The Great Grid Upgrade

Sea Link

Preliminary Environmental Information Report

Volume: 1

Part 3 Kent Onshore Scheme

Chapter 5 Water Environment

Version A

October 2023

nationalgrid

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Sea Link
Document control

Document Properties	
Organisation	Arcadis
Author	Arcadis
Approved by	Arcadis
Title	Preliminary Environmental Information Report Part 3, Chapter 5, Water Environment
Data Classification	Public

Version History

Date	Version	Status	Description / Changes
24/10/2023	A	Final	First Issue

3.5 Water Environment

3.5.1 Introduction

3.5.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents information about the preliminary environmental assessment of the likely significant water environment effects identified to date, that could result from the Proposed Project (as described in **Volume 1, Part 1, Chapter 4, Description of the Proposed Project**).

3.5.1.2 This chapter describes the methodology used, the datasets that have informed the preliminary assessment, baseline conditions, mitigation measures and the preliminary water environment residual significant effects that could result from the Proposed Project.

3.5.1.3 The draft Order Limits, which illustrate the boundary of the Proposed Project, are illustrated on **Figure 1.1.1 Draft Order Limits** and the Kent Onshore Scheme Boundary is illustrated on **Figure 1.1.3 Kent Onshore Scheme Boundary**.

3.5.1.4 This chapter should be read in conjunction with:

- **Volume 1, Part 1, Chapter 4, Description of the Proposed Project**;
- **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology**;
- **Volume 1, Part 1, Chapter 6, Scoping Opinion and EIA Consultation**;
- **Volume 1, Part 3, Chapter 1, Evolution of the Kent Onshore Scheme**;
- **Volume 1, Part 3, Chapter 3, Ecology and Biodiversity;** and
- **Volume 1, Part 3, Chapter 6, Geology and Hydrogeology.**

3.5.1.5 This chapter is supported by the following figures:

- **Figure 3.5.1 Water Environment Receptors;**
- **Figure 3.5.2 Flood Risk Baseline; and**
- **General Arrangement Plan S42_K/IGA/PS/2002** (for Minster Converter Station permanent drainage arrangement)**.**

3.5.1.6 This chapter is supported by the following appendices:

- **Volume 2, Part 1, Appendix 1.4.A, Outline Code of Construction Practice**;
- **Volume 2, Part 1, Appendix 1.4.F, Outline Schedule of Environmental Commitment and Mitigation Measures**;
- **Volume 2, Part 3, Appendix 3.5.A, Baseline Data (tables)**;
- **Volume 2, Part 3, Appendix 3.5.B, Assessment Criteria (tables);** and
- **Volume 1, Part 5, Chapter 5, Water Framework Directive Screening Assessment.**

3.5.2 Regulatory and Planning Context

3.5.2.1 This section sets out the legislation and planning policy that is relevant to the preliminary water environment assessment. A full review of compliance with relevant national and local planning policy will be provided within the Planning Statement that will be submitted as part of the application for Development Consent.

3.5.2.2 Policy generally seeks to minimise water environment effects from development and to avoid significant adverse effects. This applies particularly to the prevention of pollution of waterbodies, safeguarding water resources and the sustainable management of land drainage and flood risk.

Legislation

The Water Environment (Water Framework Directive [WFD]) (England and Wales) Regulations 2017

3.5.2.3 The Water Environment (Water Framework Directive [WFD]) (England and Wales) Regulations 2017 (as amended) (Ref 3.5.1) implemented the WFD in England and Wales. Under Section 2 of the European Union (Withdrawal) Act 2018, the 2017 Regulations continue to have effect in domestic law following the UK's withdrawal from the European Union.

3.5.2.4 The purpose of the WFD is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and ground waters to prevent further deterioration in, and enhance, water quality, and to promote sustainable water use. The 2017 Regulations require the "appropriate agency" (the Environment Agency, for England) to prepare River Basin Management Plans (RBMPs) for each river basin district (RBD), for the approval of the Secretary of State.

3.5.2.5 The RBMPs describe the current state of the water environment for each RBD, the pressures affecting the water environment, the objectives for protecting and improving it, and the programme of measures needed to achieve the statutory environmental objectives of the WFD (i.e., to enable water bodies to achieve Good status).

3.5.2.6 Under the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (Ref 3.5.2), an application for a Development Consent Order (DCO) must be accompanied by a plan with accompanying information identifying water bodies in RBMP, together with an assessment of any effects on such water bodies likely to be caused by the development (reg. 5). This is commonly referred to as a WFD assessment.

Part 5 of the Environment Act 2021 (HMSO, 2021)

3.5.2.7 Part 5 of the Environment Act 2021 (Ref 3.5.3), 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 through the newly established Office for Environmental Protection.

The Land Drainage Act 1991 (HMSO, 1991)

3.5.2.8 The Land Drainage Act 1991 (Ref 3.5.4) and the Environmental Permitting (England and Wales) Regulations 2016 (Ref 3.5.5) impose certain controls in relation to the placing of structures and the carrying out of works affecting main rivers and other (ordinary) watercourses.

National Policy

National Policy Statements

3.5.2.9 National Policy Statements (NPSs) set out the primary policy tests against which the application for a Development Consent Order (DCO) for the Proposed Project would be considered. Table 3.5.1 and Table 3.5.2 below provide details of the elements of NPS for Energy (EN-1) (Ref 3.5.6) and NPS for Electricity Networks Infrastructure (EN-5) (Ref 3.5.8) that are relevant to this chapter, and how and where they are covered in the PEIR or will be covered within the Environmental Statement (ES).

Table 3.5.1: NPS EN-1 requirements relevant to water environment

NPS EN-1 section	Where this is covered in the PEIR
5.7.4 *"(part) Applications for energy projects of 1 hectare or greater in Flood Zone 1 in England or Zone A in Wales and all proposals for energy projects located in Flood Zones 2 and 3 in England or Zones B and C in Wales should be accompanied by a flood risk assessment (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."*	An overview of baseline flood risk within the draft Order Limits is described in Section 3.5.7, and the application will be supported by a Flood Risk Assessment (FRA) that will inform the project design and the water environment assessment within the ES.
5.7.7 *"Applicants for projects which may be affected by, or may add to, flood risk should arrange pre-application discussions with the EA, and, where relevant, other bodies such as Internal Drainage Boards, sewerage undertakers, navigation authorities, highways authorities and reservoir owners and operators. Such discussions should identify the likelihood and possible extent and nature of the flood risk, help scope the FRA, and identify the information that will be required by the IPC to reach a decision on the application when it is submitted. The IPC should advise applicants to undertake these steps where they appear necessary but have not yet been addressed."*	Discussions have been held with the Environment Agency, the Lead Local Flood Authority (LLFA) and the River Stour Internal Drainage Board (IDB) at the scoping stage as described in Section 3.5.3. Baseline flood risk data has been requested from these flood risk management authorities and the scope of the FRA agreed with the relevant stakeholders. Engagement with these bodies will continue throughout the environmental impact assessment.

NPS EN-1 section	Where this is covered in the PEIR
5.15.1 *"Infrastructure development can have adverse effects on the water environment, including groundwater, inland surface water, transitional waters and coastal waters. During the construction, operation and decommissioning phases, it can lead to increased demand for water, involve discharges to water and cause adverse ecological effects resulting from physical modifications to the water environment. There may also be an increased risk of spills and leaks of pollutants to the water environment. These effects could lead to adverse impacts on health or on protected species and habitats (see Section 4.3 and Section 4.18) and could, in particular, result in surface waters, groundwaters or protected areas failing to meet environmental objectives established under the Water Framework Directive."*	The water environment assessment would consider the potential for likely significant effects on inland surface waters, including consideration of demand for water, discharges to water and potential for physical modifications and pollution during the construction, operation, and maintenance and decommissioning of the Proposed Project. The proposed scope of the assessment is provided in section 3.5.3. Effects on protected habitats and species and groundwaters are assessed in **Volume 1, Part 3, Chapter 3, Ecology and Biodiversity** and **Volume 1, Part 3, Chapter 6, Geology and Hydrogeology**. Effects on transitional and coastal waters are presented in the assessments comprising **Volume 4 of the PEIR.** A Water Framework Directive Assessment will also be produced and submitted with the DCO application, with a WFD Screening report having been produced, forming **Volume 1, Part 5, Chapter 5 Water Framework Directive Screening Assessment** of this Preliminary Environmental Impact Assessment.
5.15.2 *"Where the project is likely to have effects on the water environment, the applicant should undertake an assessment of the existing status of, and impacts of the proposed project on, water quality, water resources and physical characteristics of the water environment as part of the ES or equivalent. (See Section 4.2.)"*	Current understanding of the existing status of these aspects of the water environment is presented in Section 3.5.7. The potential for likely significant effects on water quality, water resources and the physical characteristics of the water environment is discussed in Section 3.5.9.

NPS EN-1 section	Where this is covered in the PEIR
5.15.6 *"The IPC should satisfy itself that a proposal has regard to the River Basin Management Plans and meets the requirements of the Water Framework Directive (including Article 4.7) and its daughter directives, including those on priority substances and groundwater. The specific objectives for particular river basins are set out in River Basin Management Plans. The IPC should also consider the interactions of the proposed project with other plans such as Water Resources Management Plans and Shoreline/Estuary Management Plans."*	Section 3.5.7 presents data from the relevant RBMP. The first stages of the Water Framework Directive Screening Assessment prepared for the Proposed Project is presented in **Volume 1, Part 5, Chapter 5, Water Framework Directive Screening Assessment.** The full assessment will be prepared to inform the ES and will reference Southern Waters Water Resource Management Plan and the Isle of Grain to South Foreland Shoreline Management Plan.
5.15.7 *"The IPC should consider whether appropriate requirements should be attached to any development consent and/or planning obligations entered into to mitigate adverse effects on the water environment."*	Measures to mitigate likely significant adverse effects on the water environment are described in Section 3.5.8. These will be further developed throughout the environmental impact assessment and secured, as relevant, within the application.

3.5.2.10 There are no other new or materially different policy considerations relevant to the water environment within the Draft EN-1 (Ref 3.5.7), when compared to the current EN-1 (Ref 3.5.6).

Table 3.5.2: NPS EN-5 requirements relevant to water environment

NPS EN-5 section	Where this is covered in the PEIR
2.4.1 *"Applicants should set out to what extent the proposed development is expected to be vulnerable, and, as appropriate, how it would be resilient to: flooding, particularly for substations that are vital for the electricity transmission and distribution network; effects of wind and storms on overhead lines; higher average temperatures leading to increased transmission losses; and earth movement or subsidence caused by flooding or drought (for underground cables)."*	A Preliminary assessment of effects on floodplains and flood risk is presented in Table 3.5.13: Preliminary assessment of effects on floodplains and flood risk and an FRA will be produced and submitted with the application. The FRA will consider all relevant aspects listed in this paragraph of the NPS.

NPS EN-5 section	Where this is covered in the PEIR
2.4.2 Section 4.8 of EN-1 advises that *"the resilience of the project to climate change should be assessed in the Environmental Statement (ES) accompanying an application. For example, future increased risk of flooding would be covered in any flood risk assessment (see Section 5.7 in EN-1)."*	The FRA to be prepared for the Proposed Project will examine future flood risk to the Proposed Project over its lifetime, and identify mitigation measures required to ensure flood resilience, taking climate change predictions into account.
2.6.2 Section 4.9 of EN-1 advises that *"the resilience of the project to the effects of climate change should be assessed in the Environmental Statement (ES) accompanying an application. For example, future increased risk of flooding would be covered in any flood risk assessment (see Section 5.8 in EN-1)."*	As noted above, the future increased risk of flooding will be addressed within the FRA to be prepared for the Proposed Project.

3.5.2.11 There are no other new or materially different policy considerations for the water environment within the Draft EN-5 (Ref 3.5.9), when compared to the current EN-5 (Ref 3.5.8).

National Planning Policy Framework

3.5.2.12 The National Planning Policy Framework (NPPF) (Ref 3.5.11) has the potential to be considered important and relevant to the SoS' consideration of the Proposed Project. A review of the NPS was announced in the 2020 Energy white paper: Powering our net zero future. This review was to ensure the NPSs were brought up to date to reflect the policies set out in the white paper. Table 3.5.3 below provides details of the elements of the NPPF that are relevant to this chapter, and how and where they are covered in the PEIR or will be covered within the ES.

Table 3.5.3: NPPF requirements relevant to water environment

NPPF section	Where this is covered in the PEIR
Paragraphs 153 and 154. These paragraphs advocate adoption of proactive strategies to mitigate and adapt to climate change, taking full account of flood risk, coastal change, water supply, biodiversity and landscapes.	The Proposed Project incorporates climate change resilience measures in several ways, for example avoiding situating proposed new substations and cable sealing compounds in areas that are at risk of flooding, and by incorporating climate change allowances within the operational drainage design. Further details are provided in Section 3.5.8.

NPPF section	Where this is covered in the PEIR
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."*	The Proposed Project will be subject to a detailed FRA the findings of which will be used to further develop the design to ensure it would be safe over its lifetime, without increasing flood risk elsewhere. As noted above, the Proposed Project avoids situating proposed new substations and cable sealing compounds in areas that are at risk of flooding. Further details are provided in Section 3.5.8.
Paragraphs 161 and 162. These paragraphs introduce and set out the aims of the Sequential Test, to steer new development to areas with the lowest risk of flooding and which is applied based on the relevant 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.	Several Project design alternatives have been considered, as detailed in **Volume 1, Part 3, Chapter 1, Evolution of the Kent Onshore Scheme** and on balance of reason the Proposed Project design was selected. The sequential test has been applied and development has been directed away from areas of high flood risk where possible. Where this is not possible, the exception text will be applied. The FRA to be prepared will demonstrate compliance with this policy.
Paragraphs 163 to 165. These paragraphs introduce and set out the aims and requirements of the Exception Test, stating that to pass the exception test it should be demonstrated that: *"(a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and* *(b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall."*	A FRA will be prepared to demonstrate compliance with the stated criteria. The sequential test has been applied and development has been directed away from areas of high flood risk where possible. Where this is not possible, the exception text will be applied. The FRA to be prepared will demonstrate compliance with this policy.

NPPF section	Where this is covered in the PEIR
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:* *(a) 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;* *(b) 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;* *(c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;* *(d) any residual risk can be safely managed; and* *(e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan."*	A FRA will be prepared to demonstrate compliance with the stated criteria. The sequential test has been applied and development has been directed away from areas of high flood risk where possible. Where this is not possible, the exception text will be applied. The FRA to be prepared will demonstrate compliance with this policy.
Paragraph 169. *"Major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate."*	The Project is committed to incorporating Sustainable Drainage Systems (SuDS) to manage operational drainage. Details of the drainage design will be provided within the FRA that will be prepared, informed by the drainage strategy that is being developed.

NPPF section	Where this is covered in the PEIR
Paragraph 174. *"Planning policies and decisions should contribute to and enhance the natural and local environment by [inter alia] …"preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans".*	The existing condition of water receptors in terms of their water quality is described in Section 3.5.7. Measures to prevent the Proposed Project contributing to water pollution, and where possible, improve local conditions are described in Section 3.5.8. These will be further developed throughout the environmental impact assessment, with reference to the South East RBMP (Ref 3.5.25) and secured, as relevant, within the application.

National Planning Practice Guidance

3.5.2.13 There are two National Planning Practice Guidance publications that area relevant to the water environment, the requirements of which will be covered within the ES. The flood risk and coastal change guidance (Ref 3.5.12) advises how to take account of and address the risks associated with flooding and coastal change in the planning process. The water supply, wastewater and water quality guidance (Ref Ref 3.5.13) advises on how planning can ensure water quality and the delivery of adequate water and wastewater infrastructure.

Local Planning Policy

3.5.2.14 The Kent Onshore Scheme Boundary (refer to **Figure 1.1.3 Kent Onshore Scheme Boundary**) lies within the jurisdiction of Kent County Council.

3.5.2.15 County planning guidance which is relevant to a study of the water environment and has informed the assessment of preliminary effects in this chapter are as follows:

- Kent Drainage and Planning Policy Statement (Ref 3.5.14).

3.5.2.16 This policy statement sets out the Councils expectations in terms of surface water management provisions associated with applications for major development.

3.5.2.17 The Kent Onshore Scheme Boundary lies within the boundary of Thanet District Council Local Plan (Ref 3.5.15) and Dover District Local Plan (Ref 3.5.16). Local Plan policies which are relevant to water environment matters and will inform the assessment of water environment in the ES are detailed in Table 3.5.4 and Table 3.5.45.

Table 3.5.4: Local Planning Policies relevant to water environment – Thanet Local Plan

Thanet District Council Local Plan – Policy	Where this is covered in the PEIR
CC01 - Fluvial and Tidal Flooding: New development in an area identified as being at risk of flooding and falling within Flood Zones 2 and 3, will only be permitted if it can be demonstrated that it satisfies the Sequential Test and, where required, the Exception Test as set out in the NPPF. Development proposals in these areas shall be accompanied by a FRA, including developments over 1 hectare in Flood Zone 1, which should address flood risk from all sources of flooding including surface and groundwater flooding. Any development that takes place in a flood risk area will be expected to incorporate flood resilience measures.	The FRA to be prepared for the Proposed Project will accord with the requirements of the NPPF and associated guidance, inclusive of the relevant Strategic Flood Risk Assessment (SFRA). The FRA will identify any necessary mitigation, which will be secured within the draft DCO, to ensure that there is not an unacceptable risk of flooding to the Proposed Project or elsewhere.
CC02 - Surface Water Management: New development is required to manage surface water resulting from the development using sustainable drainage systems (SuDs) wherever possible. SuDs design, together with a robust long term maintenance plan should be included as an integral part of the master planning and design process for new development and should, wherever possible, incorporate multi-functional benefits for people and wildlife.	Measures for mitigation of surface water flooding are covered in Section 3.5.8, with further detail to be provided within a drainage strategy produced for the application.

Table 3.5.5: Local Planning Policies relevant to water environment – Draft Dover District Local Plan

Draft Dover District Local Plan – Policy	Where this is covered in the PEIR
CC5 – Flood Risk: development on sites at risk of flooding must comply with the National Planning Policy Framework and associated guidance and will only be permitted as an exception and where it is demonstrated by a site-specific FRA, carried out in accordance with the requirements set out in the Council's Strategic Flood Risk Assessment (SFRA), that it would not result in an unacceptable risk of flooding on the site itself or elsewhere.	The FRA to be prepared for the Proposed Project will accord with the requirements of the NPPF and associated guidance, inclusive of the Dover District SFRA. The FRA will identify any necessary mitigation, which will be secured within the draft DCO, to ensure that there is not an unacceptable risk of flooding to the

Draft Dover District Local Plan – Policy	Where this is covered in the PEIR
	Proposed Project or elsewhere.
CC6 – Surface Water Management: new development should replicate natural ground and surface water flows and decrease surface water run-off through the use of Sustainable Drainage Systems (SuDS).	The FRA prepared for the Proposed Project will set out how surface water would be managed during construction and operation of the Proposed Project using suitable SuDS. A drainage strategy will also be prepared in support of the application.

3.5.3 Scoping Opinion and Consultation

Scoping

3.5.3.1 A Scoping Report (Ref 3.5.17) for the Proposed Project was issued to the Planning Inspectorate (PINS) on 24 October 2022 and a Scoping Opinion (Ref 3.5.18) was received from the Secretary of State (SoS) on 1 December 2022. Table 3.5.6 sets out the comments raised in the Scoping Opinion and how these have been addressed in this PEIR or will be addressed within the ES. The Scoping Opinion takes account of responses from prescribed consultees as appropriate.

Table 3.5.6: Comments raised in the Scoping Opinion

ID	Inspectorate's comments	Response
4.4.1	[*Pollution of watercourses associated with operational discharges and runoff from above ground infrastructure (AGI) – water quality effects (operation)*] This matter is scoped out on the basis of no impact pathway given treatment through SUDs provision. The Inspectorate agrees that, provided the measures to mitigate the risks of pollution of watercourses are clearly described in the ES and secured in the dDCO, this matter can be scoped out of further assessment.	This matter has been scoped out of further assessment based on the measures summarised in Section 2.5.8 to treat operational runoff from AGI. Further detail will be provided in the drainage strategy that will be produced for the application.

ID	Inspectorate's comments	Response
4.4.2	[*Increased flood risk from operational discharges and runoff from AGI and loss of floodplain storage (operation)*] This matter is proposed to be scoped out on the basis of no impact pathway given attenuation of runoff through SuDS provision. The Inspectorate agrees that, provided the operational control measures in the form of SuDS are clearly described in the ES and secured through the dDCO, this would ensure no pathway of effect to result in increased flood risk from operational discharges and runoff from AGI or loss of floodplain storage.	Details of the SuDS measures that are proposed to manage increased flood risk from operational discharges and runoff from the Proposed Project will be included within the FRA that will be prepared alongside the ES.
4.4.3	[*Physical disturbance, impact to flow regimes (watercourse crossings) from operational infrastructure (AGI and watercourse crossings) (operation)*] This matter is proposed to be scoped out on the basis that there would be no impact pathway, as there would be no physical disturbance during operation. The Inspectorate agrees that following construction there would be no further physical disturbance or impact on flow regimes at watercourse crossings and therefore this matter can be scoped out of the assessment.	In line with the conclusions of the scoping opinion, operational effects on hydromorphology have been scoped out.
4.4.4	[*Effects from maintenance activities (maintenance)*] This matter is proposed to be scoped out on the basis of the nature of the proposed maintenance activities which would not provide an impact pathway. However, the activities associated with maintenance as listed in Scoping Report paragraph 3.5.6.1.8 suggest multiple impact pathways. The ES should either assess impacts from maintenance activities where significant effects are likely to occur or explain why there are no impact pathways. It is also noted that maintenance activities are scoped in for the Suffolk Onshore Scheme at Table 2.5.1. This matter should be clarified in the ES.	On the basis of the types of maintenance activities that are envisaged, as described in **Volume 1, Part 1, Chapter 4, Description of the Proposed Project,** it is proposed to scope out effects on watercourse flow regimes, flood risk and water quality. Given the control measures that maintenance activities would be subject to, it is considered unlikely that significant effects on the water environment would arise. During scoping, maintenance activities associated with the Suffolk

ID	Inspectorate's comments	Response
		Onshore Scheme were scoped in due to the more complex co-location scenarios.
4.4.5	[*Increased surface water runoff from converter station drainage during operation on receptors 'existing land uses and infrastructure' (operation)*] This matter is scoped out on the basis of no impact pathway given attenuation of runoff through SuDS provision. The Inspectorate agrees that SuDS provision would remove/reduce the likelihood of surface water runoff from the convertor site during operation and thus ensure any such effects would be fully mitigated. The Inspectorate therefore agrees this matter can be scoped out of the assessment.	In line with the conclusions of the scoping opinion, operational effects on existing land uses and infrastructure from increased surface water runoff from Minster Converter Station and Minster Substation drainage during operation have been scoped out.
4.4.6	[*Increased flood risk due to permanent loss of floodplain storage/impediment of floodplain flows on floodplains, landowners and infrastructure (operation)*] Scoped out on the basis that there would be no impact pathway as there would be no above ground operational infrastructure in the floodplain and therefore no construction works required in the flood plain. Provided this is demonstrated in the ES, supported by the FRA, the Inspectorate agrees to scope this matter out.	The FRA that will be prepared alongside the ES will demonstrate that the Proposed Project would not cause increases in fluvial flood risk. No operational above ground infrastructure would be located in the floodplain.
4.4.7	[*Permanent impacts on land drainage regimes of ordinary watercourses, land drains and existing land uses (operation)*] This is scoped out on the basis that there are no impact pathways, as land drainage routes would be reinstated or re-provided. The ES should demonstrate how land drainage routes would be reinstated/re-provided and secured through the dDCO. On the basis of this being evidence in the ES, the Inspectorate agrees to scope this matter out.	A commitment to maintaining and re-instating or re-providing land drainage routes during construction of the Proposed Project (W11) is included in **Volume 2, Part 1, Appendix 1.4.A, Outline Code of Construction Practice** and is summarised in Section 3.5.8.

ID	Inspectorate's comments	Response
4.4.8	[*Impacts to water abstractions/interests*] The existence, location and number of abstraction sites in the Kent Onshore Scheme scoping boundary are currently unknown and are proposed to be determined through review of the EA's register. The Suffolk Onshore Scheme at Table 2.5.9 requested to scope out 'Reduced water availability to support abstractions and assimilate discharges' on 'existing water interests', although this does not feature in the scoping in/out tables for the Kent Onshore Scheme. The ES should provide information on the water abstractions/interests that may be affected by the Proposed Development and include an assessment on these receptors, where likely significant effects could occur.	Data to characterise existing surface water abstractions has been requested from the Environment Agency and Kent County Council. This data will be reviewed and where the potential for likely significant effects is identified, the abstractions/water interests will be described in the ES, which would present an assessment of effects on these receptors.
4.4.9	[*Study area, embedded measures, and assessment methodology*] See comments 3.4.11, 3.4.12, and 3.4.14 for the Suffolk Onshore Scheme above, which are also applicable to the Kent Onshore Scheme.	Please see specific responses below.
	(3.4.11) [*Study area*] The Scoping Report identifies a 500m buffer around the Onshore Scheme Scoping Boundary but does not give reasons for the choice of study area. The ES should clearly define the study area, based on the Zone of Influence (ZOI) from the Proposed Development, together with a justification for the selection.	The proposed study area is described in Section 3.5.6, which provides justification for the selection.
	(3.4.12) [*Embedded measures/design – watercourse crossings*] The Scoping Report does not currently identify the types of crossings to be applied, but states that 'suitable crossing designs would be selected with the aim of reducing impacts'. The Applicant's attention is directed to the comments of the EA at Appendix 2 to this Opinion with regards to the culverting of watercourses, which the EA would oppose	The Proposed Project is engaging with key stakeholders, including the EA and IDB, to agree suitable watercourse crossing design principles. Further details will be provided within the ES. Watercourse crossing commitments are outlined in **Volume 2, Part 1, Appendix 1.4.D, Crossings Schedule** and the proposed approaches to watercourse crossings are outlined in **Volume 1, Part 1, Chapter**

ID	Inspectorate's comments	Response
		4, Description of the Proposed Project.
	(3.4.14) [*Assessment methodology – magnitude criteria*] Examples within this table [Magnitude Criteria] include reference to fishery value or designated nature conservation sites, although such receptor types are not explicitly mentioned in this aspect chapter. The Water Environment aspect chapter of the ES should include appropriate cross-references to other relevant aspect chapters such as Ecology and Biodiversity.	This is noted and suitable cross references to relevant aspects of the **Volume 1, Part 3, Chapter 3, Ecology and Biodiversity;** and **Volume 1, Part 3, Chapter 6, Geology and Hydrogeology** assessments will be provided within the Water Environment chapter of the ES.

3.5.3.2 There has been no change to the proposed scope of the assessment since the Scoping Opinion was received.

Consultation and Project Engagement

3.5.3.3 The project has held several meetings with relevant stakeholders including the Environment Agency, the River Stour IDB and Southern Water, and has also engaged with Kent County Council in their role as the LLFA. The FRA scope has been discussed, as well as design parameters and principles for watercourse crossings.

3.5.4 Approach and Methodology

3.5.4.1 **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology** sets out the overarching approach which has been used in developing the preliminary environmental information. This section describes the technical methods used to determine the baseline conditions, sensitivity of the receptors and magnitude of effects and sets out the significance criteria that have been used for the preliminary water environment assessment.

Guidance specific to the water environment assessment

3.5.4.2 The preliminary water environment assessment has been carried out in accordance with the following good practice guidance documents:

- Planning Inspectorate Advice Note 18: The Water Framework Directive (Ref 3.5.19);
- National Highways Design Manual for Roads and Bridges LA113 (Ref 3.5.20);
- Construction Industry Research and Information Association (CIRIA) publications (various dates) (Ref 3.5.21); and
- Guidance for Pollution Prevention series (Ref 3.5.22).

Baseline Data Gathering and Forecasting Methods

Desk study

3.5.4.3 Baseline conditions of the Proposed Project were established during a desk study using the following sources:

- Statutory Main River map for England (Ref 3.5.23);
- Environment Agency Flood Map for Planning (Ref 3.5.24);
- Environment Agency long-term flood risk mapping (including flood risk from surface water and reservoirs) (Ref 3.5.25);
- The South East River Basin Management Plan (Ref 3.5.26);
- The EA Catchment Data Explorer (Ref 3.5.27); and
- River Stour IDB online mapping (Ref 3.5.27).

3.5.4.4 In addition, data requests have been made to the Environment Agency, Kent County Council (in their role as LLFA) and the River Stour IDB to provide information on the following aspects to support the assessment:

- Details of consented discharges to surface waters and licensed abstractions from surface waters;
- Deregulated surface water abstractions (private water supplies);
- Information on historical flood events and flood defences; and
- Modelled flood water level and flood extent data for the watercourses within the Study Area.

3.5.4.5 All of the information received has been incorporated into the baseline environment description in Section 3.5.7. Data which has not been received at this stage, for example, detailed flood modelling data and information on abstractions and discharges, would be used to inform the FRA and ES.

Site visits and surveys

3.5.4.6 No specific terrestrial water environment surveys have been or would be undertaken to inform this PEIR and the subsequent ES. This is because the baseline water environment can be robustly characterised using published data sources.

Assessment Criteria

3.5.4.7 The adopted assessment methodology is drawn from DMRB LA113 (Ref 3.5.20). Whilst primarily intended for use in assessing the impacts of highways projects on the water environment, the methodology is widely accepted as suitable for assessing the effects of other types of linear infrastructure projects on water environment receptors. The method promotes assessment that is proportionate to the scale and nature of the proposals and that considers the sensitivity of the local water environment to change.

3.5.4.8 With reference to **Volume 1, Part 1, Chapter 5, PEIR Approach and Method** the adopted assessment criteria are very similar that proposed in the overarching methodology. The terminology language for defining sensitivity is the same, and for defining magnitude it is very similar, with ‘Medium’ being equivalent to ‘Moderate’.

3.5.4.9 The method provides guidance on assigning value (sensitivity) to receptors (for example, watercourses and floodplains) as well as criteria for assigning impact magnitude. These criteria consider the scale/extent of the predicted change and the nature and duration of the impact. The receptor value and impact magnitude criteria are reproduced in Table 3.5.B.1 and Table 3.5.B.2 in **Volume 2, Part 3, Appendix 3.5.B, Assessment Criteria.**

3.5.4.10 The likely significant effects would be assessed with reference to published guidance for assessing the impacts of development on water environment receptors, considering the sensitivity (or value) of receptors within the Study Area, and the magnitude of change (impact) likely to be caused by the Proposed Project activities.

Sensitivity

3.5.4.11 The preliminary classification of receptor sensitivity has been guided by Table 3.70 of the DMRB LA113 (Ref 3.5.20). The criteria are reproduced in Table 3.5.B.1 in **Volume 2, Part 3, Appendix 3.5.B Assessment Criteria.**

Magnitude

3.5.4.12 The preliminary classification of the magnitude of impact has been assigned in line with Table 3.7.1 of the DMRB LA113 (Ref 3.5.20). The magnitude of impact criteria consider the expected scale, extent and duration of change, and the magnitude is assigned following consideration of the measures embedded into the design of the development to reduce impacts. Temporary effects have been defined as those whereby the receptor can recover within a period of 1 year or less. The criteria are reproduced in Table 3.5.B.2 in **Volume 2, Part 3, Appendix 3.5.B, Assessment Criteria.**

Significance of effects

3.5.4.13 The sensitivity of receptor and magnitude of impact are combined to give an overall preliminary significance of effect using the matrix set out in **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology**.

3.5.4.14 As set out in **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology** the general approach taken to determining the significance of effect in this preliminary assessment is only to state whether effects are likely or unlikely to be significant, rather than assigning significance levels.

3.5.4.15 The assessment has been undertaken based on preliminary design information for the Proposed Project. The assessment is an iterative process and would be updated for the ES as the design evolves and relevant changes are accounted for.

Assumptions and Limitations

3.5.4.16 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- It is assumed there is sufficient data from the Environment Agency, LLFAs and IDB to inform a site-specific FRA and that no new flood risk models will need to be developed.
- It is assumed there is sufficient data from the Environment Agency to define the current condition and standards of protection provided by existing flood defences, and that no baseline condition surveys will be required; and
- No water quality sampling and analysis is proposed as it is considered that sufficient baseline data is available to generally characterise the water quality of surface water receptors.

3.5.5 Basis of Assessment

3.5.5.1 This section sets out the assumptions that have been made in respect of design flexibility maintained within the Proposed Project and the consideration that has been given to alternative scenarios and the sensitivity of the preliminary assessment to changes in the construction commencement year.

3.5.5.2 Details of the available flexibility and assessment scenarios are presented in **Volume 1, Part 1, Chapter 4, Proposed Project Description** and **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology**.

Flexibility assumptions

3.5.5.3 The main preliminary assessments have been undertaken based on the description of the Proposed Project provided in **Volume 1, Part 1, Chapter 4, Description of the Proposed Project**. To take account of the flexibility allowed in the Proposed Project, consideration has been given to the potential for preliminary effects to be of greater or different significance should any of the permanent or temporary infrastructure elements be moved within the Limits of Deviation (LoD) or draft Order Limits.

3.5.5.4 The assumptions made regarding the use of flexibility for the main assessment, and any alternatives assumptions are set out in Table 3.5.7 below.

Table 3.5.7: Flexibility Assumptions

Element of flexibility	Proposed Project assumption for initial preliminary assessment	Flexibility assumption considered
Lateral LoD HVDC cables	The crossing technique for cable crossings of watercourses is assumed as open cut (representing the reasonable worst case) as the methodologies for individual watercourses have not yet been determined.	Initial preliminary assessment assumption relating to crossing technique (open cut) represents a reasonable worst case. Lateral deviation of the route within the LoD would not be expected to result in a change in significance of reported effects. No new

Element of flexibility	Proposed Project assumption for initial preliminary assessment	Flexibility assumption considered
		receptors would be impacted and although watercourses may be crossed at a different location, the same watercourses would be effected in the same reach lengths.
Lateral LoD Minster Converter Station and Minster Substation	Footprint of Minster Converter Station and Minster Substation as shown in **Figure 1.4.12 Minster 400kV Substation and Minster Converter Station Indicative Location.**	Potential for additional crossings of ditches/watercourses or for realignment of these features, as well as potential for works within the floodplain due to the lateral LoD of the converter station have been considered, as detailed in Section 2.5.9.
Vertical LoD Minster Converter Station and Minster Substation	Parameter does not affect the likely significance of effects on water environment receptors	
Lateral LoD overhead line	Overhead line alignment as shown on **Figures 1.4.10 Kent Onshore Scheme HVAC Connection Option 2 and 1.4.11 Kent Onshore Scheme HVAC Connection Option 3.**	Potential for construction works within the floodplain due to the lateral LoD of the overhead line have been considered, as detailed in Section 2.5.9.
Vertical LoD overhead line	Parameter does not affect the likely significance of effects on water environment receptors	

Consideration of Scenarios and Options

3.5.5.5 Two alternative scenarios have been considered within each of the technical assessment chapters in Part 3. These are:

- The use of either low height or standard height pylons for the HVAC connection. Within this scenario there are three options as explained in **Volume 1, Part 1, Chapter 4, Description of the Proposed Project**; and
- Permanent access to Minster converter station and substation is either taken off A256 (through bellmouth BM02) or off Jutes Lane through bellmouth BM03 but with bellmouth BM02 being retained for any abnormal indivisible load (AIL) movements during maintenance and operation as explained in **Volume 1, Part 1, Chapter 4, Description of the Proposed Project**.

3.5.5.6 Table 3.5.8 details where these scenarios are relevant to the preliminary water environment assessment and how they have been assessed and reported in Section 3.5.9.

Table 3.5.8: Considerations of Scenarios

Assessment scenario	How it has been considered within the preliminary assessment
Pylon types	There is no material difference between the different options with regard to the potential impacts on water environment receptors.
Permanent access to Minster converter station and substation	The two access routes have been reviewed to determine any differences in the number of watercourse crossings, or difference to the extent of works within a floodplain. It is considered that there is no material difference between the two options with regard to the potential for likely significant effects on water environment receptors.

Sensitivity Test

3.5.5.7 It is likely that under the terms of the draft DCO, construction could commence in any year up to five years from the granting of the DCO which is assumed to be 2026. Consideration has been given to whether the preliminary effects reported would be any different if the works were to commence in any year up to year five. Where there is a difference this is reported in Section 3.5.9 Preliminary Assessment of Effects.

3.5.6 Study Area

3.5.6.1 The Study Area for the PEIR is proposed to include all land within the Kent Onshore Scheme draft Order Limits, together with an additional 500m buffer from this boundary. The Study Area for the PEIR is illustrated in **Figure 3.5.1 Water Environment Receptors**. This Study Area is justified based on technical knowledge of similar schemes and has been set following consideration of the distance over which likely significant effects on the water environment can reasonably be expected to occur.

3.5.6.2 The FRA that would be prepared to inform the ES, may cover a larger Study Area where necessary, for example assessing the potential for changes to baseline flood risk at the local catchment scale or within a floodplain cell which may covers areas up to several km^2. **Volume 1, Part 5, Chapter 5, Water Framework Directive Screening Assessment** includes a ZOI that is set at the water body scale and include all those WFD waterbodies with the potential to be affected. The ZOI is defined as land within the Kent Onshore Scheme draft Order Limits, in addition to land within 500m of this boundary.

3.5.6.3 The Study Areas for assessing effects on geology and the groundwater environment are described in **Volume 1, Part 3, Chapter 6, Geology and Hydrogeology**.

3.5.7 Baseline Conditions

Watercourses, their Water Quality and Hydromorphology

3.5.7.1 The Kent Onshore Scheme is situated in the hydrological catchment of the River Stour. The River Stour is a designated main river that rises as the Great Stour in Lenham and flows towards and through Canterbury, where it becomes tidal, finally discharging to the sea at Pegwell Bay. The river has extensive areas of floodplain, designated as Environment Agency Flood Zone 3, with some areas mapped as benefitting from flood defences.

3.5.7.2 In addition to the River Stour, within the Study Area there are networks of watercourses that drain the marshes that are managed by the River Stour (Kent) IDB. Key watercourses include the Minster Stream to the north and the Richborough Stream to the south of the Stour. The Stour Marshes constitute a WFD Operational management catchment, within which there are several monitored waterbodies.

3.5.7.3 The main receptors in the water environment are illustrated in **Figure 3.5.1 Water Environment Receptors** and their baseline WFD status is summarised in Table 3.5.9.

Table 3.5.9: Summary of WFD Status Cycle Data (Cycle 3) 2019

Waterbody	Overall Status	Ecological Status	Chemical Status
River Stour (Kent)	Moderate	Overall – Moderate Biological – Moderate Physio-chemical – Moderate Hydromorphology – Supports Good Specific pollutants - High	Overall – Fail Priority Hazardous Substances – Fail Priority Substances - Good
Monkton and Minster Marshes	Moderate	Overall – Moderate Biological – Moderate Physio-chemical – Moderate Hydromorphology – Supports Good Specific pollutants - High	Overall – Fail Priority Hazardous Substances – Fail Priority Substances - Good

3.5.7.4 As Table 3.5.9 shows, the waterbodies share the same quality characteristics. They both have an overall Moderate status and are failing with regard to chemical status. With regard to physical form, both waterbodies are classified as being ‘Heavily Modified’.

3.5.7.5 The South East RBMP (Ref 3.5.26) indicates reasons for the Stour not achieving Good status are point source pollution from wastewater treatment works producing high phosphate levels; diffuse run-off from urban areas and agriculture and low flows due to public supply abstractions. The RMBP sets out measures for the waterbody to help reach a target status of Good by 2027. These focus on initiatives to improve fish passage and tackle illegal fishing, control and eradicate non-native invasive species and implementing recommendations from river restoration plans. Further details are provided in **Volume 1, Part 5, Chapter 5, Water Framework Directive Screening Assessment.**

3.5.7.6 In accordance with Table 3.5.B.1 in **Volume 2, Part 3, Appendix 3.5.B, Assessment Criteria**, the water quality attributes of both the River Stour and the Stour Marshes waterbody have been assigned **Very High** sensitivity (value). This is because both the waterbodies are named in the RBMP and lie within the Sandwich Bay Special Area of Conservation (SAC). Their hydromorphological sensitivity as assigned as **Medium,** given their current 'heavily modified' status, but accounting for the measures to improve this attribute set out in the RBMP.

3.5.7.7 Sites designated for their nature conservation interest, where surface waters play a key role in sustaining the designated interest features, are also important receptors. Details of these sites are provided in **Volume 1, Part 3, Chapter 3, Ecology and Biodiversity**, and assessment of effects on such sites has been undertaken in collaboration with ecology and groundwater specialists.

Existing Water Interests (Surface Water Abstractions and Discharges)

3.5.7.8 Data to characterise existing water interests has been collected from the Environment Agency and district councils and with reference to a Groundsure report (April 2022). The data, which are illustrated in **Figure 3.5.2 Water Environment Receptors** and summarised in **Volume 2, Part 3, Appendix 3.5.A, Baseline Data,** shows that watercourses in the Study Area receive, transport and dilute consented discharges and support licensed abstractions.

3.5.7.9 Watercourses in the Minster Marshes support multiple abstractions for non-potable irrigation water supplies at the local scale, and are in receipt of no existing consented discharges. Therefore with regard to existing water interests this receptor is assigned **Medium** sensitivity. The River Stour does not support any existing abstractions, however is in receipt of a number of discharges, therefore has been assigned **Medium** sensitivity. Information on groundwater abstractions is included in **Volume 1, Part 3, Chapter 6, Geology and Hydrogeology**.

Existing Flood Risk and Land Drainage

3.5.7.10 Based on the online Flood Maps (Ref 3.5.25), the main source of flood risk within the Study Area is the River Stour, with areas of Flood Zones 2 and 3 (medium to high) risk associated with the watercourse. The river has tidal reach of 35 km extending upstream to Fordwich Bridge.

3.5.7.11 There are two broad areas of Flood Zone 2 (medium risk) and Zone 3 (high risk): one where the Proposed Project makes landfall in Kent, and the other further inland, to the west of the Kent converter and substation, where the Study Area crosses the River Stour. The remainder of the Proposed Project is shown to be in Flood Zone 1 (defined as at low risk of flooding from rivers and the sea).

3.5.7.12 As the Proposed Project is classified as essential infrastructure, the floodplains of the watercourses in the Study Area are assigned **Very High** sensitivity/ value in line with the criteria presented in **Volume 2, Part 3, Appendix 3.5.B, Assessment Criteria.** However, most of the Study Area is at low risk of flooding from rivers and the sea (in Flood Zone 1), as illustrated in **Figure 3.5.2 Flood Risk Baseline**.

3.5.7.13 The EA Flood Maps also show the locations of flood defences in the surrounding area, however there are no flood defences directly benefitting the Study Area. Flood risk from surface water runoff varies across the Study Area, with most areas at very low risk from this source. Areas mapped as at higher risk closely align with watercourse corridors associated with the Stour Marshes. Within the study area ordinary watercourses and land drains perform a locally important function of managing surface water and providing drainage to allow the land to be farmed, therefore these features and the land drainage function they provide are assigned **Medium** sensitivity.

3.5.7.14 With regard to other potential flooding sources, the Environment Agency reservoir flood risk map (Ref 3.5.25) shows that the Study Area within the Stour Marshes is at risk of flooding from this source. However, it is noted that this is a residual risk and that the likelihood of reservoir failure and consequent flooding is very low. The rural setting corresponds to a low risk of flooding from sewers. Further information on the sewer network will be collected and information regarding any connections to or potential for effects on this network will be provided in the FRA.

3.5.7.15 Further assessment of the Proposed Project's interactions with groundwater aquifers is provided in **Volume 1, Part 3, Chapter 6, Geology and Hydrogeology** and groundwater as a source of flood risk to the Proposed Project will be assessed within the FRA.

Future Baseline

3.5.7.16 With regard to flood risk and drainage, future baseline conditions within the ES will be forecast, drawing on current best practice guidelines (Ref 3.5.11) taking into account the likely impacts of climate change on rainfall intensities. These future conditions will be considered to factor in climate change resilience into the Proposed Project's drainage design.

3.5.7.17 It is also anticipated that climate change will cause sea level rise which would affect coastal areas. Future baseline conditions with respect to sea level rise would be based on data provided from the Environment Agency from the Coastal Flood Boundary data set.

3.5.7.18 The implementation of future cycles of WFD management plans driving future improvements in the ecological and chemical quality of water bodies has been considered when assigning value to water environment resources and receptors.

3.5.8 Mitigation

3.5.8.1 As set out in **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology**, mitigation measures typically fall into one of the three categories: embedded measures; control and management measures; and mitigation measures.

Embedded Measures

3.5.8.2 Embedded measures have been integral in reducing the water environment effects of the Proposed Project. Measures that that have been incorporated are:

- Sensitive routeing and siting of infrastructure and temporary works e.g. avoiding situating proposed new substations and cable sealing compounds in areas that are at risk of flooding from rivers and the sea;
- Substations served with drainage systems that embed SuDS for attenuation and treatment of runoff (see **General Arrangements Plan S42_K/IGA/PS/2002**); and
- Commitments made within **Volume 2, Part 1, Appendix 1.4.F, Outline Schedule of Environmental Commitment and Mitigation Measures**.

Control and Management Measures

3.5.8.3 The following measures have been included within **Volume 2, Part 1, Appendix 1.4.A, Outline Code of Construction Practice** relevant to the control and management of impacts that could affect water environment receptors:

- **GG04**: The Construction Environmental Management Plan (CEMP) shall include measures to manage dust, waste, water, noise, vibration and soil during construction. The contractor(s) shall undertake daily site inspections to check conformance to the Management Plans. The name and contact details of person(s) accountable for issues relating to dust, waste, water, noise, vibration and soil will be displayed at site boundary.
- **GG15**: Fuels, oils and chemicals will be stored responsibly, away from sensitive water receptors. Where practicable, they will be stored >15m from watercourses, ponds and groundwater dependent terrestrial ecosystems. Where it is not practicable to maintain a >15m distance, additional measures will be identified. All refuelling, oiling and greasing of construction plant and equipment will take place above drip trays and also away from drains as far as is reasonably practicable. Vehicles and plant will not be left unattended during refuelling. Appropriate spill kits will be made easily accessible for these activities. Potentially hazardous materials used during construction will be safely and securely stored including use of secondary containment where appropriate. Stored flammable liquids such as diesel will be protected either by double walled tanks or stored in a bunded area with a capacity of 110% of the maximum stored volume. Spill kits will be located nearby.
- **GG16**: Runoff across the site will be controlled through a variety of methods including header drains, buffer zones around watercourses, on-site ditches, silt traps and bunding. There will be no intentional discharge of site runoff to ditches, watercourses, drains or sewers without appropriate treatment and agreement of the appropriate authority (except in the case of an emergency).
- **GG17**: Where required, wash down of vehicles and equipment will take place in designated areas within construction compounds. Wash water will be prevented from passing untreated into watercourses and groundwater. Appropriate measures will include use of sediment traps. Ensure there is an adequate area of hard surfaced road between the wash facility and the site exit, wherever site size and layout permits.

- **GG18**: Where required, wheel washing will be provided at each main construction works compound access point on to the highway. An adequate supply of water will be made available at these locations at all times. Road sweepers will be deployed on public roads where necessary to prevent excessive dust or mud deposits.
- **GG25**: An Emergency Action Plan will be developed for the construction phase which will outline procedures to be implemented in case of unplanned events, including but not limited to site flooding and pollution incidents.
- **W01**: All works within main rivers or ordinary watercourses will be in accordance with a method approved under environmental permits issued under the Environmental Permitting Regulations (Ref 3.5.5) or the protective provisions of the DCO for the benefit of the Environment Agency, and the Lead Local Flood Authorities
- **W02**: For open cut watercourse crossings and installation of vehicle crossing points, good practice measures will include but not be limited to:
  - where practicable, reducing the working width for open cut crossings of a main or ordinary watercourse whilst still providing safe working;
  - installation of a pollution boom downstream of open cut works;
  - the use and maintenance of temporary lagoons, tanks, bunds, silt fences or silt screens as required;
  - have spill kits and straw bales readily available at all crossing points for downstream emergency use in the event of a pollution incident;
  - the use of all static plant such as pumps in appropriately sized spill trays;
  - prevent refuelling of any plant or vehicle within 15m of a watercourse;
  - prevent storing of soil stockpiles within 15m of a main river;
  - inspect all plant prior to work adjacent to watercourses for leaks of fuel or hydraulic fluids; and
  - reinstating the riparian vegetation and natural bed of the watercourse, using the material removed when appropriate, on completion of the works and compacting as necessary. If additional material is required, appropriately sized material of similar composition will be used.
- **W03**: Riverbank and in-channel vegetation will be retained where not directly affected by installation works. Natural substrate will be provided through temporary watercourse crossings box culverts.
- **W04**: Where watercourses are to be crossed by construction traffic, measures to be applied include the use of ‘flume’ pipes or temporary spanned bridges. Once the flume pipe is installed, the area above the flume pipe will be backfilled and construction mats placed over the backfilled area to permit the passage of plant, equipment, materials and people. Flume pipes will be sized to reflect the span width and the estimated flow characteristics of the watercourse under peak flow conditions and kept free from debris. Where used, temporary bridges will be designed specifically to consider the span length and the weight and size of plant and equipment that will cross the bridge.

- **W05**: The contractor(s) will comply with all relevant consent conditions or DCO provisions regarding de-watering and other discharge activities. This will particularly be with regard to volumes and discharge rates and will include discharges to land, water bodies or third-party drains/sewers.
- **W06**: Where new or additional surfacing is required on any access tracks and compound areas, Sustainable Drainage Systems (SuDS) will be incorporated, appropriate to the existing ground conditions. The project will incorporate appropriate surface water drainage measures into its final design for the haul roads and access tracks so that they do not lead to a significant increase in flood risk. Temporary haul routes within Flood Zone 3 and areas of high and medium risk of flooding from surface water will be removed at the end of the construction phase and the ground surface will be reinstated to pre-project levels. No construction materials should be stored within Flood Zone 3 and areas of high and medium risk of flooding from surface water, where this cannot be avoided adequate mitigation measures will be applied (as identified in the Flood Risk Assessment to be completed).
- **W07**: The contractor(s) will subscribe to the Environment Agency's Floodline service, which provides advance warning of potential local flooding events, and subscribe to the Met Office's Weather Warnings email alerts system and any other relevant flood warning information. The contractor(s) will implement a suitable flood risk action plan, which will include appropriate evacuation procedures should a flood occur or be forecast.
- **W09**: In the event of a significant spill during construction, all relevant landowners/tenants will be contacted within 24 hours, within 250m of the spill, to determine if there are any private water supplies that might be affected; an assessment of the likelihood of groundwater contamination reaching identified private water supplies will be undertaken, and where a private water supply is judged likely to be affected, an alternative water supply will be provided, as appropriate.
- **W10**: Where a main river is crossed by a trenchless crossing, the cables will be laid at least 1m below the hard bed level of the river and will remain at or below this level for a distance of not less than 3m from the brink of the riverbank before rising at a slope no greater than 1 vertical in 1.5 horizontal. Marker posts shall also be positioned on each bank of the river to indicate the location of the under-crossing and the nature of the works.
- **W11**: severance of existing land drainage routes, including agricultural field drainage systems would be managed during construction through provision of temporary alternative drainage routes, and these drainage systems would be permanently reinstated or rerouted ensuring their existing function is maintained.
- **AS05**: Consultation with affected landowners will be carried out to investigate the current extent of land drainage. A scheme of pre-construction land drainage will be designed with the intent of maintaining the efficiency of the existing land drainage system and to assist in maintaining the integrity of the working area during construction. The project may include a system of 'cut-off' drains which feed into a new header drain and the project will also take into account surface water runoff measures.

Mitigation Measures

3.5.8.4 Mitigation measures are additional topic and site-specific measures that have been applied to mitigate or offset any likely significant effects. No mitigation measures relevant to water environment receptors are included at this stage.

3.5.9 Preliminary Assessment of Effects

3.5.9.1 The preliminary assessment of the effects of the Kent Onshore Scheme described in this section considers the embedded, control and management and mitigation measures described in Section 3.5.8.

3.5.9.2 The preliminary water environment assessment of the effects of the Kent Onshore Scheme is presented in the following tables.

3.5.9.3 Table 3.5.10 presents the preliminary assessment of effects on the River Stour and watercourses in the Stour Marshes from pollution during construction and decommissioning of the Proposed Project. Operational effects have been scoped out as detailed in Section 3.5.3.

Table 3.5.10: Preliminary assessment of effects on the water quality of River Stour and Stour Marshes watercourses

	Preliminary assessment
Receptor	River Stour and watercourses in the Stour Marshes including Minster Stream and Richborough Stream
Potential impact	Pollution by silt, hydrocarbons and other construction materials at open cut watercourse crossings; and Pollution risks from trenchless watercourse crossings for cable route (bentonite breakout and water consumption)
Proposed Project phase	Construction and decommissioning
Duration	Temporary (short term)
Mitigation	W01, W02, W10
Preliminary sensitivity	Very High (River Stour) High (Minster Stream and Richborough Stream)
Preliminary magnitude	Negligible All of the measures detailed in Section 3.5.8 to manage and treat work site runoff and prevent pollution associated with watercourse crossings would weaken the source-pathway-receptor link. The residual risk of pollution would reduce such that there would be no effect on the use or integrity of the watercourse receptors, satisfying the criteria defining a negligible magnitude of impact with reference to Table 3.5.B.2 of **Volume 2, Part 3, Appendix 3.5.B Assessment Criteria**. When the design flexibility is considered, the lateral position of the cables, the Minster converter station and

	Preliminary assessment
	overhead lines anywhere within the LoD would not introduce pollution risks to any new receptors, nor increase the magnitude of impacts on the water quality attributes of watercourses. The different access options to the Minster converter station have also been reviewed, both routes cross the same watercourse and it is considered that, given the proposed control measures described in Section 2.5.8, there is no material difference between the access options with regard to the potential for likely significant effects on the water quality of water environment receptors.
Preliminary likely significance of effect	**Not Significant**
Sensitivity Test	No difference in significance of effect
Confidence in prediction	Moderate

3.5.9.4 Table 3.5.11 provides the preliminary assessment of effects on the River Stour and watercourses in the Stour Marshes from physical disturbances.

Table 3.5.11: Preliminary assessment of effects on the hydromorphology of the River Stour and Stour Marshes watercourses due to physical disturbances

	Preliminary assessment
Receptor	River Stour and watercourses in the Stour Marshes including Minster Stream and Richborough Stream
Potential Impact	Temporary physical disturbance and change to flow regimes at open-cut watercourse crossings for access and the cable route.
Proposed Project phase	Construction
Duration	Temporary (short term)
Mitigation	W01, W02, W03, W04
Preliminary sensitivity	Very High
Preliminary magnitude	Small Adverse As a result of all of the measures detailed in Section 3.5.8 to mitigate changes to flow regimes and hydromorphology at watercourse crossings, the magnitude of impact would be reduced to localised and temporary changes in riparian corridors at crossing sites. This satisfies the criteria for a Minor Adverse magnitude in Table 3.5.B.2 of **Volume 2, Part 3, Appendix 3.5.B, Assessment Criteria.** When the design flexibility is considered, the lateral position of the cables, overhead lines and the Minster

	Preliminary assessment
	converter station anywhere within the defined LoD would not impact the flow regimes or hydromorphology of any new receptors, nor increase the magnitude of impacts on these attributes of watercourses. Under the different potential scenarios both of the access options to the Minster converter station require a crossing of an unnamed watercourse (tributary of the Minster Stream) and no works are required in the floodplain associated with either option. Given the proposed control measures described in Section 3.5.8, it is considered there is no material difference between the access options with regard to the potential for likely significant effects on flow regimes and hydromorphology.
Preliminary likely significance of effect	**Not Significant**
Sensitivity Test	No difference in significance of effect
Confidence in prediction	Moderate

3.5.9.5 Table 3.5.12 provides the preliminary assessment of effects on ordinary watercourses (land drains) due to earthworks during construction.

Table 3.5.12: Preliminary assessment of ordinary watercourses from earthworks

	Preliminary assessment
Receptor	Ordinary watercourses, land drains and existing land uses
Potential Impact	Increased runoff rates and volumes, and impact on land drainage regime due to soil stripping, earthworks and excavations
Proposed Project phase	Construction and decommissioning
Duration	Temporary (Short term)
Mitigation	W01, W06, W11
Preliminary sensitivity	Medium
Preliminary magnitude	Small Adverse As a result of all of the measures detailed in Section 3.5.8 to mitigate impacts on land drainage and ordinary watercourses, increases in runoff rates would be limited such that changes to the baseline land drainage regime would be minor. When the design flexibility is considered, the lateral position of the cables, overhead lines and the Minster converter station anywhere within the LoD would not generate additional land disturbance or impacts on the

	Preliminary assessment
	land drainage regime. Under the different potential scenarios for access to the converter station the alternative routes are of a similar length so requiring a similar amount of earthworks and change to the land drainage regime and it is considered there is no material difference between the access options with regard to the potential for likely significant effects on ordinary watercourses and land drainage.
Preliminary likely significance of effect	**Not Significant**
Sensitivity Test	No difference in significance of effect
Confidence in prediction	Moderate

3.5.9.6 Table 3.5.12 provides the preliminary assessment of effects on floodplains and consequent flood risk to receptors.

Table 3.5.13: Preliminary assessment of effects on floodplains and flood risk

	Preliminary assessment
Receptor	Floodplains, existing land uses and infrastructure
Potential Impact	Temporary loss of floodplain storage, impediment of floodplain flows, and increased flood risk e.g. due to spoil storage in floodplain
Proposed Project phase	Construction and decommissioning
Duration	Temporary (short term)
Mitigation	GG23, W06
Preliminary sensitivity	Very High
Preliminary magnitude	Small Adverse The Kent Onshore Scheme has largely avoided fluvial and coastal floodplains and where localised interactions occur, for example, within the floodplain of the River Stour where construction of overhead lines is required, the measures detailed in Section 3.5.8 would reduce any temporary impacts. When the design flexibility is considered, the lateral position of the cables, overhead lines and the Minster Converter Station and Minster Substation anywhere within the LoD would not increase the extent of works within a floodplain. Under the different potential scenarios (detailed in Table 2.5.7) neither of the access options to the converter station and substation require works within a floodplain. It is considered there is no material difference between the access options with regard to the potential for likely significant effects on

	Preliminary assessment
	coastal and fluvial floodplains, existing land uses and infrastructure.
Preliminary likely significance of effect	**Not Significant**
Sensitivity Test	No difference in significance of effect
Confidence in prediction	Moderate

3.5.9.7 Table 3.5.12 provides the preliminary assessment of effects on existing surface water interests (abstractions, dischargers).

Table 3.5.14: Preliminary assessment of effects on existing surface water interests

	Preliminary assessment
Receptor	Existing abstraction and discharge licence holders, and receiving/supporting watercourses (River Stour, watercourses within Minster marshes)
Potential Impact	Temporary deterioration of water quality due to project discharges e.g. from dewatering or work site runoff
Proposed Project phase	Construction and decommissioning
Duration	Temporary (medium term)
Mitigation	GG15, GG16, W02, W06, W09
Preliminary sensitivity	Medium
Preliminary magnitude	Negligible As a result of all of the measures detailed in Section 3.5.8 to mitigate changes to existing water quality and flow, the residual risk of degradation of the integrity of watercourses to support existing water interests would reduce such that there would be minimal effect, satisfying the criteria defining a negligible magnitude of impact with reference to Table 3.5.B.2 of **Volume 2, Part 3, Appendix 3.5.B, Assessment Criteria**. When the design flexibility is considered, the lateral position of the cables, overhead lines and the Minster Converter Station and Minster Substation anywhere within the defined LoD would not reduce the ability of watercourses to support existing surface water abstractions and discharges. It is considered there is no material difference between the access options with regard to the potential for likely significant effects on existing surface water interests.
Sensitivity Test	No difference in significance of effect
Preliminary likely significance of effect	**Not Significant**

Preliminary assessment	
Confidence in prediction	Moderate

3.5.10 Summary

3.5.10.1 The preliminary assessment has concluded that effects of the Proposed Project, during its construction and operation and during its maintenance and decommissioning, would be limited to localised, temporary and small changes to the water quality attributes of the receptors within the Study Area, at watercourse crossings. There is also potential for small and temporary changes in rainfall infiltration/runoff rates and the land drainage regime during construction and decommissioning. The preliminary assessment has shown that there are **no likely significant effects** expected in relation to the water environment.

3.5.10.2 In accordance with paragraph 5.7.4 of EN-1, the next step would be to develop an FRA to be submitted as part of the application for development consent. The FRA will document the design measures included to provide resilience to climate change and the measures secured to ensure no increase in flood risk elsewhere. In addition, a full WFD screening assessment would be undertaken. The findings of these studies would inform the full assessment of water environment effects to be reported within the ES.

3.5.10.3 The assessment undertaken in the ES would consider any design changes (e.g., as a result of stakeholder engagement or development of the design) since the completion of the PEIR.

3.5.11 References

Ref 3.5.1 Her Majesty's Stationery Office (2017) The Water Environment (Water Framework Directive) (England and Wales) Regulations. Available at: https://www.legislation.gov.uk/uksi/2017/407/contents/made [Accessed 7 June 2023]; and Her Majesty's Stationery Office (2019). The Floods and Water (Amendment etc.) (EU Exit) Regulations. Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111176283/contents [Accessed 7 June 2023]

Ref 3.5.2 Her Majesty's Stationery Office (2009) Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations. Available at: https://www.legislation.gov.uk/uksi/2009/2264/contents/made [Accessed 15 June 2023]

Ref 3.5.3 Her Majesty's Stationery Office (2021) Environment Act. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted [Accessed 7 June 2023]

Ref 3.5.4 Her Majesty's Stationery Office (1991) Land Drainage Act. Available at: https://www.legislation.gov.uk/ukpga/1991/59/contents [Accessed 7 June 2023]

Ref 3.5.5 Her Majesty's Stationery Office (2016) Environmental Permitting (England and Wales) Regulations 2016. Available at: https://www.legislation.gov.uk/uksi/2016/1154/contents/made [Accessed 7 June 2023]

Ref 3.5.6 Department of Energy and Climate Change (2011). Overarching National Policy Statement for Energy (EN-1). London: Department of Energy and Climate Change, pp. 108-109.

Ref 3.5.7 Department of Energy and Climate Change (2011). Draft overarching national policy statement for energy (EN-1). London: Department of Energy and Climate Change, pp. 67-72.

Ref 3.5.8 Department of Energy and Climate Change (2011). National Policy Statement for Electricity Networks Infrastructure (EN-5). London: Department of Energy and Climate Change.

Ref 3.5.9 Department of Energy and Climate Change (2021) Draft National Policy Statement for Electricity Networks Infrastructure (EN-5). London: Department of Energy and Climate Change. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015238/en-5-draft-for-consultation.pdf

Ref 3.5.10 Ministry of Housing, Communities & Local Government (2021). National Planning Policy Framework. London: Ministry of Housing, Communities & Local Government, pp. 30-32.

Ref 3.5.11 Ministry of Housing, Communities and Local Government (2019) National Planning Policy Framework Planning Practice Guidance: Flood Risk and Coastal Change. Available at: https://www.gov.uk/guidance/flood-risk-and-coastal-change [Accessed: 15 June 2023]

Ref 3.5.12 Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government. Water supply, wastewater and water quality.

Available at: https://www.gov.uk/guidance/water-supply-wastewater-and-water-quality [Accessed: 15 June 2023]

Ref 3.5.13 Kent County Council (2019) Draft Drainage and Planning Policy Statement. Available at: https://democracy.kent.gov.uk/documents/s91446/Item%2007%20Appendix%201%20-%20Drainage%20and%20Planning%20Policy.pdf [Accessed 14 June 2023]

Ref 3.5.14 Thanet District Council (2020) Thanet District Council Local Plan. Available at: https://www.thanet.gov.uk/wp-content/uploads/2018/03/LP-adjusted.pdf [Accessed 14 June 2023]

Ref 3.5.15 Dover District Council (2002) Dover District Local Plan. Available at: https://www.dover.gov.uk/Planning/Planning-Policy-and-Regeneration/Adopted-Development-Plans/Dover-District-Local-Plan-2002.aspx [Accessed 14 June 2023]

Ref 3.5.16 National Grid Electricity Transmission plc Sea Link Scoping Report October 2022[online]https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN020026/EN020026-000042-EN020026%20-%20Scoping%20Report%20-%20Volume%201%20-%20Part%201%20Introduction.pdf

Ref 3.5.17 Planning Inspectorate Scoping Opinion Proposed Sea Link December 2022 [online]https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN020026/EN020026-000027-EN020026-Scoping-Opinion.pdf

Ref 3.5.18 The Planning Inspectorate (2017) Advice Note 18: Water Framework Directive. Available at https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-18/

Ref 3.5.19 Highways England (2020) Design Manual for Roads and Bridges. LA 113 Road Drainage and the Water Environment. Available at: https://www.standardsforhighways.co.uk/prod/attachments/d6388f5f-2694-4986-ac46-b17b62c21727?inline=true [Accessed: 14 June 2023]

Ref 3.5.20 Construction Industry Research and Information Association (2022) CIRIA Publications. Available at: https://www.ciria.org/CIRIA/Bookshop/Free_Publications/Books/Free_CIRIA_Publications.aspx?hkey=ca8794b8-b1b3-4742-880d6c7a27719afb

Ref 3.5.21 NetRegs (2022) Guidance for Pollution Prevention (GPPs) – Full List. Available at: https://www.netregs.org.uk/environmentaltopics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list

Ref 3.5.22 Environment Agency (2019) Main River Map for England. Available at: https://www.gov.uk/government/collections/main-river-map-for-england-proposed-changes-and-decisions [Accessed: 14 June 2023]

Ref 3.5.23 Environment Agency (2023) Flood Map for Planning. Available at: https://flood-map-for-planning.service.gov.uk/ [Accessed: 14 June 2023]

Ref 3.5.24 Environment Agency (2023) Long-term Flood Risk Mapping. Available at: https://www.gov.uk/check-long-term-flood-risk [Accessed: 14 June 2023]

Ref 3.5.25 Environment Agency (2016) South East River Basin Management Plan. Part. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachm

ent_data/file/718337/South_East_RBD_Part_1_river_basin_management_plan.pdf [Accessed: 14 June 2023]

Ref 3.5.26 Environment Agency (2023) Catchment Data Explorer – Stour Catchment. Available at: https://environment.data.gov.uk/catchment-planning/ManagementCatchment/3087 [Accessed: 14 June 2023]

Ref 3.5.27 River Stour (Kent) Internal Drainage Board (IDB) (2023) Map of our Drainage District. Available at: https://rsidb.org.uk/map-of-our-drainage-district/ [Accessed: 14 June 2023]

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