OTTERPOOL PARK

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ENVIRONMENTAL STATEMENT

OP5 CHAPTER 15 - **SURFACE WATER RESOURCES AND FLOOD RISK**

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OTTERPOOL PARK

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MARCH 2022

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15 Surface Water Resources and Flood Risk

15.1 Introduction

15.1.1 This chapter of the ES assesses the impact of construction and operation of the proposed Development with respect to surface water resources and flood risk.

15.1.2 This chapter should be read in conjunction with Chapters 1- 4 (the introductory chapters), Chapter 7: Biodiversity and Chapter 10: Geology, Hydrogeology and Land Quality.

15.1.3 It has also been prepared alongside and informed by ES Appendix 15.1: Flood Risk Assessment and Surface Water Drainage Strategy (FRA and SWDS), ES Appendix 15.2: Water Cycle Study (WCS), ES Appendix 15.3: Water Framework Directive Screening Report and ES Appendix 15.4 which includes Figure 15.1.

Relevant Aspects of the Proposed Development

15.1.4 A full description of the proposed Development is given in Chapter 4: The Site and the Proposed Development. Aspects that are of particular relevance to this assessment include proposals for the supply of clean (potable) water and the management of wastewater generated from the Development. Given the large scale of the Development and that its location is within an area defined by the Environment Agency as ‘water stressed’, a sustainable solution to water demand management, supply and wastewater disposal is critical and are considered in this assessment.

15.1.5 Measures to safeguard the water quality of local features are necessary with the aim of contributing towards the objectives of key legislation, such as the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019, which replaces the Water Framework Directive following the UKs exit from the EU.

15.1.6 Management of the effects of the proposed Development on the existing land drainage and watercourse flow regimes is another key aspect in terms of ensuring that there is no detriment to flood risk on or off-site.

15.2 Assessment Methodology

Legislation, Policy and Guidance

Legislation

15.2.1 This impact assessment has been undertaken in accordance with current legislation specific to the surface water environment, a summary of which is provided below.

15.2.2 Directive 2000/60/EC of the European Parliament (the Water Framework Directive) (European Parliament and Council, 2000) introduced a single system of water management across the European Union (EU), which is based on the principle of river basin management. In order to achieve the Directive's objectives Member States are required to identify 'River Basin Districts' (RBDs) and produce 'River Basin Management Plans' (RBMPs) for each of the respective RBDs.

15.2.3 The Water Environment (Water Framework Directive [WFD]) (England and Wales) Regulations 2003 implemented the WFD in England and Wales and were amended by the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019. The 2019 Regulations, specifically Regulation 20, stipulate that the substance of the WFD regime that applied pre-EU Exit will continue to apply with only relatively minor amendments. The Regulations identify the RBDs and the processes that the responsible authorities for the implementation of the Directive should follow in order to: produce the necessary RBMPs; identify bodies of water within each RBD that are

used, or intended to be used, for the abstraction of drinking water; and produce a register of 'protected areas' within each RBD.

15.2.4 Part 5 of the Environment Act 2021 (HMSO, 2021), brings together measures to strengthen and update the existing regulatory and long-term planning framework for water, helping to reduce environmental risks, including to water quality and land drainage. It also strengthens the regulation of water and sewerage undertakers by the newly established Office for Environmental Protection.

15.2.5 The Water Resources Act 1991 (Ref 15.16), as amended, sets out the regulatory regime under which water abstraction and impounding is licensed by the Environment Agency (EA).

15.2.6 The Pollution Prevention and Control Act 1999 (Ref 15.17) provides for a unified system of environmental permitting. Within this the Environmental Permitting (England and Wales) Regulations 2016 (as amended) (Ref 15.20) provide the permitting regime that encompasses water discharge activities, groundwater activities, waste management activities and some activities associated with mines and quarries, including waste mining operations. An environmental permit is required for specified activities. Certain activities may benefit from an exemption from the environmental permitting regime, provided that they fulfil the conditions set by the EA.

15.2.7 The Land Drainage Act 1991 (Ref 15.15) together with the Water Resources Act 1991 provide for the EA to prevent the obstruction of any main river through the construction of flow control structures, culverts or any other structure in a main river. Where culverting or other works have a potential to affect the flow regime on ordinary watercourses, consent is required from the Lead Local Flood Authority (LLFA) under the Flood and Water Management Act 2010 (Ref 15.19), which provides better, more comprehensive management of flood risk for people, homes and businesses.

Policy

15.2.8 The assessment has considered the National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2021) The NPPF sets out Government policy on development and flood risk. Its aims are to ensure that flood risk is taken into account at all stages of the planning process, to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. Where new development is exceptionally necessary in such areas, policy aims to make it safe, without increasing flood risk elsewhere, and, where possible, reducing flood risk overall. Where water quality has the potential to be a significant planning concern, the Framework also specifies that detailed assessment would be expected to demonstrate avoidance of harm to waterbodies and compliance with other regulatory requirements relating to the water environment. The NPPF also advocates early engagement with relevant water and sewerage companies, as appropriate, to establish whether particular water and wastewater issues need to be considered.

15.2.9 The assessment also considers those relevant policies of the Folkestone & Hythe Places and Policies Local Plan (2020) and Folkestone & Hythe District Council Core Strategy Review (2022), in addition to the Kent Areas of Outstanding Natural Beauty (AONB) Landscape Design Handbook (2006) and the Kent County Council drainage and planning policy statement. These have been summarised within Table15-1, along with NPPF relevant policy paragraphs.

Table15-1:Summary of Relevant Adopted Policies

Document	Policy	Summary of Requirements	Project Response
National Planning Policy Framework (2021)	Paragraphs 153 and 154	Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures or making provision for the possible future relocation of vulnerable development and infrastructure. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaption measures, including through the planning of green infrastructure.	The assessment has considered future changes to the water environment and the proposed Development design incorporates climate change resilience measures and blue-green infrastructure as detailed in Section 15.4: Design and Mitigation and ES Appendix 15.1.
	Paragraph 162	New development should be steered to areas with the lowest risk of flooding from any source. Development should not be permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment (SFRA) (Application Ref.: 3.28) will provide the basis for applying this Sequential Test.	The vast majority of the proposed development site is located in Flood Zone 1 and a site specific Flood Risk Assessment and Surface Water Drainage Strategy (FRA and SWDS) (ES Appendix 15.1), has been prepared, demonstrating that there is a low risk of flooding from all potential sources.
	Paragraph 167	Where appropriate, applications for development should be submitted with a site-specific flood risk assessment, including all development in Flood Zones 2 and 3, and in Flood Zone 1 sites of 1 hectare or more; land having critical drainage problems or that may be subject to other sources of flooding or land identified in a SFRA as being at increased flood risk in the future. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exceptions tests, as applicable) it can be demonstrated that: Within the site, the most vulnerable development is located in areas of lowest flood risk The development is appropriately flood resistant and resilient	A FRA and SWDS has been undertaken and is provided in ES Appendix 15.1. Sustainable Drainage Systems (SuDS) have been incorporated into the design of blue-green infrastructure spaces, as noted in Section 15.4: Design and Mitigation.

Document	Policy	Summary of Requirements	Project Response
		It incorporates sustainable drainage systems Any residual risk can be safely managed Safe access and escape routes are included where appropriate, as part of an agreed emergency plan.	
	Paragraph 174	Planning policies and decisions should contribute to and enhance the natural and local environment by: Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability. Development should, where possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as River Basin Management Plans.	A WFD Screening assessment has been undertaken (provided in ES Appendix 15.3), which is informed by the South East River Basin Management Plan. Design and mitigation measures to prevent deterioration of water quality, including the promotion of SuDS, are outlined in Section 15.4 Design and Mitigation.
A Green Future: Our 25 Year Plan to Improve the Environment (2019)	Section 1: Using and managing land sustainably	Key goals are stated as: Reducing risks from flooding and coastal erosion Expanding the use of natural flood management solutions Putting in place more sustainable drainage systems Making 'at risk' properties less vulnerable to flooding	SuDS have been incorporated into the design of blue-green infrastructure spaces, as noted in Section 15.4: Design and Mitigation.
Folkestone & Hythe Places and Policies Local Plan (2020)	Policy NE2 (Biodiversity)	The Council will support development that incorporates features that enhance biodiversity as part of good design and sustainable development. Where an impact cannot be avoided or mitigated (including post-development management and monitoring), compensatory measures will be sought.	Design and mitigation measures to prevent deterioration of water quality, protecting aquatic biodiversity, including the promotion of SuDS have been outlined in Section 15.4 Design and Mitigation.
	Policy CC3 (Sustainable Drainage Systems)	Development will be permitted where surface water is managed close to its source and on the surface where reasonably practicable to do so. The policy also advocates water reuse, where practicable, and offsetting potable water demand, and encourages a water-sensitive approach to the design development. The policy also states that developments should include features that manage surface water, commensurate with the design of the	The proposed Surface Water Drainage Strategy, that forms ES Appendix 15.1, addresses the impact of the proposed Development on the surrounding water environment. Section 15.4 identifies Design and Mitigation Measures to prevent adverse impacts on the water environment, including the promotion of

Document	Policy	Summary of Requirements	Project Response
		development in terms of size, form and materials and which make an active contribution to place-making. Surface water management features should be multi-functional wherever possible in their land use and development adjacent to a water body should actively seek to enhance the water body in terms of its hydromorphology, biodiversity potential and setting.	SuDS techniques to enhance water quality. The impact of the proposed Development on water resources has been addressed within the Water Cycle Study, provided in ES Appendix 15.2. Water efficiency measures are included within the proposed Development design, as described in Section 15.4.
Folkestone & Hythe District Council Core Strategy Review (2022)	Policy SS7 (New Garden Settlement – Place Shaping Principles)	1b. A green and blue infrastructure strategy shall be developed that enhances existing green and blue infrastructure assets in accordance with policy CSD4. Additionally, the strategy shall deliver: vii. Sustainable drainage systems (SuDS) to maximise landscape and biodiversity values and to avoid any increase in, and where possible reduce downstream flooding of the East Stour River, developed as part of an integrated water management solution.	Green and blue infrastructure, including a range of SuDS, have been incorporated into the design, as outlined the Surface Water Drainage Strategy in ES Appendix 15.1.
	Policy SS8 (New Garden Settlement – Sustainability and Healthy New Town Principles)	1b) All new build housing shall be built to water efficiency standards that exceed the current building regulations so as to achieve a maximum use of 110 litres per person per day of potable water (including external water use). The development shall be informed by a Water Cycle Strategy which includes detail of: i. Water efficiency, and demand management measures to be implemented to minimise water use and maximise the recycling and reuse of water resources (i.e. through the use of 'grey' water) across the settlement, utilising integrated water management solutions; ii. The need to maintain the integrity of water quality, how it will be protected and improved, and how the development complies with the Water Framework Directive; iii. Surface water management measures to avoid increasing, and where possible to reduce, flood risk through the use of Sustainable Drainage Systems (SuDS); and iv. Water services infrastructure requirements and their delivery having regard to Policy CSD5, and as agreed	A Water Cycle Study has been prepared that includes the required details - see ES Appendix 15.2.

Document	Policy	Summary of Requirements	Project Response
		with the relevant statutory providers, and the EA guidance on Water Cycle Studies.	
	Policy CSD5 (Water and Coastal Environmental Management)	Development should contribute to sustainable water resource management which maintains or improves the quality and quantity of surface and ground water bodies, and where applicable, the quality of the coastal environment and bathing waters. Amongst other matters, the draft policy states that new buildings and dwellings must be delivered in line with wastewater capacity and designed so as to ensure that peak rate of surface water runoff from the site is not increased above the existing surface water runoff rate, incorporating appropriate SuDS and water management features, with full consideration given to integration of water management. The quality of water passed on to watercourses and the sea must be maintained or improved, and flood risk must not be increased by developments within the district.	Waste water and surface water management proposals are detailed in Appendices 15.1 and 15.2.
The Kent Downs AONB Landscape Design Handbook (2006)	New Built Development	Seek to retain key landscape features on development sites – such as woodland, shaws (narrow belts of woodland), hedgerows, orchards, mature trees, watercourses and ponds as a basis for the new landscape structure and setting of the site.	Green and blue infrastructure have been incorporated into the design, as outlined the Surface Water Drainage Strategy in ES Appendix 15.1.
Kent County Council Drainage and Planning Policy Statement (2019)	Kent County Council SuDS Policies 1 to 9	Given the range of design options to provide a drainage solution, KCC has defined: Drainage Policies (SuDS Policy 1 through 6) that set out the requirements for a drainage strategy to be compliant with the NPPF and guidance within the Non-Statutory Technical Standards for Sustainable Drainage. Environment Policies (SuDS Policy 7 through 9) that set out expectations to be considered within a drainage strategy in response to environmental legislation and guidance that KCC and the Local Planning Authorities have a duty to comply with.	These policy requirements are addressed within the FRA and SWDS in ES Appendix 15.1 and the Water Cycle Study, in ES Appendix 15.2.

Guidance

15.2.10 A number of standards and non-statutory guidelines, which provide details of assessment methodologies and mitigation techniques, have been used to inform the assessment, including:

- Construction Industry Research and Information Association (CIRIA), 2001.C532 Control of Water Pollution from Construction Sites
- Mustow et al., 2005. The Practical Methodology for Determining the Significance of Impacts on the Water Environment
- British Standards Institute, 2009. Code of Practice for Earthworks (BS6031);
- Highways England, 2020. Design Manual for Roads and Bridges (DMRB) LA113 (Road Drainage and Water Environment – Revision 1) (Formerly HD 45/09)
- Ministry of Housing Communities and Local Government, 2021. Flood Risk and Coastal Change Planning Practice Guidance
- Ministry of Housing Communities and Local Government, 2019. Water Supply, Wastewater and Water Quality Planning Practice Guidance
- CIRIA, 2015. C650 Environmental Good Practice on Site
- EA, 2021. Flood Risk Assessments: climate change allowances;
- Lead Local Flood Authorities of the South East of England, 2017. Water People Places: A guide for master planning sustainable drainage into developments; and
- DEFRA, 2015. Non-statutory technical standards for sustainable drainage systems.

Consultation and Scoping

Consultation

15.2.11 Table 15-2 provides a summary of the consultation undertaken for this chapter prior to and following the submission of the 2019 application (Y19/0257/ FH). The table summarises how the comments have been addressed in this chapter, where relevant.

15.2.12 Further details of extensive consultation being undertaken during the preparation of FRA and SWDS and WCS reports, which informed this chapter, can be found in ES Appendices 15.1 and 15.2.

Table 15-2: Summary of Consultation

Consultee/Contact	Date	Summary of Consultee Issue	Outcome
-	***Consultations during 2018***	-	-
Kent County Council (KCC)/ Water Resources	01/08/2018	Drafts of the WCS and FRA reports were sent to the Consultee in July 2018 and the following has been highlighted: Water has been identified as a key defining feature for the proposed Development and this should be reflected in the WCS Report. An integrated approach which considers the more severe flood events downstream needs to be of high priority.	Meetings were held with KCC, EA and FHDC (9th and 20th August 2018) to discuss the key points raised and agree the way forward. The FRA and SWDS (ES Appendix 15.1) and WCS (ES Appendix 15.2) reports submitted previously have been updated to address key issues and to reflect the

Consultee/Contact	Date	Summary of Consultee Issue	Outcome
Kent County Council (KCC)/ Flood and Water Management		The level of detail which has been presented to define amounts of space that need to be allocated per development parcel is appreciated. In general, the approach would seem sensible, but the presentation of the analysis is slightly confusing. Final discharge points to the Stour need to be identified and need further discussion. There will need to be a pre-development scenario against which future development is measured/assessed. This needs to be summarised within the FRA.	current planning application.
Environment Agency (EA)/ KSL Planning	06/08/2018	Drafts of the WCS, and FRA reports were sent to the Consultee in July 2018 and the following has been highlighted: From a water quality perspective, the proposals seem acceptable. The preferred eventual sewage disposal options stated are well reasoned. A whole-site solution to sewerage provision, delivered in an appropriately phased manner, needs to be directly referred to. It may be appropriate to have a condition that seeks to address timely sewage infrastructure provision. The practicalities and costs of using reclaimed water for non-potable use requires discussion. Whilst we are generally content with the content and recommendations of the submitted overarching draft Flood Risk Assessment/Drainage strategy, we would welcome the opportunity to be involved in the formulation of the flood risk management and surface water strategies associated with the individual parcels and phases. The increased fluvial flow in particular should be analysed in more detail, particularly in relation to the bridge crossings of the East Stour, location of attenuation features, invert levels and functionality of any outfalls and set-back from the river. The future functionality of the Aldington Flood Storage Area should also be a key consideration.	Meetings were held with KCC, EA and FHDC (9th and 20th August 2018) to discuss the key points raised and agree the way forward. The FRA and SWDS (ES Appendix 15.1) and WCS (ES Appendix 15.2) reports submitted previously have been updated to address key issues and to reflect the current planning application It was agreed during the meeting held on 20th August 2018 that detailed fluvial hydraulic modelling is not required for the Outline Planning Application as the proposed surface water strategy is robust and will reduce peak runoff rates to less than the greenfield rates for extreme events (e.g. 3.33% AEP and 1% AEP). Detailed modelling can be undertaken if required to inform the detailed WCS prior to development commencement, as part of the consideration of reserved matters applications.
Southern Water Plc.	03/08/2018	Infrastructure to supply the site with water and to treat wastewater is sufficient for the proposed Development.	A Water Cycle Study, is provided in ES Appendix 15.2 detailing proposals for water supply and

Consultee/Contact	Date	Summary of Consultee Issue	Outcome
		Drafts of the WCS and FRA reports were sent to the Consultee in July 2018 and the following has been highlighted: Clarification is required on the proposed actual per capita consumption. The possibility of returning effluent from Sellindge WwTW back to Otterpool for various uses needs to be covered. Clarification is required regarding the overall impact on peak flows from the Otterpool SuDS Strategy and the WwTW discharge.	wastewater management. Meetings were held with Southern Water (on 15th and 21st August 2018) to discuss these comments and other stakeholder comments related to onsite and offsite wastewater infrastructure provision. The FRA and SWDS (ES Appendix 15.1) and WCS (ES Appendix 15.2) reports have been updated to address the key issues. Southern Water agreed to draw up a letter of confirmation for providing the necessary infrastructure to serve the proposed Otterpool development, including outline detail of how this would be achieved. This letter has been provided and included with the previously submitted report with the current planning application.
Folkestone and Hythe District Council (FHDC)/ Planning	07/08/2018	Drafts of the WCS and FRA reports were sent to the Consultees in July 2018 and the following has been highlighted: The purpose and role of the WCS needs to be clear. The project needs to be put in the context of the wider sub-region/catchment, with particular reference to downstream impacts. As noted by the Place Panel, water could be a defining feature of the Garden Town. The LPA is generally encouraged by the potential scope for innovation which it would like to see explored further and secured through a forthcoming planning application.	Meetings were held with KCC, EA and FHDC (9th and 20th August 2018) to discuss the key points raised and agree the way forward. The FRA and SWDS (ES Appendix 15.1) and WCS (ES Appendix 15.2) reports submitted previously have been updated to address the key issues and to reflect in the previously submitted versions with the current planning application.
Ashford Borough Council (ABC)	18/10/2018	Meeting was held with Ashford Water Group to discuss the latest water and wastewater proposals and no major concerns were raised.	The previously submitted versions of FRA and SWDS (ES Appendix 15.1) and WCS (ES Appendix 15.2) reports have been

Consultee/Contact	Date	Summary of Consultee Issue	Outcome
			updated to reflect the current water supply and wastewater proposals.
-	***Consultations since 2019***	***This mainly includes addressing the following LPA and key consultee comments to the previously submitted Outline Planning Application Otterpool Park (Y19/2057/FH)***	-
Temple on behalf of FHDC	16/04/2019	Clarify whether there are any designated sites within the vicinity of the proposed Development. Confirm that the mitigation outlined will be secured as embedded design measures to facilitate the residual assessment approach as the main approach to the assessment and clarify if there are any adverse effects anticipated should mitigation measures not be secured.	Clarification has been provided in Section 15.3, with further detail in Chapter 7: Biodiversity. Additional explanation with regard to the assessment approach has been provided in Section 15.4. This section also included information of anticipated adverse effects in the absence of the mitigation measures proposed.
Kent County Council (KCC)/ Flood and Water Management	**11/07/2019**	The Flood Risk Assessment and Drainage Strategy submitted to support this development application demonstrates how surface water will be managed within the scale of development. It is proposed that surface water will discharge from the site at rates not to exceed greenfield runoff rates. It is agreed that this is an appropriate approach to ensure flood risk is managed. This states principles which need to be assessed as further detail design is undertaken for the next stages of planning. It is particularly important as noted within the FRA that downstream flood volumes on the East Stour River are not increased. The development proposal identifies areas where infiltration can be utilised, and these opportunities should be maximised within detailed design. Re-use of surface water provides additional benefit in management of surface water volumes and reduction of potential flood risk downstream of the proposed development, though this is discussed, further detail should be provided to KCC as Lead Local Flood Authority.	An initial meeting was held with F&HDC and KCC to discuss and agree the scope for updating WCS (ES Appendix 15.2) and FRA and SWDS (ES Appendix 15.1) for Tier 1. This was followed by two technical workshops on 29/05/2020 and 14/10/2020 to update progress and discuss discharge permitting, flood risk modelling and all key elements of the WCS and FRA and SWDS updates for Tier 1. The drafts of the WCS, FRA and WFD reports were also sent to the consultee in April 2021, followed by a meeting on 27th April 2021. Therefore, this issue has been addressed within the updated WCS (ES Appendix 15.2) and FRA and SWDS (ES

Consultee/Contact	Date	Summary of Consultee Issue	Outcome
			Appendix 15.1). Further detail on the surface water reuse proposals and associated flood risk benefits will be provided during Tier 2 and Tier 3.
Folkestone & Hythe District Council (FHDC)/ Planning	11/07/2019	The scale of a new settlement creates a unique opportunity for a step change in the provision of water supply, wastewater treatment and water infrastructure. Several recommendations were also made by the LPA in relation to the Flood Risk Assessment, Drainage Strategy and relevant chapters of the Environmental Statement (i.e. based on an independent review undertaken by their consultant, Herringtons Consultants) to address Sequential Test, groundwater flood risk from extra SuDS infiltration, climate change flood modelling/mitigation proposals and further information on surface drainage proposals.	An initial meeting was held with FHDC and KCC to discuss and agree the scope for updating the WCS (ES Appendix 15.2) and FRA and SWDS (ES Appendix 15.1) for Tier 1. This was followed by two technical workshops on 29/05/2020 and 14/10/2020 to update progress and discuss discharge permitting, flood risk modelling and all key elements of the WCS (ES Appendix 15.2) and FRA and SWDS (ES Appendix 15.1) updates for Tier 1. The drafts of the WCS, FRA and WFD reports were also sent to the Consultee in April 2021, followed by a meeting on 27th April 2021. Therefore, the key issues have been addressed within the updated WCS (ES Appendix 15.2) and FRA and SWDS (ES Appendix 15.1). Further detail on the surface water reuse proposals and associated flood risk benefits will be provided during Tier 2 and Tier 3.
Environment Agency (EA)/ KSL Planning	04/11/2020	**Agenda Item 5 of Workshop (Integrated Surface Water Management and Water Efficiency Strategy)** The extra supply for rainwater reuse via the lake or from SuDS would need abstraction licences for any volume above 20m^3/day. 90l/p/d can be achieved – this has been shown in smaller developments – but it is not clear if the LPA has the means of requiring this of a developer	The drafts of the updated WCS, FRA and WFD reports were sent to the EA and other key consultees in April 2021, followed by a meeting on 27th April 2021. Therefore, the relevant points have been addressed within the updated FRA and SWDS (ES Appendix 15.1), WCS (ES

Consultee/Contact	Date	Summary of Consultee Issue	Outcome
		under the current Building Regulations. Rainwater harvesting on individual sites would not require an abstraction licence. **Bridge Designs** The bridge designs are certainly much improved now compared to the initial plans It would, however, be good to understand that the principles in them are acceptable to the project sponsors and their proposed locations are correct before we are asked to do any more work on them. **Nutrient Neutrality** Is it correct to assume that all wetland options presented by Arcadis are proposed as “end of pipe” wetlands and not part of the “permitted” wastewater treatment? The permit limits will therefore be applied to the discharge prior to the wetland inlet with the wetland providing additional treatment beyond that which is stipulated on the discharge permit. In effect, the wetlands will be part of the measures to comply with Nutrient Neutrality requirements and not part of the wastewater treatment operations to achieve permitted discharge limits. **Effluent discharge** We note that you are pursuing Nutrient Neutrality however Health & Safety factor needs to also be taken into consideration that is associated with the wetland that is proposed to polish final effluent. **Flood risk** The aim here is to assess the possible circumstances that could cause flooding to be significantly more severe than the modelled best estimate. Adjusted parameters should include: model inflows; downstream boundary condition; channel and floodplain roughness; key structure coefficients. Reflect uncertainties, possible changes due to climate change and variations in hydraulic coefficients (for example from seasonal changes or	Appendix 15.2) and WFD Screening Assessment (ES Appendix 15.3). Further detail on the surface water reuse proposals and associated flood risk benefits will be provided during Tier 2 and Tier 3.

Consultee/Contact	Date	Summary of Consultee Issue	Outcome
		periodic maintenance) in the range of parameters used in sensitivity tests. We have no known issues with the Sellindge River Level gauge at Barrow Hill Bridge. We generally do not accept modelling as reason for not undertaking physical mitigation for loss of floodplain capacity. Any loss should be compensated for on a volume-for-volume, level-for-level basis to ensure no exacerbation of flood risk throughout the catchment.	
Environment Agency (EA)	29/04/2021	The WFD assessment covers the potential impacts on WFD well, setting out how it will be ensured that the development will not adversely affect the current classification of WFD waterbodies. Otterpool presents an opportunity to address some of the reasons the East Stour is not achieving Good status. For instance, the culvert removal, constructed wetlands and work on nutrient neutrality, will all have a positive impact.	The positive impacts of the development proposals are reflected in this assessment and reported in Section 15.5.
Environment Agency (EA) KSL Planning	05/10/2021	We are happy with the proposed approach outlined in your email and agree that the latest climate change allowances should now be applied. Provided the applicant adheres to the agreed bridge design of a minimum of a ten metre vegetated buffer zone from the top of the river bank, as well as the one metre wide mammal ledge above predicted flood levels for all planned bridges within this consultation, we have no further comments.	The most recently published advice with regard to climate change allowances (July 2021) have been incorporated into the FRA and SWDS (ES Appendix 15.1) and the proposed new bridge crossing designs adhere to the stipulated requirements.
Environment Agency (EA) KSL Planning		Comments were received on the flood modelling undertaken to inform the FRA. The EA noted their satisfaction with the adopted approach and noted that the updated flood extents produced for the 1% AEP event closely match the EA's Flood Zone 3 mapping within the site boundary and the modelled peak stages correspond closely to the observed levels.	Further information on the modelling and model results is provided in the FRA in ES Appendix 15.1.

Scoping

15.2.13 A previous EIA Scoping Opinion was undertaken for the 2019 application, where relevant, the comments from this process have been incorporated within Table 15-3. For this amended application, a request for a Scoping Opinion was submitted to F&HDC in June 2020. This outlined the work that had been undertaken to date and sets out the proposed approach to the EIA. A Scoping Opinion was issued by F&HDC in July 2020. Table 15-3 provides a summary of the scoping opinion comments relevant to this chapter, and how they have been addressed.

15.2.14 Additionally, a Scoping Addendum was submitted on 5 October 2021 (ES Appendix 2.4) to outline key changes to the application. These comprised additional land in the north-west corner of the site for provision of the waste water treatment works (WWTW), additional land for highway junction works at Newingreen Junction, minor amendments to clarify land ownership boundaries and a change in the assessment approach in relation to the future uses of Westenhanger Castle. A response was received from F&HDC on this Scoping Addendum as set out in Chapter 2: EIA Approach and Methodology. All relevant changes since the submission of the scoping report have been assessed in this ES.

Table 15-3: Summary of EIA Scoping Opinion

Consultee	Summary Scoping Opinion Response	Location in the ES
KCC	The EIA Scoping report identifies potential impacts to the water environment and indicates the opportunities for sustainable drainage measures. The applicant has undertaken consultation with KCC as Lead Local Flood Authority and we have had opportunities to provide input on the content of the FRA, SWDS and WCS. We are satisfied that matters in relation to surface water drainage will be addressed and have no further comments.	Section 15.5 and ES Appendix 15.1 (FRA and SWDS) and 15.2 (WCS).
National Highways	Given the separation of the site from the M20 by the railway line within a cutting, it would seem unlikely that the drainage and flood prevention measures for the development would impact on NH assets. However, we will require the detailed hydrological studies and proposals to confirm this.	Section 15.5 and ES Appendix 15.1 (FRA and SWDS)
Folkestone and Hythe District Council (FHDC)	The general approach, the methodology proposed, and the assessment of the significance of effects is considered acceptable, and the assessment should be undertaken on that basis. The selection criteria and proposed schemes for inclusion in cumulative assessments for water resources are also considered acceptable. It has not yet been decided whether there will be a new on-site Wastewater Treatment Works (WwTW) or whether the existing Sellindge and West Hythe WwTW will be upgraded. The effect of extra effluent discharge to the East Stour and on the marine environment should be assessed according to the worst case scenario, if this decision hasn't been made by planning submission. New development in the Stour Valley catchment has the potential to impact the highly sensitive Stodmarsh designated sites. A nutrient neutrality assessment should be undertaken in line with Natural England guidance, The likely effectiveness of mitigation measures should be made clear, by reporting pre-mitigation and residual effects where appropriate. The means by which mitigation measures are to be	Section 15.5, ES Appendix 15.1 (FRA and SWDS) and ES Appendix 15.2 (WSC). The assessment has followed the approach described in Chapter 2: EIA Approach and Methodology, which sets out the reasonable worst-case scenarios in terms of phasing and development parameters. Details of mitigation measures, and

Consultee	Summary Scoping Opinion Response	Location in the ES
	secured should also be clear in the ES and these will need to be legally secured to secure measures in perpetuity, such as through the transfer of on-site wastewater treatment and wetland assets to a long-term stewardship vehicle. A reasonable worst case scenario approach should be taken to construction phasing. We recommend a section or broader commentary explaining how reasonable worst case assessments have been derived and whether any sensitivity testing has been applied to allow for flexibility within any future uses. Baseline data used for the previous 2019 Application should be 'in date' and updated, if required.	how these will be secured is summarised in Table 15-10 Baseline data sets have been updated (Section 15.3)
EA	We have been discussing the requirements of the Environmental Statement (ES) with the applicant and their consultants from a flood risk management perspective. We are therefore satisfied with the scope of the ES. To help ensure that the important issue of water quality is adequately assessed, please ensure there is section dedicated to water quality in Chapter 15 of the updated ES. The effects on water quality of both (1) Surface Water Runoff and (2) Effluent Discharge should be assessed. Impacts of Otterpool Park development on water quality should include the Stour catchment, including the Stodmarsh conservation area. As no preferred option for wastewater treatment has been identified, impacts of all potential wastewater options on the quality of receiving waters should be fully assessed. This includes impacts on all rivers, lakes, transitional and coastal waters, and groundwater. Stodmarsh SAC and Stour estuary could all be affected by the additional loading of nutrients so need to be assessed as part of this application. Cumulative impacts on water quality of this development and other planned developments in the area should be assessed. The effect of climate change on surface water quality should be included in the updated ES/Water Cycle Study (Application Ref.: 3.30). Pollution of watercourses from silt/mud/runoff during the construction phase is highly likely, the contractors must take all possible measures to prevent any pollution to these watercourses. Regular monitoring downstream of River East Stour for silts/sediments/suspended solids may be required during the construction phase. Working on or within 8 metres of a watercourse requires a FRAP and excavation works that encounter groundwater or rainwater seep and require dewatering, may need a permit. Penstock valves on the outlet side of a lagoon/pond/swale may need to be installed to prevent pollutants entering the watercourses in the event of a serious pollution incident e.g. fire runoff or chemical/oil spillage.	Section 15.4 and Section 15.5, ES Appendix 15.1 (FRA and SWDS), ES Appendix 15.2 (WSC) and ES Appendix 15.3 (WFD Screening Assessment).
Historic England	Because heritage assets can suffer impacts from flooding and water change, there should be a cross referencing within this chapter. Consideration should be made to the existing flood	Section 15.5 and Chapter 9: Cultural Heritage

Consultee	Summary Scoping Opinion Response	Location in the ES
	issue at Westenhanger Castle in which flood events deposit sewage within parts of the scheduled monument. The works have the potential to cause detrimental changes to flood risk, water quality and resources. We highlight that there could be impacts on the archaeological resource and buildings from water changes, so this should be considered here and any subsequent assessment and design strategy.	
Ashford Borough Council (ABC)	All drainage of the site is across the border into Ashford Borough. The potential effect on water quality in the East Stour river and potential for downstream impacts in Ashford should be considered.	Section 15.5, ES Appendix 15.1 (FRA and SWDS), ES Appendix 15.2 (WSC) and ES Appendix 15.3 (WFD Screening Assessment).
Dover District Council	Cross-boundary water supply and quality issues should be addressed in the ES as our District is located within the same water catchment area as the proposed development.	Section 15.5 and ES Appendix 15.2 (WCS).

15.2.15 Temple, on behalf of F&HDC, undertook a review of the Draft ES in December 2021. The topic specific comments and response are provided in Table 15-5.

Table 15-5: Response to the Draft ES comments

Consultee	Comment	Response
Temple on behalf of FHDC, December 2021 Draft ES	FHDC should satisfy themselves that there is sufficient information presented in the ES or elsewhere in the application to be able to secure the on-site wetland and woodland proposed as mitigation to ensure nutrient neutrality in the East Stour	Information is provided in the FRA and SWDS (ES Appendix 15.1) and in the Water Cycle Study in ES Appendix 15.2. It is expected that this mitigation would be secured, as detailed in Table 15-10, via a planning condition to secure how SuDS will be built out in line with the principles set out in the FRA and SWDS. The wetland and woodland planting to offset surplus Nitrogen and Phosphorous from wastewater and surface water discharges from the proposed Development is also specifically committed to within the Development Specification (ES Appendix 14.1).

The Study Area

15.2.16 The study area for this assessment includes land within the outline planning application (OPA) site boundary and proposed Otterpool Framework Masterplan Area (OFMA) boundary, in addition to the downstream reaches of the East Stour up to and including Ashford. Any other surface water receptor within 1km of the OPA and OFMA boundaries has also been included.

15.2.17 The study area has been defined in consultation with the relevant statutory bodies, including the EA, to reflect the surrounding water environment. The study area is considered to be sufficient for the inclusion of all potentially affected surface water receptors. Beyond this 1km buffer there is considered to be no potential for significant effects on surface water receptors.

15.2.18 The study area is illustrated in Figure 15.1 in ES Appendix 15.4.

Methodology for Establishing Baseline Conditions

15.2.19 A desk-based study was carried out to establish the baseline conditions within the study area. The desk study was informed by a number of published datasets available from the British Geological Survey (BGS), the EA, Soilscapes (Cranfield Soil and Agrifood Institute) and Nature on the Map (Natural England). Data was also gathered through consultation with the key consultees listed in Table 15-2 and Table 15-3.

15.2.20 A site walkover was undertaken in October 2016 and March 2020 to supplement the understanding of the baseline characteristics of the study area and its water features. A River Condition Survey was undertaken in July 2020 to record observations of the East Stour channel dimensions, flow conditions and bankside/in-channel vegetation, as well as a geo-referenced photo record.

15.2.21 Flood risk data and flood history information has been collected from a number of strategic reports produced by FHDC including the Strategic Flood Risk Assessment (SFRA) (2015) and Stage 1 Surface Water Management Plan (SWMP). Data to describe hydrological catchment areas and characteristics has been drawn from the Centre for Ecology and Hydrology (CEH) (2017) Flood Estimation Handbook web service. This data, together with local rain gauge records, was used to derive flood flow hydrology for the East Stour river and the tributaries within the study area. A topographical survey that recorded channel dimensions and hydraulic structures on these watercourses was also completed in March 2020 and the data used to develop a hydraulic model of the watercourses. Further details are provided in ES Appendix 15.1.

15.2.22 Other data sources have included the South-East River Basin Management Plan (EA, 2019), the Stour Abstraction Licensing Strategy (EA, 2013), the FHDC Water Cycle Study (2011) and its 2019 update; the Water Resource Management Plan prepared by Affinity Water (2019) and assets datasets from Southern Water.

15.2.23 A site-specific ground investigation, inclusive of soakaway infiltration tests and groundwater level monitoring has been undertaken that has yielded data informing this assessment, as well as the FRA and SWDS (ES Appendix 15.1). Calculations have also been completed using best practice Flood Estimation Handbook methods to characterise baseline (greenfield) rates and volumes of rainfall runoff from the site. Further details are provided in ES Appendix 15.1.

Forecasting the Future Baseline

15.2.24 The assessment considers the periods of construction and subsequent operation of a number of future phases of the proposed Development. These assessment periods, described in Section 15.5, have been selected to tie into future cycles of water environment, flood risk and water resource management.

15.2.25 In the absence of the Development proposals, referred to as the Base Case, the current water environment is expected to be subject to future temporal variations. For example, it is anticipated that baseline water quality throughout the study area would

be subject to change driven by implementation of measures to deliver the objectives of the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019).

15.2.26 Climate change is anticipated to increase peak rainstorm intensities resulting in potential for an increased frequency of flash flood events. However, there is also potential for more frequent periods of drought, reducing the availability or reliability of surface and groundwater resources for both water supply and to transport and dilute wastewater effluents.

15.2.27 In addition, construction of other consented developments or those proposed and currently being considered by the planning authority in the study area, have the potential to influence the Base Case future baseline. Potential effects include those on drainage pathways and catchment hydrology, in addition to water quality and water resource effects such as demand for water supplies and impacts on the capacity of wastewater treatment systems.

Defining the Sensitivity of resource

15.2.28 The adopted assessment methodology is drawn from Volume 11, Section 3, Part 10 of the Design Manual for Roads and Bridges (Highways Agency, 2020) and The Practical Methodology for Determining the Significance of Impacts on the Water Environment (Mustow *et al*., 2005).

15.2.29 The method comprises a number of stages. The first stage involves making a judgement as to the value (or sensitivity) of receptors and their attributes, which is assigned to one of the categories identified in Table15-6.

Table 15-6: Criteria for Determining the Value (Sensitivity) of Water Environment Receptors

Value (Sensitivity)	Criteria	Examples
Very High	Attributes has a high quality and rarity on a regional or national scale	Surface Water: European Union (EU) designated salmonid/cyprinid fishery Watercourse achieving WFD Class 'High' Site protected under EU or United Kingdom (UK) wildlife legislation (Special Area of Conservation, Special Protection Area, Site of Scientific Interest, Ramsar Site) Supports a public potable water supply to a large community Flood Risk: Designated washland or a large and active floodplain where there is a high potential for flooding of a large number (>100) of residential properties and infrastructure
High	Attribute has a high quality, importance and rarity on a local scale	Surface Water: Watercourse achieving WFD Class 'Good' Major cyprinid fishery Species protected under EU or UK wildlife legislation Supports industrial or agricultural abstraction of >500 m^3/day or supports a Private Water Supply of potable water to a small community Flood Risk: Floodplain or defence protecting between 1 and 100 residential properties or industrial premises from flooding
Medium	Attribute has a medium quality, importance and rarity on a local scale	Surface Water: Watercourse achieving WFD Class 'Moderate'

Value (Sensitivity)	Criteria	Examples
		Water feature that supports an abstraction for agricultural or industrial use of between 50 and 499m^3/day or supports a Private Water Supply of potable water to an individual property Flood Risk: Floodplain or defence protecting 10 or fewer industrial properties from flooding.
Low	Attribute has a low quality, importance and rarity on a local scale	Surface Water: Watercourse that is not a fishery, achieving WFD Class 'Poor' Supports an abstraction for agricultural or industrial use of <50m^3/day. Does not support a public or private potable water supply. Flood Risk: Floodplain within limited constraints and a low probability of flooding of residential and industrial properties.

Methodology for Assessing Impacts

Impact Characterisation

15.2.30 The magnitude of change (or impact) on the baseline condition is then assigned considering the scale and extent of change and the nature and duration of the impact. Definitions of magnitude are provided in Table 15-7, which were adapted from the DMRB with reference to the paper Practical Methodology for Determining the Significance of Impacts on the Water Environment (Mustow et.al, 2005).

Table 15-7: Criteria for Determining the Magnitude of Impact on Water Environment Receptors

Magnitude of Impact	Criteria	Examples
Major Adverse	Results in loss of attribute and/or quality and integrity of the attribute	Loss or extensive change to a fishery or designated nature conservation site Change in the WFD class of a river reach or pollution of a potable source of abstraction Increase in peak flood level (1% annual probability) > 100 mm, or increasing the risk of flooding to >100 residential properties
Moderate Adverse	Results in effect on integrity of attribute, or loss of part of attribute	Partial loss in productivity of a fishery Pollution of a non-potable source of abstraction Increase in peak flood level (1% annual probability) > 50 mm, or increased flood risk to < 100 residential properties
Minor Adverse	Results in some measurable change in attribute quality or vulnerability	Discharges to a watercourse that results in no significant loss of quality, fishery or biodiversity value Increase in peak flood level (1% annual probability) < 50 mm or increasing the risk of flooding to < 10 industrial properties
Negligible	Results in effect on attribute of insufficient magnitude to affect the use or integrity	

Magnitude of Impact	Criteria	Examples
Minor Beneficial	Results in some beneficial effect on an attribute or a reduced risk of a negative effect occurring	Reduction in peak flood level (1% annual probability) of 10mm to 50mm
Moderate Beneficial	Results in moderate improvement of attribute quality	Reduction in quantity or improvement in quality of a polluting discharge Reduction in peak flood level of between 50mm and 100mm in the 1% annual probability event
Major Beneficial	Results in major improvement in attribute quality	Prevention of existing polluting discharges sufficient to achieve WFD class improvement. Reduction in peak flood level of > 100mm in the 1% annual probability event

Assessing Significance

15.2.31 The overall significance of effects on hydrology, flood risk and surface water receptors are then derived by combining the value (sensitivity) of the receptor with the magnitude of the predicted impact (change), as illustrated in Table 15-8. Slight, moderate and large/very large significance may be adverse or beneficial.

Table 15-8: Criteria for Determining the Significance of Effects on Water Environment Receptors

		MAGNITUDE OF IMPACT			
		Negligible	**Minor**	**Moderate**	**Major**
SENSITIVITY OF ATTRIBUTE	**Very High**	Neutral	Moderate/Large	Large/Very Large	Very Large
	High	Neutral	Slight/Moderate	Moderate/Large	Large/Very Large
	Medium	Neutral	Slight	Moderate	Large
	Low	Neutral	Neutral	Slight	Slight/Moderate

15.2.32 Where more than one significance outcome is possible, professional judgement is used to determine which is most appropriate on a case-by-case basis and ensuring regard to the precautionary principle. Effects with an overall significance of Moderate, Large and Very Large are considered Significant in terms of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, henceforth referred to as 'EIA Regulations'.

Limitations and Assumptions

Limitations

15.2.33 No water quality monitoring surveys have been carried out and the sensitivity (value) of water quality attributes have been assigned on the basis of available published data.

This is considered appropriate given the outline nature of the application for planning permission and given the availability of existing, contemporary data sets.

15.2.34 The river surveys to collect data to inform the flood modelling were carried out in 2018 (East Stour) and 2020 (tributaries). Watercourse channel geometry will not have significantly changed since this time and therefore the data is considered reliable for assessing flood risk.

Assumptions

15.2.35 To ensure a precautionary assessment of the effects of the Proposed development on water quality, the assessment assumes that there is no cross-drainage zone interaction, i.e. runoff would only reach a SuDS feature, such as a wetland, if one were located within the drainage zone. This is a precautionary assumption as it does not account for any additional treatment of runoff when there is hydraulic connectivity between the drainage zones.

15.2.36 The flood modelling study of the East Stour and its tributaries, the findings of which has informed the development masterplan, has been shaped by a number of precautionary assumptions. These are detailed in the FRA (ES Appendix 15.1) and include, for example, accounting for saturated catchment conditions prior to application of design rainstorm events to generate the flood flows that are routed through the model.

15.2.37 Several assumptions have been made in undertaking the calculations an assessment informing the Water Cycle Study (ES Appendix 15.2). These are detailed in the WCS report (ES Appendix 15.2) and include factors such as development occupancy rates and per capita water consumption rates.

15.2.38 No other assumptions relevant to this assessment that lie outside of the outline construction methodology and available operational information, documented in Section 4.3, have been made.

15.3 Baseline

Existing Baseline

Catchment Hydrology

15.3.1 The study area has a moderately sloping topography towards the north-west, with ground levels varying between approximately 57m and 107m above ordnance datum (AOD).

15.3.2 Governed in part by this topography, surface water mainly flows from east to west. The topography divides the site into a number of sub-catchments each drained by a network of ordinary watercourses that discharge ultimately to the East Stour. Other surface water features within the study area include ponds, a lake and numerous ditches and drains. The East Stour drains a total area of 19.49km^2 to National Grid Reference (NGR) E609400, N137700 located downstream of the site and receives an average annual rainfall of 775mm.

15.3.3 A desk study review of the hydrogeology aquifer classification 625k data from the BGS shows that most of the site lies upon a section of the Lower Greensand Group which is considered to be a highly productive aquifer with significant intergranular flow. The EA Aquifer Designation Map indicates that the site is partially located on both Principal and Secondary A Aquifers. Principal aquifers are described as geology that exhibits high permeability and/or provide a high level of water storage. They may support water and/or river base flow on a strategic scale. Secondary A aquifers are described as permeable strata capable of supporting water supplies at a local rather than strategic scale and in some cases forming an important source of base flow to rivers. Further detail is provided in Section 10.3 of Chapter 10: Geology, Hydrogeology and Land Quality.

15.3.4 A review of the Soilscape map has been undertaken. This shows that the soil types for the site can be split into four main areas. Most of the site is covered by freely draining, slightly acidic but base rich soils. The second largest soil type in terms of plan area on the site can be identified as loamy soils with naturally high groundwater likely influenced by the East Stour River and underlying geology. The west of the site is partially covered by slowly permeable, seasonally wet slightly acidic loamy soils which follows the profile of the Harringe Brooke (a minor tributary of the East Stour). To the east, freely draining and slightly acidic loamy soils cover a small proportion of the site.

Surface Water Quality and Designated Sites

15.3.5 The WFD sets out standards for water quality in rivers, estuaries, coastal waters and aquifers. RBMPs identify the main issues within a catchment and outline the means of achieving the targets set by the Directive.

15.3.6 Within the study area, the only surface waterbody which is classified under the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019) is the East Stour River, a reach of the Stour hydrological catchment.

15.3.7 Baseline water quality has been characterised for the East Stour using WFD monitoring data relevant to the Cycle 3 2019 legal baseline. Available data indicates that the water body currently achieves Moderate status. This status is limited by biological quality elements (macrophytes and phytobenthos combined) and physico-chemical quality elements, specifically phosphates. The water body has a target to achieve Good status by 2027. Its chemical water quality achieves ‘Fail’, on the basis of mercury and its compounds and Polybrominated diphenyl ethers (PBDE), a

chemical used in the manufacture of a wide array of products, including plastics. Further details are provided in ES Appendix 15.3.

15.3.8 Whilst the Floods and Water (Amendment etc.) (EU Exit) Regulations are also applicable to the minor watercourses that flow through the application site; these features are not specifically monitored by the EA, nor are included within the RBMP. Therefore, the water quality attributes of minor watercourses have been inferred using the data for the East Stour River to which they drain, as summarised in Table 15-9.

15.3.9 There are several designated sites in the vicinity of the application site. The closest of these with an international designation, that has water interest features is Dungeness, Romney Marsh and Rye Bay Special Protection Area (SPA). The marine component of the SPA is located 2.9km to the south-east of the site. Within 5km of the application site, there are seven national statutory designated sites, the locations of which are presented on Figure 2 in ES Appendix 7.1. These consist of six SSSI (Sites of Special Scientific Interest) and one Local Nature Reserve (LNR). The potential for effects on designated sites is assessed in Chapter 7: Biodiversity. One of these sites, Otterpool Quarry (SSSI) is within the proposed Development site but is not designated for biodiversity value, and effects on this site are addressed in Chapter 10: Geology, Hydrogeology and Land Quality. Further afield, the Stodmarsh Special Area of Conservation (SAC) (also designated as a SPA and Ramsar site) is located approximately 23km to the north.

Flood Risk

15.3.10 An FRA has been carried out for the proposed Development and is provided in ES Appendix 15.1. The baseline flood risk to the proposed Development is summarised below.

15.3.11 The EA Flood Map for Planning as provided in Figure 10 (ES Appendix: 15.1) of the supporting FRA, indicates that the vast majority of the site is located on land designated in Flood Zone 1 (land having less than 1 in 1,000 annual probability of flooding). There are limited areas of Flood Zone 2 (land having between a 1 in 100 and 1 in 1,000 annual probability of flooding) and Flood Zone 3 (land having a 1 in 100 or greater annual probability of flooding). These areas follow the route and profile of the East Stour River valley which runs through the northern half of the site. Baseline fluvial flood risk has been verified through hydraulic modelling, as detailed in the FRA (ES Appendix 15.1), The model also results indicate that in saturated catchment conditions, baseline modelled 1 in 100 year flood extents are in broad agreement with the EA mapping. There are no recorded historical flood events having affected the site. However, the EA reports that downstream, the town of Ashford is susceptible to and has experienced past flooding.

15.3.12 As a largely greenfield site, rainfall runoff patterns are governed by topography, soil type and the nature of the overlying surfaces. Data on existing surface water flood risk have been gathered from the EA Long term flood risk map, as provided in Figure 11 (ES Appendix: 15.1) of the supporting FRA. This indicates limited areas of localised flooding within the area of study, mostly associated with valley features representing drainage routes/flow paths; and the channels of the watercourses within the site, such as the East Stour meanders. The site is therefore subject to varying degrees of flood risk from surface water sources.

15.3.13 The Stage 2 FHDC SFRA reports on flood risk from groundwater sources and is informed by data compiled by the BGS. The datasets and related mapping indicate that the whole of the Folkestone and Hythe District is generally located within a low-

risk area in terms of groundwater flooding. The risk of flooding from groundwater sources to the site is considered to be low.

15.3.14 The site does not lie within an area at risk of flooding from reservoirs. The nearest extent of flooding shown on the EA Long term flood risk map is located 2.8km to the north-west and downstream of the site towards Ashford. The risk of flooding from artificial sources is considered to be low.

15.3.15 The Stage 2 FHDC SFRA details that the majority of sewer networks within the area of study are combined sewers. These networks can be overwhelmed during large rainstorm events, resulting in surcharge and risk of land and property flooding. Many of the surface water and highway sewers also discharge directly to local watercourses, which increases the risk of surcharged drainage networks during heavy storm events near to some watercourses. Historic England has highlighted issues of flooding at Westenhanger Castle when sewage has been deposited within parts of the scheduled monument.

Water Resources

15.3.16 The study area is known to have limited surface and groundwater resources and is considered to be a water stressed area. Low average annual rainfall in the catchment makes it one of the driest areas in the country. The EA currently class surface water and groundwater resources within the District as over-licensed or over-abstracted and the Stour Abstraction Licensing Strategy indicates that no further consumptive licences will be granted for surface water abstraction.

15.3.17 Potable water is supplied to the district by Affinity Water and the district lies completely within Water Resource Zone (WRZ) 7 in the Southeast region. This WRZ is supplied via a number of groundwater abstractions from the underlying chalk aquifer and the import of treated water from neighbouring water companies, namely South East Water (SEW) and Southern Water (SW).

15.3.18 Wastewater in the District is collected and treated by SW. There are currently two treatment facilities nearby, the Sellindge Wastewater Treatment Works (WwTW) located approximately 1km to the west and the West Hythe WwTW in the adjoining catchment approximately 7km to the southeast. Sellindge discharges to the East Stour River via Horton Priory Dyke and West Hythe WwTW discharges to the English Channel via a long sea outfall.

15.3.19 Table 15-9 provides a summary of the values assigned to water receptors and their attributes. These have been assigned guided by the criteria presented in Table 15-6.

Table 15-9 Summary of Value of Water Environment Receptors and their Attributes

Receptor	Attribute	Description	Value (Sensitivity)
East Stour River	Flood flow storage and conveyance	The East Stour is the receptor and final conveyance route for most of the surface water drainage generated within the application site boundary, it therefore has a key function in local land drainage and flood risk management	High
	Water quality	The East Stour currently has WFD 'Moderate' overall ecological classification, with a target of achieving 'Good' status by 2027	Medium/High
	Water supply and dilution and transport of wastewater	The East Stour is identified as being unlikely to support new consumptive abstractions given the reliability of water availability. The watercourse receives discharges from the Sellindge WwTW.	High
Ordinary watercourses	Flood flow storage and conveyance	Watercourses with limited constraints and low probability of flooding industrial/residential properties, but medium to high risk of surface water flooding and which are key to local land drainage	Medium
	Water quality	Inferred WFD class of 'Moderate' without any protected designations	Medium
	Water supply and dilution and transport of wastewater	Inferred that the existing watercourses are unlikely to support new requests for consumptive abstractions given the reliability of water availability in the East Stour	Medium
Ponds	Flood flow storage and conveyance	Waterbodies with low probability of flooding industrial/residential properties	Low
	Water quality	Inferred WFD class of 'Moderate' without any protected designations	Medium

15.3.20 The English Channel has been scoped out as a potential receptor given that the proposed wastewater treatment strategy, described in Section 15.5 and in further detail in ES Appendix 15.2, discounts use of the West Hythe WwTW.

Future Baseline

15.3.21 The future baseline is the situation that would prevail should a proposed Development not proceed. The future baseline is further defined by the assessment scenario that the topic adheres to. The future baseline for surface water resources and flood risk has identified the following:

- The proposed Development is expected to be constructed in phases, with the OPA for 8,500 homes built out by 2042. The full OFMA for 10,000 homes would be built out by 2044. Base case environmental conditions over this relatively long period would be expected to vary from the present-day baseline described.

- The predicted effects of climate change are expected to increase the frequency of intense rainstorms and increase peak river flows, exacerbating flooding risks. In addition, there is predicted to be more periods of drought, increasing pressures on water resources.
- By 2027, the objectives for the East Stour water body as detailed in its RBMP are for this waterbody to achieve Good overall status, an improvement from its existing Moderate status. Key drivers for improvements are the better management of agricultural/rural land to reduce diffuse pollution and also the higher quality of point source discharges to the river from sewage treatment works.
- Future Asset Management Planning (AMP) cycles (5 yearly) will deliver upgrades and efficiencies in the infrastructure that supplies potable water to the study area and given the water stressed nature of the area, there will be drivers to maximise water use efficiency in all new development through the adoption of Water Sensitive Urban Design principles in line with the latest CIRIA guidelines (Ref. 15-26).
- Similarly, in base case future years planned implementation of improvements and investment in wastewater treatment infrastructure will contribute to reducing the risk of sewer flooding and also contribute to water quality improvements in the East Stour catchment.

15.4 Design and Mitigation

15.4.1 The following section sets out:

- The embedded design measures, including good practice approaches, relied on in this assessment; and
- The potential significant effects remaining after the application of embedded design measures and good practice approaches, and any additional mitigation required to address these potential significant effects.

15.4.2 Environmental considerations have influenced the proposed Development throughout the design development process, from early options assessment through to refinement of the Project design. An iterative process has facilitated design updates and improvements, informed by environmental assessment and input from the Project design teams, stakeholders and public consultation.

15.4.3 Impacts would be reduced by measures embedded into the design of the development, as well as by additional mitigation, and together these measures would act to avoid, reduce and mitigate effects. The measures have been summarised by whether they are embedded design measures, which are secured through the documents for approval, or additional mitigation secured, for example, by planning condition or legal agreement. additional mitigation secured, for example, by planning condition or legal agreement. Embedded measures are described as measures that form part of the design, developed through the iterative design process and good practice standard approaches and actions commonly used on development projects to avoid or reduce environmental impacts, typically applicable across the whole Development. Additional mitigation is described as any additional Development-specific measures needed to avoid, reduce or offset potential impacts that could otherwise result in effects considered significant in the context of the EIA Regulations.

Embedded Design Measures

Construction

15.4.4 The design of the proposed Development has incorporated blue and green infrastructure to avoid and minimise impacts to existing surface water bodies. The ordinary watercourses flowing through the site generally have a minimum

development-free corridor of 15m alongside each bank (30m total). The width of the development-free corridor varies along the East Stour river but is a minimum of 25m.

15.4.5 To ensure the quality of the water environment does not deteriorate during construction, an outline Code of Construction Practice (CoCP) has been prepared to form part of the application (ES Appendix 4.2). This documents best practice construction methodologies and describes procedures for the management of environmental impacts during construction. It is expected that a planning condition would be established requiring this outline CoCP be further developed into a detailed CoCP. The detailed Plan would include a Pollution Control Plan and method statements detailing how activities would be managed and monitored by the main contractor, to avoid impacts on the water environment.

15.4.6 The following best practice measures are applicable and would be secured via the detailed CoCP:

- Avoiding the storage of any potentially polluting materials in close proximity to any waterbodies, including stockpiles of soil to reduce potential for sedimentation. Where this is not possible works would be undertaken in accordance with approved method statements and in accordance with environmental permitting requirements/restrictions in order to safeguard the water environment.
- Soil stripping managed to ensure the minimum area of exposed soil at any one time.
- Fuels and chemicals would be stored, and refuelling would take place within bunded areas to prevent leakage, and these would be located away from waterbodies. Drainage from these areas would incorporate an isolation facility such that the outlet could be sealed in the event of a spill.
- Provision made for water treatment to remove silt/sediment before discharge to a surface water feature.
- Regular monitoring of the East Stour downstream of work sites during the construction phase for visual signs of silts/sediments/suspended solids.
- Concrete would be laid only following the suitable preparation of the ground surface and temporary shuttering used to contain potential leaks.
- Designated washing out areas would be set up for concrete lorries with impermeable liners to protect the soil and groundwater below.
- Wastewater generated from construction compound(s) would be disposed of via appropriate means, for example pumped out and removed from site by tanker.

15.4.7 An emergency spillage response plan would document measures to be implemented to prevent pollutants infiltrating into the soils beneath the site and reaching surface water receptors. Appropriate equipment (e.g. absorption mats) would also be made easily accessible on site to deal with accidental spillages and the plan would also provide a full list of protocols and communication channels with the EA in the event of an accidental pollution incident. Should any pollution incidents occur, the EA incident hotline would be called immediately in tandem with dealing with any spillages.

15.4.8 To promote the sustainable use of water resources, measures would be implemented to promote general water use efficiency and particularly to reduce the use of potable water. Examples include rainwater harvesting to provide water supply for the construction welfare facilities and for use in dust suppression, and wheel washing facilities as well as leakage prevention.

Operation

15.4.9 As detailed in the FRA, SuDS would be installed to manage surface water across the proposed Development, in terms of both water quality and quantity. Space to

accommodate these features is integrated into the site's design and the key principles regarding the phasing of SuDS construction, detailed in the FRA (ES Appendix 15.1), is expected to be secured via a planning condition that specifies how SuDS will be built out in line with these principles. The proposals would deliver greenfield (existing) discharge rates from the site during rainfall events up to a 1 in 100 (1%) annual probability including an allowance for climate change. To ensure this, strategic SuDs infrastructure would be included in green infrastructure spaces that would be present throughout the proposed Development. These green spaces are illustrated on the Open Spaces and Vegetation Parameter Plan (ES Appendix 4.2), with further detail provided on the illustrative SuDS layout plan provided in ES Appendix 15.1 (Figure 27). Several infiltration areas have also been included in the design, located within green infrastructure spaces where the ground conditions are suitable. Swales, soakaways, permeable paving, rain gardens and green roofs would provide more localised surface water management within the development areas. The proposed Development would aim to be an exemplar regarding the provision of SuDS and multi-functional green space, promoting Water Sensitive Urban Development (WSUD) principles. This would ensure that flood risk is mitigated during each development phase and cumulatively as the phases progress, whilst also reducing water demand and maximise overall environmental benefits.

15.4.10 The use of SuDS would also promote good water quality standards and achieve nutrient neutrality with regard to discharges to the East Stour river, as detailed in the Water Cycle Study (ES Appendix 15.2). SuDS would also allow for the creation of new wildlife spaces and valuable open amenity areas. A variety of treatment methods are proposed to be employed for different sources of runoff to remove hydrocarbons, metals, sediments and other impairments on water quality. Pre-treatment would be utilised to supplement filtration, bioremediation, detention and vegetation uptake processes. Suitable containment facilities would also be provided to avoid pollution of receiving waterbodies.

15.4.11 Development in the floodplain (defined by the extent of EA Flood Zones 2 and 3) across the site would be limited to the water compatible land uses and the three new road bridges over the East Stour to connect the north riverside area to the south, illustrated in the Development Areas and Movement Corridors Parameter Plan (ES Appendix 4.2). To ensure these bridges do not cause constrictions to flow, which could increase flood risk onsite and upstream, their preliminary design has been informed by hydraulic modelling, detailed in ES Appendix 15.1, and includes for clear span structures having abutments set back at least 10 m from the existing river banks, to ensure a vegetated buffer is retained. Crossing 3 entirely spans the floodplain, with no loss of floodplain storage. To offset any effects at crossings 1 and 2 the loss of floodplain storage associated with the footprint of the embankments for the proposed crossings would be offset by the creation of wetland areas along the East Stour river corridor. Calculations, presented in the FRA (ES Appendix 15.1), demonstrate that significantly more floodplain storage is created at the same ground levels from which it is lost during the 1 in 100 annual chance event, including a 38% climate change allowance.

15.4.12 The crossings of the East Stour River would include provision for 1m wide, flood free, mammal passage. A Flood Risk Activity Permit (FRAP) would be prepared for the bridge structures. In addition, ordinary watercourse consent applications under the Land Drainage Act 1991 would be obtained as required from KCC, as the LLFA for works impacting on the flow conveyance of minor watercourses on the site. The FRAP permit and ordinary watercourse consent applications would demonstrate that:

- The design of watercourses crossings would cause no increase in flood risk either upstream or downstream.

- Access to the main river network for maintenance and improvement would not be prejudiced.
- Works would be carried out in such a way as to avoid unnecessary environmental impacts.

15.4.13 The development proposals also provide for the removal of existing culverts on the Racecourse Drain and the East Stour. Removal of these structures has been assessed as part of the FRA (ES Appendix 15.1), which reports on the flood risk benefits of the proposals. The daylighting of these reaches of watercourse would also deliver wider environmental benefits.

15.4.14 Capacity constraints associated with the existing WwTWs and sewerage network to accommodate increased flows from the proposed Development as the development phases progress would be addressed with future investment and careful planning. Initial assessment detailed in the WCS (ES Appendix 15.2) indicates that upgrading the existing Sellindge WwTW (operated by Southern Water) or providing an onsite works are both viable options. It is proposed that the initial development phases would be served by a dedicated onsite WwTW, with suitable additional onsite nutrient neutrality mitigation. This would include constructed wetlands and woodland planting to offset surplus nitrogen and phosphorous in discharges from the proposed Development, with these measures expected to be secured via a planning condition. The modular onsite WwTW would be constructed and commissioned in phases. This phased approach would ensure the flexibility to connect the later development phases of this application and the Otterpool Framework Masterplan to Sellindge WwTW, if deemed required. These options would be further reviewed as part of a detailed WCS prepared prior to the submission of Tier 2 and any relevant reserved matters applications.

Additional Mitigation

15.4.15 An iterative appraisal of the proposed Development taking into account the embedded design measures and good practice was undertaken to identify any potentially significant effects that would require additional mitigation. Effects on surface water resources and flood risk that could be significant and therefore required further consideration for additional mitigation are as follows:

- Increase in potable water demand and waste water discharges of the East Stour River and Ordinary Watercourses during operation.

15.4.16 A WCS has been prepared (ES Appendix 15.2) to assess the impacts of proposed Development on existing water resources, the receiving water environment and existing infrastructure. The strategy describes proposals for the sustainable planning of water use and wastewater treatment. A detailed WCS would also be undertaken prior to construction to ensure that the proposed Development would have no adverse impacts on water resources, water quality and flood risk. Water Sensitive Urban Design (WSUD) principles would be set out in the detailed WCS and put in place to restrict the maximum amount of extra potable water consumed by each new

household to the 110 litres of water per person per day target, in line with the relevant policies described in Section 15.2.

15.5 Assessment of Residual and Cumulative Effects

15.5.1 The following section sets out the residual effects following the implementation of the embedded measures and additional mitigation set out above.

Residual Effects from Construction

Water Quality

15.5.2 The construction phases of the Development would require earthworks to take place, including excavation, transportation, stockpiling and backfilling of material. Erosion and subsequent mobilisation of this material, by wind or water, and its transportation via surface water runoff to surface watercourses has the potential to result in sedimentation.

15.5.3 There is also the potential for accidental spillages of oils, chemicals, cement and fuels from the movement of construction traffic across the site and in association with chemical storage facilities.

15.5.4 However, given the implementation of the control measures documented in the CoCP and the embedded design measures outlined in Section 15.4, it is considered that there would be negligible impact on the water quality attributes of surface water features which have been assigned values ranging from High to Medium, with an overall **negligible** significance of effect, and therefore **Not Significant**.

15.5.5 During the construction of the new bridges to facilitate crossings of the East Stour River and where works are required to any ordinary watercourses to accommodate the Development, there is a higher risk of temporary impacts on surface water quality through the disturbance of the banks of the watercourses and through works being undertaken in closer proximity to them. The water quality attributes of these features are assigned High to Medium value (sensitivity). However, measures outlined in the CoCP for avoiding pollution when working adjacent to watercourses or in channel, would be implemented. The effect of these construction activities on the water quality attributes of surface water receptors is therefore considered to be minor and would have an overall **negligible/slight adverse** significance of effect, and would therefore be **Not Significant**.

Flood Risk and Drainage

15.5.6 Construction activities would result in the creation of additional impermeable surface areas within the site as subsequent development phases progress. Increased rates and volumes of surface water runoff would be generated from these areas of the Development, with the potential for increased surface water flood risk on site and in downstream areas. The value of the watercourses in the study area with regard to conveyance of storage of flow ranges from high (East Stour) to medium (ordinary watercourses). However, management of onsite drainage using the range of SuDS techniques described in Section 15.4 would result in a negligible magnitude of impact on the conveyance properties of watercourses and the overall baseline land drainage regime. This would result in an overall **neutral** significance of effect, which would therefore be **Not Significant**.

Water Resources

15.5.7 Given the commitment to sustainable use of water resources onsite during the construction phase, as outlined in Section 15.4, it is considered that there would be a negligible impact, an overall **neutral** significance of effect, which would therefore be

Not Significant on surface water resources, assigned high to medium value (sensitivity) for their water supply attributes.

15.5.8 Foul water generated during the construction phase by construction staff would be dealt with appropriately to ensure there would be a negligible impact, an overall **neutral** significance of effect, which would therefore be **Not Significant** on the water environment.

Residual Effects from Operation

Water Quality

15.5.9 SuDS would be installed to manage impacts arising from the generation of surface water runoff as the Development becomes operational at the end of each phase. These SuDS systems would be implemented as part of the construction enabling works stage in each development phase and would collect, convey and provide treatment of surface water runoff to ensure the sustainable management of operational surface water drainage. The effectiveness of the proposed treatment measures have been tested and found to be sufficient using the Natural England nutrient budgeting and CIRIA Simple Index Assessment methodologies. It is therefore considered that the magnitude of any impact on surface water quality (ranging in value from high to medium) during the operation phases of the Development would be negligible, have an overall **neutral** significance of effect, and would therefore be **Not Significant**.

15.5.10 This assessment is supported by the results of a WFD Screening assessment report provided in ES Appendix 15.3. The report concludes that the proposed Development is compliant with the requirements of the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019, and provides opportunities to address some of the reasons the East Stour waterbody is not currently achieving Good status, for example, the proposed extensive wetlands system to achieve nutrient neutrality would improve physico-chemical and biological elements that support the overall waterbody status.

Flood Risk and Drainage

15.5.11 A potential effect on baseline fluvial flood risk is associated with the permanent bridges to facilitate the crossings of East Stour river, acting to change its existing flow regime. The flow conveyance attributes of the East Stour are assigned High value. However, as the bridges would be designed in accordance with best practice to avoid localised hydraulic effects and configured in accordance with EA FRAP requirements, it is considered that there would be negligible impacts on flow conveyance, an overall **neutral** significance of effect, and would therefore be **Not Significant**.

15.5.12 As detailed in ES Appendix 15.1, the development proposals also include for the removal of existing culverts on the Racecourse Drain and the East Stour. The daylighting proposals would benefit the flow regimes of these watercourses (assigned as having medium and high value respectively) and negate a potential source of flood risk associated with culvert blockage. A localised beneficial impact on flow conveyance is therefore assessed, with overall a **large beneficial** significance of effect for the Racecourse Drain and a **moderate beneficial** effect (local) for the East Stour river. The effect would be beneficial and **Significant**.

15.5.13 Given that building, with the exception of the new bridge crossings, would be avoided in areas at existing risk of fluvial flooding, and that compensation storage would be provided to more than offset losses from the embankments of crossings 1 and 2, no material loss of floodplain storage would result due to the proposed Development.

15.5.14 As a result of the proposed design and the sustainable management of surface water runoff within the site, the proposed Development would result in a negligible magnitude

of impact on flood risk, have an overall **neutral** significance of effect, and would therefore be **Not Significant**.

Water Resources

15.5.15 The design of the proposed Development would make use of Water Sensitive Urban Design Principles to ensure the sustainable management of both foul discharges and potable water supply. Full details of such proposals to deliver these principles would be set out in a detailed WCS prior to construction. SuDS systems would enhance infiltration of rainfall runoff into the ground, potentially contributing to an increase in base-flow in the smaller watercourses that flow through the site. This would provide slight beneficial impacts for the flow regimes of these surface water features, the water supply attributes of which are assigned medium value (sensitivity). It is therefore considered that the operation of the proposed Development would have a negligible impact on water resources. The overall significance of effects would be **neutral,** and therefore be **Not Significant**.

Cumulative Effects

Cumulative Effects with other Developments

15.5.16 The cumulative effects of the proposed Development have been assessed with reference to the developments listed in ES Appendix 2.4. These sites, which include developments that have been consented within the borough of Ashford and Folkestone and Hythe District, have been screened and those situated in the same hydrological catchments as the proposed Development have been considered as having potential to have a cumulative impact on the surface water environment. There is the potential for developments that drain the same hydrological catchments to have a cumulative impact on flood risk, through the generation of increased runoff. However, in line with local policy requirements, described in Section 15.2, it is considered that other developments would also incorporate SuDS (including best practice construction methods) to manage impacts on water quality and run off quantity during their construction and operation. It is therefore considered that there would be **neutral** cumulative effects (**Not Significant**) on these attributes of the surface water environment within the study area.

15.5.17 Development of the site together with other sites located in the same foul water catchment draining to Sellindge WwTW, has the potential to result in cumulative excessive demand on the network and treatment capacity of the WwTW. Further work to deliver the proposed options for the management of foul water would be carried out as part of a detailed WCS going forward. The preferred option is to provide an onsite WwTW facility in the north west part of the site, to treat foul water from the proposed Development, including the provision to connect Phase 2 Sellindge sites to the same onsite WwTW facilities if needed and subject to future agreements and approvals. These Phase 2 sites have been identified as part of the F&HDC Core Strategy Review (2022) for future residential development. Therefore, no negative cumulative impact is expected on the existing Sellindge WwTW. However, any future upgrading of the infrastructure at the Sellindge WwTW would provide additional mitigation to manage any cumulative effects.

15.5.18 There is also the potential for cumulative impacts on water resources, which may be significant given the water stressed nature of the East Stour catchment. This has been addressed in the WCS (ES Appendix 15.2), and associated FRA and SWDS (ES Appendix 15.1), including further recommendations as required. Therefore, detailed proposals for integrated water management, including targeted rainwater reuse (i.e. by using the stored water at SuDS, nutrient mitigation wetlands and existing Racecourse Lake) will be further assessed and developed, prior to construction of the

proposed Development. This will ensure the sustainable management of water resources and flood risk management that will prevent any adverse impacts on the wider water environment. It will be expected that other developments will be designed to be sensitive to water resource usage and will follow similar sustainable and WSUD principles. It is therefore considered that cumulative effects on water resources would be **negligible** and therefore **Not Significant**.

Cumulative Effects with the Framework Masterplan

15.5.19 The 10,000 home Framework Masterplan has the potential to results in cumulative effects on the water environment, including on flood risk/land drainage, water resources and demand on waste water treatment networks. The calculations undertaken to inform the Water Cycle Study (ES Appendix 14.2) have accounted for the full Otterpool Park Framework Masterplan quantum of development. The FRA and SWDS (ES Appendix 15.1) has also been prepared for the full Framework Masterplan. The conclusions of these studies have informed the cumulative assessment, which concludes **negligible** effects on the water environment, and therefore **Not Significant**.

Cumulative Effects with the Permitted Waste Facility

15.5.20 The assessment has also considered potential for cumulative impacts on the water environment associated with a Permitted Waste Facility, located within the application site boundary. Build out of the facility would reduce the number of homes and education facilities constructed as part of the proposed Development and the facility has been subject to an independent EIA. On the basis that all foul water (including leachate and foul water discharge) generated by the waste facility would be tankered off-site for disposal at a licenced facility, and that the currently proposed SuDS in the 250m buffer zone around the waste facility would be retained, cumulative effects on the water environment would be **negligible** and **Not Significant**.

15.6 Monitoring

15.6.1 No monitoring requirements have been identified for surface water resources and flood risk.

15.7 Assessment Summary of Effects

15.7.1 Table 15-10 provides an assessment summary with respect to surface water resources and flood risk, including the potential significant effect with embedded design measures in place, and additional measures required to reach the residual significance of effect.

Table 15-10 Summary Table of Effects

Receptor	Embedded Design Measures	Potential Significant Effect (pre- mitigation)?	Phase	Additional Mitigation	Mitigation delivery mechanism	Residual Effect Significance
East Stour river Ordinary Watercourses Ponds	A CoCP would be produced and implemented. This would document procedures for managing environmental impacts during construction and would include a Pollution Control Plan. An emergency spillage response plan would also be prepared to document measures to be implemented to prevent pollutants reaching surface water receptors. Water efficiency measures would be implemented to promote sustainable use of water resources and reduce the use of potable water.	Silt pollution = Not Significant	C	No additional mitigation required	N/A	**Slight Adverse - Not Significant** (Watercourses at Bridge Crossings) **Neutral - Not Significant** (Other watercourses and features)
		Pollution with fuel, oils, cement or concrete = Not Significant	C			**Slight Adverse - Not Significant** (Watercourses at Bridge Crossings) **Neutral - Not Significant** (Other watercourses and features)
	Site drainage would be managed appropriately using a range of SuDS techniques as secured through the CoCP.	Increase in flood risk – increased surface water runoff from impermeable areas and due to soil compaction/disturbance = Not Significant	C	No additional mitigation required	N/A	**Neutral - Not Significant**

Receptor	Embedded Design Measures	Potential Significant Effect (pre- mitigation)?	Phase	Additional Mitigation	Mitigation delivery mechanism	Residual Effect Significance
East Stour River Ordinary Watercourses	SuDS would be included within green infrastructure spaces to manage surface water quality and quantity across the proposed Development as secured through the FRA and SWDS (ES Appendix 15.2). Development in the floodplain would be limited to three new road bridges over the East Stour. These bridges would be designed in accordance with best practice and, where required, hydraulic modelling to ensure that there would be no constriction of flow in these watercourses as secured through the Strategic Design Principles (ES Appendix 4.3) and the FRA and SWDS (ES Appendix 15.1). Existing culverts on the Racecourse drain and East Stour would be removed, restoring naturalised channels and flow regimes and removing a potential source of flood risk linked to culvert blockage as secured through the Strategic Design Principles (ES Appendix 4.3) and the FRA and SWDS (ES Appendix 15.1).	Changes in flow conveyance and/or local hydraulics of watercourses being crossed by bridges or where works to existing culverts are being undertaken = Not Significant	O	No additional mitigation required	N/A	**Slight Adverse - Not Significant**
		Increase in flood risk – increased surface water runoff from impermeable areas and due to permanent increase in impermeable land cover = Not Significant to Significant Beneficial	O	No additional mitigation required	N/A	**Neutral - Not Significant to Moderate Beneficial - Significant**

Receptor	Embedded Design Measures	Potential Significant Effect (pre- mitigation)?	Phase	Additional Mitigation	Mitigation delivery mechanism	Residual Effect Significance
	Bridging of the East Stour and works to ordinary watercourses would be subject to secondary consents, a Flood Risk Activity Permit and Ordinary Watercourse Consent respectively.					
	Commitment to limiting potable water usage per dwelling by including water efficient fittings and other measures to minimise water demand and maximise water re-use, secured through the Energy Strategy (ES Appendix 4.9).	Increase in potable water demand and waste water discharges = Significant	O	A detailed WCS would be undertaken prior to construction to ensure the proposed Development would not have adverse impacts on water resources. WSUD principles would be set out in the detailed WCS to restrict the maximum amount of extra potable water consumed by each household to 110 litres of water per person per day.	Planning condition	**Neutral - Not Significant**
	SuDS, and additional nutrient neutrality mitigation measures, would be used to promote good water quality standards. A variety of methods are proposed to be employed for different sources of runoff to remove hydrocarbons, metals, sediments and other impairments on water quality. Pre-treatment would be utilised to supplement filtration,	Pollution with fuels, oils or silt, increased nutrient loading (nitrogen and phosphates) = Not Significant	O	No additional mitigation required	N/A	**Neutral - Not Significant**

Receptor	Embedded Design Measures	Potential Significant Effect (pre- mitigation)?	Phase	Additional Mitigation	Mitigation delivery mechanism	Residual Effect Significance
	bioremediation, detention and vegetation uptake processes as secured through the FRA and SWDS (ES Appendix 15.1).					

15.8 References

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