	5.5	0.46	0.9	6.1
A259 Seabrook Road	0.43	0.8	4.3	0.53	1.1	5.2
Prospect Road	0.81	4.1	14.7	0.73	2.6	9.7

Table 93 A259 Prospect Road / Station Road / High Street 2046 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Station Road	0.46	0.80	6.35	0.50	1.00	6.74
A259 Seabrook Road	0.46	0.90	4.57	0.60	1.50	6.07
Prospect Road	0.90	8.00	26.50	0.76	3.10	11.15

11.10.11 The results of the sensitivity test show the same result as for the 2046 tests, with the junction operating just within capacity in the DM scenario and over practical capacity in the DS scenario. In view of the conclusion of the 2037 and 2044 assessments, no mitigation would be proposed for this assessment year.

11.11 M20 Junction 13

11.11.1 The 2018 baseline junction capacity assessment indicated that the M20 Junction 13 is currently operating within practical capacity. Table 94 presents the results of the 2037 DM highway capacity assessment, which indicate that it will continue to operate within capacity, however the A20 Castle Hill Bridge is predicted to be approaching practical capacity with an RFC of 0.84 in the PM peak hour.

Table 94 M20 Junction 13 2037 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
M20 Westbound Entry Only	0.50	1.0	5.0	0.31	0.4	3.8
Churchill Avenue	0.78	3.4	9.9	0.73	2.6	7.2
Cherry Garden Avenue	0.46	0.8	4.5	0.63	1.7	6.7
A20 Castle Hill Bridge	0.78	0.8	10.6	0.84	5.1	14.7

11.11.2 The DS 2037 results in Table 95 indicate that the junction will be within capacity in the AM peak hour, but in the PM peak hour the A20 Castle Hill Bridge is predicted to operate over practical capacity with an RFC of 0.89. Despite operating above capacity, the increase in delay per vehicle is only 5 seconds compared with the DM 2037 and the increase in queuing in not significant. Therefore, it is not considered that development traffic is having a severe impact in the 2037 forecast scenario.

Table 95 M20 Junction 13 2037 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
M20 Westbound Entry Only	0.52	1.10	5.39	0.32	0.50	3.99
Churchill Avenue	0.82	4.30	11.78	0.76	3.20	8.26
Cherry Garden Avenue	0.50	1.00	4.88	0.68	2.10	7.72
A20 Castle Hill Bridge	0.82	4.40	12.65	0.89	7.10	19.68

11.11.3 The 2044 assessment junction capacity results shown in Table 96 (DM) and Table 97 (DS).

Table 96 M20 Junction 13 2044 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
M20 Westbound Entry Only	0.50	1.00	5.02	0.32	0.50	3.94
Churchill Avenue	0.79	3.80	10.60	0.73	2.70	7.33
Cherry Garden Avenue	0.49	0.90	4.75	0.63	1.70	6.54
A20 Castle Hill Bridge	0.77	0.77	10.04	0.87	6.20	17.47

Table 97 M20 Junction 13 2044 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
M20 Westbound Entry Only	0.54	1.20	5.75	0.34	0.50	4.32
Churchill Avenue	0.88	6.60	17.47	0.78	3.40	8.87
Cherry Garden Avenue	0.57	1.30	5.95	0.74	2.70	9.54
A20 Castle Hill Bridge	0.84	4.90	13.96	0.95	13.20	34.71

11.11.4 The 2044 assessment results show that the A20 Castle Hill Bridge is predicted to operate above practical capacity in the PM peak hour in both the DM and DS scenarios. Whilst there is an increase in RFC between the DS and DM scenarios, the increase in delay on the A20 Castle Hill Bridge is less than 20 seconds per vehicle and the queue in the DS 2044 PM peak is not predicted to impact on any other movements. The impact of the development flows is therefore not considered to be severe.

11.11.5 In addition to the A20 Castle Hill Bridge, the Churchill Avenue approach is also predicted to operate above practical capacity in the DS 2044 AM peak hour. The increase in delay on the approach compared with the DM scenario is less than seven seconds per vehicle and the increase in predicted

queue length is only three vehicles. Similarly, to the A20 Castle Hill Bridge approach results, the impacts are not considered to be severe on the Churchill Avenue approach.

11.11.6 The introduction of the development flows onto the network is not predicted to have a severe impact on the M20 westbound off-slip.

Mitigation Discussions

11.11.7 The junction modelling results at this junction were discussed with Kent County Council, Folkestone & Hythe District Council and Highways England. It was agreed that the results suggested that the Otterpool Park development would not have a severe impact at this junction and that, subject to further review by all three authorities, no mitigation would be proposed for this junction.

11.11.8 During a period when mitigation options were discussed, a potential improvement at the junction was identified. The Churchill Avenue approach consists of a single long lane that widens to two lanes approximately 75m and then to three lanes approximately 20m before the give way line. The Churchill Avenue exit is two lanes that taper down to one wide 4.5m lane. If the exit lane were to taper down to a standard lane width it would allow for the two-lane section on the Churchill Approach to be extended further back. This improvement would allow the Churchill Avenue approach to operate at practical capacity in both DS scenarios.

2046 Sensitivity Assessment

11.11.9 The 2046 sensitivity tests for the M20 Junction 13 are shown in Table 98 and Table 99 for the DM and DS scenarios respectively.

Table 98 M20 Junction 13 2046 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
M20 Westbound Entry Only	0.51	1.10	5.19	0.32	0.50	3.99
Churchill Avenue	0.80	4.00	11.24	0.74	2.80	7.63
Cherry Garden Avenue	0.49	1.00	4.81	0.63	1.70	6.70
A20 Castle Hill Bridge	0.78	0.78	10.60	0.87	6.40	17.98

Table 99 M20 Junction 13 2046 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
M20 Westbound Entry Only	0.55	1.20	5.89	0.34	0.50	4.39
Churchill Avenue	0.88	7.00	18.52	0.79	3.70	9.51
Cherry Garden Avenue	0.57	1.30	5.91	0.76	3.00	10.39
A20 Castle Hill Bridge	0.85	5.40	15.20	0.96	14.70	38.25

11.11.10 The junction capacity results are similar to the 2044 results as the A20 Castle Hill Bridge is predicted to operate above practical capacity in both DM 2046 and DS 2046 PM peak hour. The Churchill Avenue approach is predicted to operate within practical capacity in the DM 2044 AM peak hour but over practical capacity in the and DS 2044 AM peak hour.

11.12 M20 Junction 9

11.12.1 The baseline junction modelling indicates that the M20 Junction 9 is currently operating over practical capacity in the PM peak hour due to the volume of traffic routing from the M20 eastbound slip into Ashford which conflicts with the heavy traffic flows on the associated section of the circulatory. The eastbound slip consists of two left-turn lanes and two ahead lanes, even though the volume of traffic left-turning is low, and the ahead traffic volume is high. The number of ahead lanes is restricted to two lanes because the associated exit arm on Fougeres Way has just two exit lanes.

11.12.2 Table 100 presents the 2037 DM scenario modelling results, while Table 101 shows the 2037 DS scenario results.

Table 100 M20 Junction 9 2037 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Trinity Road	1	67.9%	6.4	21.1	81.2%	12.8	23.3
	2 and 3	72.6: 72.6%	6.6	18.4	95.1: 95.1%	20.8	35.9
M20 Slip Road Westbound	1 and 2	79.3: 79.5%	6.9	25.4	86.9: 87.2%	7.6	43.0
	3 and 4	67.8: 66.4%	5.1	21.5	84.7: 83.5%	6.9	39.6
Fougeres Way Northbound	1 and 2	64.7: 64.7%	6.2	10.8	53.3: 53.3%	4.7	8.9
	3	39.9%	3.3	9.9	29.5%	2.6	8.4
	4	78.1%	9.7	17.8	67.4%	8.5	13.5
M20 Slip road Eastbound	1 and 2	30.3: 30.3%	1.8	17.3	20.4: 20.2%	1.7	17.2
	3 and 4	75.2: 83.9%	7.3	26.2	85.7: 86.6%	11.6	30.6

Table 101 M20 Junction 9 2037 DS Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Trinity Road	1	69.8%	6.6	21.8	80.3%	12.7	21.9
	2 and 3	72.9: 72.9%	6.6	18.5	93.3: 93.3%	18.2	30.0
M20 Slip Road Westbound	1 and 2	80.1: 80.1%	7.4	24.5	88.6: 88.6%	8.6	43.1
	3 and 4	65.3: 63.6%	5.0	20.0	80.5: 79.3%	6.4	34.5

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Fougeres Way Northbound	1 and 2	65.1: 64.6%	6.8	10.8	53.3: 53.3%	4.7	8.9
	3	40.1%	3.4	10.0	29.5%	2.6	8.4
	4	82.5%	11.1	20.2	71.4%	9.6	14.5
M20 Slip road Eastbound	1 and 2	30.3: 30.3%	1.8	17.3	20.4: 20.2%	1.7	17.2
	3 and 4	75.2: 83.9%	7.3	26.2	86.1: 86.2%	11.5	30.7

11.12.3 The junction is predicted to continue operating above practical capacity in the DM 2037 PM peak hour, shown in Table 100. The highest DoS is on Trinity Road in lanes 2 and 3 of 95.1% in the PM peak hour.

11.12.4 There is little difference between the DS 2037 and DM 2037 results, the DS results indicate that the junction will also be operating over practical capacity on Trinity Road in the PM peak hour. The worst DoS in the DS 2037 scenario is 93.3% on Trinity Road lanes 2 and 3. The results indicated that the impacts of the Otterpool Park development flows will not have a severe impact on junction operation in 2037.

11.12.5 The results for the DM 2044 scenario are presented in Table 102, with the DS results shown in Table 103.

Table 102 M20 Junction 9 2044 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Trinity Road	1	68.0%	6.4	21.2	84.0%	14.1	24.5
	2 and 3	76.2: 76.2%	7.1	19.6	97.9: 97.9%	27.1	47.9
M20 Slip Road Westbound	1 and 2	85.6: 85.6%	8.4	29.3	89.0: 89.0%	8.3	46.0
	3 and 4	73.3: 71.6%	5.8	22.8	86.2: 85.0%	7.3	41.3
Fougeres Way Northbound	1 and 2	67.3: 67.3%	6.9	11.9	56.0: 56.0%	5.1	9.1
	3	43.5%	3.8	11.0	31.0%	2.8	8.5
	4	82.0%	10.6	20.8	72.0%	9.7	14.7
M20 Slip road Eastbound	1 and 2	32.2: 32.0%	2.0	17.5	21.1: 20.9%	1.7	17.2
	3 and 4	79.5: 88.3%	8.2	28.7	88.4: 88.8%	12.6	32.9

Table 103 M20 Junction 9 2044 DS Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Trinity Road	1	70.4%	6.7	22.0	89.4%	16.8	31.4
	2 and 3	76.7: 76.7%	7.3	19.7	99.0: 99.0%	30.3	56.3
M20 Slip Road Westbound	1 and 2	86.9: 87.1%	9.2	29.1	99.0: 99.0%	16.5	86.4
	3 and 4	70.6: 69.1%	5.7	21.1	89.6: 88.4%	8.3	46.0
Fougeres Way Northbound	1 and 2	69.7: 67.1%	7.6	11.4	55.9: 55.9%	5.1	9.1
	3	42.4%	3.6	10.2	31.1%	2.8	8.5
	4	84.2%	11.8	21.5	79.8%	12.2	17.8
M20 Slip road Eastbound	1 and 2	32.2: 32.0%	2.0	17.5	22.1: 22.1%	1.8	18.1
	3 and 4	79.5: 88.3%	8.2	28.7	93.0: 92.8%	14.8	40.9

11.12.6 The results indicate that the capacity issues in the PM peak hour are predicted to worsen in the DM and DS scenarios. The highest DoS is 97.9%, predicted on Trinity Road in the PM peak hour. The M20 westbound and eastbound off-slips are also predicted to be approaching capacity.

11.12.7 The addition of the forecasted Otterpool development traffic, which is approximately 3% increase in the total junction flow, is predicted to result in the junction operating above practical capacity in the DS 2044 AM peak hour as well as the DS 2044 PM peak hour.

11.12.8 Kent County Council raised concern over the increase in the mean max queue on Trinity Road in the DM 2044 PM peak hour. The addition of the development flows in the DS scenario results in the predicted queue increasing by approximately 3 PCUs. This could be considered a significant impact if it results in the queue blocking back to the next junction.

11.12.9 The M20 eastbound off-slip is also predicted to operate over practical capacity in the PM peak hour in the DS scenario. However, the increase in delay comparative to the DM scenario is approximately 8 seconds per PCU which is not considered to be severe. The predicted queue lengths are also not expected to impact on the M20 mainline as there is enough of storage on the slip to accommodate the increase in queue length.

11.12.10 The M20 westbound off-slip is predicted to be approaching theoretical capacity in the DS 2044 PM peak hour with a DoS of 99%. The predicted mean maximum queue length of 16 PCUs is not expected to impact on the M20 mainline, however the increase in delay exceeds 20 seconds and is therefore considered to be a severe impact.

Proposed Mitigation

11.12.11 To mitigate the potential impacts described above, it is proposed that the exiting flare on Trinity Road is extended by 30m. This would increase the capacity of the approach and also provide

additional stacking space. It is also proposed that amendments to the lane allocations on the approach are made to allow the middle lane on Trinity Road to be shared for ahead and left movements. This would distribute the capacity enhancements more evenly across all movements on the approach.

11.12.12 The proposed intervention would require lane marking and road sign changes. In addition, it is recommended that a uniform cycle time for the junction of 65 seconds for the AM peak hour and 72 seconds for the PM peak hour be adopted for the DS 2044 forecast year.

11.12.13 Preliminary discussions regarding these mitigation options have been held with Kent County Council and Highways England. The results for the DS with mitigation 2044 scenario are shown in Table 104.

Table 104 M20 Junction 9 2044 DS with Mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Trinity Road	1	71.8%	8.5	26.6	79.8%	12.7	26.9
	2 and 3	72.6: 72.6%	8.6	22.2	93.5: 93.5%	18.5	33.5
M20 Slip Road Westbound	1 and 2	80.7: 80.9%	9.6	28.3	88.6: 88.6%	9.8	47.6
	3 and 4	65.8: 64.0%	6.6	23.3	80.2: 79.1%	7.5	38.8
Fougeres Way Northbound	1 and 2	41.4%	4.4	10.4	28.9%	3.0	8.0
	3	41.4%	4.4	10.4	28.9%	3.0	8.0
	4	72.8%	11.0	16.2	74.1%	12.6	15.1
M20 Slip road Eastbound	1 and 2	30.2: 30.0%	2.4	20.4	21.4: 21.4%	1.9	19.2
	3 and 4	74.7: 82.9%	8.9	29.3	90.1: 90.0%	14.2	37.3

11.12.14 The DS with mitigation 2044 AM peak is predicted to operate within practical capacity. The DS with mitigation 2044 PM peak hour is predicted to operate above practical capacity with a maximum DoS of 93.5%. This is an improvement on the DM 2044 PM scenario which has a predicted maximum DoS of 97.9%.

11.12.15 The modelling results indicate that proposed mitigation in combination with cycle time changes, would result in a reduction in the DoS and mean maximum queue on the Trinity Road approach as well as improve the overall junction performance compared with the DM case. The increase in approach capacity on Trinity Road also allows for more even lane usage which benefits downstream sections of the junction. Cycle time changes and optimisation indicate the M20 westbound is now predicted to operate within practical capacity in the PM peak hour. The increase in delay compared with the DM 2044 is predicted to be approximately 2 seconds per vehicle and the increase in mean maximum queue length is not considered to be severe.

2046 Sensitivity Assessment

11.12.16 Table 105 and Table 106 present the results of the DM and DS with mitigation scenario modelling results for the 2046 sensitivity test.

Table 105 M20 Junction 9 2046 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Trinity Road	1	66.1%	6.3	19.6	84.5%	14.5	24.9
	2 and 3	75.4: 75.4%	7.0	18.4	99.5: 99.5%	32.4	59.2
M20 Slip Road Westbound	1 and 2	86.0: 86.0%	8.5	29.6	89.9: 89.9%	8.6	47.7
	3 and 4	73.5: 72.0%	5.8	22.9	87.5: 86.2%	7.6	42.8
Fougeres Way Northbound	1 and 2	68.4: 68.4%	6.7	11.3	56.7: 56.7%	5.2	9.2
	3	42.3%	3.6	10.2	31.4%	2.8	8.6
	4	80.4%	10.4	18.9	72.2%	9.7	14.8
M20 Slip road Eastbound	1 and 2	32.6: 32.6%	2.0	17.5	21.4: 21.4%	1.8	17.3
	3 and 4	81.4: 89.1%	8.5	29.7	90.0: 90.1%	13.3	34.7

Table 106 M20 Junction 9 2046 DS with Mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Trinity Road	1	73.0%	8.7	27.1	94.6%	21.1	46.1
	2 and 3	74.0: 74.0%	8.9	22.6	90.1: 90.1%	15.9	26.2
M20 Slip Road Westbound	1 and 2	82.1: 82.1%	9.9	28.9	91.6: 91.6%	10.8	52.1
	3 and 4	66.1: 64.7%	6.7	23.4	82.5: 81.4%	7.6	39.1
Fougeres Way Northbound	1 and 2	41.9%	4.5	10.5	40.8%	4.5	11.1
	3	41.9%	4.5	10.5	40.8%	4.5	11.1
	4	73.8%	11.2	16.6	66.4%	9.4	15.3
M20 Slip road Eastbound	1 and 2	30.6: 30.6%	2.4	20.4	20.5: 20.5%	1.8	17.2
	3 and 4	76.3: 83.9%	9.1	29.9	86.3: 86.4%	12.4	30.8

11.12.17 The DS with mitigation scenario shows an improvement on Trinity Road and the M20 slip road eastbound, both of which operate over practical capacity in the DM scenario. The M20 slip road westbound operates over practical capacity in the PM peak in the DS with mitigation scenario, but the increase in mean maximum queue length (2 PCUs) and average delay per PCU (2.4 seconds) does not represent a severe impact.

11.13 B2064 Cheriton High Street/ Risborough Lane

11.13.1 The baseline results for the B2064 Cheriton High Street/ Risborough Lane junction indicate that it is currently approaching practical capacity in the Base 2018 PM peak. Table 107 presents the junction capacity results for the DM 2037 scenario.

Table 107 B2064 Cheriton High Street / Risborough Lane 2037 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Stanley Road	1	106.1%	13.2	264.2	84.1%	5.4	128.4
Cheriton High Street Westbound	1 and 2	64.3: 64.3%	8.9	30.6	66.1: 66.1%	11.2	29.4
Risborough Lane	1 and 2	106.3: 106.3%	42.0	181.9	126.9: 126.9%	98.0	472.9
Cheriton High Street Eastbound	1 and 2	75.6: 106.0%	20.1	91.3	100.4: 123.0%	64.8	195.3

11.13.2 The junction is predicted to operate above theoretical capacity on three of the four approaches in the AM peak hour and over theoretical capacity in two of the four approaches in the PM peak hour.

11.13.3 The results indicate that the junction is not able to cope with the forecast demand in its current layout and method of control.

11.13.4 As the junction is already predicted to be substantially over capacity in the DM 2037 case it is not possible to accurately determine the potential impacts and severity of the Otterpool development traffic. Any additional increase in traffic results in exponential growth of queues and delays which is shown in the DS 2037 results Table 108.

Table 108 B2064 Cheriton High Street / Risborough Lane 2037 DS Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Stanley Road	1	111.7%	16.9	332.2	90.6%	6.6	154.5
Cheriton High Street Westbound	1 and 2	70.5: 70.5%	10.9	29.6	72.3: 72.3%	14.0	27.5
Risborough Lane	1 and 2	125.0: 125.0%	91.5	436.6	156.7: 156.7%	162.4	777.6
Cheriton High Street Eastbound	1 and 2	97.0: 127.9%	60.1	209.4	115.6: 151.5%	163.2	440.7

Mitigation Discussions

11.13.5 It is notable that this junction operates over theoretical capacity in the 2037 DM scenario, which does not include the full forecast of homes and jobs required for Folkestone & Hythe for 2037. As described in Chapter 6, the DM scenario traffic flows are discounted by an amount equivalent to the number of homes and jobs that would be provided by Otterpool Park in the 2037 assessment year. This is intended to account for the understanding that it would be difficult for Folkestone & Hythe District Council to meet their housing and employment forecasts without the introduction of Otterpool Park. The traffic flows tested in the 2037 DS scenario include traffic generation for all households and employment required to meet Folkestone & Hythe District Council's targets in 2037.

11.13.6 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.

11.14 B2064 Cheriton High Street/ Cherry Garden Avenue

11.14.1 The baseline results for the B2064 Cheriton High Street/ Cherry Garden Avenue junction indicated that it is currently operating above practical capacity in the Base 2018 AM and PM peak hours with a maximum DoS of 91% and 94% respectively. Table 109 presents the junction capacity results for the DM 2037 scenario.

Table 109 B2064 Cheriton High Street / Cherry Garden Avenue 2037 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
A20 Cherry Garden Avenue	1	94.1%	20.4	123.6	102.2%	22.1	200.6
	2 and 3	96.4: 96.4%	26.2	121.3	99.6: 99.6%	23.8	149.0
A2034 Cheriton Road Westbound	1 and 2	75.1: 94.0%	16.0	77.9	72.1: 97.7%	13.0	72.5
B2034 Beachborough Road	1	96.1%	28.3	118.0	103.9%	42.9	179.6
A20 Cheriton Road Eastbound	1	29.9%	6.4	34.8	32.1%	5.9	39.1
	2 and 3	84.2: 84.2%	21.3	79.5	86.8: 86.8%	20.3	78.3

11.14.2 The junction is predicted to operate above practical capacity on three of the four approaches in the DM 2037 AM peak hour with a maximum predicted DoS of 96.4% on Cherry Garden Avenue. In the DM 2037 PM peak hour the junction is predicted to operate above theoretical capacity on two approaches and over practical capacity on one approach. The maximum predicted DoS in the PM peak hour is 103.9% on Beachborough Road.

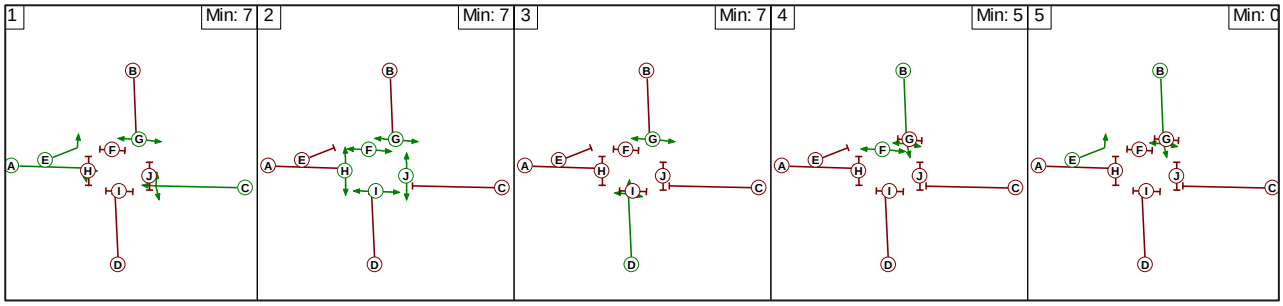
11.14.3 The results show that the junction is not able to cope with the forecast demand in its current layout and method of control. As with the Cheriton High Street/ Risborough Way junction, for the junction to operate within capacity a highway improvement would be required at this location prior to 2037.

Mitigation options

11.14.4 As the junction is already forecast to operate above theoretical capacity in the DM 2037 scenario it is difficult to establish the potential impact of the development flows accurately. As there is currently not a committed highway improvement scheme at this location, potential interventions to bring the junction within capacity were explored as part of the assessment.

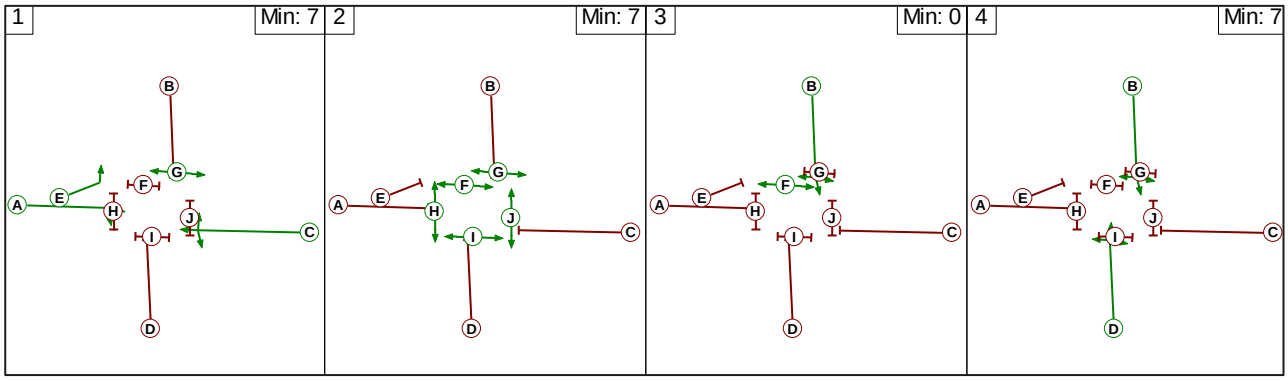
11.14.5 The junction currently operates with the staging plan shown in Figure 9. The Cheriton Road eastbound and westbound right turn movements are allowed to run opposed in the same stage and there is sufficient storage capacity for the right turners not to block the ahead movements.

Figure 9 Existing Signal Staging Plan for B2064 Cheriton High Street / Cherry Garden Avenue Junction



11.14.6 The demand for the right-turn movements from Cherry Garden Avenue and Beachborough Lane are much lower than those on Cheriton Road eastbound and westbound, however the two approaches are not run opposed. If the junction were to be redesigned to allow the right turns from these approaches to run opposed safely, it would add considerable capacity benefits to the junction and reduce the number of stages required. A potential staging plan for this is shown in Figure 10.

Figure 10 Proposed signal staging plan for B2064 Cheriton High Street / Cherry Garden Avenue



11.14.7 In addition to this, if parking restrictions were placed on the Cheriton Road westbound exit after the bus stop, the Cheriton Road eastbound right turn lane could be extended further back.

11.14.8 The impacts of the Otterpool development traffic have been assessed assuming that this scheme or one similar were to be adopted as the future base case. Table 110 presents the DS 2037 with mitigation results.

Table 110 B2064 Cheriton High Street / Cherry Garden Avenue 2037 DS with Mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
A20 Cherry Garden Avenue	1	49.6%	11.7	41.7	40.6%	8.4	34.2
	2 and 3	54.9: 54.9%	14.3	41.7	83.0: 83.0%	10.9	51.5
A2034 Cheriton Road Westbound	1 and 2	64.6: 66.2%	16.0	55.1	66.9: 81.2%	14.2	57.6
B2034 Beachborough Road	1	71.6%	20.8	56.4	82.9%	25.0	58.0
A20 Cheriton Road Eastbound	1	41.3%	8.7	44.2	45.2%	8.3	45.9
	2 and 3	78.0: 78.0%	22.5	58.6	84.4: 84.4%	23.0	63.3

11.14.9 The results for the DS 2037 with mitigation indicate that the junction would operate within practical capacity in both the AM and PM peak hour. The results for the DS 2044 with mitigation are shown in Table 111.

Table 111 B2064 Cheriton High Street / Cherry Garden Avenue 2044 DS with Intervention Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
A20 Cherry Garden Avenue	1	50.0%	11.8	42.5	40.9%	8.5	34.2
	2 and 3	56.7: 62.2%	14.7	43.7	88.6: 88.6%	12.3	60.1
A2034 Cheriton Road Westbound	1 and 2	70.9: 84.8%	19.1	59.1	77.8: 88.3%	19.0	63.0
B2034 Beachborough Road	1	76.5%	22.8	60.0	89.6%	28.8	68.3
A20 Cheriton Road Eastbound	1	50.0%	11.2	46.0	57.8%	11.4	49.9
	2 and 3	81.0: 81.0%	24.7	61.4	86.0: 86.0%	23.9	66.8

11.14.10 The results for the DS 2044 with mitigation indicate that the junction would operate within practical capacity in both the AM and PM peak hour.

2046 Sensitivity Assessment

11.14.11 The results for the DS 2046 with mitigation assessment are shown in Table 112.

Table 112 B2064 Cheriton High Street / Cherry Garden Avenue 2046 DS with Intervention Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
A20 Cherry Garden Avenue	1	51.5%	12.0	44.3	41.8%	8.7	35.1
	2 and 3	78.0: 78.5%	16.7	53.2	98.0: 98.0%	17.5	107.7
A2034 Cheriton Road Westbound	1 and 2	70.2: 89.8%	19.3	58.0	80.1: 90.7%	20.4	64.2
B2034 Beachborough Road	1	80.2%	23.9	64.9	98.2%	36.8	107.3
A20 Cheriton Road Eastbound	1	49.2%	11.1	44.4	58.9%	11.8	49.6
	2 and 3	83.6: 83.6%	27.0	62.1	86.2: 93.8%	24.9	68.8

11.14.12 The results for the DS 2046 with intervention indicate that the junction is predicted to operate over practical capacity in the PM peak hour. However, the results would represent an improvement on even the 2037 DM without mitigation results presented in Table 109.

11.15 A259 Prospect Road / Stade Street

11.15.1 The A259 Prospect Road / Stade Street is a non-signalised T-junction with the minor arm situated on a narrow bridge over the Royal Military Canal. A signalised standalone pedestrian crossing is located over the main A259 Prospect Road on the eastern side of the junction.

11.15.2 The DM 2037 results shown in Table 113 indicate that the junction is predicted to be approaching practical capacity in the AM peak hour with an RFC of 0.84 on Stade Street. In the PM peak hour, the Stade Street approach is predicted to operate above theoretical capacity with an RFC of 1.05.

Table 113 A259 Prospect Road / Stade Street 2037 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Stade Street	0.84	3.9	95.6	1.05	10.1	234.1
A259 Rampart Road Westbound	0.53	1.1	15.2	0.66	1.9	24.0

11.15.3 The results for the DS 2037 junction capacity assessment are presented in Table 114.

Table 114 A259 Prospect Road / Stade Street 2037 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Stade Street	0.96	7.20	167.75	1.24	18.50	404.25
A259 Rampart Road Westbound	0.54	1.10	15.86	0.67	2.00	24.81

11.15.4 The DS 2037 results indicate that the Stade Street arm would operate over practical capacity in the AM peak hour and over theoretical capacity in the PM peak hour. The delays on the minor arm are predicted to increase substantially compared with the DM scenarios. Based on these results the impact of the Otterpool Park development flows would be considered to be severe. However, increase in queue length would not extend into the next junction along Stade Street.

11.15.5 The 2044 junction capacity results, presented in Table 115 and Table 116, indicate that the junction performance is predicted to worsen in both the DM and DS scenarios.

Table 115 A259 Prospect Road / Stade Street 2044 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Stade Street	0.86	4.4	104.3	1.10	12.1	277.5
A259 Rampart Road Westbound	0.52	1.1	15.1	0.68	2.1	25.0

Table 116 A259 Prospect Road / Stade Street 2044 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Stade Street	1.04	10.2	223.1	1.56	29.4	646.3
A259 Rampart Road Westbound	0.54	1.1	16.1	0.72	2.6	29.3

11.15.6 The DM 2044 results show that the Stade Street approach is predicted to operate above practical capacity in the AM peak hour and over theoretical capacity in the PM peak hour. The junction is predicted to be over theoretical capacity in the AM and PM peak hours in the DS 2044 scenario. The junction is predicted to perform worst in the PM peak hour for all forecast scenarios.

Mitigation Discussions

11.15.7 The traffic flows on the minor arm, which are forecast to be approximately three vehicles a minute, are not considered to be heavy. However, the junction modelling uses a one-hour flow profile which assumes that the traffic flows will have a normal distribution within the peak hour. This means that the demand is approximately 22% higher in the middle 30 minutes of the peak hour compared with the 15 minutes either side. Based on this traffic flow profile assumption the junction is predicted to

be over capacity for 30 minutes within the peak hour. The results show the worst performing 15-minute period within the peak hour and indicate that the queue on the minor arm will extend past the nearest junction with Portland Road in the DM 2037 PM peak hour.

11.15.8 Following discussions with Kent County Council, it was agreed that this modelling approach may be over estimating the potential impacts of the forecast flows and did not take into account the potential benefits the pedestrian crossing may have for the minor arm when it is called. Kent County Council requested that the junction was remodelled with the pedestrian crossing in LinSig using the give-way coefficients from Junctions 9.

11.15.9 The junction was remodelled using LinSig for the 2044 PM peak, as this peak period represented the worst-case scenario. As pedestrian data had not been collected at this site, the model tested the pedestrian crossing being called at different frequencies. An additional scenario in which 'Keep Clear' markings are added onto the A259 eastbound lane on approach to the pedestrian crossing was also tested. The results of the updated junction capacity assessment for the 2044 PM peak scenarios are presented in Table 117.

Table 117 Stade Street Highway Capacity LinSig Results for 2044 PM Peak Hour

Freq. of Pedestrian Crossing Activation	Stade Street 2044 PM Peak								
	Do-Minimum			Do-Something			Do-Something with 'Keep Clear'		
	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/ PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/ PCU)
240s	79.4%	5.5	49.1	97.7%	14.2	156.1	92.9%	12.7	121.7
180s	78.7%	5.5	48.6	96.1%	11.4	141.9	90.0%	9.7	103.8
120s	77.2%	5.4	48.0	93.0%	8.2	118.6	84.7%	6.5	79.2
60s	73.2%	3.1	42.6	84.9%	4.4	74.7	72.0%	3.1	44.4

11.15.10 The results indicate that the frequency at which the pedestrian crossing is called does have an impact on the performance of Stade Street, with junction performance improving at lower frequencies. The junction is predicted to operate within practical capacity in the DM 2044 PM peak hour for all pedestrian crossing frequencies tested. For the DS 2044 PM scenario, Stade Street is predicted to operate within practical capacity only if the pedestrian crossing were to be called once every minute.

11.15.11 If Keep Clear markings were to be introduced to the A259 eastbound lane on approach to the pedestrian crossing, Stade Street is predicted to operate within practical capacity in the DS scenario if the pedestrian crossing were to be called up to once every two minutes. Full results from the junction modelling are provided in Appendix R.

11.15.12 The results indicate that there will be periods within the peak hour where queues will form on the minor arm. These are predicted to be worse in the DS scenarios, however they are still predicted to block back past the nearest junction in the DM 2037 PM peak hour. Further testing involving the pedestrian crossing indicates that the junction may operate within capacity depending on the frequency of the crossing being called.

11.15.13 It is recommended that the conditions at this location be monitored going forwards. If queuing and delays on the minor arm do become a severe issue, then the implementation of 'Keep Clear' markings may assist the minor arm by protecting a space for vehicles to enter when the pedestrian crossing is called.

11.15.14 If the conditions on the minor arm are still severe and start to cause issues elsewhere on the network, then full signalisation of the junction including the pedestrian crossing could be considered.

11.16 Barrow Hill One-Way Operation

11.16.1 The Barrow Hill funnel junction is located at a heavily constrained location where the A20 narrows to a single lane under a railway bridge. The junction is quite isolated with the nearest main junction to the north being the A20 Ashford Road/Swan Lane which is approximately 300m away and to the south the A20 Ashford Road/Otterpool Lane junction which is approximately 1km away.

11.16.2 The results for the 2037 DM scenario are presented in Table 118.

Table 118 Barrow Hill One-Way 2037 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Barrow Hill Southbound	1	78.5%	7.2	31.8	76.1%	6.7	30.2
Barrow Hill Northbound	1	83.2%	8.9	32.5	81.3%	8.3	30.8

11.16.3 The results indicate that the junction is predicted to operate within practical capacity in the DM 2037 scenarios. The highest forecast DoS in the DM 2037 is 83.2% on Barrow Hill northbound in the AM peak hour. The results for the 2037 DS scenario are presented in Table 119.

Table 119 Barrow Hill One-Way 2037 DS Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Barrow Hill Southbound	1	104.8%	26.5	152.9	104.4%	24.1	151.3
Barrow Hill Northbound	1	101.1%	23.9	97.9	104.0%	32.3	130.4

11.16.4 Based on the current cycle time and method of control the junction is predicted to operate over theoretical capacity in the DS 2037 scenario once the Otterpool development traffic is added onto the network. The highest predicted DoS in the AM peak hour is 104.8% and 104.4% in the PM peak hour. The mean maximum queue lengths and average delay per PCU are predicted to increase significantly. The results indicate that changes to the junction operate would be required by the DS 2037 forecast year.

11.16.5 Table 120 and Table 121 show that the 2044 DM and DS results show similar results to the 2037 assessment year, with the junction operating within practical capacity in the DM and over theoretical capacity in the DS scenario.

Table 120 Barrow Hill One-Way 2044 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Barrow Hill Southbound	1	83.1%	7.7	37.8	78.9%	7.2	32.0
Barrow Hill Northbound	1	82.9%	9.1	30.7	81.4%	8.4	30.9

Table 121 Barrow Hill One-Way 2044 DS Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Barrow Hill Southbound	1	107.7%	30.4	192.6	110.5%	44.5	222.5
Barrow Hill Northbound	1	102.7%	28.8	114.1	117.3%	64.5	315.7

Mitigation proposal

11.16.6 The junction efficiency 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 funnel junction 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.

11.16.7 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. However, this can lead to longer queues as each approach needs to wait longer for their respective green time.

11.16.8 As the junction is predicted to operate above theoretical capacity in the DS 2037, cycle time optimisation was used to find the lowest cycle time required for the junction to operate with practical capacity for each of the future scenarios. The impact of the Otterpool development flows on the junction and its severity can be assessed based on the increase in predicted mean maximum queue lengths and delay per PCU as a result of the increase in cycle time. Table 122 presents the cycle times applied for each of the forecast years.

Table 122 Barrow Hill One-Way Cycle Times by Scenario

Scenario	Cycle Time	
	AM Peak	PM Peak
2037 DM	50	50
2037 DS	68	72
2044 DM	50	50
2044 DS	72	88

11.16.9 The results for the DS 2037 with an adjusted cycle time are shown in Table 123.

Table 123 Barrow Hill One-Way 2037 DS with cycle time adjustment Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Barrow Hill Southbound	1	88.3%	12.7	45.9	85.9%	11.9	45.5
Barrow Hill Northbound	1	86.5%	14.4	35.4	87.0%	16.1	34.5

11.16.10 The results indicate that the junction would operate within practical capacity with a cycle time of 68 seconds in the AM peak hour and 72 seconds in the PM peak hour. Compared with the results for the DM 2037, shown in Table 118, the increase in delay per PCU is less than 20 seconds for any approach and the increase in mean maximum queue is not predicted to interact with any other main junctions on the network. The increase in cycle time in this scenario is not expected to cause a severe impact and is predicted to allow the junction to operate within practical capacity.

11.16.11 The results for the 2044 DS scenario with cycle time adjustment are shown in Table 124.

Table 124 Barrow Hill One-Way 2044 DS with cycle time adjustment Highway Capacity Results

Traffic Movement	Lane	M Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Barrow Hill Southbound	1	88.6%	12.9	49.9	88.4%	18.0	45.7
Barrow Hill Northbound	1	85.9%	15.7	33.2	88.5%	18.7	43.6

11.16.12 The results indicate that the junction will operate within practical capacity in the DS 2044 scenario. Although the mean maximum queue lengths in the DS 2044 are higher than those in the DM 2044 in Table 120, particularly in the PM peak hour, the queues are not expected to impact on any other main junctions on the network. The increase in the average delay per PCU compared with the DM case is also less than 20 seconds per vehicle and therefore not considered severe.

11.16.13 Preliminary discussions regarding the implementation of the proposed mitigation have 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 would help to manage queues and maintain driver satisfaction by minimising wasted green time.

2046 Sensitivity Assessment

11.16.14 As a sensitivity test the forecasts for the 2046 DM and DS with cycle time adjustment were also modelled and the results are shown in Table 125 and Table 126. The cycle time in the DS scenario was adjusted to 80 seconds in the AM peak and 104 seconds in the PM peak.

Table 125 Barrow Hill One-Way 2046 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Barrow Hill Southbound	1	84.4%	8.0	39.2	79.6%	7.3	32.6
Barrow Hill Northbound	1	82.3%	8.9	30.2	82.4%	8.7	31.7

Table 126 Barrow Hill One-Way 2046 DS with cycle time adjustment Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Barrow Hill Southbound	1	90.0%	14.9	54.4	89.8%	22.3	50.7
Barrow Hill Northbound	1	88.4%	19.2	36.9	88.7%	22.3	46.8

11.16.15 The DM 2046 scenario is still predicted to operate within practical capacity with a cycle time of 50 seconds. For the DS 2046 scenario, cycle time optimisation indicated that the junction would require a cycle time of 80 seconds in the AM peak hour and 104 seconds in the PM peak hour for it to operate within practical capacity. It should be noted that a 104 second cycle time for this type of junction is considered long and the resultant queues in the DS 2046 PM peak hour are larger than those in the DM 2046 PM peak hour. However, the queues are not expected to impact on any other key junctions on the network and the increase average delay per PCU is less than 20 seconds compared with the DM 2046 case. The potential upgrade on the current vehicle detection and method of control could help to manage queues.

11.17 A260 Spitfire Way/ White Horse Hill/ A20 Slip Roads

11.17.1 The A260 Spitfire Way/ White Horse Hill/ A20 Slip Road roundabout is located to the north of the A20 and provides a link between Hawkinge, Folkestone and the A20 eastbound. The A260 Canterbury Road runs south from the roundabout and provides a link over the A20 and access to the A20 westbound via the Alkham Valley Roundabout. The baseline junction capacity results indicate that the junction is currently operating within practical capacity.

11.17.2 The results for the DM 2037 junction capacity assessment are shown in Table 127.

Table 127 A260 Spitfire Way / White Horse Hill/ A20 Slip Roads 2037 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
White House Hill	0.52	1.1	8.7	0.30	0.4	4.6
A20 Slip Roads	0.78	3.3	15.9	0.84	5.1	16.5
Canterbury Road	0.37	0.6	3.8	0.72	2.5	9.4
Spitfire Way	0.87	6.0	18.1	0.61	1.6	6.8

11.17.3 The results indicate that the junction is predicted to operate above practical capacity with an RFC of 0.87 on the Spitfire Way approach in the DM 2037 AM peak hour. In the PM peak hour, the A20 Slip Road is approaching capacity with an RFC of 0.84, however the predicted queue of 5.1 vehicles not expected to impact on the operation of the slip road.

11.17.4 The results for the DS 2037 junction capacity assessment are shown in Table 128.

Table 128 A260 Spitfire Way / White Horse Hill/ A20 Slip Roads 2037 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
White House Hill	0.56	1.2	9.5	0.33	0.5	4.8
A20 Slip Roads	0.83	4.4	20.6	0.88	6.6	21.1
Canterbury Road	0.38	0.6	3.9	0.72	2.6	9.8
Spitfire Way	0.88	6.5	19.7	0.62	1.6	7.1

11.17.5 The results for the DS 2037 assessment indicate that the junction is predicted to operate above practical capacity on the Spitfire Way approach in the AM peak hour with an RFC of 0.88. There is a predicted increase in queue of 0.5 vehicles compared with the DM scenario and delay of 1.6 seconds per vehicle. This is not considered to be a severe impact.

11.17.6 In the PM peak hour, the A20 Slip Road is predicted to operate over practical capacity with an RFC of 0.88, however the predicted queue increase compared with the DM case is only 1.5 vehicles. The increase in delay is less than 5 seconds per vehicle. The impacts of the Otterpool development traffic is therefore not considered to be severe in the 2037 forecast scenario.

11.17.7 The results for the DM and DS 2044 junction capacity assessments are shown in Table 129 and Table 130 respectively.

Table 129 A260 Spitfire Way / White Horse Hill/ A20 Slip Roads 2044 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
White House Hill	0.54	1.2	9.4	0.30	0.4	4.6
A20 Slip Roads	0.78	3.5	16.8	0.88	6.8	21.3
Canterbury Road	0.37	0.6	3.8	0.73	2.6	9.9
Spitfire Way	0.88	7.0	20.9	0.61	1.6	6.9

Table 130 A260 Spitfire Way / White Horse Hill/ A20 Slip Roads 2044 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
White House Hill	0.63	1.70	11.64	0.33	0.50	4.79
A20 Slip Roads	0.89	6.70	31.25	0.95	13.70	40.58
Canterbury Road	0.38	0.60	3.92	0.75	3.00	11.42
Spitfire Way	0.90	8.20	24.45	0.64	1.70	7.51

11.17.8 The results indicate that the junction is predicted to operate above practical capacity with an RFC of 0.88 on the Spitfire Way approach in the DM 2044 AM peak hour. In the DM 204 PM peak hour the A20 Slip Road is predicted to be operating over practical capacity with an RFC of 0.88.

11.17.9 The results for the DS 2044 junction capacity assessment indicate that the junction is predicted to operate above practical capacity on the Spitfire Way and A20 Slip Road approaches in the AM peak hour with an RFC of 0.9 and 0.89 respectively. The predicted increase in queue length on the A20 Slip Road is 3.2 vehicles and the increase in delay is approximately 15 seconds per vehicle. The queues on the slip road are not predicted to block back so the impact is not considered to be severe.

11.17.10 In the PM peak hour, the A20 Slip Road is predicted to operate over practical capacity with an RFC of 0.95, the queue is predicted to increase by approximately 7 vehicles compared with the DM case. The predicted queue is not expected to impact on the A20 as the slip has sufficient stacking space for the queue. The increase in delay is approximately 19.3 seconds per vehicle. The impacts of the Otterpool development traffic is therefore not considered to be severe in the 2044 forecast scenario.

2046 Sensitivity Assessment

11.17.11 The results for the DM and DS 2046 sensitivity tests are presented in Table 131 and Table 132.

Table 131 A260 Spitfire Way / White Horse Hill/ A20 Slip Roads 2046 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
White House Hill	0.55	1.2	9.6	0.31	0.4	4.6
A20 Slip Roads	0.80	3.8	18.4	0.89	7.2	22.6
Canterbury Road	0.38	0.6	3.9	0.73	2.7	10.1
Spitfire Way	0.89	7.4	22.0	0.62	1.6	7.0

Table 132 A260 Spitfire Way / White Horse Hill/ A20 Slip Roads 2046 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
White House Hill	0.64	1.70	12.02	0.34	0.50	4.87
A20 Slip Roads	0.90	7.10	33.15	0.96	15.70	45.80
Canterbury Road	0.38	0.60	3.97	0.76	3.10	11.74
Spitfire Way	0.91	8.90	26.35	0.64	1.80	7.70

11.17.12 The results indicate that the Otterpool development traffic flows may be considered to have a severe impact in the DS 2046 PM peak scenario on the A20 Slip Road. The queues on this approach are predicted to increase from 7.2 vehicles in the DM 2046 scenario to 15.7 in the DS 2046. The delays are predicted to increase by 21 seconds per vehicle.

11.17.13 It should be noted again that the DM scenarios include a much lower forecast of households and employment than the DS scenario and assumes that the houses and jobs that would be created by Otterpool Park would not be able to be accommodated elsewhere, and thus represents a best case for the DM scenario.

11.17.14 It should also be noted that all of the scenarios are based on demand flows and assume that the all traffic arrives within the peak hour. The junction is also modelled using a one-hour flow profile in Junction 9 which assumes that all demand flows will have a peak within the peak hour rather than arrive uniformly. This provides a worst-case scenario for the junction capacity assessment.

11.17.15 It is proposed that if the Otterpool Park development is approved, the operation of this junction is monitored in order to establish mitigation is required.

Influence of Forecast Method on Assessment Results

11.17.16 Table 55 to Table 57 show that the percentage increase in traffic flows between the DM and DS case on Spitfire Way (up to 1%) and Canterbury Road (between 1% and 4%), is very low. As mentioned in Chapter 6, the forecast for the DM case traffic flows was calculated using a TEMPro growth rate based on the delivery of a reduced number of houses and jobs compared to the target forecast for Folkestone & Hythe and that the growth rate would be around 10% greater in the 2037 DM scenario and up to 15% greater in the 2044 and 2046 scenarios if the targets were met in a different way. It is therefore possible that the impact of the Otterpool Park development at this junction could be negligible, or even have a positive benefit of a reduction in traffic.

11.18 Alkham Valley Road/ A20 Slip Roads

11.18.1 The Alkham Valley Road/ A20 Slip Road roundabout is located to the south of the A20 and provides a link between Hawkinge, Folkestone and the A20 westbound. The baseline junction capacity results indicate that the junction is currently approaching capacity in the 2018 AM peak hour and operating within practical capacity in the PM peak hour.

11.18.2 The results for the DM 2037 junction capacity assessment are shown in Table 133.

Table 133 Alkham Valley Road / A20 Slip Roads 2037 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A20 Off-Slip	0.02	0.0	1.9	0.02	0.0	2.2
Alkham Valley Road (East)	0.55	1.2	4.2	0.26	0.4	2.6
Alkham Valley Road (South)	1.06	47.4	121.5	0.85	5.4	15.6

11.18.3 The results indicate that the junction is predicted to operate above theoretical capacity with an RFC of 1.06 on the Alkham Valley south approach in the DM 2037 AM peak hour. In the PM peak hour, the Alkham Valley south approach is predicted to be operating at capacity with an RFC of 0.85.

11.18.4 The results for the 2037 DS scenario junction capacity assessment are presented in Table 134.

Table 134 Alkham Valley Road / A20 Slip Roads 2037 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A20 Off-Slip	0.02	0.0	1.9	0.02	0.0	2.2
Alkham Valley Road (East)	0.55	1.2	4.2	0.26	0.4	2.6
Alkham Valley Road (South)	1.09	64.4	157.6	0.87	6.4	18.3

11.18.5 The results of the 2037 DS scenario assessment indicate that the junction is predicted to continue to operate above theoretical capacity on the Alkham Valley south approach in the AM peak hour with an RFC of 1.09. As the junction is already over theoretical capacity in the DM 2037 AM peak hour it is difficult to assess the exact impact of the development traffic. However, the results indicate that an intervention at this location would be required even without the addition of the Otterpool development traffic.

11.18.6 In the PM peak hour, the Alkham Valley south approach is predicted to operate over practical capacity with an RFC of 0.87, the queue is predicted to increase by approximately one vehicle compared with the DM case. The increase in delay is approximately three seconds per vehicle. No issues are predicted on the A20 Off-slip. The impacts of the Otterpool development traffic is therefore not considered to be severe in the PM peak 2037 DS scenario.

11.18.7 The results for the 2044 DM and DS junction capacity assessments are shown in Table 135 and Table 136.

Table 135 Alkham Valley Road / A20 Slip Roads 2044 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A20 Off-Slip	0.02	0.0	1.9	0.02	0.0	2.2
Alkham Valley Road (East)	0.56	1.3	4.4	0.26	0.4	2.6
Alkham Valley Road (South)	1.11	75.2	183.0	0.86	5.8	16.6

Table 136 Alkham Valley Road / A20 Slip Roads 2044 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A20 Off-Slip	0.02	0.0	1.9	0.02	0.0	2.2
Alkham Valley Road (East)	0.56	1.3	4.4	0.26	0.4	2.6
Alkham Valley Road (South)	1.19	120.3	293.5	0.88	6.8	19.4

11.18.8 Based on the local junction modelling the Alkham Valley Road/ A20 Slip Road Roundabout will require an intervention to improve the performance of the Alkham Valley Road south approach. This requirement is independent of the Otterpool development as the junction is already forecast to operate above theoretical capacity in the DM 2037 scenario. The development traffic is not considered to have a severe impact on any of the approaches that are operating within theoretical capacity in any of the forecast scenarios.

2046 Sensitivity Assessment

11.18.9 The results for the 2046 junction capacity assessment (Table 137 for the DM and Table 138 for the DS) are similar to the 2044 capacity results except that the Alkham Valley Road south approach is predicted operate above practical capacity in the DM 2046 PM peak. The impacts of the development traffic are not considered to be severe except in the AM peak hour on Alkham Valley Road south which is already over theoretical capacity in the DM case.

Table 137 Alkham Valley Road / A20 Slip Roads 2046 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A20 Off-Slip	0.02	0.0	1.9	0.02	0.0	2.2
Alkham Valley Road (East)	0.57	1.3	4.4	0.27	0.4	2.6
Alkham Valley Road (South)	1.12	79.6	192.9	0.87	6.2	17.7

Table 138 Alkham Valley Road / A20 Slip Roads 2046 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A20 Off-Slip	0.02	0.0	1.9	0.02	0.0	2.2
Alkham Valley Road (East)	0.56	1.3	4.4	0.26	0.4	2.6
Alkham Valley Road (South)	1.19	120.4	292.2	0.89	7.5	21.2

Influence of Forecast Method on Assessment Results

11.18.10 As is the case for the A260 Spitfire Way/ White Horse Hill/ A20 Slip Road roundabout, the conservative method used to forecast DM traffic flows could affect assessment results at this junction.

11.18.11 Table 55 to Table 57 show that the percentage increase in traffic flows between the DM and DS case on Alkham Valley Road and Canterbury Road is up to 4% in the 2044 scenario. The forecast for the DM case traffic flows was calculated using a TEMPro growth rate based on the delivery of a reduced number of houses and jobs compared to the target forecast for Folkestone & Hythe and that the growth rate would be around 15% greater in the 2044 and 2046 scenarios if the targets were met in an alternative way. It is therefore possible that the impact of the Otterpool Park development at this junction could be negligible, or even have a positive benefit of a reduction in traffic.

11.19 A260 Canterbury Road / Alkham Valley Road

11.19.1 The A260 Canterbury Road/ Alkham Valley Road is a non-signalised T-junction on a bridge over the A20. The baseline junction capacity results indicate that the junction is operating within practical capacity in the AM and PM peak hours.

11.19.2 The DM 2037 and DS 2037 local junction modelling results are presented in Table 139 and Table 140.

Table 139 A260 Canterbury Road / Alkham Valley 2037 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Alkham Valley Road	0.62	1.6	23.7	0.24	0.3	10.1
	0.09	0.1	85.1	0.28	0.4	106.1
Canterbury Road Northbound	1.08	14.6	243.9	0.96	9.3	117.9

11.19.3 The DM 2037 results indicate that the junction may be operating above theoretical capacity in the AM peak hour with an RFC of 1.08 for the right-turn from Canterbury Road Northbound into Alkham Valley Road. The right-turn is also predicted to be approaching theoretical capacity in the PM peak hour with an RFC of 0.96. Based on these results the junction will require capacity improvements independent of the Otterpool Park development traffic.

Table 140 A260 Canterbury Road / Alkham Valley 2037 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
Alkham Valley Road	0.62	1.6	24.0	0.25	0.3	10.4
	0.11	0.1	99.6	0.32	0.4	123.1
Canterbury Road Northbound	1.16	19.2	311.8	0.99	11.5	142.2

11.19.4 Although the increase in traffic flows in the DS scenario due to Otterpool Park are traffic flow forecasts in this area is very low, the junction is already predicted to be operating above capacity. As such the impacts of adding any traffic to the junction is predicted to increase queues and delays exponentially. Table 140 shows that the although there is a relatively small increase in RFC for the right turn movement, the predicted delays increase substantially. The junction is predicted to operate above theoretical in the DS 2037 AM peak hour with an RFC of 1.16 and over practical capacity with an RFC of 0.99 in the PM peak hour.

DM Forecast Method and other Local Network Influences

11.19.5 Based upon the junction capacity assessment this junction will require a capacity improvement prior to 2037. The chosen method of forecasting DM traffic flows has the same potential effect at this junction as it does at the other two adjacent junctions on the local network described in sections 11.17 and 11.18. The percentage increase in traffic flows between the DM and DS case on Alkham Valley Road and Canterbury Road is up to 4% in the 2044 scenario, whereas the forecast for the DM case traffic flows could be around 15% greater in the 2044 and 2046 scenarios if the housing and employment forecasts for Folkestone & Hythe were met in a different way. It is therefore possible that the impact of the Otterpool Park development at this junction could be negligible, or even have a positive benefit of a reduction in traffic.

11.19.6 The A260 Canterbury Road / Alkham Valley junction is in very close proximity to the Alkham Valley Road/ A20 Slip Road roundabout and the A260 Spitfire Way/ White Horse Hill/ A20 Slip Road roundabout. The performance of these three junctions are interlinked and any improvements at one of them will impact on the other. It is recommended that any further consideration of the performance and capacity issues at these three junctions should involve assessment of the three junctions together.

11.20 A20 Ashford Road Small Roundabout

11.20.1 The A20 Ashford Road small roundabout is located to the south of the M20 Junction 11. Despite being a four-arm roundabout, two of the arms are currently unused and the junction primary functions as a U-turn facility to access the M20 Junction 11 from the A20 Ashford Road to Sandling north of the junction. Although the junction has been modelled with two give-way approaches, it is only the A20 northbound approach that is expected to have circulating traffic to yield to.

11.20.2 The local junction modelling results for the 2037 scenarios are presented in Table 141 and Table 142.

Table 141 A20 Ashford Road Small Roundabout 2037 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A20 Ashford Road Southbound	0.54	1.2	3.7	0.50	1.0	3.2
A20 Ashford Road Northbound	0.47	0.9	3.5	0.42	0.7	3.0

Table 142 A20 Ashford Road Small Roundabout 2037 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A20 Ashford Road Southbound	0.75	2.90	6.5	0.73	2.70	5.9
A20 Ashford Road Northbound	0.83	4.80	11.0	0.73	2.70	6.5

11.20.3 The DM 2037 results indicate that the junction will operate within practical capacity in both the AM and PM peak hours with no substantial queues or delays predicted. The DS 2037 results indicate that the junction is predicted to be approaching capacity in the AM peak hour with an RFC of 0.83 on the A20 Ashford Road northbound approach. The junction is predicted to operate within practical capacity in the PM peak hour.

11.20.4 Although the junction is predicted to be approaching capacity on the A20 northbound approach in the DS 2037 AM peak hour, a comparison between the DM and DS results indicates that the increases in queue and delay are not predicted to be severe. The increase in delay is predicted to be approximately seven seconds per vehicle and the increase in queue length is approximately four vehicles which would not interact with any other junctions.

11.20.5 The local junction modelling results for the 2044 scenarios are presented in Table 143 and Table 144.

Table 143 A20 Ashford Road Small Roundabout 2044 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A20 Ashford Road Southbound	0.56	1.3	3.9	0.52	1.1	3.3
A20 Ashford Road Northbound	0.50	1.0	3.8	0.43	0.8	3.1

Table 144 A20 Ashford Road Small Roundabout 2044 DS Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A20 Ashford Road Southbound	0.94	13.3	24.4	0.87	6.1	11.7
A20 Ashford Road Northbound	0.97	20.4	40.7	0.89	7.2	14.8

11.20.6 The DM 2044 results indicate that the junction will continue to operate within practical capacity in both the AM and PM peak hours are no substantial queues or delays predicted. The DS 2044 results indicate that the junction is predicted to operate above practical capacity in the AM peak hour on both approaches with the highest RFC of 0.97 on the A20 Ashford Road northbound approach. In the PM peak hour, both approaches are predicted to operate above practical capacity with the worst RFC 0.89 on the A20 northbound approach.

11.20.7 The increase in delay on the A20 Ashford Road northbound is considered to warrant consideration as it is greater than 20 seconds per vehicle. This approach is required to yield to U-turn movements from the A20 Ashford Road which joins as a minor at a T-junction north of the roundabout. The increase in queue length is not considered to be severe as it is not expected to impact on any other junctions.

11.20.8 The A20 southbound is predicted to have a queue length of 13.3 vehicles in the AM peak hour which would be approximately seven vehicles in each lane. The nearest junction to the north of the junction is the T-junction with the A20 Ashford Road, which is approximately 120m away. The queues are not expected to impact on the T-junction to the north as the two-lane approach would provide enough stacking space to accommodate the queue. The increase in delay is predicted to be 20.5 seconds which could be considered to be severe.

Proposed Mitigation

11.20.9 To mitigate the impacts of the development flows it is proposed that the A20 Ashford Road northbound is signalised. The results from the junction capacity assessment with mitigation for the DS 2044 are shown in Table 145.

Table 145 A20 Ashford Road Small Roundabout 2044 DS with mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
A20 Ashford Road Southbound	1	89.1%	3.8	13.5	80.5%	2.0	7.9
	2	89.1%	3.8	13.5	80.5%	2.0	7.9
A20 Ashford Road Northbound	1	72.1%	9.3	10.0	66.6%	7.9	8.8
	2	72.1%	9.3	10.0	66.5%	7.9	8.8

11.20.10 The results indicate that the A20 Ashford Road northbound would operate within practical capacity in the DS 2044 AM and PM peak hours. The increase in queuing and delay is not considered to be severe in comparison to the DM case.

11.20.11 The A20 Ashford Road southbound is still predicted to operate above practical capacity, for a give-way approach, in the AM peak hour. A comparison of the increase in queue lengths and delay compared with the DM case indicates that the impacts are not predicted to be severe. The predicted queue lengths of 4 PCUs per lane would be accommodated within the storage space on the approach. The increase in average delay is predicted to be approximately 10 second which is also not considered to be severe.

2046 Sensitivity Assessment

11.20.12 The results for the DM and DS 2046 scenarios are presented in the Table 146 and Table 147.

Table 146 A20 Ashford Road Small Roundabout 2046 DM Highway Capacity Results

Traffic Movement	AM Peak Hour			PM Peak Hour		
	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)	RFC	Queue Length (vehs)	Ave. Delay (secs/veh)
A20 Ashford Road Southbound	0.56	1.30	3.88	0.52	1.10	3.36
A20 Ashford Road Northbound	0.50	1.00	3.82	0.44	0.80	3.09

Table 147 A20 Ashford Road Small Roundabout 2046 DS with mitigation Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
A20 Ashford Road Southbound	1	90.2%	4.3	14.8	84.3%	2.6	9.7
	2	90.2%	4.3	14.8	84.3%	2.6	9.7
A20 Ashford Road Northbound	1	75.9%	10.5	11.0	68.6%	8.2	9.2
	2	75.8%	10.5	11.0	68.6%	8.2	9.2

11.20.13 The results indicate that the junction is predicted to operate within practical capacity in the DM 2046 scenarios with a maximum RFC of 0.56 on the A20 Ashford Road southbound approach.

11.20.14 In the DS 2046 scenario, the A20 Ashford Road southbound is predicted to operate above practical capacity in the AM peak hour within a DoS of 90.2%. The predicted increase in delays and queues are not considered to be severe. The A20 Ashford Road northbound is predicted to operate within practical capacity in both peak hours.

11.20.15 Although the predicted increases in delays and queues on the A20 Ashford Road southbound are not considered to be severe, it is recommended that the performance of the approach is monitored going forwards. As U-turn movements from the south are not expected it would not be appropriate to proposed signalisation of the A20 Ashford Road southbound unless in the peak hour were to become severe. However, based on the local junction modelling this is not expected to be an issue if the northbound approach and southern circulatory are signalised.

11.21 Nackington Road / Old Dover Road / St Lawrence Road / The Drive

11.21.1 Presented in Table 148 are the highway capacity results in 2037 DM for Nackington Road / Old Dover Road / St Lawrence Road / The Drive junction.

Table 148 Nackington Road / Old Dover Road / St Lawrence Road / The Drive 2037 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Old Dover Road / St Lawrence Road / The Drive							
Old Dover Road Westbound	1	76.0: 76.0%	14.4	29.6	40.8: 52.3%	6.9	22.3
The Drive	1	18.5%	2.1	39.2	89.0%	6.5	131.5
Old Dover Road	1	71.7%	14.4	39.7	87.8%	24.2	44.8
St Lawrence Road	1	76.2%	11.9	57.4	79.9%	9.6	74.7
Nackington Road / Old Dover Road							
Old Dover Road Westbound	1	67.8%	12.2	48.6	38.1%	8.2	22.6
Nackington Road	1 and 2	75.9: 75.9%	17.5	37.9	81.2: 81.2%	12.1	63.6
Old Dover Road Eastbound	1 and 2	68.1: 68.1%	11.5	23.1	78.3: 78.3%	11.1	15.8

11.21.2 The DM 2037 results indicate that the junction is predicted to operate within practical capacity in both the AM and PM peak hours. However, The Drive and Old Dover Road are approaching practical capacity in the PM peak hour with DoS results of 89% and 87.8% respectively.

11.21.3 Table 149 displays the highway capacity results for the DS 2037 scenario.

Table 149 Nackington Road / Old Dover Road / St Lawrence Road / The Drive 2037 DS Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Old Dover Road / St Lawrence Road / The Drive							
Old Dover Road Westbound	1	77.5: 77.5%	14.9	30.2	43.3: 56.2%	7.1	23.1
The Drive	1	19.0%	2.1	39.3	88.8%	6.5	131.1
Old Dover Road	1	72.3%	14.6	40.0	88.8%	24.9	46.3
St Lawrence Road	1	77.5%	12.1	58.5	83.5%	10.4	80.2
Nackington Road / Old Dover Road							
Old Dover Road Westbound	1	67.8%	12.2	48.6	38.1%	8.2	22.6

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Nackington Road	1 and 2	77.5: 77.5%	18.3	38.5	82.1: 82.1%	12.5	64.3
Old Dover Road Eastbound	1 and 2	71.2: 71.2%	12.1	24.9	80.6: 80.6%	13.1	17.7

11.21.4 Similar to the 2037 DM results, the junction is predicted to operate within practical capacity in the AM and PM peak hours. Table 149 shows that the junction is approaching its practical capacity on The Drive and Old Dover Road with a DoS values of 88.8% on both approaches. The predicted increases in delay per PCU compared with the DM case are minimal with the highest being 5.5 seconds on St Lawrence Road.

11.21.5 Presented in Table 150 are the 2044 DM highway capacity results for this junction.

Table 150 Nackington Road / Old Dover Road / St Lawrence Road / The Drive 2044 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Old Dover Road / St Lawrence Road / The Drive							
Old Dover Road Westbound	1	78.6: 78.6%	15.3	30.8	43.3: 56.7%	7.0	23.2
The Drive	1	18.9%	2.1	39.3	90.7%	6.9	141.6
Old Dover Road	1	73.8%	15.1	40.8	89.5%	25.7	46.6
St Lawrence Road	1	79.1%	12.6	59.9	87.1%	11.1	90.0
Nackington Road / Old Dover Road							
Old Dover Road Westbound	1	69.7%	12.7	49.5	40.7%	8.7	24.3
Nackington Road	1 and 2	78.7: 78.7%	18.8	39.4	81.9: 81.9%	12.6	62.5
Old Dover Road Eastbound	1 and 2	71.3: 71.3%	12.1	24.3	82.9: 82.9%	14.5	19.9

11.21.6 Similar to the 2037 DM results, the junction is predicted to operate within practical capacity in the AM peak hour and above practical capacity in the PM peak hour. As shown in Table 150, the junction is operating just above practical capacity in the PM peak with a maximum DoS value of 90.7% on The Drive. Old Dover Road is also approaching capacity with a DoS of 89.5%.

11.21.7 Presented in Table 151 are the 2044 DS highway capacity results for this junction.

Table 151 Nackington Road / Old Dover Road / St Lawrence Road / The Drive 2044 DS Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Old Dover Road / St Lawrence Road / The Drive							
Old Dover Road Westbound	1	80.5: 80.5%	15.9	32.3	56.1: 66.1%	7.7	24.3
The Drive	1	19.6%	2.1	39.5	91.1%	6.9	143.4
Old Dover Road	1	74.5%	15.4	41.3	92.2%	27.8	53.4
St Lawrence Road	1	80.9%	13.2	61.8	88.1%	11.8	90.2
Nackington Road / Old Dover Road							
Old Dover Road Westbound	1	72.1%	13.0	51.6	40.7%	8.7	24.3
Nackington Road	1 and 2	80.7: 80.7%	20.0	40.2	85.4: 85.4%	13.9	67.2
Old Dover Road Eastbound	1 and 2	71.7: 71.7%	12.6	24.6	85.2: 85.2%	17.9	21.9

11.21.8 As is the case for the 2044 DM scenario, the junction is operating above practical capacity in the PM peak hour 2044 DS scenario. Table 151 shows that the junction is operating above practical capacity in the PM peak period for two approaches; The Drive, with a DoS value of 91.1%, and Old Dover Road, with a DoS value of 92.2%.

11.21.9 Compared to the 2044 DM capacity results, Old Dover Road has had a DoS increase of 2.7%, a mean maximum queue increase of 0.5 PCUs, and an average delay increase of 6.8 seconds. The Drive has a predicted increase in DoS of 0.6%, a mean maximum queue increase of 0.2 PCUs, and an average delay increase of 1.8 seconds. These impacts are not considered to be severe.

11.21.10 Since the impacts are not considered to be severe in either the 2037 or 2044 DS scenarios, no mitigation is proposed for these junctions.

2046 Sensitivity Assessment

11.21.11 Presented in Table 152 and Table 153 are the 2046 DM and DS highway capacity results for this junction.

Table 152 Nackington Road / Old Dover Road / St Lawrence Road / The Drive 2046 DM Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Old Dover Road / St Lawrence Road / The Drive							
Old Dover Road Westbound	1	79.6: 79.6%	15.6	31.2	46.4: 59.0%	7.2	23.1
The Drive	1	19.0%	2.1	39.3	91.7%	7.1	147.2
Old Dover Road	1	74.5%	15.4	41.3	90.3%	26.4	48.2
St Lawrence Road	1	80.0%	12.8	60.8	88.2%	11.5	92.7
Nackington Road / Old Dover Road							
Old Dover Road Westbound	1	70.4%	12.9	49.8	40.3%	8.7	23.6
Nackington Road	1 and 2	79.9: 79.9%	19.3	40.2	85.2: 85.2%	13.4	68.1
Old Dover Road Eastbound	1 and 2	72.3: 72.3%	12.3	24.7	82.8: 82.8%	15.0	19.4

Table 153 Nackington Road / Old Dover Road / St Lawrence Road / The Drive 2046 DS Highway Capacity Results

Traffic Movement	Lane	AM Peak Hour			PM Peak Hour		
		DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)	DoS	Mean Max Queue (PCUs)	Ave. Delay (secs/PCU)
Old Dover Road / St Lawrence Road / The Drive							
Old Dover Road Westbound	1	81.7: 81.7%	16.3	33.1	62.7: 69.8%	7.6	27.6
The Drive	1	19.6%	2.1	39.6	93.3%	7.4	156.9
Old Dover Road	1	75.4%	15.7	41.8	93.4%	29.0	56.7
St Lawrence Road	1	81.8%	13.4	62.8	89.8%	12.4	95.0
Nackington Road / Old Dover Road							
Old Dover Road Westbound	1	72.8%	13.3	52.0	47.8%	10.1	30.9
Nackington Road	1 and 2	81.4: 81.4%	20.5	40.6	86.2: 86.2%	14.3	63.7
Old Dover Road Eastbound	1 and 2	75.1: 75.1%	13.1	26.3	85.4: 85.4%	18.2	22.7

11.21.12 As with the previous results for this junction, the junction is predicted to operate within capacity in the AM peak hour, but over practical capacity in the PM peak hour for both scenarios. A comparison of the change in delay and queues between the DM 2046 and DS 2046 indicates that the impacts are not predicted to be severe. The highest increase in delay is 9.7 seconds on The Drive in the DS 2046 PM peak hour. The highest increase in queues 2 PCUs on St Lawrence Road in the PM peak hour.

11.22 Summary of Assessment of Proposed Junctions

11.22.1 This section presents the results of the junction modelling for the proposed junctions associated with the development described in Table 54. A summary of results for all junctions for all assessment years and scenarios are shown in Table 154. The table presents the highest DoS or RFC on any arm of the junction, with junctions that are predicted to operate over capacity in any scenario (i.e. with a DoS above 90% or an RFC above 85%) in either the AM or PM peak hour highlighted orange. For the full junction modelling reports and summary tables for each of the proposed junctions refer to Appendix P and Appendix R respectively.

Table 154 Summary of AM and PM Peak Hour Do-Something Highway Capacity Results for Proposed Junctions for all Assessment Years

Junction ID / Name		Maximum DoS / RFC (Do-Something Scenario)					
		2037		2044		2046	
		AM	PM	AM	PM	AM	PM
J31	A20 Ashford Road access to P1B & P7	47.0%	53.5%	52.4%	52.7%	57.3%	53.3%
J32	A20 Ashford Road access to P6	0.19	0.20	0.27	0.38	0.26	0.39
J33	Newingreen Link Road west	0.20	0.12	0.18	0.18	0.16	0.17
J34	A20 Ashford Road access to P1A & P2A	40.3%	40.1%	41.8%	38.1%	56.6%	43.4%
J35	Newingreen Link Road east	64.6%	65.4%	81.3%	67.0%	83.1%	70.9%
J36	A20 Ashford Road Business Park access	69.2%	77.2%	89.0%	63.7%	89.1%	65.5%
J37	Otterpool Lane access to P1B	0.09	0.20	0.06	0.13	0.09	0.06
J38	Otterpool Lane access to P2B & P3B	0.33	0.48	0.30	0.25	0.62	0.47
J39	Newingreen Link Road / High Street	56.6%	66.1%	69.7%	69.0%	73.2%	67.6%
J40	Otterpool Lane P9 north	-	-	-	-	0.07	0.29
J41	Otterpool Lane P9 south	-	-	-	-	0.25	0.08

NB: J40 and J41 are only present in 2046 DS scenario

11.22.2 Table 154 shows that all of the proposed junctions are working within capacity in the AM and PM peak hours for all assessment years.

11.23 Junction Assessments Results Summary

11.23.1 An analysis of how existing junctions are operating in the 2018 baseline scenario was provided in Chapter 3. Table 58 presented a summary of the results of the DM and DS highway capacity modelling for the 2037, 2044 and 2046 design years. The DM traffic flows were forecast based on a significantly lower number of houses and jobs within the District of Folkestone & Hythe on the basis that, if the Otterpool Park development was not approved, the number of houses and jobs the District Council could deliver would be reduced.

11.23.2 Based on the results of the DM scenario assessments, the following junctions are expected to operate over practical capacity in future years without the Otterpool Park development:

- A259 / Dymchurch Road / Military Road;
- M20 Junction 13;
- M20 Junction 9;
- A260 Spitfire Way / White Horse Hill / A20 Slip Roads; and
- Nackington Road / Old Dover Road / St Lawrence Road / The Drive.

11.23.3 The following junctions are expected to operate over theoretical capacity in future years without the Otterpool Park development:

- A20 Ashford Road / A261 Hythe Road;
- A20 Ashford Road / Stone Street;
- B2064 Cheriton High Street / B2063 Risborough Lane;
- B2064 Cheriton High Street / A2034 Cherry Garden Avenue;
- A259 Prospect Road / Stade Street;
- Alkham Valley Road / A20 slip roads; and
- A260 Canterbury Road / Alkham Valley Road.

11.23.4 It is therefore anticipated that capacity enhancements are likely to be required at many of the above junctions regardless of whether the proposed Otterpool Park development is permitted. A further five junctions that would operate within capacity in the DM scenarios, but over capacity in one or more DS scenarios, have been identified:

- M20 Junction 11;
- Barrow Hill one-way signals;
- Aldington Road / Lympne Hill;
- A259 Prospect Road / A259 East Road / Station Road / High Street; and
- A20 Ashford Road small roundabout.

11.23.5 Table 155 presents the proposed mitigation tested within this assessment for the five junctions listed above that operate within capacity in the DM scenarios that the Otterpool Park development would have a severe impact on. In addition, the table includes mitigation tested for some of the junctions that would operate over capacity without Otterpool Park development flows.

Table 155 Summary of Mitigation Proposals

No.	Junction	Description of mitigation	Year Required
J2	M20 J11	Signalisation of M20 eastbound off-slip and eastern circulatory. Two-lane exit onto the M20 eastbound on-slip. Update on road markings and signing.	2044 DS
J11	A20/Stone St/ Hythe Road	Signalisation of A20/Stone St/ Hythe Road junction	2037 DM

No.	Junction	Description of mitigation	Year Required
J15	A259 / Dymchurch Road / Military Road	Parking restrictions on Military Road to allow two-lane flow.	2037 DM
J23	M20 J9	Extension of the flare on Trinity Road by 30m, sharing middle lane to for left and ahead. Cycle time and signal time optimisation.	2044 DS (maybe earlier)
J25	B2064 Cheriton High Street / A2034 Cherry Garden Avenue	Extend Cheriton High Street eastbound right turn and allow right turns from Beachborough Road and Cherry Garden Avenue to run opposed.	2037 DM
J27	Barrow Hill	Cycle time optimisation. Potential signal control upgrade.	2037 DS
J43	A20 Ashford Road Small Roundabout	Signalisation of the A20 northbound approach to the roundabout.	2044 DS

11.23.6 A summary of the capacity results for each of these junctions is provided in Table 156. It is considered that based upon the junction capacity assessments and the proposed interventions that the Otterpool development traffic can be mitigated so as to not have a severe impact on the network.

11.23.7 It is anticipated that further discussions regarding the proposed mitigation will be held with Kent County Council, Folkestone & Hythe District Council and Highways England following submission of the Otterpool Park planning application.

Table 156 Summary of AM and PM Peak Hour Do-Nothing & Do-Something Highway Capacity Results for Junctions Require Capacity Improvements

Junction ID / Name		Maximum Degree of Saturation / Ratio of Flow to Capacity																			
		2018		2037						2044						2046					
		Baseline		Do-Minimum		Do-Something		DS Mitigation		Do-Minimum		Do-Something		DS Mitigation		Do-Minimum		Do-Something		DS Mitigation	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
J2	M20 J11	0.40	0.45	0.43	0.47	0.69	0.86	68.8%	71.3%	0.45	0.57	0.94	1.27	78.3%	84.9%	0.46	0.57	0.96	1.37	80.7%	84.9%
J11a	A20 Ashford Road / A261 Hythe Road	0.87	0.72	0.96	0.99	1.41	0.91	84.9%	63.0%	1.09	1.02	1.70	1.02	90.1%	68.4%	1.10	1.05	1.18	1.29	90.9%	76.2%
J15	A259 / Dymchurch Road / Military Road	81%	85%	94.0%	93.3%	102.8%	101.6%	84.1%	83.7%	93.4%	95.3%	103.2%	102.0%	87.6%	88.8%	94.7%	95.6%	101.9%	102.9%	89.1%	85.2%
J21a	M20 J13	0.51	0.51	0.78	0.84	0.82	0.89			0.79	0.87	0.88	0.95	0.85	0.95	0.80	0.87	0.88	0.96	0.85	0.96
J23	M20 J9	75.3%	92%	83.9%	95.1%	83.9%	93.3%			88.3%	97.9%	88.3%	99.0%	80.9%	93.5%	89.1%	99.5%	89.7%	101.7%	82.1%	94.6%
J25	B2064 Cheriton High Street / A2034 Cherry Garden Avenue	91.0%	94.0%	96.4%	103.9%	117.0%	125.4%	78.0%	84.4%	97.8%	106.2%	127.0%	132.4%	84.8%	89.6%	99.4%	107.0%	131.9%	136.0%	89.8%	98.2%
J27	Barrow Hill One-way	53.4%	49.4%	83.2%	81.3%	104.8%	104.4%	86.5%	87.0%	83.1%	81.4%	107.7%	117.3%	88.6%	88.5%	84.4%	82.4%	112.5%	122.2%	90.0%	89.8%
J43	A20 Ashford Road small roundabout			0.55	0.50	0.83	0.73			0.56	0.52	0.97	0.89	89.1%	80.5%	0.57	0.53	1.02	0.91	90.2%	84.3%

12 M20 Merge and Diverge Assessments

12.1 Introduction

12.1.1 The M20 junctions between Junctions 9 and 13 and the A20 slips at Alkham Valley have been assessed to determine whether the current highway layouts will meet the required merge and diverge DMRB standards (TD 22/06 'Layout of separated junctions) in the future assessment years. Descriptions and illustration from the DMRB merge and diverge layouts mentioned in the following sections have been provided in Appendix S.

12.1.2 At this stage for the outline planning application this is a high-level assessment to indicate potential needs for upgrade. The proposals that might be needed specifically to address traffic impacts of Otterpool Park and the feasibility of these improvements will need ongoing discussion with Highways England.

12.2 Overview of Results

12.2.1 This section provides a summary of the results of the merge and diverge assessments for all assessment years, which has been undertaken using TD 22/06 in DMRB.

2037 Assessment

12.2.2 Table 157 and Table 158 present the results of the merge and diverge assessments for the 2037 assessment year.

Table 157 2037 DM and DS Merge Assessment Results

Junction	Location	Layout Type			Number of Mainline Lanes		Upgrade Requirement
		Existing	Forecast (AM / PM)				
			DM	DS	Upstream	Downstream	
M20 J9	M20 EB on slip	A	B / F	B / F	2	3	Layout Type C (DM scenario)
	M20 WB on slip	A	A / A	B / A	2	2	None
M20 J10	M20 WB on slip	A	B / B	E / B	2	3	None
M20 J10A	M20 EB on slip	A	A / B	A / B	2	2	None
	M20 WB on slip	A	E / E	A / E	2	2	None
M20 J11	M20 EB on slip	A	A / A	A / B	2	2	None
	M20 WB on slip	A	A / A	A / A	2	2	None
M20 J11A	M20 WB on slip	A	A / A	A / A	2	2	None
M20 J12	M20 EB on slip	A	A / A	A / A	2	2	None
	M20 WB on slip	E	A / A	A / A	2	2	None
M20 J13	M20 EB on slip	B	E / A	E / A	2	2	None
	M20 WB on slip	A	A / E	A / E	2	2	None
A20	A20 EB on slip	A	E / E	E / E	1	1	None
	A20 WB on slip	A	- / E	- / E	1	2	2-lane slip road (DM scenario)

Merge type

A = Taper Merge

B = Parallel Merge

E = Lane Gain

F = Lane Gain with Ghost Island Merge

12.2.3 It must be noted that the assessment of the merge slip roads identifies in some of the junctions the future requirement for a type B 'Parallel Merge' composed of two Upstream Mainline lanes and two Downstream Mainline lanes, which consists of providing an auxiliary lane alongside the mainline carriageway for the merge slip road. However, between junctions 9 and 12 the existing layout is 3 lanes upstream and downstream of the mainline carriageway for the M20 which provides higher capacity. Therefore, in this case no upgrade is proposed.

Table 158 2037 DM and DS Diverge Assessment Results

Junction	Location	Layout Type			Number of Mainline Lanes		Potential Upgrade Requirement
		Existing	Forecast (AM / PM)				
			DM	DS	Upstream	Downstream	
M20 J9	M20 EB on slip	A	A / C	A / C	2	3	None
	M20 WB on slip	A	B / A	D / A	2	3	Layout Type B Option 1 (DM scenario)
M20 J10	M20 WB on slip	A	A / C	A / D	2	3	Layout Type B Option 1 (DS scenario)
M20 J10A	M20 EB on slip	A	A / A	A / A	2	2	None
	M20 WB on slip	A	- / -	A / -	2	2	None
M20 J11	M20 EB on slip	A	A / A	A / A	2	2	None
	M20 WB on slip	A	A / A	A / A	2	2	None
M20 J11A	M20 WB on slip	B Option 2	A / A	A / A	2	2	None
M20 J12	M20 EB on slip	C	A / A	A / A	2	2	None
	M20 WB on slip	A	A / A	A / A	2	2	None
M20 J13	M20 EB on slip	A	- / A	- / A	2	2	None
	M20 WB on slip	B Option 2	A / -	A / -	2	2	None
A20	A20 EB on slip	A	- / A	- / A	2	2	None
	A20 WB on slip	A	- / -	- / -	1	1	None

Diverge type

A = Taper Diverge

B Option 1 = Ghost Island diverge including for conversion of existing taper diverge

B Option 2 = Parallel diverge

C = Lane drop at Taper Diverge

D Option 1 = Ghost Island diverge for Lane Drop including for conversion of existing Lane Drop at Taper Diverge

D Option 2 = Lane Drop at Parallel Diverge

2044 Assessment

12.2.4 Table 159 and Table 160 present the results of the merge and diverge assessments for the 2044 scenario.

Table 159 2044 DM and DS Merge Assessment Results

Junction	Location	Layout Type			Number of Mainline Lanes		Upgrade Requirement
		Existing	Forecast (AM / PM)				
			DM	DS	Upstream	Downstream	
M20 J9	M20 EB on slip	A	B / F	B / F	2	3	Layout Type C (DM scenario)
	M20 WB on slip	A	B / A	B / A	2	2	None
M20 J10	M20 WB on slip	A	E / B	E / B	2	3	None
M20 J10A	M20 EB on slip	A	A / B	A / E	2	3	None
	M20 WB on slip	A	A / E	A / E	2	2	None
M20 J11	M20 EB on slip	A	A / A	B / E	2	3	None
	M20 WB on slip	A	A / A	B / A	2	2	None
M20 J11A	M20 WB on slip	A	A / A	E / A	2	3	None
M20 J12	M20 EB on slip	A	A / A	A / B	2	2	Layout Type B (DS scenario)
	M20 WB on slip	E	A / A	B / A	2	2	None
M20 J13	M20 EB on slip	B	E / A	E / A	2	2	None
	M20 WB on slip	A	A / E	B / E	2	2	Layout Type B (DS scenario)
A20	A20 EB on slip	A	E / E	E / E	1	1	None
	A20 WB on slip						

Merge type

A = Taper Merge

B = Parallel Merge

C = Ghost Island Merge

E = Lane Gain

F = Lane Gain with Ghost Island Merge

Table 160 2044 DM and DS Diverge Assessment Results

Junction	Location	Layout Type			Number of Mainline Lanes		Upgrade Requirement
		Existing	Forecast (AM / PM)				
			DM	DS	Upstream	Downstream	
M20 J9	M20 EB on slip	A	A / C	A / C	2	3	None
	M20 WB on slip	A	D / A	D / A	2	3	Layout Type B Option 1 (DM scenario)
M20 J10	M20 WB on slip	A	A / C	A / D	2	3	Layout Type B Option 1 (DS scenario)
M20 J10A	M20 EB on slip	A	A / A	A / A	2	2	None
	M20 WB on slip	A	A / -	A / -	2	2	None
M20 J11	M20 EB on slip	A	A / A	A / C	2	3	None
	M20 WB on slip	A	A / A	A / A	2	2	None
M20 J11A	M20 WB on slip	B Option 2	A / A	A / C	2	3	None
M20 J12	M20 EB on slip	C	A / A	A / A	2	2	None
	M20 WB on slip	A	A / A	A / A	2	2	None
M20 J13	M20 EB on slip	A	- / A	- / A	2	2	None
	M20 WB on slip	B Option 2	A / -	A / -	2	2	None
A20	A20 EB on slip	A	- / A	- / A	2	2	None
	A20 WB on slip	A	- / -	- / -	1	1	None

Diverge type

A = Taper Diverge

B Option 1 = Ghost Island diverge including for conversion of existing taper diverge

B Option 2 = Parallel diverge

C = Lane drop at Taper Diverge

D Option 1 = Ghost Island diverge for Lane Drop including for conversion of existing Lane Drop at Taper Diverge

D Option 2 = Lane Drop at Parallel Diverge

2046 Assessment

12.2.5 Table 161 and Table 162 present the results of the merge and diverge assessments for the 2046 scenario.

Table 161 2046 DM and DS Merge Assessment Results

Junction	Location	Layout Type			Number of Mainline Lanes		Upgrade Requirement
		Existing	Forecast (AM / PM)				
			DM	DS	Upstream	Downstream	
M20 J9	M20 EB on slip	A	B / F	B / F	2	3	Layout Type C (DM scenario)
	M20 WB on slip	A	B / A	B / A	2	2	None
M20 J10	M20 WB on slip	A	E / B	E / B	2	3	None
M20 J10A	M20 EB on slip	A	A / B	A / E	2	3	None
	M20 WB on slip	A	A / E	A / E	2	2	None
M20 J11	M20 EB on slip	A	A / A	B / E	2	3	None
	M20 WB on slip	A	A / A	B / A	2	2	None
M20 J11A	M20 WB on slip	A	A / A	E / A	2	3	None
M20 J12	M20 EB on slip	A	A / B	A / B	2	2	Layout Type B (DM scenario)
	M20 WB on slip	E	A / A	B / A	2	2	None
M20 J13	M20 EB on slip	B	E / A	E / A	2	2	None
	M20 WB on slip	A	A / E	B / E	2	2	Layout Type C (DS scenario)
A20	A20 EB on slip	A	E / E	E / A	2	2	None
	A20 WB on slip	A	- / E	- / E	1	2	2 lane slip road (DM scenario)

Merge type

A = Taper Merge

B = Parallel Merge

C = Ghost Island Merge

E = Lane Gain

F = Lane Gain with Ghost Island Merge

Table 162 2046 DM and DS Diverge Assessment Results

Junction	Location	Layout Type			Number of Mainline Lanes		Upgrade Requirement
		Existing	Forecast (AM / PM)				
			DM	DS	Upstream	Downstream	
M20 J9	M20 EB on slip	A	A / C	A / C	2	3	None
	M20 WB on slip	A	D / A	D / A	2	3	Layout Type B Option 1 (DM scenario)
M20 J10	M20 WB on slip	A	A / D	A / D	2	3	Layout Type B Option 1 (DM scenario)
M20 J10A	M20 EB on slip	A	A / A	A / A	2	2	None
	M20 WB on slip	A	A / -	A / -	2	2	None
M20 J11	M20 EB on slip	A	A / A	A / C	2	3	None
	M20 WB on slip	A	A / A	C / A	2	3	None
M20 J11A	M20 WB on slip	B Option 2	A / A	A / C	2	3	None
M20 J12	M20 EB on slip	C	A / A	A / A	2	2	None
	M20 WB on slip	A	A / A	A / A	2	2	None
M20 J13	M20 EB on slip	A	- / A	- / A	2	2	None
	M20 WB on slip	B Option 2	A / -	A / A	2	2	None
A20	A20 EB on slip	A	- / A	A / C	2	3	Layout Type C (DS scenario)
	A20 WB on slip	A	- / -	- / -	1	1	None

Diverge type

A = Taper Diverge

B Option 1 = Ghost Island diverge including for conversion of existing taper diverge

B Option 2 = Parallel diverge

C = Lane drop at Taper Diverge

D Option 1 = Ghost Island diverge for Lane Drop including for conversion of existing Lane Drop at Taper Diverge

D Option 2 = Lane Drop at Parallel Diverge

12.2.6 The following sections describe the DM and DS mitigation requirements for each junction for each assessment year in more detail.

12.3 Assessment Results by Junction

2037 M20 Junction 9

Do-Minimum Scenario

12.3.1 The results of the assessment at the M20 Junction 9 suggest that the junction requires an upgrade of the eastbound on-slip and westbound off-slip in the 2037 DM scenario. According to Table 3/1b 'Cross-Sections for Connector Roads To/From Mainline Motorways from TD 22/06 and presented in Appendix S, the merge slip road would require two lanes. This appears to be achievable for the eastbound on-slip by providing a type C 'Ghost Island Merge', which consists of a two-lane slip road where the lanes are separated by a ghost island. The offside lane merges with the mainline

carriageway and the nearside lane continues downstream and then merges with the mainline carriageway with an additional taper merge. Implementation of this upgrade could be constrained by the presence of the A28 Canterbury Road bridge east of the existing on-slip road.

12.3.2 The westbound off-slip could require an upgrade to a type B 'Ghost Island Diverge' which consists of a two-lane slip road where the lanes are separated by a ghost island. From the nearside lane from the mainline carriageway, a taper diverge forms the first lane of the slip road and the second lane is formed from an additional taper diverge. As explained in the TD 22/06, providing two access points for a two-lane exit slip road increases the capacity of the diverge and is designed to reduce the likelihood of congestion in the mainline and 'swooping' movements to the slip road when the diverge flow is high. As in the eastbound on-slip proposed upgrade, the upgrade for the westbound off-slip road could be constrained by the existing A28 Canterbury Road bridge located west of the diverge.

12.3.3 These upgrades would mean the junctions would also meet the layout requirements for the 2044 and 2046 DM scenarios.

Do-Something Scenario

12.3.4 The proposal for the eastbound on-slip and westbound off-slip and described for the DM scenario would be sufficient to meet requirements for the 2037, 2044 and 2046 DS scenarios.

M20 Junction 10

Do-Minimum Scenario

12.3.5 The existing layout at the M20 Junction 10 would satisfy the DMRB standards for the 2037 and 2044 DM scenarios. For the 2046 DM scenario, the eastbound off-slip could require an upgrade to a type B 'Ghost Island Diverge', with both lanes in the off-slip road separated by a ghost island. From the nearside lane from the mainline carriageway, a taper diverge would form the first lane of the slip road and the second lane is formed from an additional taper diverge. It is noted that the overbridge over Silver Hill Road / Lees Road could be a constraint on the implementation of this upgrade.

12.3.6 As Figure 2/5 MW in Appendix S shows, the flows lie close to the boundary where the two-lane exist, the requirement for this upgrade should be reviewed.

Do-Something Scenario

12.3.7 In the 2037 DS scenario, according to Table 3/1b in Appendix S, a two-lane slip road would be required in the diverge for the eastbound off-slip. It should be noted that this upgrade is the same as would be required for the 2046 DM scenario, a type B Ghost Island Diverge'.

12.3.8 No further upgrade would be required on this slip for the 2044 and 2046 DS scenarios.

M20 Junctions 10A, 11 and 11A

12.3.9 No upgrades would be required for the M20 Junctions 10A, 11 and 11A in any of the DM or DS scenarios.

M20 Junction 12

Do-Minimum Scenario

12.3.10 No upgrades are expected to be required as this junction in the 2037 and 244 DM scenarios.

12.3.11 In the 2046 DM scenario, this junction may require an upgrade on the eastbound on-slip road to a Type B 'parallel Merge'. This would provide an auxiliary lane alongside the mainline carriageway for the merge slip road. This Type B parallel merge layout appears to be viable at this outline stage of investigation.

Do-Something Scenario

12.3.12 No upgrade is anticipated to be required to this junction in the 2037 DS scenario. In the 2044 DS scenario, the eastbound on-slip would require the same upgrade as will be required on this slip in the 2046 DM scenario. No further upgrade would be required for the 2046 DS scenario.

M20 Junction 13

Do-Minimum Scenario

12.3.13 The existing layout at the M20 Junction 13 would satisfy the DMRB standards for the 2037, 2044 and 2046 DM scenarios.

Do-Something Scenario

12.3.14 No upgrade would be required at this junction in the 2037 DS scenario. For the westbound on-slip, a type B 'Parallel Merge' with an auxiliary lane alongside the mainline carriageway for the parallel on-slip would be required in the 2044 and 2046 DS scenarios. No constraints to the upgrade to this merge typology have been identified at this time.

A20 Slips at Alkham Valley

Do-Minimum Scenario

12.3.15 For the westbound on-slip, there is predicted to be more traffic merging than in the mainline carriageway in the AM peak hour in the 2037 DM scenario. This may require the on-slip to be upgraded to provide a two-lane slip road, although no merge type is extracted from the TD 22/06. No further upgrade would be required on this slip in the 2044 and 2046 DM scenarios. The need for this should be carefully reviewed due to the presence of the A260 bridge and the tunnel west of the junction.

Do-Something Scenario

12.3.16 The 2037 and 2044 DS scenarios would require the same upgrade as is required for the 2037 DM scenario. No further upgrade would be required for these scenarios.

12.3.17 In the 2046 DS scenario, and according to Figure 2/5 AP in Appendix S, three lanes would be required in the upstream mainline before the eastbound off-slip in the 2046 DS scenario. The proposed upgrade could provide an additional lane along the mainline carriageway and then the nearside lane from this mainline carriageway diverts to form the slip road (type C 'Lane Drop at Taper Diverge').

12.3.18 As the layout obtained from Figure 2/5 AP shows that the flows lie on the boundary between this layout and the existing layout A 'Taper diverge' and due to the presence of the tunnel west of the junction, this proposal should be carefully reviewed.

Influence of Forecast Method on Assessment Results

12.3.19 As explained in Chapter 6 and referred to in the junction capacity assessments in the vicinity of this motorway junction in Chapter 11, the method used to forecast the DM case traffic flows assumed a TEMPro growth rate based on the delivery of a reduced number of houses and jobs compared to the target forecast for Folkestone & Hythe. If Folkestone & Hythe District Council meet their housing and employment forecasts, the background traffic growth rate in the DM scenario could be around 10% greater in the 2037 DM scenario and up to 15% greater in the 2044 and 2046 scenarios if the targets were met. This could increase traffic flows above the DS case at this junction. It is therefore possible that the implementation of a large, sustainable development on the Otterpool Park site is anticipated to represent a lower-impact case at this junction than the DM case without Otterpool Park.

12.4 Summary of Upgrade Requirements

12.4.1 Table 163 summarises the scenarios where the merge and diverge assessment have showed that changes would be required for each junction.

Table 163 Summary of Merge and Diverge Assessment Upgrade Requirements

Junction	Scenario	Upgrade Requirement		
		2037	2044	2046
M20 Junction 9	DM		-	-
	DS		-	-
M20 Junction 10	DM			
	DS		-	-
M20 Junction 10A	DM			
	DS			
M20 Junction 11	DM			
	DS			
M20 Junction 11A	DM			
	DS			
M20 Junction 12	DM			
	DS			-
M20 Junction 13	DM			
	DS			-
A20 Slips at Alkham Valley	DM		-	-
	DS		-	

Key:

	no upgrade required in assessment year for corresponding scenario
	upgrade required in assessment year for corresponding scenario
-	*no further upgrade required in assessment year for corresponding scenario*

For all assessment years, first upgrade required in DS scenario is the same upgrade required in the DM scenario

Two red cells in same scenario indicates that a second upgrade is required

13 Summary and Conclusions

13.1 Summary

Overview

13.1.1 This Transport Assessment is prepared in support of an outline planning application for the 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).

13.1.2 In addition to the outline application development, a wider Otterpool Park Framework Masterplan Area (OPFM) includes for up to 10,000 homes.

13.1.3 Otterpool Park is located in the Folkestone & Hythe district. The villages of Westenhanger and Newingreen lie within the application site boundary, while the villages of Lympne, Barrow Hill and Sellindge are located just outside it. Link Park, a distribution and industrial centre, lies just outside the application boundary and within the boundary of the OPFM.

13.1.4 The Kent Downs Area of Outstanding Natural Beauty (AONB) bounds the area along its eastern and southern edges.

Scoping

13.1.5 The scope of assessment required for the application was discussed with Kent County Council, Folkestone & Hythe District Council and Highways England during discussions between July 2017 and July 2018. 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. For Walk and Cycle trips, this includes routes within reasonable walking/cycling distance from the site and considers the scale of trips generated and the condition of the existing and proposed routes.

13.1.6 Public transport impacts are considered in terms of the scale of increase of trips resulting from the proposed development on the services on which they are expected to impact. Further investigation of the effects of impacts on these services and any mitigation required will be undertaken by Kent County Council and discussed with the County and local service providers.

13.1.7 The extent of the highway capacity study area is shown in . It includes local modelling of a number of agreed existing and committed junctions as well as proposed junctions that connect into the existing highway network. Junctions have been assessed using the appropriate LinSig, Arcady or Picady software.

13.1.8 Kent County Council requested that a VISSIM model be produced to assess the local junctions most likely to be impacted by the development. Discussions regarding the base VISSIM model 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.

13.1.9 Merge/diverge assessments have been undertaken within the study area on the M20 and at the A20 slip roads near Alkham Valley.

Assessment Years and Scenarios

13.1.10 The following forecast years have been assessed:

- 2018 Base Year: pre-construction ‘no scheme’ baseline;
- 2037: the end of the Folkestone & Hythe District Council Local Plan period;
- 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; and
- 2046 Sensitivity Assessment: representing the year of full build-out for OPFM, including 10,000 homes.

13.1.11 Each future year assessment includes two scenarios:

3) **Do-Minimum (DM)**, which includes:
   - committed highway improvement schemes; and
   - forecast baseline traffic flows.
4) **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.

13.1.12 A weekday morning peak hour (0800 to 0900) and a weekday evening peak hour (1700 to 1800) has been assessed for each assessment year. These time periods align with the local highway network peak periods as determined from analysis of traffic survey data.

Policy and Guidance

13.1.13 The following national, regional and local policy and guidance documents were reviewed:

- National Planning Policy Framework (NPPF), 2018;
- The Strategic Road Network and the Delivery of Sustainable Development – Department for Transport Circular 02/13;
- Kent Local Transport Plan 4: Delivering Growth without Gridlock 2016-2031 (2016);
- Folkestone & Hythe Core Strategy, 2013;
- Folkestone & Hythe District Council Transport Strategy, 2011;
- Core Strategy Local Plan Review, 2019; and
- Places and Policies Local Plan, Submission Draft, 2019.

13.1.14 The review of policy and guidance has influenced the development proposals and the Transport Assessment. The policies and guidance in place seek an emphasis on development in locations where sustainable travel modes can be encouraged and of facilitating access by all modes. The masterplan for Otterpool Park has been developed, through consultation with Folkestone & Hythe District Council, Kent County Council and other key stakeholders, to create a highly-sustainable garden settlement. Further information relating to how the development proposals have responded to policy requirements is described in a later section of this summary.

2018 Baseline Conditions

13.1.15 The existing network conditions for all modes were assessed using a method of site observations and audits, client liaison meetings and desktop-based analysis

Conditions for sustainable modes

13.1.16 Most of the roads across the site and in the local vicinity have a footway for pedestrians on at least one side of the road. The exceptions are Otterpool Lane and sections of Aldington Road west and east of the site, which have no footways on either side. Footway widths vary from 1.5m to 2.5m on the A20, with widths of other roads varying between 1m to 1.5m.

13.1.17 The only signal-controlled crossing is located on Otterpool Lane at the junction with the A20 Ashford Road. No infrastructure is provided for cyclists and road alignments on the A20 and the A261 Hythe Road create difficult environments for cyclists on these heavily-trafficked roads.

13.1.18 PRoW with the study area are of mixed condition. Overall, there are existing issues with north-south permeability and lack of wider connections and links over the railway line and M20.

13.1.19 A Walking and Cycling Study commissioned by Folkestone & Hythe District Council considered a number of possibilities for enhancement of the walking and cycling networks in the area:

- 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;
- Provision of a re-aligned A20 through the development;
- Improved cycle linkages to the Hythe and Folkestone areas;
- Improved connections with Westenhanger Railway Station, particularly to the north; and
- Integration of internal road network and surrounding PRoW.

13.1.20 Due to the size of the site and the distance to other large settlements, the accessibility of local settlements and services is restricted. Sellindge and Lympne are the only settlements outside the site within a 30-minute walk time of the centre of the site. Hythe is within a 30-minute cycle ride, while Folkestone and parts of Ashford could be reached within 45 minutes' ride.

13.1.21 The accessibility of the site to bus services is limited, with bus stop locations limited to the locations of the existing settlements at Barrow Hill, Newingreen, Link Park and Lympne. The majority of the site is more than the desirable distance of 400m from a bus stop. Service frequency is low with only two hourly services operating on a weekday.

13.1.22 Westenhanger railway station offers a sustainable gateway to the site from within Kent and offers the opportunity to connect to high speed services at Ashford International or Folkestone.

Local highway conditions

13.1.23 The M20 Junction 11 serves as the main gateway highway access to the Otterpool Park site from the wider area and operates with spare capacity within the local peak periods.

13.1.24 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 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.

13.1.25 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. The A20 junction with the A261 Hythe Road operates over capacity in the AM peak creating significant delay and queuing on Hythe Road.

13.1.26 The A20 Barrow Hill is constrained by a single lane section where the road passes under the high-speed and Network Rail lines, which is controlled by traffic signals.

13.1.27 Otterpool Lane routes north-south through the southern section of the site and 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 Otterpool Lane junction with the A20 operates within capacity in the AM and PM peak periods.

13.1.28 Aldington Road is a narrow single carriageway road routing along the southern boundary of the site, west to Aldington and east towards Hythe. Stone Street extends along part of the Southeastern boundary of the site northwards from Aldington Road where it is split by the A20 Ashford Road before continuing north towards Westenhanger Station.

Traffic flow data and baseline junction capacity modelling

13.1.29 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.

13.1.30 The data collected in June 2017 was validated against the October 2016 data and both were used to establish a 2018 baseline using TEMPro growth factors. For the Canterbury data, the 2014 turning count data was validated against the 2018 ATC data and it was found that no growth had occurred, therefore the 2014 data was used in this assessment.

13.1.31 The following junctions within the study area are currently operating over capacity:

- A20 Ashford Road / A261 Hythe Road in the AM peak, operating at an RFC of 0.87;
- M20 Junction 9 in the PM peak, operating at a DoS of 92%;
- B2064 Cheriton High Street / A2034 Cherry Garden Avenue in the AM (91% DoS) and PM (94% DoS) peaks;
- Old Dover Road / St Lawrence Road / The Drive in the AM (99% DoS) and PM (100.7% DoS) peaks; and
- Nackington Road / Old Dover Road in the AM peak, operating at a DoS of 97%.

13.1.32 In addition, the B2064 Cheriton High Street / B2063 Risborough Lane junction is approaching capacity in the PM peak.

13.1.33 The Hythe Road arm of the junction with the A20 is operating over practical capacity due to high traffic flows on the A20 Ashford Road. an improvement is proposed at this junction as part of the planning application for the Land East of Ashford Road, however the scheme does not provide effective capacity enhancements.

13.1.34 Junction 9 of the M20 currently operates over practical capacity M20 eastbound off-slip ahead movement and the Trinity Road arm. The cause is the volume of traffic routing from the M20 eastbound slip into Ashford which conflicts with the heavy traffic flows on the associated section of the circulatory and prevents traffic from entering the junction from the Trinity Road arm.

13.1.35 The Cheriton High Street / Cherry Garden Avenue junction operates over practical capacity on Beachborough Road and Cheriton Road because the volume of traffic routing through the junction exceeds the capacity of the junction in its current layout and method of control.

13.1.36 The two junctions in Canterbury on Old Dover Road operate over practical capacity due to high volumes of traffic and the lack of non-blocking storage on the right-turn into St Lawrence Road.

M20 Freight Management

13.1.37 When queuing at the Port of Dover or Eurotunnel entrances extends onto the M20, a procedure called Operation Stack has historically been called into practice. The procedure 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. During times of operation, non-freight traffic is diverted onto local roads, including the A20.

13.1.38 A proposal for a lorry holding area to replace Operation Stack was withdrawn. Highways England are currently exploring alternative schemes and in the meantime will implement an alternative scheme to Operation Stack called Operation Brock, which will create up to 2,000 on-road lorry holding spaces between the M20 Junctions 8 and 9 and provide a contraflow system on the M20 that will enable the motorway to be kept open to general traffic under managed conditions that include a speed reduction on the M20 during times of its operation.

Road Safety

13.1.39 PIA data within 500m of the site has been obtained from Kent County Council for the period of five-years up until the 30th August 2017. A total of 117 recorded accidents took place within the study area, of which 101 were classified as of slight severity, 13 were considered serious and three were fatal.

13.1.40 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.

13.1.41 The evidence does not suggest specific safety deficiencies on the local highway network in the vicinity of the development site.

Vehicle parking at Westenhanger Station

13.1.42 A parking beat survey was undertaken on Thursday 19th April 2018 at Westenhanger Station, including on Stone Street on approach to the station car park.

13.1.43 The station car park was found to have no spare parking capacity during the AM, with significant parking also occurring on the access road and further parking along Stone Street. Parking provision at the station currently provides insufficient capacity to accommodate demand.

Development Proposals and Transport Strategy

13.1.44 The proposed mix and scale of land uses is such that the site will provide a sufficient 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.

13.1.45 A Transport Strategy has been developed 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.

Walking and cycling strategy

13.1.46 The development provides for walkable neighbourhoods, with the majority of all homes within easy walking or cycling distances of facilities and services, creating the opportunity for high levels of travel by walk and cycle mode. Walking and cycling routes will include ‘direct routes’ that allow direct and fast access between residential areas and key destinations such as schools, high streets and Westenhanger station, and ‘leisure routes’ connecting green spaces inside and outside the site.

13.1.47 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.

13.1.48 Where key walking and cycling routes intersect vehicular traffic routes, safe crossing points will be provided. A series of walking and cycling routes away from vehicular traffic will also be created. At the boundaries of the site, walking and cycling routes would be designed to link in with existing external networks. Links would also be established with new off-site sustainable transport infrastructure, which would be supported through the likely provision of financial contributions to be agreed.

Public transport strategy

13.1.49 An upgrade service provision, including the potential for direct services to London, and to the passenger facilities at Westenhanger Station is being explored in conjunction with key stakeholders. It is envisaged that improvements could 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.

13.1.50 It is intended that there would be a bus stop within 400 metres of the majority of homes along with a minimum service provision of 30-minute frequencies from early occupation rising to a frequency of 10-15 minutes once fully commercial. In the early phases of development, service improvements would be likely to involve enhancements to existing services, including re-routing through the site to serve Westenhanger Station. Diverted routes could consist of the following:

- 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).

13.1.51 High quality facilities at bus stops would be provide shelters, lighting and information and design would take account of the accessibility needs of the mobility impaired.

Highway access strategy

13.1.52 The approach taken for the highway access strategy 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.

13.1.53 A number of highway network upgrades are proposed in the immediate vicinity of the site, as follows:

- Upgrade of the A20 Ashford Road between the roundabout south of the M20 J11 and north of the Newingreen junction to an urban dual carriageway of 40mph speed limit, with route re-alignment west of the existing route;
- Provision of a new single carriageway 30mph strategic road (the Newingreen Link) west of the new dual carriageway and north of the existing A20 east-west alignment;
- Diversion of the existing A20 Ashford Road west of Newingreen to tie in to the Newingreen Link;
- Stopping-up of Stone Street at the junction with the A20 Ashford Road north of the junction with the A261 Hythe Road;
- Reduction in speed limit on the A20 west of the dual carriageway (on the Newingreen Link) and west of the junction with the A261 Hythe Road to 30mph;
- Provision of a hierarchy of new internal access roads within the site boundary; and
- Provision of a number of new junctions along the A20 Ashford Road and B2067 Otterpool Lane.

13.1.54 The section of the A20 at which the dual carriageway is proposed currently carries traffic volumes that are greater than the desired design capacity for the road type. The dualling and route realignment therefore means the road would meet the capacity requirements to accommodate forecast traffic flows with and without Otterpool Park development.

Parking provision

13.1.55 Parking for cars and bicycles will be provided as part of the development in accordance with the emerging policy T2 of the Places and Policies Local Plan (Submission Draft, 2018). For car parking, this policy provides differing levels of parking requirement according to the category of area, i.e. Town Centre, Edge of Centre, Suburban. In agreement with Kent County Council, it is proposed that the category of area for which parking levels would apply for Otterpool Park would be agreed in accordance with policy as the development phasing is implemented.

Sustainable travel measures

13.1.56 In addition to the provision of infrastructure for walking cycling and public transport, a draft Framework Travel Plan, which is also submitted for information with the Application, a comprehensive range of measures are suggested for the development to promote sustainable travel and vehicle choices. These would be confirmed as part of a Final Travel Plan, to be agreed with local authorities prior to occupation of the development.

Future Baseline Highway Conditions

Background traffic forecasting

13.1.57 The method for forecasting background vehicle traffic growth on the network for the assessment years was agreed with Kent County Council and Highways England.

13.1.58 Traffic generation for four committed developments directly adjacent to the Otterpool Park site was added by extracting flow volume and routing information available in the planning application information relating to the developments. Traffic growth for freight traffic on the M20 was calculated by applying an annual growth rate of 0.6%, as suggested in the National Road Traffic Forecasts.

13.1.59 Further traffic growth was calculated using TEMPro v7.2 with updated housing and employment forecasts provided by Kent County Council and Folkestone & Hythe District Council. Housing and job numbers provided by the four committed developments and proposed to be provided by Otterpool Park were deducted from the housing and employment forecasts from which the growth rates were derived. The resulting growth rates were applied to background traffic for both the DM and DS scenarios. This means that comparison between the results of DM and DS capacity testing shows an absolute worst case in terms of any increases in highway network delay and queuing in the DS scenario and that the DM scenario results would under-estimate impacts if the housing and job forecasts for Folkestone & Hythe shown are met without Otterpool Park.

Committed Highway Schemes

13.1.60 The following committed transport infrastructure/improvement schemes have been taken into account in the DM and DS road network for the assessment:

- New M20 Junction 10A and associated changes to the surrounding road network, including M20 Junction 10;
- New signalised site access junction on A20 Hythe Road for Willesborough Lees development;
- Traffic calming proposals and new site access points through Sellindge Village proposed for the Sellindge residential development;
- Adjustments to the flare length on the A261 Hythe Road at the junction with A20 Ashford Road required for the Land East of Ashford Road development;
- A2034 Cheriton Road/ A20 Cherry Garden Avenue junction and link proposals for the Folkestone Seafront masterplan; and
- Nackington Road/ Old Dover Road and Old Dover Road/ St Lawrence Road/ The Drive proposals for the Mountfield Park development.

13.1.61 Kent County Council has investigated an alternative scheme at the A20 Ashford Road / A261 Hythe Road that would provide the capacity improvement necessary to accommodate traffic growth at a junction that is operating over practical capacity in the 2018 baseline situation. The scheme would involve incorporating the existing A20 Ashford Road / A261 Hythe Road and A20 Ashford Road / Stone Street priority junctions into one signal-controlled junction. The scheme is not currently programmed for implementation due to insufficient funds.

Development Trip Generation

13.1.62 The method of calculating trip generation by mode was agreed with Kent County Council, Folkestone & Hythe District Council and Highways England and reflects the fact that the proposed retail, education and community land uses would primarily serve the demand arising from Otterpool Park residents and would not draw in significant trips from off-site locations.

13.1.63 The demand for the retail and community land uses was calculated by considering the demand for these land uses that would be generated by the on-site Residential land uses. Residential trip rates were derived from the TRICS 7.5.1 database and then disaggregated by trip purpose. The resulting trip generation purpose was then assigned to a land use associated with the trip purpose, e.g. shopping trips were assigned to retail land use. An uplift was applied to account for a comparatively low number of external trips attracted to these land uses. Employment trip rates were derived from the TRICS database.

13.1.64 Trip rate reductions were applied to account for ‘linked’ trips, visits made by a single person to a number of different land uses (i.e. from residential to school to retail to work) that are one single trip but would be counted as multiple trips by the trip generation calculations which consider each land use separately. Table 31 presents a summary of the total, internal and external all-mode trip generation for each assessment year.

13.1.65 Separate travel mode splits were derived for internal and external trips as well as for each trip purpose using a combination of Census 2011 and NTS data sources. Table 35 to Table 37 present the number of internal and external trips by mode for each assessment scenario.

Development Trip Distribution

13.1.66 External trip distribution between the site and off-site ODs that are expected to attract/generate trips as calculated using gravity modelling which assumed that the number of trips routing to/from an OD declines with increasing distances and time of travel (deterrence functions) but is positively correlated with the size of the attractor/generator at the OD.

13.1.67 Trips made between on-site development zones (internal trips) were calculated by considering the likely origin/destination of trips routing into and out of each development zone according to the

purpose of the trip, e.g. trips for Education purposes were distributed only to development zones that contained Education land uses.

13.1.68 The distribution of vehicle trips on the highway network was determined by inputting trips between each OD to VISUM. Trips by other modes were manually assigned to the pedestrian and cycle networks and bus and rail routes that provide the most likely route between the site and the ODs.

Effects on Sustainable Transport Modes

Effects on pedestrian network

13.1.69 Based on current mode of travel behaviour, a high number of internal Walk trips is expected along with a peak external Walk trip flow of around four trips per minute to Sellindge, the closest significant settlement within reasonable walking distance, in the AM peak with trips in the period dominated by Education trips. Travel mode shares for other sustainable modes are currently low and the significant improvements to the bus and cycle networks proposed by the Otterpool Park development may result in a shift from Walk to Bus or Cycle mode for short-range trips in future.

13.1.70 The two primary off-site ODs for external walk trips are expected to be Sellindge and Hythe. The number of accidents recorded on these routes in the five-year period analysed is low, with no accidents involving pedestrians or cyclists. The route to Sellindge currently benefits from recently-implemented traffic calming proposals through Sellindge Village, including carriageway narrowing, new crossing points and a reduction in the permitted speed limit. Reports from Sellindge Parish Council suggest that this has had the effect of reducing HGV movements along this section of the A20.

13.1.71 Otterpool Park proposals for this route would complement the situation in Sellindge Village by establishing a 30mph speed limit along the A20 from where it begins at Sellindge eastwards to the junction with the A261 Hythe Road and along the proposed Newingreen Link. This, combined with new pedestrian crossing facilities on key desire lines across the A20, including at a location west of the existing junction with Otterpool Lane, would represent significant improvement in the pedestrian environment compared to the current situation. Further benefit could be gained from re-surfacing of the section of the A20 along Barrow Hill, including the provision of anti-skid surfacing.

13.1.72 The increase in pedestrian movements to/from Hythe is expected to be low as a result of the development, with an additional 1-2 trips per minute. The A261 Hythe Road currently provides a poor environment for pedestrians, with no footpath provided on much of the route. This route has been identified as a priority for improvement in the Folkestone & Hythe Walking and Cycling Study. Alternative routes to Hythe for pedestrians are provided by two PRoWs; one routing through Sandling Park from the north-eastern boundary of the site and the other extending from the south-east boundary of the site just north of Lympne. The PRoW routing through Sandling Park, located as it is next to the north-east of the site, which will contain the highest-density housing, the Business Park and Westenhanger Station, is expected to be the primary route for Walk trips to/from Hythe. While this PRoW currently crosses the A20 in an uncontrolled manner, the Otterpool Park proposals would provide a signal-controlled crossing over a re-aligned A20 that addresses the driver visibility issues inherent in the current road alignment along parts of the A20 around this location.

13.1.73 The proposed internal pedestrian infrastructure would provide capacity to accommodate the significant pedestrian flows expected across the site. Where key desire lines cross the A20, safe passage would be provided through signal-controlled pedestrian crossings and refuges as required. The distribution of amenities and services for residents across the site would mean that Walk trips would distributed across the network of internal Primary, Secondary and Tertiary roads that link residential areas to the key destinations.

Effects on cycle network

13.1.74 The greatest number of external Cycle trips along a single route is expected to occur along the A261 Hythe Road, along which less than one additional trip per minute in forecast in both peak periods. The volumes of traffic during peak hours and the alignment of the road make this a difficult route for cyclists. The Otterpool Park proposals at Newingreen would improve conditions for cyclists on

approach to this route form the site; the signalisation of the A261 Hythe Road junction with the A20 Ashford Road would enable controlled turning movements into/out of Hythe Road and the introduction of the Newingreen Link would reduce the amount of traffic that would otherwise route through the junction, particularly HGV traffic.

13.1.75 The number of additional cyclists expected along the proposed dualled section of the A20 is forecast to be low. However, the re-alignment of the A20 and the introduction of signal-controlled junctions along the route that could incorporate cycle priority facilities would provide benefit to all cyclists along this route.

13.1.76 Additional Cycle trips on other external local routes are expected to be low.

13.1.77 The number of internal Cycle trips is expected to be low based on current travel behaviour. However, the proposed cycle infrastructure, including cycleways, signalised crossings and storage facilities in private and public areas along with measures to encourage cycling that would be implemented through Residential, School and Workplace Travel Plans, is expected to significantly increase cycle usage in future. The level of cycle infrastructure proposed therefore provides capacity for a much greater level of Cycle trips than is forecast using the method of trip generation calculation requested for this assessment.

Effects on bus network

13.1.78 Since trip generation by mode is based primarily on current travel behaviour patterns, the number of Bus trips is forecast to be low. Based on the current level of service provision, the majority of bus trips are expected to impact on the number 10 service, for which the current level of service frequency would be unsuitable to sustain the forecast level of additional passengers. Impact on other existing bus services would be low based on this forecast.

13.1.79 The increases to service provision and improvements to access to services proposed in the Transport Strategy draft Framework Travel Plan are expected to have a significant positive effect on bus usage and increase demand above the level forecast in this assessment. The proposed level of provision would provide greater capacity that would accommodate the expected increase in demand above the forecast level.

Effects on rail network

13.1.80 The forecast number of rail trips, which is also based primarily on existing trip patterns and service provision, is also low. It is expected that existing service provision would be capable of accommodating the increase in patronage suggested by the forecast.

13.1.81 The Otterpool Park proposals would significantly improve access to Westenhanger Station as well as provide a vastly increased local population, of which the highest density of residents and visitors would be cited within walking or cycling distance or on a connecting bus route.

13.1.82 The effect on rail patronage that the proposed development and the Transport Strategy would have is difficult to quantify. Further detailed assessment work is required and changes to rail patronage would be monitored over time as the development phases are built out.

Junction Capacity Assessments

13.1.83 Based on the results of the junction capacity assessments, the following junctions are expected to operate over practical capacity in future years without the Otterpool Park development:

- A259 / Dymchurch Road / Military Road;
- M20 Junction 13;
- M20 Junction 9;
- A260 Spitfire Way / White Horse Hill / A20 Slip Roads; and
- Nackington Road / Old Dover Road / St Lawrence Road / The Drive.

13.1.84 The following junctions are expected to operate over theoretical capacity in future years without the Otterpool Park development:

- A20 Ashford Road / A261 Hythe Road;
- A20 Ashford Road / Stone Street;
- B2064 Cheriton High Street / B2063 Risborough Lane;
- B2064 Cheriton High Street / A2034 Cherry Garden Avenue;
- A259 Prospect Road / Stade Street;
- Alkham Valley Road / A20 slip roads; and
- A260 Canterbury Road / Alkham Valley Road.

13.1.85 It is evident that capacity enhancements are likely to be required at many of the above junctions regardless of whether the proposed Otterpool Park development is permitted.

13.1.86 The capacity assessments identified that the following junctions would operate within capacity in the DM scenarios, but over capacity in one or more DS scenarios:

- M20 Junction 11;
- Barrow Hill one-way signals;
- Aldington Road / Lympne Hill;
- A259 Prospect Road / A259 East Road / Station Road / High Street; and
- A20 Ashford Road small roundabout.

13.1.87 Mitigation measures were identified and tested for the above five junctions as well as for a number of the junctions that are expected to operate over capacity in the future DM scenarios.

M20 Merge and Diverge Assessments

13.1.88 The M20 junctions between Junctions 9 and 13 and the A20 slips onto the M20 at Alkham Valley have been assessed to determine whether the current highway layouts will meet the required merge and diverge DMRB standards in the future assessment years in the DM and DS scenarios.

13.1.89 The following junctions were found to require upgrades in a future case DM scenario:

- 2037: Junction 9 and the A20 slips;
- 2046: Junction 10 and Junction 12.

13.1.90 These junctions were found to need the same upgrades in future case DS scenarios. In the case of Junction 10, the upgrade improvement would be required by 2037 and Junction 12 would require the upgrade by 2044. In addition, the A20 slips at Alkham Valley may require a further upgrade by 2046 (although this would not be for the outline planning application development) and Junction 13 may require upgrade by 2044.

13.2 Conclusions

13.2.1 The proposals for Otterpool Park represent a new garden settlement based on sustainable living and sustainable travel and would accord with the requirements of local, regional and national policy requirements and guidance.

13.2.2 Current conditions on parts of the existing walking and cycling networks would be insufficient to accommodate significant future growth. Service frequency on the local bus network as well as accessibility to bus and rail services is poor. Several parts of the highway network currently operate with capacity constraints with conditions expected to worsen in future while many other parts of the network are predicted to require capacity enhancements without the Otterpool Park development.

13.2.3 Since trip generation by mode is based primarily on current travel behaviour patterns, the number of external trips forecast to be made by sustainable modes is low and could be accommodated on the existing networks. However, changes to the transport networks proposed as part of the Otterpool Park development, sustainable travel plan initiatives and off-site improvements recommended in the Folkestone & Hythe Walking and Cycling Study are expected to change future travel behaviour, with a shift to Bus and Cycle mode in particular for short- to medium-distance trips. To reflect this, the

transport proposals of the Otterpool Park development would provide additional capacity for sustainable modes to accommodate a significantly greater increase in trips than are currently forecast. This would also have the effect of further encouraging sustainable travel.

13.2.4 Proposals to provide pedestrian/cycle priority on key desire lines inside the site and at locations linking to existing external walk/cycle routes would significantly improve conditions for vulnerable road users at these locations. Improvements to bus and rail accessibility and services along with Travel Plan measures would encourage a shift to travel by sustainable modes.

13.2.5 The highway network has been assessed to determine the potential effect the development would have on key junctions identified by Kent County Council, Folkestone & Hythe District Council and Highways England. Based upon the junction capacity assessments and the proposed interventions It is considered that the Otterpool development traffic can be mitigated so as to not have a severe impact on the network.

13.2.6 It is anticipated that further discussions regarding the proposed mitigation will be held with Kent County Council, Folkestone & Hythe District Council and Highways England following submission of the Otterpool Park planning application.

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Figure 2 Local Walking and Cycling Networks

Figure 3 Existing Strategic Cycle Route Map and Cycle Isochrones

Figure 4 Existing Local Amenities and Walking Isochrones

Figure 5 Strategic Plan of Bus Service Routes

Figure 6 Local Public Transport Service Routes, Stops/Stations and Walk Isochrones

Figure 7 Local Highway Network

Figure 8 Existing and Proposed Bus Stops and Routes

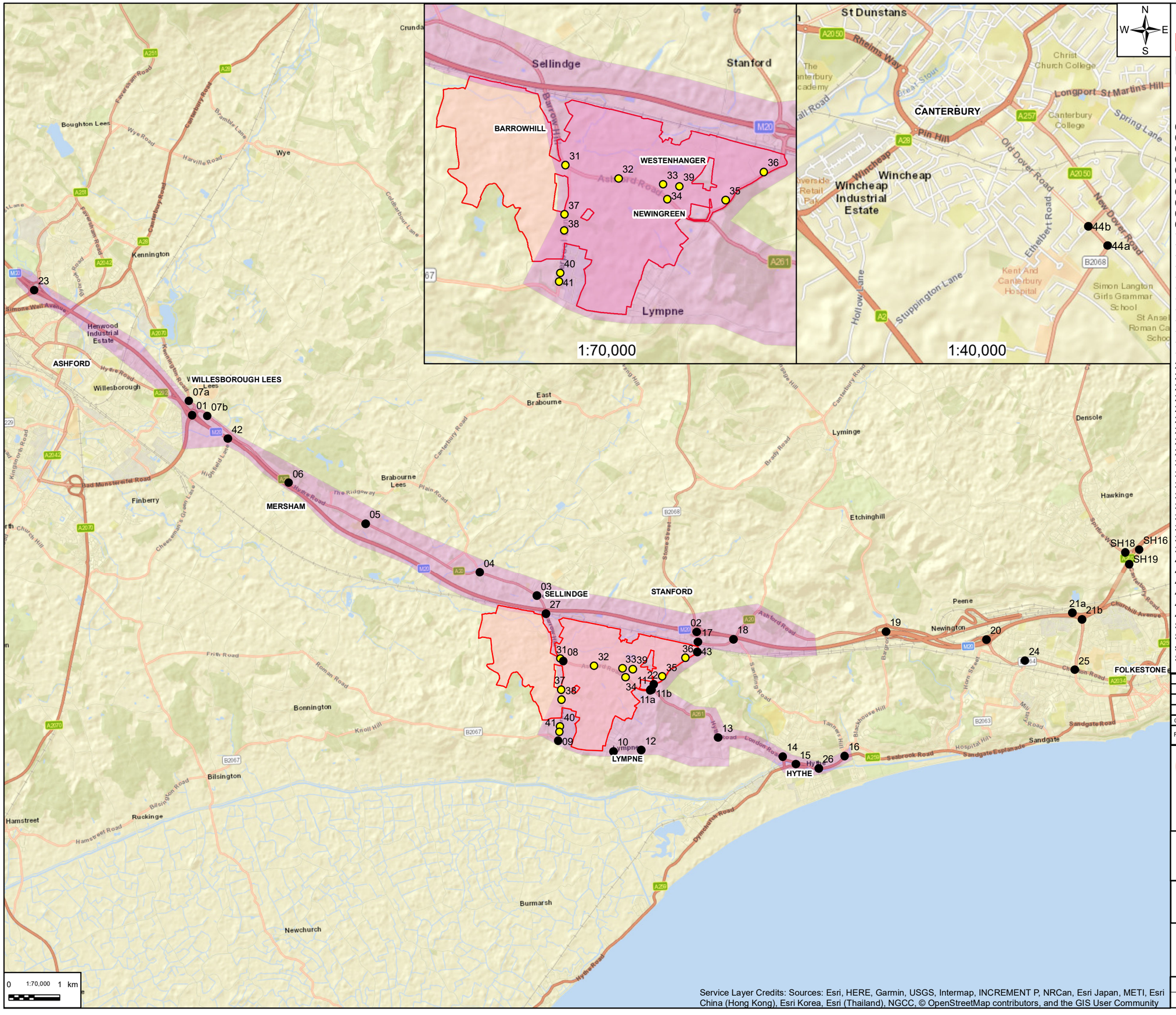

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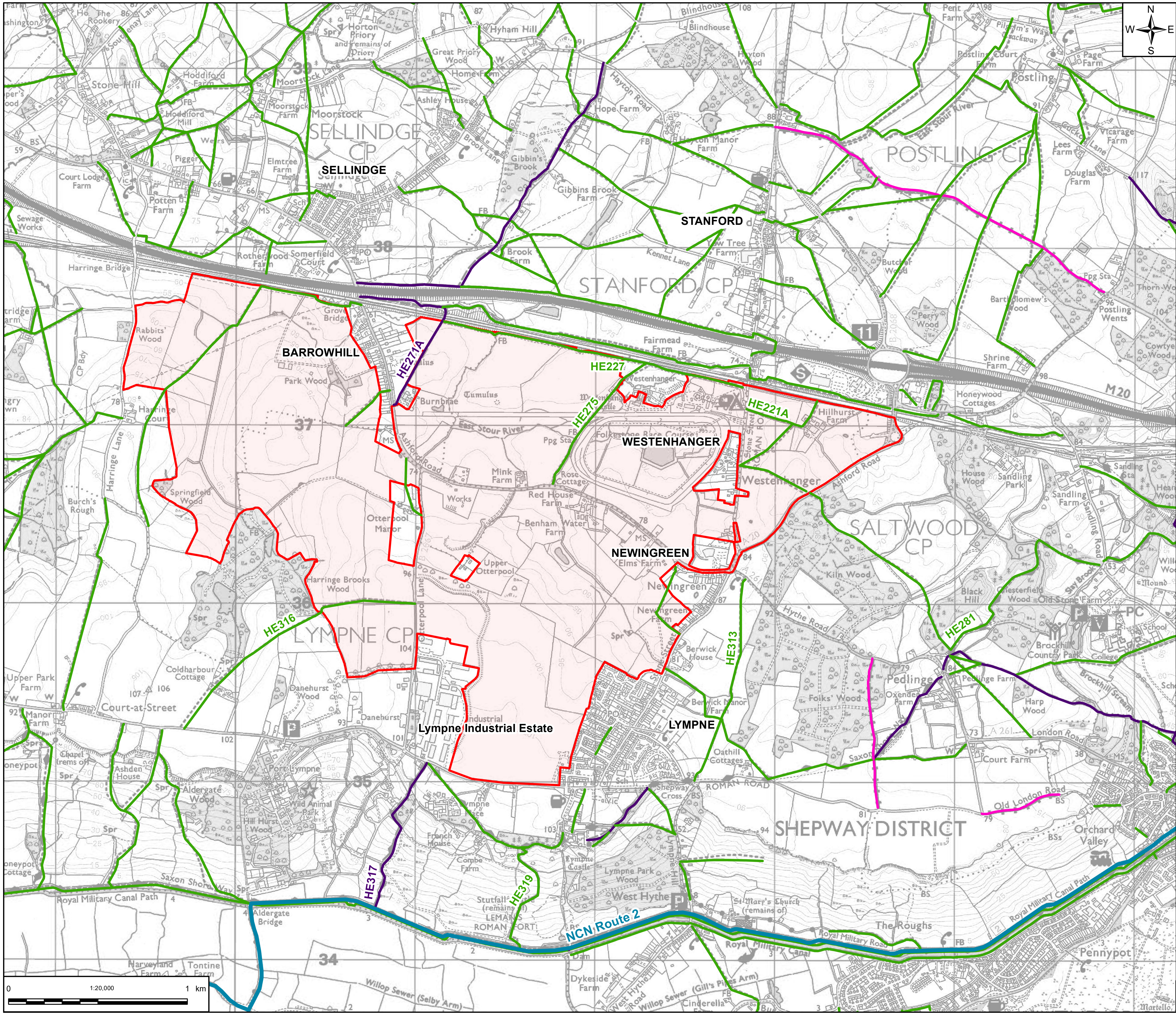
Figure Number 1
HIGHWAY ASSESSMENT STUDY AREA

scale	original size	datum	grid
1: 70,000	A3	Sx	BNG



Legend

Site Boundary

CYCLE ROUTES

National Cycle Network Route

PUBLIC RIGHTS OF WAY

Byway Open to All

Public Bridleway

Public Footpath

Layer Credits: Contains Ordnance Survey data © Crown copyright 2018 OS 0100031673

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Figure Number 2
LOCAL WALKING AND CYCLING NETWORKS

scale	original size	datum	grid
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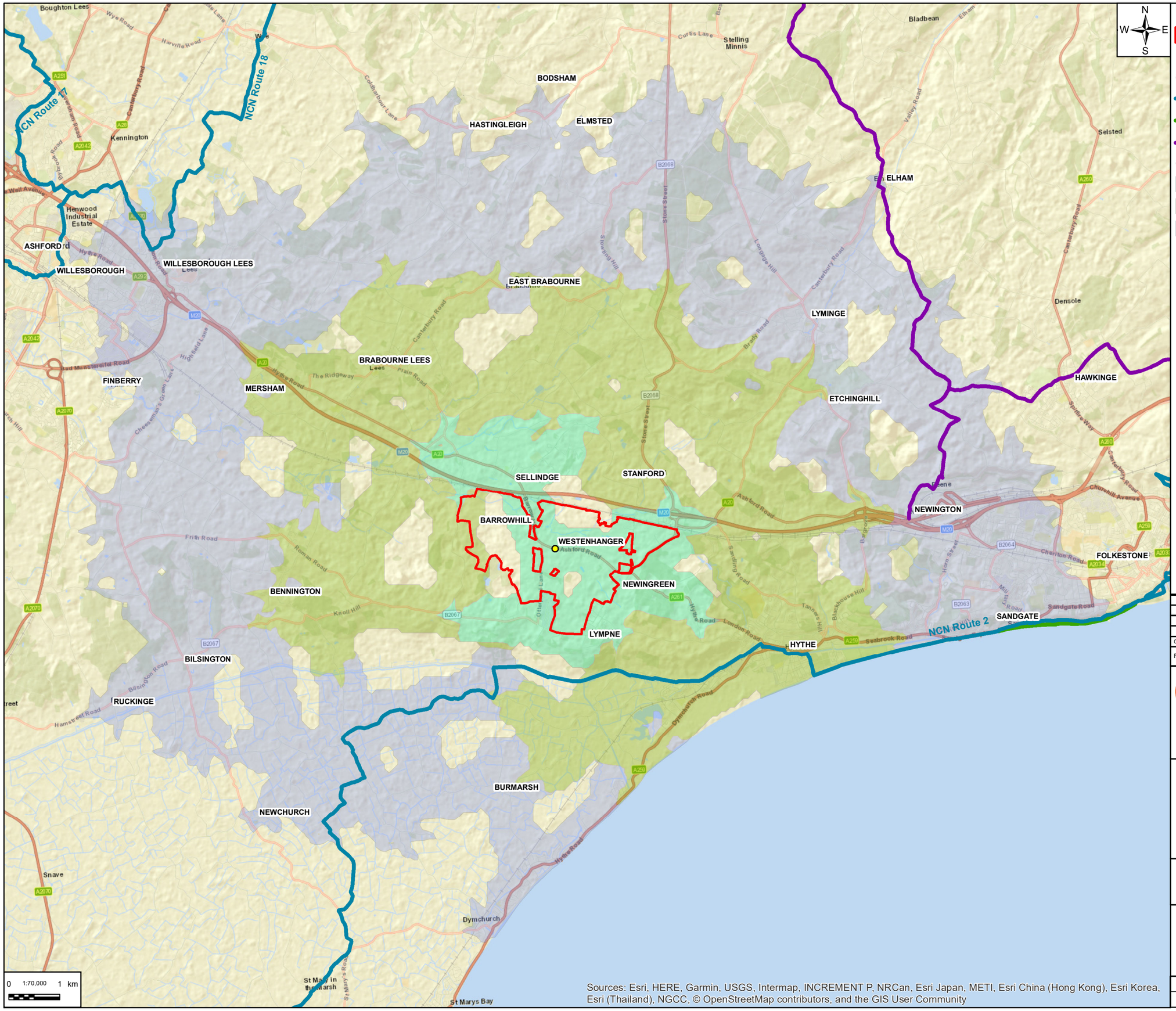

N
W E
S

Legend

- Site Boundary
- Node

CYCLE ROUTES

- National Cycle Network Route
- National Cycle Network Link
- Regional Route

CYCLING JOURNEY TIME

- 15 mins
- 30 mins
- 45 mins

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Figure Number 3
EXISTING STRATEGIC CYCLE ROUTE MAP AND CYCLE ISOCHRONES

scale	original size	datum	grid
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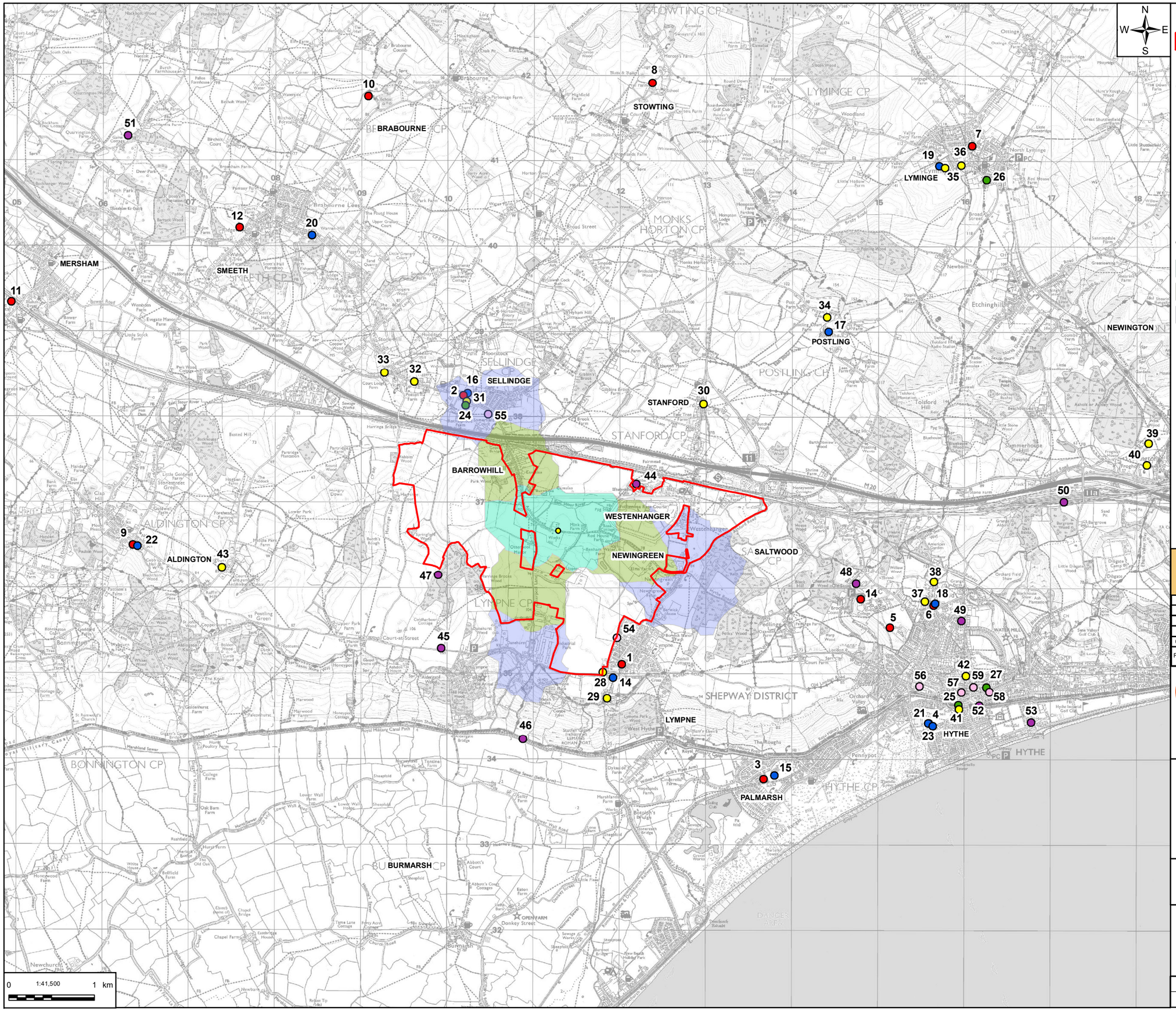

Legend

- Site Boundary
- Node

COMMUNITY FACILITIES

- Education
- Child Care Facilities
- Health Services
- Community Facilities
- Sports and Recreation
- Retail

WALKING JOURNEY TIME

- 10 mins
- 20 mins
- 30 mins

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Figure Number 4
EXISTING LOCAL AMENITIES AND WALKING ISOCHRONES

scale	original size	datum	grid
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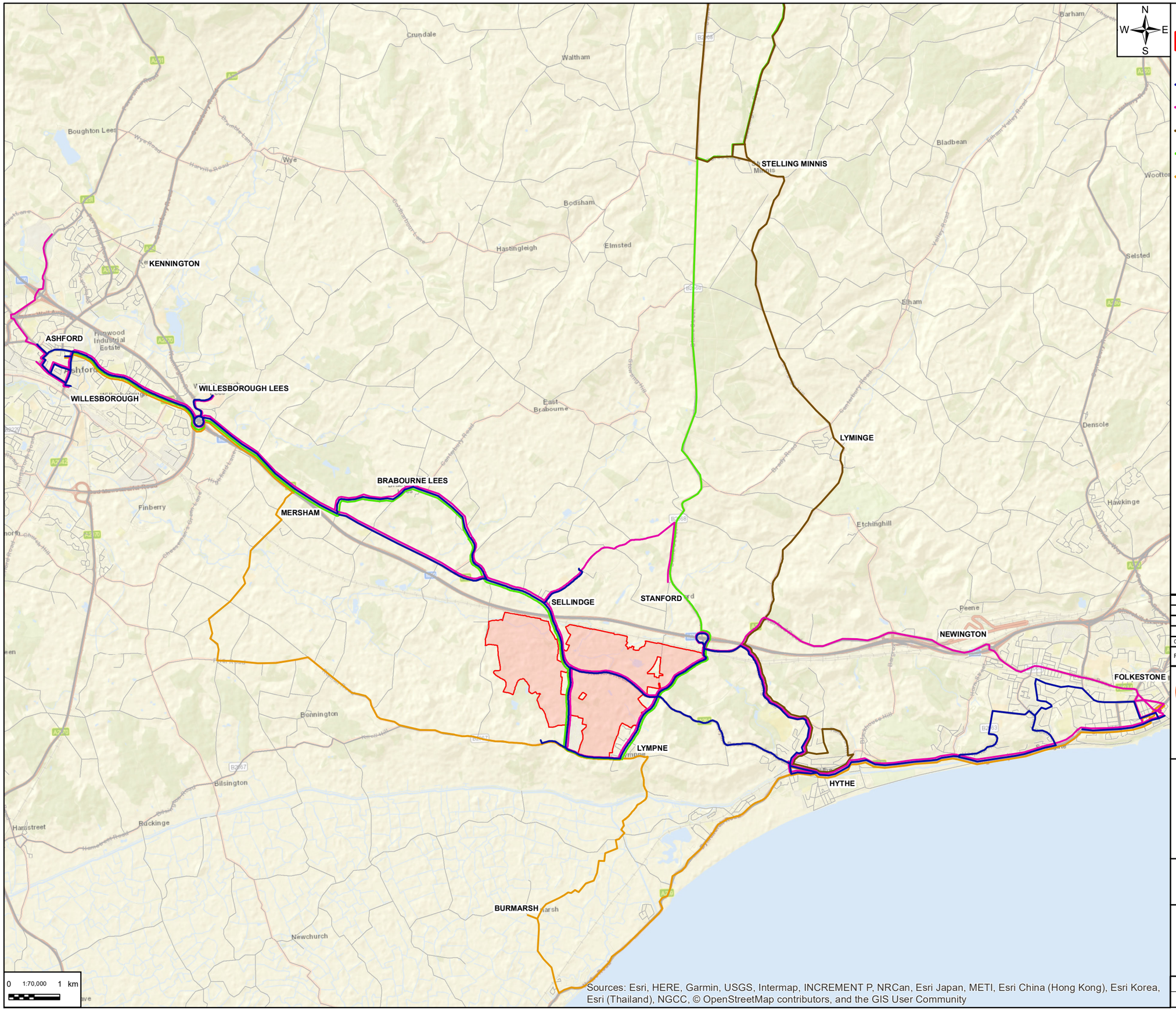

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Figure Number 5
STRATEGIC PLAN OF BUS SERVICE ROUTES

scale	original size	datum	grid
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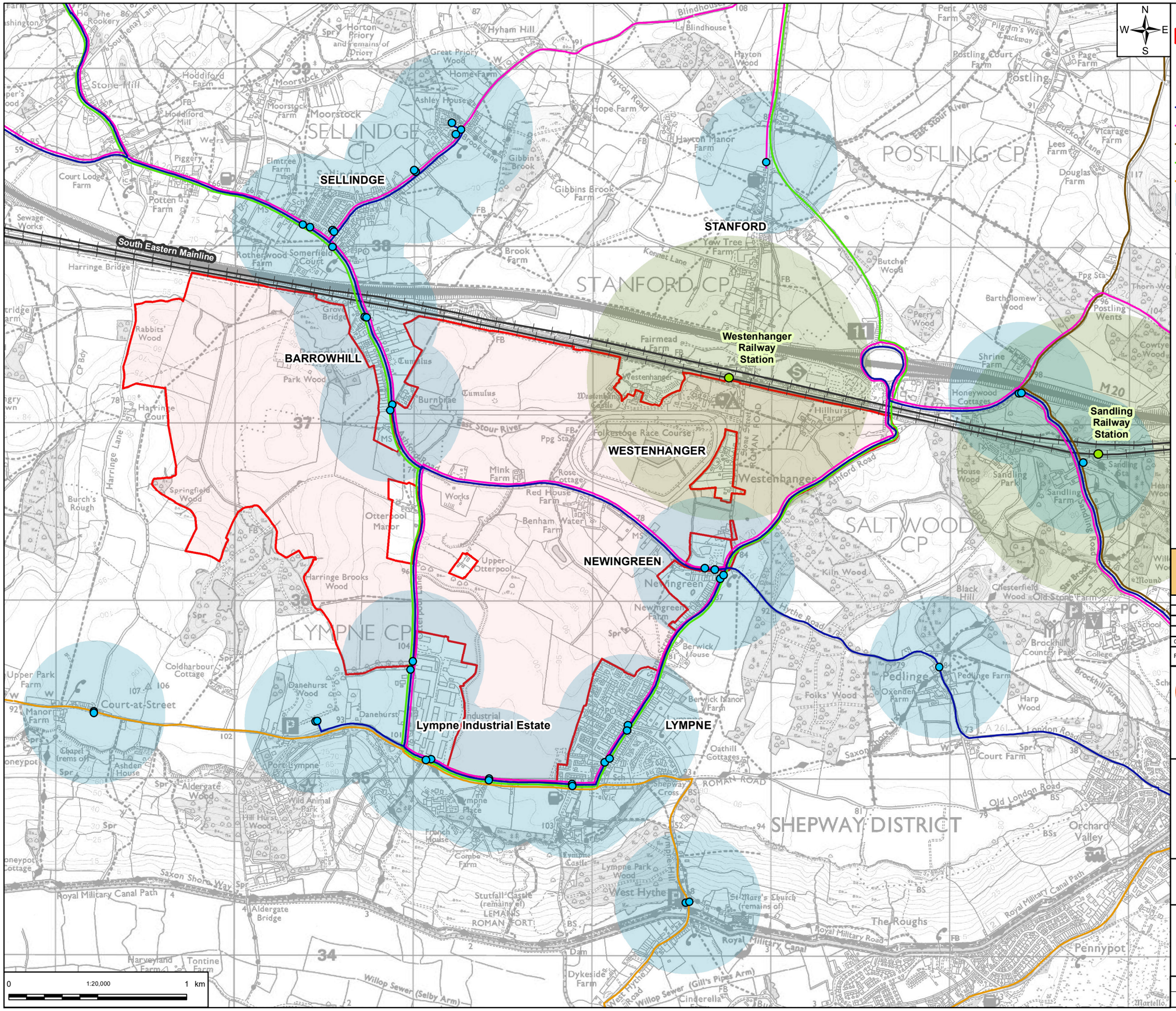

Legend

- Site Boundary

BUS

- Bus Stop

Bus Services :

- 10
- 10A
- 18
- 18A
- 111
- 400m Walking Distance

RAIL

- Railway Station
- Railway Line
- 800m Walking Distance

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Figure Number 6
LOCAL PUBLIC TRANSPORT SERVICE ROUTES, STOPS/STATIONS AND WALK ISOCHRONES

scale	original size	datum	grid
1: 20,000	A3	Sx	BNG

Legend

- Site Boundary
- Motorway
- A Road
- B Road
- Minor Road

REV	Date	Description	Drawn	Check	Approv
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Figure Number 7
LOCAL HIGHWAY NETWORK

scale	original size	datum	grid
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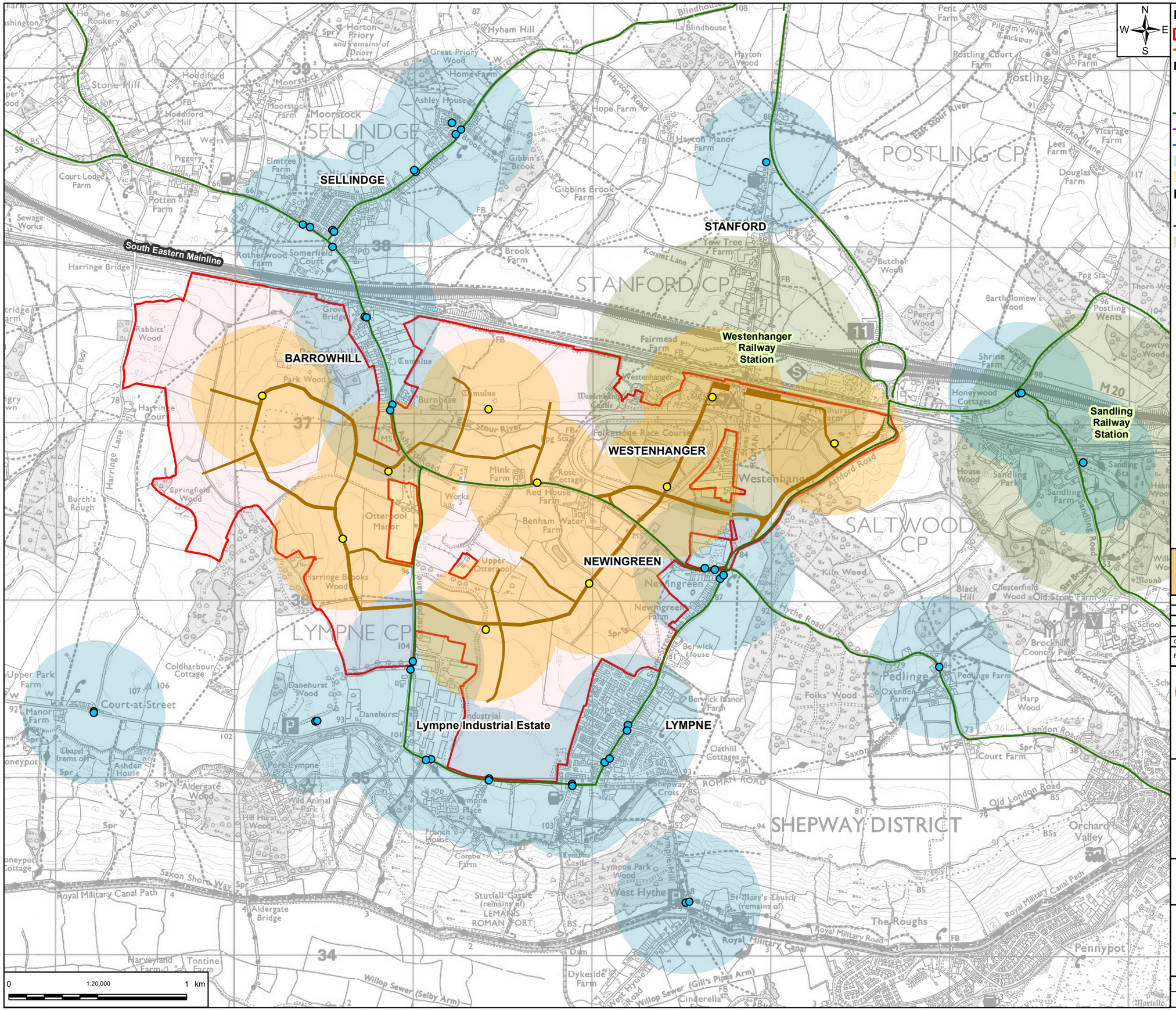

Legend

- Site Boundary
- Indicative Primary Roads

BUS

- Bus Stop
- Proposed Bus Stops
- Existing Bus Routes 10, 10A, 18A
- Proposed Route A
- Proposed Route B
- 400m Walking Distance
- 400m Walking Distance (Proposed Bus Stops)

RAIL

- Railway Station
- Railway Line
- 800m Walking Distance

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Figure Number 8
EXISTING AND PROPOSED BUS STOPS AND ROUTES

scale	original size	datum	grid
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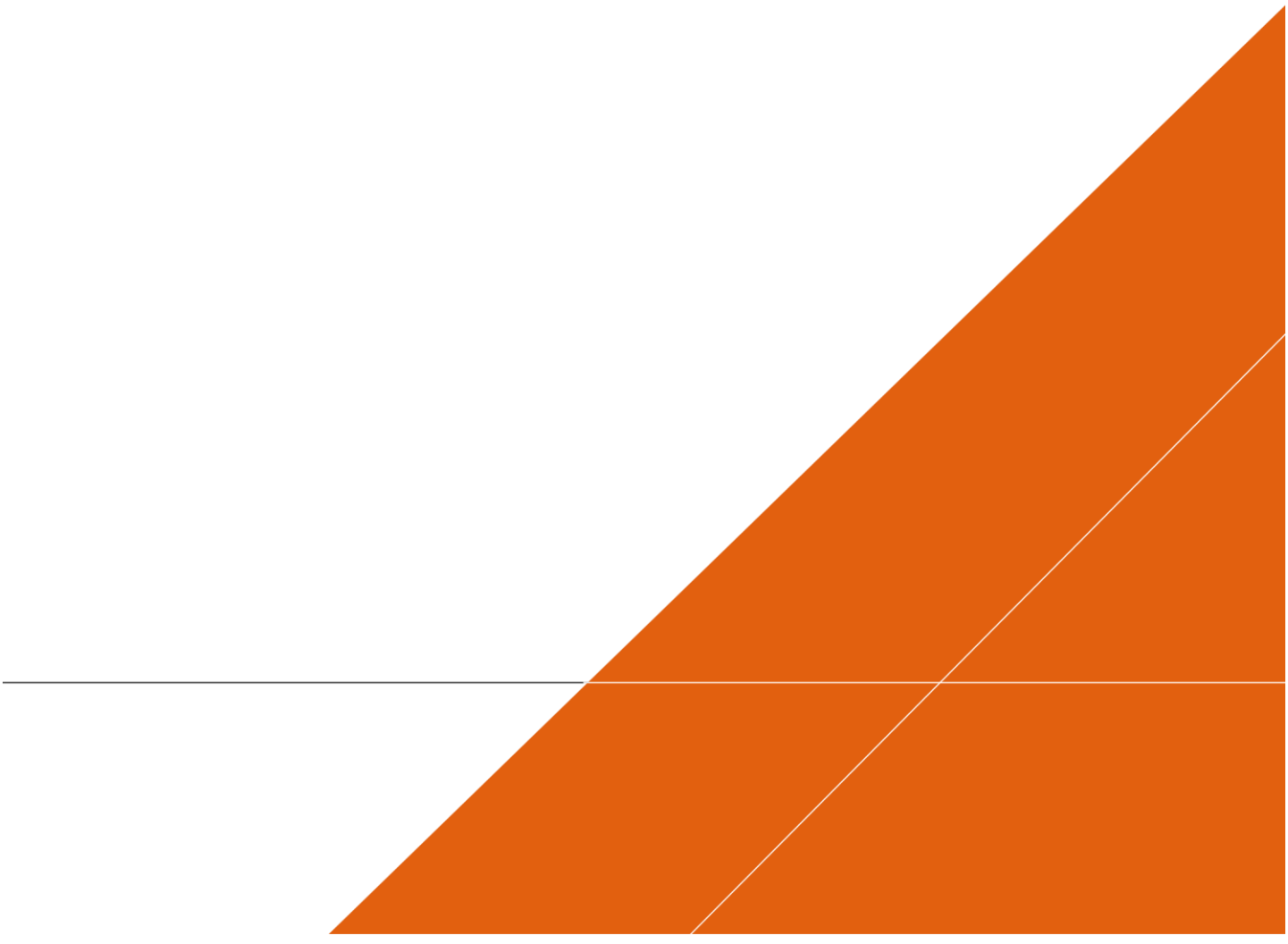
Transport Assessment Appendices

NOVEMBER 2018



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