Lower Thames Crossing

6.3 Environmental Statement Appendices
Appendix 14.8 Road Drainage and the Water Environment Legislation and Policy

APFP Regulation 5(2)(a)

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Lower Thames Crossing

Appendix 14.8 Legislation and Policy

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1.1 Legislation and Policy

1.1.1 This Population and Human Health assessment has been undertaken in accordance with relevant legislation, together with national, regional and local plans and policies.

Legislation

1.1.2 Relevant legislation that has been considered in the environmental assessment is presented in Table 1.1. The Planning Statement (Application Document 7.2) provides an assessment of the Project's strategic alignment and conformity with the National Policy Statement for National Networks (NPSNN).

1.1.3 A number of the sources of legislation referred to throughout the ES, including this chapter, derive from the law of the European Union (EU). It is noted that the impact of European legislation may need to be revised following the UK's exit from the EU but much EU-derived domestic legislation continues to have effect in domestic law. Relevant legislation is included in Table 1.1.

1.1.4 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 have been amended by the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019/558 so as to continue to have effect now the United Kingdom has left the EU.

Table 1.1 Legislative requirements

Scale	Legislation	Description of Legislation
National	Environment Act 2021	The Environment Act has two main functions: • To give a legal framework for environmental governance in the UK. • To bring in measures for improvement of the environment in relation to waste, resource efficiency, air quality, water, nature and biodiversity, and conservation. The majority of the Act does not make any immediate changes for organisations other than regulators. Legislative requirements relevant to water are included in the Act however, these provisions are not directly relevant to the Project Development Consent Order (DCO) application or to its examination and determination.
	The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WFD Regulations), as amended by the Floods and Water (Amendment etc.) (EU Exit) Regulations	Regulation 20 of the EU Exit Regulations sets out the amendments to the WFD Regulations following the exit from the European Union (EU). The substance of the WFD regime which applied pre-EU exit will continue to apply with only relatively minor amendments. The WFD regime provides for the protection of surface (fresh) water, estuaries, coastal waters and groundwater. The objectives of the Directive (and WFD Regulations) are to enhance the status, and prevent further deterioration of aquatic ecosystems, promote the sustainable use of water, reduce

Scale	Legislation	Description of Legislation
	2019 (EU Exit Regulations)	pollution of water and ensure progressive reduction of groundwater pollution.
	The Flood and Water Management Act 2010	The legislation provides a comprehensive flood risk management framework for people, homes and businesses. The Act encourages the use of sustainable drainage in new developments and redevelopments, with reference to the Non-statutory Technical Standards for Sustainable Drainage Systems (SuDS) (Department for Environment, Food and Rural Affairs (Defra), 2015).
	The Environmental Permitting (England and Wales) Regulations 2016	These regulations aim to prevent or minimise the risk of pollution. Covers permitting of water discharge activities and flood risk activity permits related to main river. These regulations include provisions relating to groundwater discharges originally implemented by the Groundwater Directive 2006 (2006/118/EC).
	The Water Act 2003 and Water Act 2014 as amended by the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019 (EU Exit Regulations)	These Acts govern the control of water abstraction, discharge to waterbodies, water impoundment, conservation, and drought provision.
	The Water Resources Act 1991 as amended by the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019 (EU Exit Regulations)	This Act sets out the regulatory regime under which water abstraction and impounding is licensed by the Environment Agency. It is a criminal offence to knowingly permit any poisonous, noxious or polluting matter or any solid waste matter to enter any controlled waters.
	The Land Drainage Act 1991	This Act requires that ordinary watercourses be maintained by their owner in such a condition that the free flow of water is not impeded. Under this Act, works with the potential to block or obstruct flow are subject to consent from the relevant internal drainage board or local authority.
	The Environmental Protection Act 1990	Part 2A of this Act provides protection to controlled waters from pollution by hazardous substances in, on or under the land.

Policy

1.1.5 National policies are presented in Table 1.2 with the Project response to these requirements. Where there is duplication of requirements presented in the various relevant National Policy Statements, these have been combined and a single Project response to the policy issue is provided in the table.

1.1.6 Table 1.3 presents regional and local policies that have been considered during the development of the Project and the DCO application.

1.1.7 The Planning Statement (Application Document 7.2). presents the latest versions of the draft NPSs which are currently going through the process of consultation and revision and Project responses to these requirements.

Table 1.2 National policy framework and the Project response

Reference	Requirement	Project response
National Policy Statement for National Networks (NPS NN) (Department for Transport, 2014)		
Paragraph 4.48 (Broadly consistent with NPS EN-1 section 4.10)	'*Issues relating to discharges or emissions from a proposed project which affect air quality, water quality, land quality and the marine environment* may *be subject to separate regulation under the pollution control framework or other consenting and licensing regimes. Relevant permissions will need to be obtained for any activities within the development that are regulated under those regimes before the activities can be operated.*'	Details of the secondary consents that would be secured by the Project, following grant of the DCO, are provided in the Consents and Agreements Position Statement (Application Document 3.3).
Paragraph 4.55 – 4.56 (Broadly consistent with NPS EN-1 section 4.10)	'*The Secretary of State should be satisfied that development consent can be granted taking full account of environmental impacts. … to ensure that in the case of potentially polluting developments:* • *the relevant pollution control authority is satisfied that potential releases can be adequately regulated under the pollution control framework; and* • *the effects of existing sources of pollution in and around the project are not such that the cumulative effects of pollution when the proposed development is added would make that development unacceptable, particularly in relation to statutory environmental quality limits.* *The Secretary of State should not refuse consent on the basis of regulated impacts unless there is good reason to believe that any relevant necessary operational pollution control permits or licences or other consents will not subsequently be granted.*'	Assessments of the potential for pollutant releases from the Project to cause detriment to the water environment have been completed in consultation with the Environment Agency, Natural England and Marine Management Organisation (MMO). The assessments, detailed in Appendix 14.3: Operational Surface Water Drainage Pollution Risk Assessment; Appendix 14.5: Hydrogeological Risk Assessment; and Appendix 14.7: Water Framework Directive Assessment (Application Document 6.3), conclude that with mitigation in place (described in Appendix 14.5) pollution risks can be adequately regulated. The potential for cumulative effects has been assessed in the Environmental Statement Chapter 16: Cumulative Effects Assessment (Application Document 6.1). The Environment Agency, Kent County Council and Essex County Council (acting on behalf of Thurrock) as Lead Local Flood Authorities (LLFAs) and MMO have been consulted about consents and licensing for Project activities such as discharges to the water environment, groundwater control, and works to, and structures in, on, over or under controlled waters. A summary of the consultation undertaken with regulatory authorities is presented in Table 14.1 of Environmental Statement Chapter 14: Road Drainage and the Water

Reference	Requirement	Project response
		Environment. Based on these consultations, which are further detailed in the Statements of Common Ground (Application document references 7.3) there is no reason to believe that the required consents and permits will not be granted.
Paragraph 5.90 (Broadly consistent with NPS EN-1 section 5.7)	'*The applicant, the Examining Authority and the Secretary of State (in taking decisions) should take account of the policy on climate change adaptation in paragraphs 4.36 to 4.47.*' These paragraphs state that new development should be planned to avoid increased vulnerability to the range of impacts arising from climate change, incorporating suitable adaption measures considering the latest UK Climate Projections (currently 2018 (UKCP18)).	The Project design has built-in climate change resilience in several ways. For example, the operational drainage design has included an allowance for the predicted changes to rainfall intensity and the implications for operational road drainage volumes and rates. The findings of the Flood Risk Assessment (FRA) presented in Appendix 14.6 (Application Document 6.3) and the assessment presented in Environmental Statement Chapter 15: Climate (Application Document 6.1), have informed the Project design to ensure its resilience to predicted climate change effects on river flows and water levels in the Thames Estuary. Key elements of the design that deliver this resilience are the vertical alignment of the main road, the drainage design, design of watercourse crossings and additional protection measures for the tunnel portals. Climate change effects on groundwater resources have also been considered in the design of the Project. Further details are provided in Section 14.4 of Chapter 14: Road Drainage and the Water Environment (Application Document 6.1), Appendix 14.5: Hydrogeological Risk Assessment and Appendix 14.6: FRA (Application Document 6.3).
Paragraph 5.91 to 5.94 (Broadly consistent with NPS EN-1 paragraph 5.7.4)	'*The National Planning Policy Framework (paragraphs 100 to 104) makes clear that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk. But where development is necessary, it should be made safe without increasing flood risk elsewhere. The guidance supporting the National Planning Policy Framework explains that essential transport infrastructure …, which has to cross the*	The Project route would cross areas at high risk of flooding, as described in Section 14.4 of Chapter 14: Road Drainage and the Water Environment. A detailed FRA (Appendix 14.6, Application Document 6.3) has been prepared that has considered the effects on the Project and arising from the Project of all forms of flooding, and that complies with the other requirements of the NPSNN. The FRA has been informed by the results of hydrological and hydraulic modelling of the Mardyke, the West Tilbury Main and the influence of the tidal

Reference	Requirement	Project response
	area at risk, is permissible in areas of high flood risk, subject to the requirements of the Exception Test.' Applications for all projects in Flood Zones 2 and 3 should be accompanied by an FRA. '*This should identify and assess the risks of all forms of flooding to and from the project and demonstrate how these flood risks will be managed, taking climate change into account.*' '*In preparing an FRA the applicant should:* • *consider the risk of all forms of flooding arising from the project … in addition to the risk of flooding to the project, and demonstrate how these risks will be managed and, where relevant, mitigated, so that the development remains safe throughout its lifetime'*. Paragraph 5.94 also states that the FRA should take account of climate change and should clearly state the development lifetime over which the assessment has been made. The vulnerability of those using the infrastructure should be considered as well as the need to remain operational during a worst-case flood event. The FRA should also include an assessment of risk, after risk reduction measures have been taken into account, and provide the evidence for the Secretary of State to apply the Sequential Test and Exception Test, as appropriate.	River Thames, on the flow regimes of these watercourses. The FRA findings, summarised in Section 14.6 of Chapter 14: Road Drainage and the Water Environment (Application Document 6.1) and detailed in full in Appendix 14.6 (Application Document 6.3), have informed this environmental assessment An assessment of the Project's impact on greenhouse gas (GHG) emissions and assessment of the vulnerability of the Project to climate change during construction and operation is provided in Chapter 15: Climate (Application Document 6.1).
Paragraph 5.96 (Broadly consistent with NPS EN-1 paragraph 5.7.7)	'*Applicants for projects which may be affected by, or may add to, flood risk are advised to seek sufficiently early pre-application discussions with the Environment Agency, and, where relevant, other flood risk management bodies such as lead local flood authorities, Internal Drainage Boards, sewerage undertakers, highways authorities and reservoir owners and operators.*'	The FRA (Appendix 14.6, Application Document 6.3) has been informed by extensive consultation with the Environment Agency, relevant LLFAs, the North Kent Marshes Internal Drainage Board and sewerage undertakers. A summary of these discussions is provided in Chapter 14: Road Drainage and the Water Environment Table 14.1 Application Document 6.1), with further details in Appendix 14.6 (Application Document 6.3).

Reference	Requirement	Project response
Paragraph 5.97	'*For local flood risk (surface water, groundwater and ordinary watercourse flooding), local flood risk management strategies and surface water management plans provide useful sources of information for consideration in Flood Risk Assessments. Surface water flood issues need to be understood and then account of these issues can be taken, for example flow routes should be clearly identified and managed.*'	As detailed in Section 14.2 (Local Policy Framework sub-section) of Chapter 14: Road Drainage and the Water Environment (Application Document 6.1), this assessment and its accompanying FRA (Appendix 14.6, Application Document 6.3) has been informed by key flood risk management strategies prepared by Kent County Council and Essex County Council. Surface water flood risk has been assessed, and Part 7 of Appendix 14.6: FRA (Application Document 6.3) documents Project proposals for the management of flood risk from this source.
Paragraphs 5.98 – 5.99	These paragraphs detail that where flood risk is a factor, the application must be supported by an appropriate FRA that demonstrates that flood risk will not be increased elsewhere, that the proposed development is appropriately flood resilient and resistant and that any residual risk can be safely managed. It should also be demonstrated that priority has been given to the use of SuDS.	An FRA has been prepared (Application Document 6.3, Appendix 14.6). As summarised in Sections 14.5 and 14.6 of Chapter 14: Road Drainage and the Water Environment (Application Document 6.1), the Project design includes measures to ensure flood resilience/resistance and to prevent increases in flood risk elsewhere. An assessment of residual flood risk is presented in Part 6 of the FRA and Part 7 describes the proposed use of SuDS to manage operational drainage from the Project.
Paragraph 5.100 (Broadly consistent with NPS EN-1 paragraph 5.7.10)	This paragraph relates to drainage systems and states, '*The Secretary of State will therefore need to be satisfied that the proposed drainage system complies with any National Standards published by Ministers under Paragraph 5(1) of Schedule 3 to the Flood and Water Management Act 2010. In addition, the development consent order, or any associated planning obligations, will need to make provision for the adoption and maintenance of any Sustainable Drainage Systems (SuDS)*'.	Part 7 of the FRA (Appendix 14.6 Application Document 6.3) details the proposed operational drainage systems, which have been designed in accordance with relevant National Standards, and local guidance, as referenced in Section 14.5 of Chapter 14: Road Drainage and the Water Environment (Application Document 6.1), and below. Provision for maintenance of these drainage systems is also described in Section 14.5 of Chapter 14: Road Drainage and the Water Environment and would be secured via commitments within the Register of Environmental Actions and Commitments (REAC) (Application Document 6.3, Appendix 2.2).
Paragraph 5.101 (Broadly consistent with	'*If the Environment Agency continues to have concerns and objects to the grant of development consent on the grounds of flood risk, the Secretary of State can grant consent, but*	Proposed mitigation measures to reduce Project effects on flood risk during construction and operation are described in the Environmental Statement in Section 14.5 of Chapter 14: Road

Reference	Requirement	Project response
NPS EN-1 paragraph 5.7.8)	*would need to be satisfied before deciding whether or not to do so that all reasonable steps have been taken by the applicant and the Environment Agency to try and resolve the concerns.*'	Drainage and the Water Environment (Application Document 6.1). These measures have been developed in consultation with the Environment Agency as documented in the Summary of envisaged Statements of Common Ground (Application Document 7.3). As detailed, general agreement in principle has been reached with the Environment Agency with regard to the mitigation of Project effects on flood risk.
Paragraph 5.102	'*The Secretary of State should expect that reasonable steps have been taken to avoid, limit and reduce the risk of flooding to the proposed infrastructure and others. However, the nature of linear infrastructure means that there will be cases where:* • *upgrades are made to existing infrastructure in an area at risk of flooding;* • *infrastructure in a flood risk area is being replaced;* • *infrastructure is being provided to serve a flood risk area; and* • *infrastructure is being provided connecting two points that are not in flood risk areas, but where the most viable route between the two passes through such an area.'*	As detailed in the FRA (Application Document 6.3, Appendix 14.6), the Project design has incorporated measures to avoid, limit and reduce the risk of flooding to the proposed infrastructure for example, by crossing floodplains on viaducts and by incorporating flood protection measures at the northern tunnel portal. To ensure that the risk of flooding to others is not increased by the Project, floodplain compensation storage would be provided, and measures are included in the road drainage design to provide attenuation of discharges.
Paragraph 5.103 and 5.104	'*The Secretary of State should take account of any positive benefit to placing linear infrastructure in a flood-risk area*.' It is also stipulated that reasonable mitigation measures should be included in the design of linear infrastructure to ensure that the infrastructure remains functional in the event of predicted flooding.	The mitigation provided in the Project design is described in Section 14.5 of Chapter 14: Road Drainage and the Water Environment (Application Document 6.1). As detailed in the FRA (Application Document 6.3, Appendix 14.6), and in paragraphs 14.6.124 and 14.6.126 of Chapter 14: Road Drainage and the Water Environment the Project would deliver local flood risk benefits in the Mardyke and Mardyke West tributary catchments.
Paragraphs 5.105, 5.106 and 5.107	These paragraphs state the preference for locating projects in Flood Zone 1 in line with the Sequential Test. Where this is not possible, national networks infrastructure projects can be located in Flood Zone 3a, subject to the Exception Test.	Several alternatives to the Project design have been considered, as detailed in Environmental Statement Chapter 3: Assessment of Reasonable Alternatives (Application Document 6.1) and on balance of reason the design was selected, which

Reference	Requirement	Project response
(Broadly consistent with NPS EN-1 paragraph 5.7.12)	Paragraph 5.106 states, '*The test provides a method of managing flood risk while still allowing necessary development to occur.*' Paragraph 5.107 stresses that, '*The Exception Test is only appropriate for use where the Sequential Test alone cannot deliver an acceptable site, taking into account the need for national networks infrastructure to remain operational during floods.*'	crosses areas of Flood Zone 3. The Project therefore triggers application of the Exception Test, which has been satisfied as detailed below.
Paragraphs 5.108 and 5.109	These paragraphs describe the Exception Test. '*Both elements of the test will have to be passed for development to be consented. For the Exception Test to be passed:* • *it must be demonstrated that the project provides wider sustainability benefits to the community that outweigh flood risk; and* • *a FRA must demonstrate that the project will be safe for its lifetime, without increasing flood risk elsewhere and, where possible, will reduce flood risk overall.'* '*In addition, any project that is classified as 'essential infrastructure' and proposed to be located in Flood Zone 3a or b should be designed and constructed to remain operational and safe for users in times of flood; and any project in Zone 3b should result in no net loss of floodplain storage and not impede water flows.*'	As illustrated in the FRA (Application Document 6.3, Appendix 14.6), some areas within the Order Limits are in Flood Zone 3. As noted above, the Project has been subject to a detailed FRA, which provides the evidence required to satisfy the second part of the Exception Test. Evidence in support of the first part of the Exception Test, regarding the sustainability benefits of the Project, is summarised in the Need for the Project (Application Document 7.1). Details of the measures integrated into the design of the Project to ensure that it remains operational and safe for users in times of flood are provided in Section 14.5 of Chapter 14: Road Drainage and the Water Environment (Application Document 6.1).
Paragraph 5.221	'*Where a development … is likely to have significant adverse effects on the water environment, the applicant should ascertain the existing status of, and carry out an assessment of the impacts of the proposed project on water quality, water resources and physical characteristics as part of the environmental statement.*'	All the characteristics listed have been included in the scope of this assessment, as set out in the methodology in Section 14.3 of Environmental Statement Chapter 14: Road Drainage and the Water Environment (Application Document 6.1), and description of the water environment baseline, presented in Section 14.4 of Chapter 14.
Paragraph 5.223	'*Any environmental statement should describe:*	The existing water environment (water quality, water resources and physical characteristics) is described in the Environmental

Reference	Requirement	Project response
(Broadly consistent with NPS EN-1 paragraph 5.15.3)	• *the existing quality of waters affected by the proposed project;* • *existing water resources affected by the proposed project and the impacts of the proposed project on water resources;* • *existing physical characteristics of the water environment (including quantity and dynamics of flow) affected by the proposed project, and any impact of physical modifications to these characteristics;* • *any impacts of the proposed project on water bodies or protected areas under the Water Framework Directive and source protection zones (SPZs) around potable groundwater abstractions; and* • *any cumulative effects.'*	Statement in Section 14.4 of Chapter 14: Road Drainage and the Water Environment (Application Document 6.1), and the effects of the Project are described and assessed in Section 14.6 of the Chapter 14. In addition, a Hydromorphology Assessment has been prepared (Application Document 6.3, Appendix 14.4) that assesses the impacts of physical modifications of watercourses, a WFD Assessment has been prepared and is provided (Application Document 6.3, Appendix 14.7) and a Hydrogeological Risk Assessment has been prepared that describes the impacts on groundwater resources (Application Document 6.3, Appendix 14.5). The potential for cumulative effects is addressed in the Environmental Statement in Section 14.7 of Chapter 14: Road Drainage and the Water Environment, and in Chapter 16: Cumulative Effects Assessment (Application Document 6.1).
Paragraphs 5.225 and 5.226 (Broadly consistent with NPS EN-1 paragraph 5.15.6)	'*The Secretary of State will generally need to give impacts on the water environment more weight where a project would have adverse effects on the achievement of the environmental objectives established under the Water Framework Directive.*' '*The Secretary of State should be satisfied that a proposal has had regard to the River Basin Management Plans and the requirements of the Water Framework Directive (including Article 4.7) and its daughter directives, including those on priority substances and groundwater. … In terms of Water Framework Directive compliance, the overall aim of projects should be no deterioration of the ecological status in watercourses, ensuring that Article 4.7 of the Water Framework Directive Regulations does not need to be applied.*'	A WFD Assessment has been prepared and is provided in Appendix 14.7 (Application Document 6.3). Appropriate design and mitigation measures have been incorporated into the Project to facilitate WFD compliance, such that there would be no adverse effects on the achievement of the objectives established under the WFD. These are described in Section 14.5 of Chapter 14: Road Drainage and the Water Environment of the Environmental Statement (Application Document 6.1).
Paragraph 5.227	'*The Examining Authority and the Secretary of State should consider proposals put forward by the applicant to mitigate*	Proposed mitigation measures to reduce Project effects on the water environment during construction and operation are

Reference	Requirement	Project response
	adverse effects on the water environment and whether appropriate requirements should be attached to any development consent and/or planning obligations. If the Environment Agency continues to have concerns and objects to the grant of development consent on the grounds of impacts on water quality/resources, the Secretary of State can grant consent, but will need to be satisfied before deciding whether or not to do so that all reasonable steps have been taken by the applicant and the Environment Agency to try to resolve the concerns, and that the Environment Agency is satisfied with the outcome.'	described in the Environmental Statement in Section 14.5 of Chapter 14: Road Drainage and the Water Environment (Application Document 6.1). These measures have been developed in consultation with the Environment Agency. General agreement in principle has been reached with the Environment Agency with regard to the mitigation of Project effects on water environment receptors, as reported in the Statement of Common Ground (Application Document 7.3).
Paragraph 5.229 (Broadly consistent with NPS EN-1 paragraph 5.15.8)	'*The Secretary of State should consider whether the mitigation measures put forward by the applicant which are needed for operation and construction (and which are over and above any which may form part of the project application) are acceptable. A construction management plan may help codify mitigation.*'	Proposed mitigation measures to reduce Project effects on the water environment during construction and operation are described in the Environmental Statement in Section 14.5 of Chapter 14: Road Drainage and the Water Environment (Application Document 6.1). These mitigations, which have been consulted on and agreed with the regulator, are secured by several commitments within the REAC (Appendix 2.2, Application Document 6.3).
Paragraph 5.230	'*The project should adhere to any National Standards for sustainable drainage systems (SuDS).*'	A strategy for managing operational surface water drainage has been prepared centred on the application of SuDS, appropriate to local conditions. The strategy is summarised in Part 7 of Appendix 14.6: Flood Risk Assessment (Application Document 6.3). The drainage principles have been discussed and agreed with relevant LLFAs, as detailed in Table 14.1 of Environmental Statement Chapter 14: Road Drainage and the Water Environment (Application Document 6.1).
Paragraph 5.231	'*The risk of impacts on the water environment can be reduced through careful design to facilitate adherence to good pollution control practice. For example, designated areas for storage and unloading, with appropriate drainage facilities, should be marked clearly.*'	Proposed pollution control practices are described in Section 14.5 of Chapter 14: Road Drainage and the Water Environment (Application Document 6.1). These practices are secured by several commitments within the REAC (Appendix 2.2, Application Document 6.3).

Reference	Requirement	Project response
Overarching National Policy Statement for Energy (NPS EN-1) (Department of Energy and Climate Change, 2011a)		
Paragraph 5.15.3	Outlines the need for the ES to describe '*the existing quality of waters affected by the proposed project and the impacts of the proposed project on water quality, noting any relevant existing discharges, proposed new discharges and proposed changes to discharges;'* and *'any relevant existing abstraction rates, proposed new abstraction rates and proposed changes to abstraction rates (including any impact on or use of mains supplies and reference to Catchment Abstraction Management Strategies)*'.	ES Chapter 14: Road Drainage and the Water Environment (Application Document 6.1) describes and assesses the effects of the Project on water quality, including the effects of proposed new discharges to watercourses and to ground. The Project has also undertaken a comprehensive Water Features Survey, detailed in Appendix 14.2 (Application Document 6.3), that has identified and characterised existing discharges and abstractions. Where relevant, effects on these receptors are also presented in Chapter 14 of the ES.
Paragraph 5.7.5	FRAs should: • *'be proportionate to the risk and appropriate to the scale, nature and location of the project;* • *be undertaken by competent people, as early as possible in the process of preparing the proposal;* • *consider both the potential adverse and beneficial effects of flood risk management infrastructure, including raised defences, flow channels, flood storage areas and other artificial features, together with the consequences of their failure;* • *consider and quantify the different types of flooding (whether from natural and human sources and including joint and cumulative effects) and identify flood risk reduction measures, so that assessments are fit for the purpose of the decisions being made;* • *consider the effects of a range of flooding events including extreme events on people, property, the natural and historic environment and river and coastal processes;* • *consider how the ability of water to soak into the ground may change with development, along with how the*	The Project has prepared an FRA (ES Appendix 14.6, Application Document 6.3), that assesses all relevant forms of flooding and that has been informed by detailed modelling studies of river and tidal flooding for a range of flooding events, including extreme events, and which has been prepared by engaging with the Environment Agency and LLFAs. Part 6 of the FRA details the flood risk management and mitigation measures proposed and Part 7 of the FRA considers surface water drainage.

Reference	Requirement	Project response
	proposed layout of the project may affect drainage systems; • *be supported by appropriate data and information, including historical information on previous events'.*	
National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (NPS EN-4) (Department of Energy and Climate Change, 2011b)		
Paragraph 2.22.2	This paragraph sets out that the construction of pipelines '*creates corridors of surface clearance and excavation that can potentially affect watercourses, aquifers, water abstraction and discharge points, areas prone to flooding and ecological receptors. Pipeline impacts could include inadequate or excessive drainage, interference with groundwater flow pathways, mobilisation of contaminants already in the ground, the introduction of new pollutants, flooding, disturbance to water ecology, pollution due to silt from construction and disturbance to species and their habitats. Impacts during construction should be avoided as far as possible through route selection or mitigated if unavoidable and ground should be reinstated after construction'*.	Chapter 14: Road Drainage and the Water Environment (Application Document 6.1) provides an assessment of the effects of the Project on all of the receptors and potential impact pathways listed. Proposed mitigation measures to reduce Project effects on the water environment during construction and operation are described in the Environmental Statement in Section 14.5 of Chapter 14: Road Drainage and the Water Environment.
Paragraph 2.22.5	IPC should liaise with the EA over the potential for the new development to result in loss or reduction of supply to any licensed abstraction or unlicensed groundwater abstraction, or any potential interference with current legitimate uses of groundwater or surface waters, taking account of the terms of any relevant environmental permits or any negative effect on a groundwater dependent ecosystem.'	The Project's effects on groundwater dependent ecosystems and on licenced and unlicensed groundwater abstractions are presented in the Hydrogeological Risk Assessment (ES Appendix 14.5, Application document 6.3).
Paragraph 2.22.6 – 2.22.7	This paragraph states that *'mitigation measures to protect the water environment may include techniques for crossing rivers and managing surface water before and after construction, including restoring vegetation and using sustainable drainage systems to control run-off' and* further	The Project has included a commitment, detailed within the REAC, part of the outline Code of Construction Practice, Appendix 2.2 (Application Document 6.3), to adopting appropriate techniques for river crossings, for managing surface water using suitable SuDS measures and for protecting

Reference	Requirement	Project response
	adds that *'mitigation measures to protect water quality may include:* • *the avoidance of vulnerable groundwater areas or appropriate use of above ground pipeline facilities;* • *use of the highest specification pipework and best practice in the storage and handling of pollutants to prevent spillage* • *careful storage of excavated material away from watercourses and facilities for the disposal of sewage and waste* • *use of sustainable drainage systems and careful reinstatement of riverbanks and reedbeds*	water quality and re-instating riverbanks and riparian vegetation.
National Policy Statement for Electricity Networks Infrastructure (NPS EN-5) (Department of Energy and Climate Change, 2011c)		
N/A	There are no additional relevant details on the assessment of water quality and resource or flood risk and drainage.	Not applicable.
National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2021)		
Paragraph 153	This paragraph advocates adoption of proactive strategies to mitigate and adapt to climate change, taking full account of flood risk, coastal change, water supply, biodiversity and landscapes.	As described above, the Project design has built-in climate change resilience in several ways. Further details are provided in Chapter 15: Climate and the Flood Risk Assessment (ES Appendix 14.6, Application document 6.3).
Paragraph 159	'*Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.*'	As described above, the Project has been subject to a detailed FRA (Application Document 6.3, Appendix 14.6). The assessment findings, which are summarised in the Environmental Statement in Section 14.6 of Chapter 14: Road Drainage and the Water Environment (Application Document 6.1), have been used to develop the Project design to ensure it would be safe over its lifetime, without increasing flood risk elsewhere (as described in Section 14.5).
Paragraph 161	This paragraph introduces the Sequential Test, the aim of which is to steer new development to areas with the lowest risk of flooding and which is applied based on the relevant	Several alternatives to the Project design have been considered, as detailed in Chapter 3: Assessment of Reasonable Alternatives and on balance of reason the design,

Reference	Requirement	Project response
	strategic flood risk assessment. NPPF advocates that the sequential approach should be used in areas known to be at risk now or in the future from any form of flooding.	which crosses areas of Flood Zone 3, was selected. Essential transport infrastructure is permissible in areas of high flood risk, triggering the Exception Test, all parts of which have been satisfied, as detailed in the FRA (Application Document 6.3, Appendix 14.6).
Paragraph 167	'*When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:* • *within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;* • *the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;* • *it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;* • *any residual risk can be safely managed; and* • *safe access and escape routes are included where appropriate, as part of an agreed emergency plan.'*	A site-specific FRA has been prepared (Application Document 6.3, Appendix 14.6). The FRA demonstrates compliance with the stated criteria.

Table 1.3 Regional and local policies for Road Drainage and the Water Environment

Reference	Requirement
Mayor of London (2021) The London Plan	**Policy SI 12 Flood risk management** development plans should use the Major's Regional Flood Risk Appraisal, Strategic FRA and local flood risk management strategies (LFRMS) to identify areas of particular and cumulative flood risk, develop approaches to reduce risk and cooperate with Boroughs on cross boundary issues. Flood risk should be minimised & mitigated, and residual risk addressed.
Maidstone Local Plan (2017)	**DM3 Natural Environment** New development will be expected to contribute towards the goal of a linked network of green spaces and blue corridors. WFD integrated river basin management should influence development plans.
Tonbridge and Malling Adopted Development Plan Core Strategy (2007)	**CP1 Sustainable Development and CP10 Flood Protection** Development proposals will be balanced against the need to protect and enhance the natural and built environment including water quality. Where possible areas liable to flood will be avoided. Development must be justified in areas of flood risk and must be subject to flood risk assessment and be designed and to mitigate effects of flooding on site and potential for impact on flooding elsewhere on floodplain.
Gravesham Borough Council (2014) Gravesham Local Plan Core Strategy (Adopted 2014)	**CS12 Green Infrastructure, CS18 Climate Change and CS19 Development and Design Principles** With exception of previously developed sites along the Thames Riverside and other regeneration sites already evaluated, development will be directed sequentially to areas at least risk of flooding. Proposals in flood risk areas must be accompanied by an FRA and flood risk management plan (FRMP) (if required). Permission will be refused to schemes that do not pass sequential and exception tests. Maintenance, improvement or replacement of flood defence infrastructure will be prioritised over other uses where relevant. New developments should take opportunities to reduce causes and impacts of flooding from all sources where technically and financially feasible and aim to contribute to WFD good water status. Surface water run-off from new development must not at minimum create greater adverse impact. SuDS are required on all developments where technically and financially feasible. New development will not pose an unacceptable risk/harm to the water environment including quality and/or quantity of groundwater, surface water, wetlands and coastal water systems.
Thurrock Council (2015) Core Strategy and Policies for Management of	**CSTP25 Addressing Climate Change, CSTP27 Management and Reduction of Flood Risk, PMD1 Minimising Pollution and Impacts on Amenity and PDM15 Flood Risk Assessment** These policies aim to ensure new vulnerable development is not at risk of flooding. The sequential test is required and in most cases the exception test is also required. Those sites that require the exception test must demonstrate that development provides wider sustainability benefits to the community that outweigh flood risk. FRA must demonstrate

Reference	Requirement
Development (Adopted 2015)	that development will be safe without increasing flood risk elsewhere and if possible, reduce flood risk overall. Developments are expected to incorporate SuDS to reduce surface water flooding to the site and surrounding area. At sites of identified surface water flood risk, site specific Flood Risk Assessment should ensure appropriate use of SuDS.
Havering Local Plan (2021)	**Policy 31 Rivers and River Corridors, Policy 32 Flood Management and Policy 34 Managing Pollution** Policy 31 advocates that major developments in close proximity to rivers investigate and where feasible secure opportunities to restore and enhance rivers and their corridors in line with Thames River Basin Management Plan (RBMP). Developments should be set 8m back from main rivers, ordinary watercourses and other flood assets, and 16m from tidal rivers or defence structures and developments will be supported if they facilitate and act on recommendations of the Thames Estuary 2100 Plan. Policy 32 states that developments should follow NPPF sequential and exception tests to avoid flood risk to people and property and to manage residual risk. Developments must seek to reduce surface water flooding by providing SuDS unless there are practical reasons not to do so, by ensuring SuDS proposals apply the London Plan drainage hierarchy achieving greenfield run-off rates where feasible and include clear arrangements for ongoing maintenance over the development's lifetime. Policy 34 requires that developments must not pose an unacceptable risk to the quality of groundwater or surface water. Designs must be optimised in layout and orientation and use green infrastructure to minimise exposure to pollutants.
Brentwood Borough Council Local Plan (2022)	**BE02 Water Efficiency and Management, BE05 Sustainable Drainage, NE02 Blue Green Infrastructure and NE09 Flood Risk** Policy BE02 advocates that Development should incorporate water conservation measures to meet minimum standards for water efficiency and that all developments should seek to improve water quality, not cause deterioration (watercourse or ground water), not lead to adverse impacts on natural functioning of watercourses and where it is likely to have an impact, proposals must set out how impacts will be mitigated. Policy BE05 states that all developments should incorporate SuDS. Greenfield, major and CDA developments must achieve greenfield run-off rates. On brownfield sites where this is not possible then a 50% reduction should be achieved. NE02 states that new development is expected where appropriate and possible to maximise opportunities to enhance or restore existing green and blue infrastructure (GBI) or create new provision on sites that connect to the wider GBI network. There must be no adverse impact on functioning or water quality of adjacent watercourses or bodies. With regard to flood risk, Policy NE09 states that Sequential and where necessary exception tests are to be applied to avoid areas of flood risk. Site specific FRA must assess all sources of flooding and demonstrate how the flood risk will be managed over the lifetime of the development, accounting for climate change. Site specific FRA required for all new development greater than 1ha in size in Flood Zone 1, any within a CDA, all in Flood Zone 2 and 3, any new development or change of use to a more vulnerable class which may be subject to other sources of flooding.

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