

The Great Grid Upgrade

Eastern Green Link 5 (EGL 5)

Preliminary Environmental Information Report

Volume 1

Part 2

Chapter 9 Water Environment

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9. Water Environment

9.1 Introduction

- 9.1.1 This chapter presents the preliminary findings of the Environmental Impact Assessment (EIA) undertaken to date for the Eastern Green Link 5 (EGL 5) English Onshore Scheme, with respect to the water environment, including flood risk and land drainage. The preliminary assessment is based on information obtained to date. It should be read in conjunction with the description of the Project provided in **Volume 1, Part 1, Chapter 4: Description of the Project**.
- 9.1.2 This chapter describes the methodology used, the datasets that have informed the preliminary assessment, current baseline conditions, current environmental measures, and the preliminary water environment effects that could result from the English Onshore Scheme during the construction, operation (and maintenance), and decommissioning phases. Specifically, it relates to the English Onshore elements of the Project landward of Mean Low Water Springs (MLWS).
- 9.1.3 This chapter should be notably read in conjunction and considered alongside the following technical aspect chapters found in **Volume 1**:
- **Part 1, Chapter 5: PEIR Approach and Methodology**;
 - **Part 2, Chapter 6: Biodiversity** due to the close association between water environment features and the biodiversity that they support and the potential for overlapping embedded environmental measures;
 - **Part 2, Chapter 7: Cultural Heritage** due to the potential for impacts on heritage assets outside the English Onshore Scheme by changes to drainage, and preservation conditions;
 - **Part 2, Chapter 8 Landscape and Visual Amenity** due to the close association between some landscape receptors and water environment features (fluvial and coastal waterbodies) and the potential for overlapping embedded environmental measures;
 - **Part 2, Chapter 10: Geology and Hydrogeology**, which presents an assessment of potentially significant effects on sensitive groundwater receptors, due to the close association between local hydrology, hydrogeology, and water environment features (surface waterbodies);
 - **Part 2, Chapter 11: Agriculture and Soils** due to the close association between soils, land management, and the land drainage regime;
 - **Part 2, Chapter 12: Traffic and Transport** due to the potential for traffic / plant emissions associated with the English Onshore Scheme to adversely affect water environment receptors;
 - **Part 2, Chapter 16: Health and Wellbeing** due to the potential for water availability and quality, as well as contamination, to affect human health;
 - **Part 4, Chapter 26: Greenhouse Gas** due to the influence of climate change on flood risk and the land drainage regime; and

- **Part 4, Chapter 27: Cumulative Effects.**

9.1.4 There is also spatial overlap with the offshore assessments that are being progressed for the English Offshore Scheme (see **Volume 1, Part 3 English Offshore Scheme**), with the intertidal zone being a common receptor with regards to the Water Framework Directive (WFD). This chapter should also therefore be read in conjunction with the following chapters found in **Volume 1**:

- **Part 3, Chapter 17: Coastal and Marine Physical Processes,** and
- **Part 3, Chapter 19: Fish and Shellfish Ecology.**

9.1.5 This chapter is supported by the following figures in **Volume 3**:

- **Part 2, Figure 9-1: Water Environment Study Area and Features;**
- **Part 2, Figure 9-2: Water Framework Surface Waterbody Status;**
- **Part 2, Figure 9-3: Water Framework Groundwater Body Status;**
- **Part 2, Figure 9-4: Flood Risk from Rivers and the Sea;** and
- **Part 2, Figure 9-5: Risk of Flooding from Surface Water.**

9.1.6 This chapter is supported by the following appendices in **Volume 2**:

- **Part 1, Appendix 2.A: Regulatory and Planning Context;**
- **Part 1, Appendix 5.A: Outline Register of Design Measures;**
- **Part 1, Appendix 5.B: Outline Code of Construction Practice (CoCP);**
- **Part 2, Appendix 9.A: Onshore Water Framework Directive Assessment Stage 1 & 2 Report¹;**
- **Part 2, Appendix 9.B: Preliminary Water Environment Design Principles;** and
- **Part 2, Appendix 9.C: Preliminary Watercourse Crossing Schedule.**

Limitations

9.1.7 The information provided in this Preliminary Environmental Information Report (PEIR) is preliminary, the final assessment of potentially significant effects will be reported in the Environmental Statement (ES). The PEIR has been produced to fulfil National Grid Electricity Transmission plc (NGET)'s consultation duties in accordance with Section 42 of the Planning Act 2008 (PA 2008) and enable consultees to develop an informed view of the preliminary significant effects of the English Onshore Scheme.

9.1.8 Limitations relating to the water environment that affect the robustness of the preliminary assessment of the potentially significant effects of the English Onshore Scheme come from uncertainty surrounding design and ongoing assessment. The full evaluation at the ES stage will be informed by:

¹ The WFD Assessment is being undertaken for the Onshore and Offshore elements of the Project, in accordance with relevant methodologies and in consultation with the Environment Agency. The Assessments are being reported in separate documents, with appropriate cross referencing for overlapping WFD waterbodies and Scheme activities.

- Full review and assessment of Environment Agency flood models and their outputs, with additional modelling simulations completed as necessary;
- The evolved design of the Project;
- Land drainage surveys; and
- Continued stakeholder engagement.

9.1.9 These limitations will be resolved before submission of the ES.

Preliminary significance conclusions

9.1.10 For ease of reference, a summary of the potentially significant effects from the preliminary water environment assessment, and before mitigation, is provided in **Table 9-1**. All other effects in relation to the water environment have been assessed as not significant. Further details of the methodology behind the assessment, and a detailed narrative of the assessment itself are provided within the sections below.

Table 9-1 Preliminary summary of significance of effects

Receptor and summary of predicted effects	Sensitivity / importance / value of receptor ¹	Magnitude of change ²	Significance ³	Summary rationale
<p><u>Attribute: Water quality</u> Ordinary watercourses / Internal Drainage Board (IDB) drains: effects on water quality due to watercourse diversions</p>	Medium to low	Minor to moderate adverse	Minor moderate adverse (Potentially Significant)	to Drainage works will be undertaken on the site, including diversions of existing watercourses, having the potential for significant effects on water quality attributes. Due to the limited extent of watercourse diversions and drainage works, any impacts will be localised to the affected watercourses.
<p><u>Attribute: Flow storage and conveyance</u> Land drainage regime (ditches, land drains etc.): reduced flow conveyance and storage capacity due to watercourse diversions. Effects of land raising to construct the transition joint bays at landfall.</p>	Medium	Minor to moderate adverse	Minor moderate adverse (Potentially Significant)	to Drainage works will be undertaken on the site, including diversions of existing watercourses, having the potential for significant effects on the flow storage and conveyance attributes of the affected watercourses and on the land drainage regime. Land raising will be required to facilitate construction at the Anderby Creek Landfall. Land here benefits from existing coastal defences such that it is outside of the routine tidal floodplain but is a floodplain in defence overtopping scenarios.

1. The sensitivity / importance / value of a receptor is defined using the criteria set out in Section 9.9 and is defined as [low, medium, high, and very high].
2. The magnitude of change on a receptor resulting from activities relating to the development is defined using the criteria set out in Section 9.9 and is defined as [Major Adverse, Moderate Adverse, Minor Adverse, Negligible, Minor Beneficial, Moderate Beneficial, Major Beneficial, No change].
3. The significance of the environmental effects is based on the combination of the sensitivity / importance / value of a receptor and the magnitude of change and is expressed as major (significant), moderate (potentially significant) or minor / negligible (not significant), subject to the evaluation methodology outlined in Section 9.9.

9.2 Relevant Technical Guidance

9.2.1 The legislation and planning policy which has informed the assessment of effects with respect to the water environment is provided within **Volume 2, Part 1, Appendix 2.A: Regulatory and Planning Context**. Further information on policies relevant to the English Onshore Scheme is provided in **Volume 1, Part 1, Chapter 2: Regulatory and Policy Overview**. Relevant technical guidance, specific to the water environment, that has informed this PEIR and will inform the assessment within the ES is summarised below.

Technical guidance

9.2.2 A summary of the technical guidance for the water environment is given in **Table 9-2**.

Table 9-2 Technical guidance relevant to the water environment assessment

Technical guidance document	Context
Nationally Significant Infrastructure Project: Advice on the Water Framework Directive (WFD) (Ref 9.1)	Explains the information that the Planning Inspectorate considers an Applicant must provide with their application in order to clearly demonstrate that the WFD and the Water Environment Regulations (2017) have been appropriately considered.
Various Construction Industry Research and Information Association (CIRIA) publications, for example, C532: Control of water pollution from construction sites (Ref 9.2)	Provide construction good practice for preventing pollution of the water environment
Guidance for Pollution Prevention Series (Ref 9.3)	Provide environmental good practice and environmental regulatory guidance for a range of topics, for example, GPP5: Works and maintenance in and near watercourses.
Design Manual for Roads and Bridges (DMRB) LA 113: Road drainage and the water environment (Ref 9.4)	Describes a methodology for assessing the effects of linear infrastructure development on the water environment, including criteria for classifying receptor sensitivity (importance) and impact magnitude.
Local flood risk management guidelines published by the Lead Local Flood Authority (LLFA) (Ref 9.5)	These provide baseline flood risk data, design guidance and criteria for the management of surface water runoff from new developments.

Technical guidance document	Context
Flood Risk and Coastal Change (Ref 9.6) and Water Quality and Supply planning practice guidance (Ref 9.7)	The Flood Risk and Coastal Change guidance provides recommended allowances for climate change effects on future peak river flows, sea levels and rainfall intensities. These allowances will be taken forward to the Flood Risk Assessment (FRA) and inform the design of surface water drainage systems. The Water Quality and Supply guidance sets out approaches for protecting water quality and ensuring sustainable water use within a project's extents.
LLFA guidance on Sustainable Drainage Systems (SuDS) (Ref 9.8)	Describes requirements relating to surface water drainage and SuDS.

9.3 Consultation and Engagement

Overview

- 9.3.1 The assessment has been informed by consultation responses and ongoing stakeholder engagement. An overview of the approach to consultation is provided in Section 5.9 of **Volume 1, Part 1, Chapter 5: PEIR Approach and Methodology**.

Scoping Opinion

- 9.3.2 An EIA Scoping Opinion was adopted by the Secretary of State, administered by the Planning Inspectorate, on 13 October 2025. A summary of the relevant responses received in the EIA Scoping Opinion in relation to the water environment, and confirmation of how these have been addressed within the assessment to date, is presented in **Table 9-3**.
- 9.3.3 The information provided in the PEIR is preliminary and not all of the EIA Scoping Opinion comments have been addressed fully at this stage, however all comments will be addressed within the ES.

Table 9-3 Summary of EIA scoping opinion responses for the water environment

Consultee	Consideration	How addressed in this PEIR
Planning Inspectorate (ID 3.4.1)	In the absence of information such as evidence demonstrating agreement with relevant bodies, the Inspectorate is not in a position to agree to scope out matters linked to pollution due to soil stripping, earthworks and excavations and use and refuelling of plant (Construction phase).	The ES will include an assessment of clear these matters. This will be informed by the mitigation measures included in Volume 2, Part 1, Appendix 5.B: Outline CoCP . An outline soil management plan will also be prepared as an appendix to Volume 2, Part 1, Appendix 5.B: Outline CoCP . Accordingly, the ES should include Agency will continue to confirm an assessment of these matters or mitigation measures and reach

Consultee	Consideration	How addressed in this PEIR
	<p>demonstrate agreement with the relevant consultation bodies to the absence of a likely significant effect (LSE).</p>	<p>agreement regarding the absence of a LSE.</p>
<p>Planning Inspectorate (ID 3.4.2)</p>	<p>The Planning Inspectorate is in agreement that pollution and physical disturbance caused by maintenance activities, can be scoped out of further assessment.</p> <p>The Planning Inspectorate caveated that: “The ES should describe the relevant mitigation measures to safeguard the water environment during operation and explain how these are secured.”</p>	<p>The Planning Inspectorate’s agreement is noted, and this matter has been scoped out of further assessment. Maintenance activities will be limited to inspections and minor works¹. The ES will describe operational management procedures to safeguard water receptors, including pollution prevention and emergency response protocols. These measures would be secured through inclusion within a Register of Environmental Actions and Commitments, forming part of Volume 2, Part 1, Appendix 5.B: Outline CoCP, to be prepared alongside the ES.</p>
<p>Planning Inspectorate (ID 3.4.3)</p>	<p>The Planning Inspectorate confirms that they are not in the position to agree to scope the matters linked to pollution due to discharges of operational surface water drainage and that “<i>substations carry inherent risk of pollution from runoff and firewater during emergencies</i>”. Accordingly, the ES should include an assessment of these matters or the information demonstrating agreement with the relevant consultation bodies to the absence of an LSE.</p>	<p>The ES will include an assessment of operational surface water drainage discharges, including consideration of flood risk and pollution pathways both during normal operation (e.g. from runoff) and during extreme scenarios (e.g., emergencies). The FRA will set out sustainable drainage measures and set out compliance with National Policy Statements EN-1 and EN-5. Engagement with the Environment Agency and LLFA will continue to agree suitable mitigation to avoid an LSE.</p>
<p>Planning Inspectorate (ID 3.4.4)</p>	<p>The Planning Inspectorate is in agreement that physical disturbance and change to flow regime and hydromorphology during operation can be scoped out of the ES, given that the nature of the operational proposed development is unlikely to have an impact.</p>	<p>The Planning Inspectorate’s agreement is noted, and this matter has been scoped out of further assessment.</p>
<p>Planning Inspectorate (ID 3.4.5)</p>	<p>Impacts from vibration on flood defence assets - as construction works have potential to cause vibration impacts which could affect flood defences, the Inspectorate considers that this matter should be</p>	<p>The impact from vibrations on flood defence assets will be considered in the ES in line with the scoping opinion, unless otherwise agreed with the relevant consultation body.</p>

Consultee	Consideration	How addressed in this PEIR
	scoped into the ES unless otherwise agreed with relevant consultation bodies.	
Planning Inspectorate (ID 3.4.6)	Future flood risk as a result of the proposed development should be assessed in the ES using appropriate, up to date climate change projections using the credible maximum climate change scenario.	Future flood risk will be assessed in the ES and its accompanying FRA, using up-to-date climate change projections in line with the credible maximum scenario and national guidance.
Planning Inspectorate (ID 3.4.7)	<i>“It’s unclear whether the WFD and ES study areas are the same or different, and if they differ, the reason is not specified. All potentially affected waterbodies should be assessed for likely significant effects, using an appropriate Zone of Influence (Zol) in the ES.”</i>	The ES and WFD Assessments for the Onshore and Offshore Schemes will clearly define the respective study areas and explain any differences. All potentially affected waterbodies will be assessed for likely significant effects using an appropriate Zol.
Planning Inspectorate (ID 3.4.8)	<i>“No water quality sampling and analysis is proposed on the basis that the applicant considers the existing baseline data available is sufficient. There is no evidence to support this such as relevant agreement from consultees. The ES should provide sufficient evidence to support the approach to characterisation of the baseline environment.”</i>	The ES will justify the approach adopted to characterise baseline water quality and will confirm agreement on this matter with relevant consultees.
Planning Inspectorate (ID 3.4.9)	<i>“No baseline condition surveys for flood defences are proposed on the basis that the applicant considers the existing baseline data from the Environment Agency available is sufficient. The ES should provide sufficient evidence to support the approach to characterisation of the baseline environment such as relevant agreement with the Environment Agency.”</i>	The ES will confirm approach to characterising flood defence conditions using Environment Agency data, providing evidence of agreement with the Environment Agency where required.
Planning Inspectorate (ID 3.4.10)	<i>“EIA Scoping Report paragraph 9.7.7 states that surveys of main rivers are proposed but there is no mention of surveying of ordinary watercourses without further explanation. The ES should set out how the scope of surveys has been determined including any agreement with relevant consultees.”</i>	A hydrology and flood risk walkover will include watercourses that the Project crosses, and the information will be used to inform the ES and WFD Assessments, as well as the crossing designs.

Consultee	Consideration	How addressed in this PEIR
Planning Inspectorate (ID 3.4.11)	<p><i>“The ES should identify all potential sources of flood risk and assess likely significant effects where an impact pathway exists. This should take account of appropriate climate change projections using the credible maximum climate change scenario.”</i></p>	The ES and its accompanying FRA will identify all potential sources of flood risk and assess likely significant effects where an impact pathway exists. This will include climate change considerations.
Planning Inspectorate (ID 3.4.12)	<p>The Environment Agency have flagged to the Planning Inspectorate that there is potential for the timing and design of the work to adversely impact the delivery of a beach nourishment scheme as a coastal flood defence.</p> <p><i>“The Inspectorate considers that the ES should assess potential significant effects on flood defences where they are likely to occur.”</i></p>	The ES will assess potential impacts on flood defences including considerations that could affect coastal defences such as beach nourishment. Engagement with the Environment Agency will continue to agree mitigation measures. Where required, engagement with Natural England will be undertaken.
Planning Inspectorate (ID 3.4.13)	<p>The Inspectorate noted that the Environment Agency have flagged the omission of discussion of the impacts to chalk streams and states that:</p> <p><i>“Unless otherwise agreed with the relevant consultation bodies, should chalk streams be located within the zone of influence and have potential to be impacted by the proposed development, the ES should include these as a sensitive receptor, explaining how their sensitivity is determined in the methodology and provide an assessment of significant effects where they are likely to occur.”</i></p>	The ES will include chalk streams as sensitive receptors where they fall within the ZoI. Their sensitivity will be defined in the impact assessment methodology, and an assessment of likely significant effects provided, unless otherwise agreed with consultees.
Planning Inspectorate (ID 3.4.14)	<p>The Planning Inspectorate queries that the EIA Scoping Report does not confirm whether foul water management would be required for welfare accommodations, and if so, how it would be managed.</p> <p><i>“The ES should confirm whether there will be a need for foul water management and provide details of this and how any mitigation is secured through the Development Consent Order (DCO).”</i></p>	As detailed in Table 9-6 , it is intended that foul water generated from construction compound welfare facilities will be discharged to sewer, subject to the agreements with the utility providers, or in locations where a sewer connection is not reasonably practicable, collected and tankered off site for disposal at a licensed treatment facility. These measures will be secured through a commitment within Volume 2, Part 1, Appendix 5.B: Outline CoCP .

Consultee	Consideration	How addressed in this PEIR
Environment Agency	The Environment Agency raised that the EIA Scoping Report states that they regulate Main Rivers when they are the regulatory body for Water Framework Directive (WFD) for all inland watercourses including Main Rivers and ordinary watercourses as well as coastal waters within 1 nautical mile of the coast. All inland watercourses and coastal waters within 1 nautical mile of the coast should be considered otherwise the proposed development may breach the WFD.	The Applicant acknowledges the Environment Agency's concern and will ensure surveys reflect their regulatory role under the WFD for all inland watercourses and coastal waters within 1 nautical mile.

1. As defined in **Volume 1, Part 1, Chapter 4: Description of the Project, Table 4-16.**

Technical engagement

9.3.4 The water environment assessment has been, and will continue to be, informed by consultation and engagement with stakeholders including the relevant LLFA the Environment Agency, the Lynsey Marsh IDB and Anglian Water. Key details and agreements arising from this engagement will be detailed in the ES and any feedback provided will shape the scope of the FRA and ES (where appropriate). A summary of the technical engagement undertaken to date is outlined in **Table 9-4.**

Table 9-4 Technical engagement on the environmental aspect assessment

Consultee	Consideration	How addressed in this PEIR
Environment Agency	Flood data availability: discussions on the suitability of existing data to inform finished floor levels for the proposed Converter Station, and flood risk at the Anderby Creek Landfall location.	An audit of available data has been undertaken, and a technical note was shared with the Environment Agency for review and agreement in February 2026. Continued engagement with the Environment Agency is proposed in order to agree on suitable management, control measures, and other water environment design principles. These discussions and assessment will inform the FRA. While this Chapter provides some preliminary information regarding effects on water resources, further information will be included within the ES and FRA.
Lynsey Marsh IDB	Initial engagement to introduce the Project.	N/A – future engagement will focus on agreeing IDB watercourse crossing and diversion methodologies and surface water drainage principles.

Consultee	Consideration	How addressed in this PEIR
LLFA (Lincolnshire Initial engagement County Council)	introduce the Project.	to N/A – future engagement will focus on agreeing ordinary watercourse crossing methodologies and surface water drainage principles.

9.3.5 Engagement with the Environment Agency, LLFAs and IDBs will continue to inform the ES. Statements of Common Ground will be used to record engagement and ongoing discussions with these stakeholders throughout the DCO process.

9.4 Data Gathering Methodology

9.4.1 The known or predicated current and future baseline environment described in this section has been characterised from desk study and data collection from several stakeholders. The data sources and stakeholders are detailed in **Table 9-5**.

9.4.2 All further information received from stakeholders will be incorporated into future stages of the assessment.

Study area

9.4.3 As defined in the EIA Scoping Report (Ref 9.9) the study area for the EIA is proposed to include all land within the draft Order Limits, and in addition, a buffer of 500 m from this boundary. The study area, illustrated in **Volume 3, Part 2, Figure 9-1**, is considered appropriate based on technical knowledge of similar projects and has been set following consideration of the distance over which potentially significant effects can reasonably be expected to occur.

9.4.4 The ES assessment will consider terrestrial waterbodies to Mean High Water Springs (MHWS).

9.4.5 The FRA that will be prepared to inform the EIA will 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 cover areas up to several square kilometres.

9.4.6 The study area for the WFD Assessment is defined by a Zone of Influence (Zoi). Zois are set following consideration of the nature, scale and duration of a projects' construction and operational activities. The Zoi proposed, will be agreed with the Environment Agency and is consistent with other recent similar linear DCO projects, including the Eastern Green Link 3 and 4 Projects. The Zoi proposed for the WFD Assessment can be seen in **Volume 3, Part 2, Figure 9-2**; and **Volume 3, Part 2, Figure 9-3**.

9.4.7 As described in **Volume 2, Part 2, Appendix 9.A: Onshore Water Framework Directive Assessment Stage 1 & 2 Report**, for the terrestrial activities proposed by the Project, the proposed Zoi will include all surface and groundwater bodies regulated by the WFD that could be directly impacted (i.e., within the direct footprint of the Project) and those up to 500 m of the draft Order Limits to account for potential indirect impacts. Protected areas with a surface or groundwater dependency up to 500 m of the draft Order Limits will also be included in the scope of the assessment following consideration of the distance over which Project activities can reasonably have the potential to cause potentially significant effects / influence the achievement of the WFD status. To address the English Offshore

Scheme, transitional/coastal waterbodies up to 1 nautical mile will be considered within the WFD assessment.

Desk study

9.4.8 A summary of the organisations that have supplied data, together with the nature of that data is outlined in **Table 9-5**.

Table 9-5 Data sources used to inform the water environment assessment

Organisation	Data source	Data provided
Environment Agency	Statutory Main River map for England (Ref 9.10).	Main River map for England.
Environment Agency	Catchment data explorer database of Cycle 2 and 3 WFD information (Ref 9.11).	Waterbody status under Cycles 2 and 3 of the WFD.
Environment Agency	Flood Map for Planning (Ref 9.12). ¹	Spatial Flood Zone Information.
Environment Agency	Long term flood risk mapping from the National Assessment of Flood Risk 2 (Ref 9.13). ²	Risk of flooding from surface water mapping, risk of flooding from rivers and the sea mapping, including climate change allowances.
Environment Agency	AIMS (Asset Information and Maintenance) Flood Defences (inc. standardised attributes) (Ref 9.14). ³	Information on existing flood defence infrastructure.
Environment Agency	Various flood models and associated data.	<p>Flood modelling outputs (flood extent, depth and hazard data) from a number of models.</p> <p>Fluvial flood models covering baseline, climate change allowances and defended and undefended scenarios (where relevant) for the following catchments:</p> <ul style="list-style-type: none"> • Woldgrift Drain (2019) • Willoughby High Drain (2018) <p>Tidal overtopping and tidal breach models for both baseline and climate change scenarios at the Anderby Creek Landfall based on the Northern Tidal Model (NTM) (2010).</p>

Organisation	Data source	Data provided
Department for Multi-Agency Rural Affairs (DEFRA)	for Multi-Agency Information Countryside website (Ref 9.16).	Geographic Information for the Areas and Nitrate Vulnerable Zones (MAGIC) (NVZs).
LLFA and IDB	Various reports associated data	and Historical flood records

¹ Published in March 2025 and revised November 2025.

²Published in January 2025, and risk of flooding from surface water revised in September 2025, and risk of flooding from rivers and sea revised in January 2026.

³ Updated November 2025

9.4.9 Data on abstraction licenses from surface water, and Consented Discharges to Controlled Waters dataset from the Environment Agency's Public Register (Ref 9.15) is pending and will be used to inform the ES.

Survey work

9.4.10 No site walkover has been conducted to date, with this PEIR informed by a desk-based study. However, preparation of the ES and FRA will be informed by a hydrology and flood risk walkover of key surface water receptors and areas of interest in Spring 2026. The site walkover will include developing an understanding of local topography, local land drainage regime and watercourse condition, to be recorded through visual surveys and photographs.

9.5 Overall Baseline

Sites Designated for Nature Conservation

9.5.1 A number of ponds and surface water channels / ditches are within the draft Order Limits, some of which are part of sites designated for nature conservation, details of which are provided in **Volume 1, Part 2, Chapter 6: Biodiversity**. Where surface waters play a key role in sustaining the designated interest features, these sites will be identified in the ES and will be included as a receptor in the assessment presented in the ES.

Existing water interests

9.5.2 Data to characterise existing water interests has been collected from the Environment Agency. Watercourses in the study area receive, transport and dilute consented and informal discharges and support abstractions of water for a range of uses. Based on information available to date, the location of surface water abstractions and permitted discharges is provided in **Volume 3, Part 2, Figure 9-1**. Details of consented discharges and permitted and private surface water abstractions are pending confirmation and will be included within the ES.

9.5.3 Information on private water supplies and permitted abstractions supported by groundwater resources is provided in **Volume 1, Part 2, Chapter 10: Geology and Hydrogeology**.

Current baseline

- 9.5.4 The study area crosses the catchments of numerous watercourses and is located within the Anglian River Basin District. The features of the surface water environment are illustrated on:
- **Volume 3, Part 2, Figure 9-1: Water Environment Study Area and Features;**
 - **Volume 3, Part 2, Figure 9-2: Water Framework Surface Waterbody Status;**
 - **Volume 3, Part 2, Figure 9-4: Flood Risk from Rivers and the Sea;** and
 - **Volume 3, Part 2, Figure 9-5: Risk of Flooding from Surface Water.**
- 9.5.5 Groundwater receptors are addressed in **Volume 1, Part 2, Chapter 10: Geology and Hydrogeology** and displayed in **Volume 3, Part 2, Figure 9-3.**
- 9.5.6 For reporting purposes, the draft Order Limits have been subdivided into three sections: Anderby Creek Landfall / Cable Route / Converter Station. The current baseline is described below for each of these. The Alford and Grimsby to Walpole haul roads are within the Cable Route section.
- 9.5.7 For the purposes of this assessment, with regard to the WFD, surface water, groundwater and transitional / coastal water bodies within the Zol have been identified and screened within the WFD Stage 1 Assessment report in **Volume 2, Part 2, Appendix 9.A: Onshore Water Framework Directive Assessment Stage 1 & 2 Report.** This report contains additional information on the baseline status of these water bodies.
- 9.5.8 The FRA will consider groundwater flood risk and any other relevant sources of flooding as well as the flood risk and land drainage considerations given below for each section of the draft Order Limits.

Anderby Creek Landfall

Surface Water Features

- 9.5.9 Within the Anderby Creek Landfall area there are no main rivers that would be crossed by the draft Order Limits. However, there are several surface water drainage channels within the Anderby Creek Landfall area. The catchments of these watercourses tend to be rural in their land use, with flat topography.
- 9.5.10 Other water features within the Anderby Creek Landfall area include numerous natural and artificial ponds. The Anderby Creek Landfall location is on the Lincolnshire coast of the North Sea. In this area are the Huttoft and Moggs Eye beaches which are part of the stretch of sand from Mablethorpe to Skegness, which are subject to regular beach replenishment works for strategic flood defence purposes.
- 9.5.11 The Anderby Creek Landfall area is wholly within the Lindsey Marsh IDB area.

Surface Water Quality

- 9.5.12 In the Anderby Creek Landfall section of the Project, the study area covers two surface waterbodies as illustrated in **Volume 3, Part 2, Figure 9-2:**
- Anderby Main Drain; and
 - Lincolnshire Transitional and Coastal (TraC).

- 9.5.13 The baseline status of these is described in **Volume 2, Part 2, Appendix 9.A: Onshore Water Framework Directive Assessment Stage 1 & 2 Report**. Whilst this appendix also identifies the WFD groundwater bodies within the study area, groundwater quality information is provided in **Volume 1, Part 2, Chapter 10: Geology and Hydrogeology** and illustrated in **Volume 3, Part 2, Figure 9-3**.
- 9.5.14 The WFD classifications for the waterbodies are informed by monitoring a range of parameters that are indicators of water quality from Environment Agency monitoring sites. These waterbodies have a moderate ecological status and a chemical status of fail due to exceedance of priority hazardous substances. Multiple reasons for not achieving good (RNAG) status are reported for these waterbodies, with polybrominated diphenyl ethers (PBDE) and mercury and its compounds being common to all. Other RNAGs include physical modification, sewage discharge, and poor agricultural land management.
- 9.5.15 The coastal waters at the proposed Anderby Creek Landfall site have designated Bathing Water status, the Anderby bathing water, achieving the latest annual classification of excellent.

Hydromorphology

- 9.5.16 The Anderby Main Drain waterbody has a hydromorphological designation of artificial, with the Lincolnshire TraC waterbody designated as heavily modified. Many of the watercourses / drains in this part of the study area have been subject to modifications for the purposes of land drainage and flood defence. Watercourses that serve a land drainage function tend to have relatively low hydromorphological diversity, typically having uniform channel profiles and straightened channel forms, which are subject to routine maintenance practices such as bed silt clearance and mowing of channel banks.

Flood Risk and Land Drainage

- 9.5.17 Based on the online Flood Maps (Ref 9.12) the majority of the Anderby Creek Landfall area is at high risk of flooding, with the draft Order Limits crossing large extents of coastal floodplain (initially defined by the extents of Environment Agency Flood Zone 2 (medium risk; between a 1 in 1000 (0.1%) and 1 in 100 (1%) annual probability of flooding from rivers and the sea) and Flood Zone 3 (high risk; 1 in 100 (1%) or greater annual probability of flooding from rivers or 1 in 200 (0.5%) or greater annual probability of flooding from the sea). This is shown on **Volume 3, Part 2, Figure 9-4**.
- 9.5.18 According to the Environment Agency AIMS database (Ref 9.14), flood defences are situated along the coastal frontage of this Anderby Creek Landfall area. These comprise of raised embankments and dunes, reducing the risk of tidal flooding. The Environment Agency flood model outputs that have been received confirm this. Model simulations of present-day scenarios (not accounting for climate change) show that the land within the draft Order Limits is subject to flooding only during events with a low annual chance, associated with overtopping of the defences. There is a greater residual risk associated with a defence breach, and future climate change is predicted to increase flood risk.
- 9.5.19 The Risk of Flooding from Surface Water map (Ref 9.17) shows that most of the land in this section is at very low risk of surface water flooding (annual chance of flooding of less than 0.1%). There are isolated areas of high risk, concentrated around land drainage pathways and watercourses. This is shown on **Volume 3, Part 2, Figure 9-5**.

9.5.20 The previously described network of watercourses and drainage ditches are key to the land drainage regime in this area. Formal drainage systems include those serving existing roads and agricultural land is also understood to be served by piped and open drainage systems.

Cable Route

Surface Water Features

9.5.21 As illustrated in **Volume 3, Part 2, Figure 9-1**, within this section of the Project there is one main river within the draft Order Limits; Woldgrift Drain, which flows from southwest to northeast, discharging into the North Sea at Trusthorpe.

9.5.22 There is also an ordinary watercourse, Boygrift Drain, and a network of IDB and landowner drainage ditches that function at a local scale located throughout the section. In some places these are managed by the Lindsey Marsh IDB (the area of which covers most of the Project area), to facilitate land drainage and control flood risk. The catchments of the watercourses can be categorised as generally rural in their land use, with some small urban areas, and relatively flat topography.

9.5.23 Other water features within the Cable Route section include numerous natural and artificial ponds.

Surface Water Quality

9.5.24 The draft Order Limits is located in the WFD Steeping and Eaus Operational Catchment.

9.5.25 The Zol, including around areas of minor road improvements, covers the following WFD waterbody catchments:

- **Long Eau Water Body**, moderate ecological status;
- **Great Eau (downstream of South Thoresby) Water Body**, poor ecological status;
- **Trusthorpe Pump Drain**, moderate ecological status;
- **Anderby Main Drain**, moderate ecological status;
- **Boygrift Drain**, moderate ecological status; and
- **Woldgrift Drain**, moderate ecological status.

9.5.26 Further information is provided in **Volume 2, Part 2, Appendix 9.A: Onshore Water Framework Directive Assessment Stage 1 & 2 Report**, which summarises baseline WFD status data (Ref 9.11) for those watercourses within the Zol, and are illustrated in **Volume 3, Part 2, Figure 9-2**. Whilst this appendix also identifies the WFD groundwater bodies within the study area, groundwater quality information is provided in **Volume 1, Part 2, Chapter 10: Geology and Hydrogeology** and illustrated in **Volume 3, Part 2, Figure 9-3**.

9.5.27 RNAGs vary, with a wide range of issues cited, including poor physio-chemical and biological quality, poor livestock and nutrient management, point source pollution from sewage discharges and physical modification.

9.5.28 All WFD waterbodies listed above share a chemical status of 'fail' due to mercury and its compounds and PBDE.

- 9.5.29 The draft Order Limits are partially located within Nitrate Vulnerable Zones, west of Bilsby. They are not within a surface water Drinking Water Protected Area or Safeguard Zone.
- 9.5.30 The scope of works within the catchment areas of the Long Eau and Great Eau Water Bodies, and Trusthorpe Pump Drain are associated with minor road improvements. Any widening works at these locations will need to consider respective impacts.

Hydromorphology

- 9.5.31 All of the WFD waterbodies that are crossed by the draft Order Limits have a hydromorphological designation of artificial or heavily modified. Many of the water features have been subject to modifications for the purposes of land drainage and flood defence. The ordinary watercourses in the study area, particularly those within the IDB area, serve a land drainage function and have a relatively low hydromorphological diversity.

Flood Risk and Land Drainage

- 9.5.32 Based on the online Flood Maps (Ref 9.12) large parts of the study area are at high risk of flooding from rivers and / or the sea, with the draft Order Limits crossing large extents of fluvial and coastal floodplain (initially defined by the extents of Environment Agency Flood Zone 2 and Flood Zone 3). This is shown on **Volume 3, Part 2, Figure 9-4**.
- 9.5.33 According to the Environment Agency AIMS database (Ref 9.14), there are flood defences along the Woldgrift Drain within the draft Order Limits in the form of naturally high ground, reducing the risk of fluvial flooding. No other flood defences are shown within the draft Order Limits or immediate surrounding area.
- 9.5.34 Outputs from Environment Agency flood models will be used to refine understanding of the protection afforded to the land within the draft Order Limits and to characterise any residual flood risks. This information will be used to inform the FRA that will be prepared alongside the ES.
- 9.5.35 The Risk of Flooding from Surface Water map (Ref 9.17) shows that most of the land in this section is at very low risk of surface water flooding (annual chance of flooding of less than 0.1%). There are isolated areas of high risk, concentrated around land drainage pathways and watercourses. This is shown on **Volume 3, Part 2, Figure 9-5**.
- 9.5.36 As previously described, a network of watercourses and drainage ditches are key to the land drainage regime in this area. Formal drainage systems serve existing roads and agricultural land (including piped and open drainage systems).

Converter station

Surface Water Features

- 9.5.37 The Woldgrift Drain is the only Main River in the vicinity of the converter station, located northwest of the proposed converter station. The Boygrift Drain ordinary watercourse is located up to 530 m southeast of the proposed station. Their catchments can be categorised as generally rural in their land use, with relatively flat topography.
- 9.5.38 The converter station is within the Lindsey Marsh IDB district which manages numerous watercourses, including Boygrift Drain.

Surface Water Quality

- 9.5.39 The converter station is located in the Steeping and Eaus Operational Catchment, draining to the WFD waterbody the Boygriff Drain. This is listed in **Volume 2, Part 2, Appendix 9.A: Onshore Water Framework Directive Assessment Stage 1 & 2 Report** which summarises baseline WFD status data (Ref 9.11) and illustrated in **Volume 3, Part 2, Figure 9-2**. The Boygriff Drain waterbody has an ecological status of moderate and a chemical status of 'fail' due to exceedances of PBDE and mercury and its compounds.
- 9.5.40 The converter station is not within a surface water Drinking Water Protected Area, Safeguard Zone nor a Nitrate Vulnerable Zone.

Hydromorphology

- 9.5.41 The Boygriff Drain has a hydromorphological designation of artificial and has been subject to modifications for example, for the purposes of land drainage and flood defence, as well as navigation. The ordinary watercourses and drainage ditches in this Section, particularly those within the IDB area, also serve a land drainage function and have a relatively low hydromorphological diversity.

Flood Risk and Land Drainage

- 9.5.42 Based on the online Flood Maps (Ref 9.12) land within the draft Order Limits at the converter station crosses the fluvial and coastal floodplain (initially defined by the extents of Environment Agency Flood Zone 2 and Flood Zone 3). This is shown on **Volume 3, Part 2, Figure 9-4**. However, these flood zones and associated risks of flooding do not account for the presence and functioning of flood defences.
- 9.5.43 Environment Agency National Flood Risk Assessment 2 (NaFRA2) outputs and the Northern Tidal Model (NTM) outputs indicate that the defences provide a high degree of protection against inundation of most of the land within the draft Order Limits. There is a greater residual risk associated with a defence breach, and future climate change is predicted to increase flood risk also.
- 9.5.44 The Risk of Flooding from Surface Water map (Ref 9.17) shows that most of the land in this section is at very low risk of surface water flooding (annual chance of flooding of less than 0.1%). There are isolated areas of high risk, concentrated around land drains and watercourses and reflecting topographical low spots. The previously described network of watercourses and drainage ditches are key to the land drainage regime in this area. Formal drainage systems include those serving existing roads and agricultural land is also likely to be served by piped and open drainage systems, to be confirmed with the proposed site visit in Spring 2026. This is shown on **Volume 3, Part 2, Figure 9-5**.

Future baseline

- 9.5.45 The future baseline relates to known or anticipated changes to the current baseline in the future which would be assessed as part of the English Onshore Scheme in the ES.
- 9.5.46 With regard to flood risk and land drainage, future baseline conditions would be forecast, drawing on current best practice guidelines and latest flood risk data (i.e., model outputs and / or NaFRA2 datasets) (Ref 9.19) taking into account the likely impacts of climate change on rainfall intensities, and where applicable, peak river flows and sea level rise. These future conditions would be considered to factor climate change resilience into the design of the English Onshore Scheme.

- 9.5.47 It is expected that the WFD legislation will drive future improvements in the ecological and chemical quality of waterbodies. The effects of the implementation of future cycles of river basin management plans would therefore also be considered when assigning value to water environment receptors.
- 9.5.48 It is recognised that there are several other proposed and committed developments within the surrounding area that could alter the future baseline in the absence of the Project. For water environment, this includes future developments that share the same hydrological catchments as the study area. The potential for inter-project cumulative effects will be considered later in the EIA process according to the approach outlined within **Volume 1, Part 4, Chapter 27: Cumulative Effects**.
- 9.5.49 Future baseline conditions relating to coastal processes and the intertidal zone are addressed for the English Offshore Scheme in **Volume 1, Part 3, Chapter 17: Marine Physical Processes**.

9.6 Environmental Measures

- 9.6.1 As set out in **Volume 1, Part 1, Chapter 5: PEIR Approach and Methodology**, the environmental measures are characterised as design measures or control and management measures. A range of environmental measures would be implemented as part of the English Onshore Scheme and will be secured in the DCO as relevant.
- 9.6.2 **Table 9-6** outlines how these design and control measures will influence the water environment assessment. In addition to the measures listed in **Table 9-6**, standard mitigation measures, comprising management activities and techniques, would be implemented during the construction of the Project to limit effects through adherence to good site practices and achieving legal compliance. These are listed in **Volume 2, Part 1, Appendix 5.B: Outline CoCP** and are not repeated below. Measures listed in **Table 9-6** have been assigned references, for example (GG01). These align with the references provided in **Volume 2, Part 1, Appendix 5.B: Outline CoCP**, Table 3-1 for ease of cross-reference. Any references identified with ID MT (for example, MT01) include measures which may also be listed in other aspects considered as part of this PEIR and, therefore have been identified as measures which apply to multiple aspects.
- 9.6.3 Design measures identified through the EIA process have also been applied to avoid or reduce potentially significant effects. Design measures included that a relevant to water receptors are included in **Table 9-6** below under Design and Operation and are also included in **Volume 2, Part 1, Appendix 5.A: Outline Register of Design Measures**.
- 9.6.4 In addition to the measures outlined in **Table 9-6** below, a series of initial water environment design and construction principles are set out in **Volume 2, Part 2, Appendix 9.B: Preliminary Water Environment Design Principles**. The assigned references in this table follow the same approach as the documents referenced above. These are included to gain feedback from key water environment stakeholders, with the aim of agreeing a suite of principles that would apply in the majority of cases; with other instances being dealt with by exception.
- 9.6.5 Environmental measures relating to groundwater and fauna / flora in the riparian zone are summarised in **Volume 1, Part 1, Chapter 10: Geology and Hydrogeology** and **Volume 1, Part 1, Chapter 6: Biodiversity**, respectively. Compliance with these measures will be secured by way of a requirement in the DCO / via DCO submission.

Table 9-6 Summary of the environmental measures

Receptor	Potential changes and effects	Environmental measures ¹	ID reference ²
Construction			
Watercourses, surface waterbodies, associated protected areas, existing water interests	Associated risk of pollution from general construction including construction traffic / plant.	<p>Good practice measures during construction. For example, fuels, oils, and chemicals will be stored responsibly, away from sensitive water receptors. All refuelling, oiling, and greasing of construction plant and equipment will take place above drip trays (or similar) and also away from drains as far as is reasonably practicable. Appropriate spill kits will be made easily accessible for these activities.</p> <p>Wastewater generated from construction compound welfare facilities will be discharged to sewer, subject to the agreements with the utility providers, or in locations where a sewer connection is not reasonably practicable, collected and tankered off site for disposal at a licensed treatment facility.</p>	W01 (C)
Existing water interests	Impact on water resources.	Measures to encourage water use efficiency during construction, for example, aerated taps and waterless urinals in site offices; rainwater harvesting for use in dust suppression, would be implemented in order to reduce consumptive water use.	W02 (C)
Watercourses	Risk of disturbance of sensitive locations along watercourses due to access requirement.	<p>Where watercourses are to be crossed by construction traffic, temporary spanned bridges will be used in preference to culverts.</p> <p>Temporary culverts will be sized appropriately to ensure the watercourse's capacity is maintained and to maintain existing flows, and natural riverine connectivity throughout the year, at both high and low flows and kept free from debris. The inlets and outlets of culverts will be designed such that there is no ledge or disruption to flow into or out of the culvert. They will also be designed to maintain natural slope / water velocities and have buried inlet / outlets. For crossings of smaller ditches, these culvert design</p>	MT03 (C)

Receptor	Potential changes and effects	Environmental measures ¹	ID reference ²
		<p>criteria may be varied, in agreement with the relevant authority (IDB / LLFA).</p> <p>Once the temporary culvert is installed, the area above the temporary culvert will be backfilled and a temporary haul road constructed over the backfilled area to permit the passage of plant, equipment, materials, and people.</p> <p>Temporary bridges, which are expected to be used to cross Environment Agency main rivers, larger drains (where required due to engineering complexity) and designated WFD waterbodies, will be designed specifically to consider the span length and the weight and size of plant and equipment that will cross the bridge, and to reduce impediment to flows and increase in flood risk.</p>	
All environment receptors	water Pollution risk, potential impacts on land drainage and groundwater.	The Contractor would comply with all relevant consent conditions or DCO requirements regarding de-watering and other discharge activities. This will particularly be with regard to volumes and discharge rates and will include discharges to land, waterbodies, or third-party drains / sewers. All water discharges to be undertaken under the correct Environment Agency permits, with appropriate pre-treatment (e.g. de-silting) where required.	W03 (C)
Existing drainage and pipes)	land Risk of removal / reduction in land drainage capacity due to underground construction activities.	Any field (land) drainage assets affected during the construction period would be diverted to maintain continuity of the land drainage system. Existing land drainage systems impacted by the Project during its construction would be re-provided to maintain the land drainage regime.	W04 (C)
Receptors vulnerable flooding	Risk of reduction in effectiveness of existing flood defences due to construction activities.	Where works are proposed to cross beneath flood defences, appropriate construction methodologies would be adopted. The Contractor would agree with the relevant party any relevant monitoring requirements to ensure no effects on their integrity.	W05 (C)

Receptor	Potential changes and effects	Environmental measures ¹	ID reference ²
Watercourses	Construction activities with the potential to impede in channel and floodplain flows, as well as impact on water quality.	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 and the Land Drainage Act (1991) (Ref 9.20), or the protective provisions of the DCO for the benefit of the LLFA and IDB.	W06 (C)
Watercourses	Construction activities with the potential to impede in channel and floodplain flows, as well as impact on water quality.	For open cut watercourse crossings and installation of vehicle crossing points, good practice measures will be included to control pollution risks and to manage and ensure continuation of downstream flows. The measures would be set out in the Outline CEMP to be prepared alongside the ES. At crossing sites, the riparian corridor and watercourse channels would be suitably reinstated on completion of the construction works.	W07 (C)
Receptors vulnerable flooding	Risk of damage to construction plant and materials and disruption of activities. Compromise to the safety of construction site personnel.	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.	W08 (C)
Land drainage regime (ditches and underground pipes) and receptors vulnerable to flooding	Waterlogging or flooding of working areas and detriment to surrounding land drainage and changes to the land drainage from land used during construction.	Where appropriate, pre-construction field drainage will be installed within the working area to help prevent possible waterlogging of the working area and therefore the need for temporary dewatering during construction. This will also enable current drainage systems to continue working throughout the period of construction. Landowners will be consulted on the design of the land drainage proposals. The design would pay particular attention to the need to reduce the risk that the drains do not act as pathways for contamination or cause flooding off-site, consulting with the LLFA where necessary.	W09 (C)

Receptor	Potential changes and effects	Environmental measures ¹	ID reference ²
		<p>A specialised drainage contractor will review the designs and provide technical advice to NGET and its Contractor during relevant construction and reinstatement activities.</p> <p>Upon completion of the Project, the working areas will be removed, and the sites will be reinstated to their pre-construction condition. Stripped topsoil will be reinstated, and sites would be restored to their original function, subject to any planting constraints or agreements established with landowners. Where required, replacement land drainage systems will be installed.</p>	
Watercourses, associated protected areas ²	Risk of residual damage to riparian vegetation and watercourses post construction.	Riparian vegetation and the natural bed materials of the watercourses would be reinstated, using the material removed when appropriate on completion of the works. If additional material is required, appropriately sized material of similar composition would be used.	W10 (C)
Watercourses	Risk of hydromorphological change due to watercourse diversion / access requirements.	Upon completion of construction activities, the working areas will be removed, and the sites will be reinstated to their pre-construction condition. Temporary construction haul roads, including associated temporary structures such as bridges and culverts, would typically be decommissioned and removed unless identified during the design process as providing long-term environmental or land-use benefits, subject to agreement with the landowner.	W11 (C)
Design and Operation			
Watercourses, surface waterbodies, associated protected areas,	Risk of adverse effects relating to surface water runoff at Above Ground Infrastructure (AGI) sites and increase in rates and	Suitable flood resilience and surface water drainage provisions would be embedded within the design for any operational AGI in line with national and local policy, and guidance requirements of the relevant LLFA.	W01 (D)

² Including sites with ecological designations, drinking water protected areas and Nitrate Vulnerable Zones

Receptor	Potential changes and effects	Environmental measures ¹	ID reference ²
existing interests, drainage regime	water volumes of rainfall runoff and land subsequent increase in flood risk.	<p>Where new permanent areas of impermeable land cover are created, the drainage design will be in accordance with the requirements of the relevant Internal Drainage Board, in addition to the Lincolnshire County Council (2025) Guidance for developers: Carbon Management Plan (CMP) and SuDS method statement (Ref 9.8) and will include allowances for climate change in accordance with current (May 2022) Environment Agency requirements. The drainage infrastructure will provide the storage necessary to achieve discharges at greenfield rates and will not significantly alter groundwater recharge patterns by transferring a significant recharge quantity from one catchment to another. A specialised drainage contractor will review the designs and will provide advice to NGET and its contractor during relevant construction and reinstatement activities.</p> <p>The drainage systems will be designed to accommodate runoff from the 1 in 100-year storm, inclusive of the recommended 40% allowance for climate change.</p>	
Receptors vulnerable flooding	Disruption or impediment of to floodplain flows and loss of storage for floodwaters due to placement of AGI	In discussion with the Environment Agency, where placement of AGI cannot avoid floodplains, measures to suitably mitigate flood risk effects would be provided to ensure receptors themselves are safe and do not adversely increase flood risk to the wider environment. Embedded measures only required.	W02 (D)
Watercourses	Disruption or impediment to flows and effects on hydromorphology	Where watercourses are crossed the cable burial depth will be minimised as far as is practicable to reduce the impact on soils during construction whilst preventing potential future exposure due to hydromorphological change.	W03 (D)

1. This is not an extensive list, more examples provided in **Volume 2, Part 2, Appendix 9.B: Preliminary Water Environment Design Principles**.
2. ID references as in **Volume 2, Part 1, Appendix 5.B: Outline Code of Construction Practice (CoCP)**.

9.7 Scope of the Assessment

Spatial scope and study area

- 9.7.1 The spatial scope of the assessment of the water environment covers the area of the English Onshore Scheme contained within the draft Order Limits, together with the Zol and study areas described in Section 9.4. The study areas for the water environment assessment are shown in **Volume 3, Part 2, Figure 9-1**.

Temporal scope

- 9.7.2 The temporal scope of the assessment of the water environment is consistent with the period over which the English Onshore Scheme would be carried out. As detailed in **Volume 1, Part 1, Chapter 4: Description of the Project**, it covers the period 2029 – 2035 for construction, and the lifetime of the Project for operation (expected to operate for 40 years, although likely extended through replacement and repair).
- 9.7.3 The English Onshore Scheme is expected to have a minimum life span of approximately 40 years. If decommissioning is required at this point in time, then activities and effects associated with the decommissioning phase are expected to be of a similar level to those during the construction phase works, albeit with a lesser duration of two years. Acknowledging the complexities of completing a detailed assessment for decommissioning works up to 40 years in the future, it is considered that the significance of effects relating to the decommissioning phase would be no greater than those from the construction phase and decommissioning effects are not discussed in detail in this chapter; however, **Table 4-19** in **Volume 1, Part 1, Chapter 4: Description of the Project** provides a high level summary assessment of the likely significant effects associated with decommissioning. Furthermore, should decommissioning take place it is expected that an assessment in accordance with the legislation and guidance at the time of decommissioning would be undertaken.

Identification of receptors

- 9.7.4 The principal water environment receptors that have been identified as being potentially subject to significant effects are summarised in **Table 9-7** and are shown in **Volume 3, Part 2, Figure 9.1**. These are features that would be physically disturbed by the Project, would receive discharges from the Project and / or are hydrologically connected and situated downstream of large-scale construction work sites.
- 9.7.5 Groundwater and ecological receptors are addressed in **Volume 1, Part 2, Chapter 10: Geology and Hydrogeology** and **Volume 1, Part 2, Chapter 6: Biodiversity** respectively.
- 9.7.6 The sensitivity values assigned in **Table 9-7** have been assigned using currently available data.

Table 9-7 Water environment receptors subject to potential effects

Receptor (sensitivity / value)	Reason for consideration
<p><u>Attribute: Hydromorphology</u></p> <p>Statutory main rivers (medium value) Ordinary watercourses / IDB drains (medium to low value)</p>	<p>Where open cut crossing methods are proposed for cable installation and where culverts are required for construction access, a temporary impact pathway would be created, due to temporary physical disturbance and changes to channel platform and temporary changes to watercourse flow regimes. Impacts would range in duration.</p> <p>There is also potential for watercourse diversions within the draft Order Limits, potentially impacting flow conveyance and hydromorphology.</p>
<p><u>Attribute: Surface water quality</u></p> <p>Statutory main rivers (high to medium value) Ordinary watercourses / IDB drains (medium to low value) Other surface waterbodies (medium to low value)</p>	<p>Temporary impacts at watercourse crossings for the cables and for access, and at construction work sites, for example, arising from generation of silted runoff and associated dewatering activities. There is also limited potential for break out of drilling muds at trenchless crossings.</p> <p>The impacts would be greatest on receptors crossed by the Project and / or located immediately adjacent to construction work sites.</p>
<p>Protected areas / nature conservation sites with a hydrological link to Project activities (very high to high value)</p>	<p>Potential for effects linked to reasons provided in above rows. Impacts on water quality and flows for example could impact qualifying features for which the protected areas are designated.</p>
<p><u>Attribute: Flood flow storage and conveyance</u></p> <p>Statutory main rivers (high to medium value) Ordinary watercourses / IDB drains (medium to low value)</p>	<p>Parts of the construction working width and temporary construction compounds would be located within defended floodplains (including Flood Zone 3). This could result in temporary changes in floodplain storage or flow routes and consequently changes to baseline flood risk.</p>
<p><u>Attribute: Existing surface water abstractions and discharges</u></p> <p>Licence holder / user (medium to low value)</p>	<p>Measures would be put in place to foster water use efficiency during construction of the Project, with non-domestic water anticipated to be supplied by tanker.</p> <p>It is anticipated that the operational Project has no consumptive water demand and hence no major impact on local water resource availability is anticipated.</p>
<p>Flood defences (high to medium value) People, property, and infrastructure (e.g. sluices, pumps) (high to medium value)</p>	<p>Construction works could impact on the structural integrity of flood defences during construction and / or conflict with planned flood risk management projects and capital works.</p>

Receptor (sensitivity / value)	Reason for consideration
<p><u>Attribute: Flow storage and conveyance</u></p> <p>Land drainage regime (ditches, land drains etc) (medium value)</p>	<p>The existing land drainage regime could be impacted directly by construction activities causing severance of drainage routes or by damage caused to the soil structure. AGI would be constructed on greenfield land, so changes to existing rainfall infiltration and runoff patterns would be induced. Temporary increases in impermeable land cover (e.g., construction compounds) could cause localised changes to the land drainage regime, resulting in ponding of water or waterlogging of soils. Areas with a sloping topography where topsoil has been stripped would be particularly vulnerable to these changes.</p>

Potential effects considered within this assessment

9.7.7 The effects on water environment receptors, which have the potential to be significant and have been taken forward for detailed assessment are summarised in **Table 9-8**.

Table 9-8 Water environment receptors scoped in for further assessment

Receptor	Potentially significant effects
Construction	
<p>Statutory main rivers</p> <p>Ordinary watercourses / IDB drains</p> <p>Existing water interests – licence holders / users</p> <p>Protected areas / nature conservation sites</p>	<p><u>Physical disturbance and change to flow regime and hydromorphology</u></p> <p>The English Onshore Scheme will cross numerous watercourses, with potential for temporary physical disturbance, a water supply requirement and potential to impact on flow regimes.</p>
<p>Statutory main rivers</p> <p>Existing water interests – licence holders / users</p> <p>Protected areas / nature conservation sites</p>	<p><u>Pollution risks (e.g. bentonite breakout) and water consumption</u></p> <p>The English Onshore Scheme will cross some watercourses and would make landfall using trenchless techniques, with associated water consumption and pollution risks.</p>
<p>People, property, and infrastructure</p> <p>Existing land drainage regime</p>	<p><u>Increased flood risk and detriment to land drainage</u></p> <p>Due to the large swathes of floodplain within the draft Order Limits, temporary works in the floodplain cannot be avoided. New areas of temporary impermeable land cover would be created.</p>
<p>Flood defences</p> <p>People, property, and infrastructure</p>	<p><u>Temporary works in the floodplain / in proximity to flood defences</u></p> <p>Construction works could impact on the structural integrity of flood defences during construction and /</p>

Receptor	Potentially significant effects
Statutory main rivers Ordinary watercourses / IDB drains Other surface waterbodies Existing water interests – licence holders / users Protected areas / nature conservation sites	<p>or conflict with planned flood risk management projects and capital works. The Project will engage with the Environment Agency and IDBs to understand the potential for effects and to integrate design measures to avoid impacts on the integrity of flood defence infrastructure.</p> <p><u>Surface water quality (sediments and oils / fuels)</u></p> <p>As agreed by the Planning Inspectorate (ID 3.4.1), they are not in the position to scope pollution due to soil stripping, earthworks and excavations and use and refuelling of plant during construction from the assessment. Measures outlined in Section 9.6 would act to manage work site runoff to ensure watercourses are not polluted, nor their flow capacities reduced due to these activities, and the function of existing land drainage routes and systems are retained. An Outline Soil Management Plan (OSMP) will also be prepared for the Project.</p> <p>Soil management measures will be contained in Volume 2, Part 1, Appendix 5.C: Outline CEMP.</p>
Operation	
People, property, and infrastructure Existing land drainage regime	<p><u>Increased flood risk and detriment to land drainage</u></p> <p>New permanent areas of impermeable land cover would be introduced. AGI would be constructed on greenfield land, so changes to existing rainfall infiltration and runoff patterns would be induced.</p>
Statutory main rivers Ordinary watercourses / IDB drains Other surface waterbodies Existing water interests – licence holders / users Protected areas / nature conservation sites	<p><u>Surface water quality</u></p> <p>As agreed by the Planning Inspectorate (ID 3.4.3), they are not in the position to scope pollution due to discharges of operational surface water drainage from the assessment.</p> <p>“Impacts to increased flood risk and land drainage is scoped in on the basis that new impermeable areas would be introduced into the floodplain and therefore it is unclear whether / how flooding runoff, and subsequently pollution within operational surface water discharge would be appropriately managed.”</p>

9.7.8 The receptors / effects detailed in **Table 9-9** have been scoped out from being subject to further assessment because the potential effects are not considered likely to be significant.

Table 9-9 Summary of effects scoped out of the water environment assessment

Receptors / potential effects	Justification
Operation	
<u>Attribute: Hydromorphology / flow regimes</u>	The Planning Inspectorate agreed that physical disturbance and change to flow regime and hydromorphology during operation can be scoped out further assessment (ID 3.4.4). This is on the basis that the impact of proposed development on watercourse flow regimes or their hydromorphology is unlikely.
Statutory main rivers	Maintenance activities would be low impact, generally limited to nonintrusive inspections undertaken in line with the Applicant’s operational management procedures.
Ordinary watercourses / IDB drains	

9.8 Key Parameters for Assessment

Realistic worst-case design scenario

- 9.8.1 The assessment has followed the Rochdale Envelope approach as outlined in **Volume 1, Part 1, Chapter 4: Description of the Project** and **Volume 1, Part 1, Chapter 5: PEIR Approach and Methodology**. The assessment of effects has been based on the description of the Project and parameters outlined in **Volume 1, Part 1, Chapter 4: Description of the Project**. However, where there is uncertainty regarding a particular design parameter, the realistic worst-case design parameters are provided below with regards to the water environment along with the reasons why these parameters are considered worst-case. The preliminary assessment for the water environment has been undertaken on this basis. Effects of greater adverse significance are not likely to arise should any other development scenario, based on details within the Rochdale Envelope (e.g., different infrastructure layout within the draft Order Limits), to that assessed here be taken forward in the final design scheme.
- 9.8.2 In relation to the water environment the following assumptions are made regarding the Project design parameters in order to ensure a realistic worst-case assessment has been undertaken:
- Installation of the cables via a trenchless crossing technique has been assumed at all crossings of main rivers and at the Anderby Creek Landfall site. Where the cable installation needs to cross ordinary watercourses, whilst a trenchless crossing technique may be adopted in some locations, this initial preliminary assessment has assumed an open cut crossing technique, representing the reasonable worst case. Lateral deviation of the route within the draft Order Limits would not be expected to result in a change in significance of reported effects. No new receptors would be impacted and although watercourses may be crossed at a different location, the same watercourses would be affected in the same reach lengths.

- Temporary crossings are required where the construction haul road crosses existing watercourses. It has been assumed that ditches, field drains, and small watercourses would be temporarily culverted. Works associated with culverting would be undertaken in line with the environmental measures previously described in **Table 9-6** and documented in **Volume 2, Part 1, Appendix 5.C: Outline CEMP**. Where the construction haul road crosses a watercourse for which a culvert solution is not reasonably practicable or where specified by the relevant stakeholder as unsuitable, bridges would be used. For the preliminary assessment it has been assumed that all ordinary watercourse construction haul road crossings would use culverts and all main river construction haul road crossings would use bridges and that temporary crossings would be removed once construction works were complete unless replacing an existing structure in a poor state of repair. Watercourses should be reinstated to at least baseline conditions, and planting re-established where practicable.
- Where watercourse diversions cannot be avoided, this preliminary assessment is based on the current design and assumes that diversion channels would satisfy the environmental measures described in Section 9.6 and documented in **Volume 2, Part 1, Appendix 5.B: Outline CoCP**.
- With regard to land drainage and management of construction worksite runoff and operational drainage, detailed information is not currently available with regard to how land drainage routes would be maintained and how runoff would be managed, the preliminary assessment is therefore based on the initial principles set out in **Volume 2, Part 2, Appendix 9.B: Preliminary Water Environment Design Principles**.
- With regards to the location of the converter station, it is assumed that the current proposed location is carried forward, as laid out in **Volume 1, Part 1, Chapter 4: Description of the Project**, and specifically in **Section 4.4**.

Consideration of construction scenarios

- 9.8.3 As detailed in **Volume 1, Part 1, Chapter 4: Description of the Project**, the timing of construction activities set out within this PEIR is indicative.
- 9.8.4 The current timing of construction activities has not been confirmed at this stage. Previously described environmental measures associated with construction would be in place until commissioning and testing of the entire Project is complete. Effects relating to pollution risk, flooding, and impacts on the land drainage regime are anticipated to be materially the same regardless of construction timing.

9.9 Assessment Methodology

Overview

- 9.9.1 The generic project-wide approach to the assessment methodology is set out in **Volume 1, Part 1, Chapter 5: PEIR Approach and Methodology**, and specifically in Sections 5.4 to 5.6. However, whilst this has informed the approach that has been used in this water environment assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this water environment assessment. Details are provided below.

9.9.2 Where the preliminary assessment of effects, presented below, refers to construction, this includes all aspects of the English Onshore Scheme, such as the cables, converter station and access roads and AGI.

Data sources

9.9.3 In addition to the data sources used to inform this PEIR (**Table 9-5**), the following data sources are proposed to be used to inform the water environment ES assessment:

- Data from Environment Agency flood models, with model refinements and simulations of flood events incorporating the most recent climate change guidelines undertaken where necessary;
- Drainage and flood data / information from Local Authority Surface Water Management Plans and Strategic Flood Risk Assessments;
- Land drainage data and information from relevant IDBs;
- Anglian River Basin Management Plan (Ref 9.22);
- Data defining surface water catchment areas and hydrological properties (e.g. rainfall, slopes, and soil permeability) from the Flood Estimation Handbook webservice (Ref 9.23);
- Field Notes and photography collected during site surveys (e.g. ecology surveys, land drainage surveys, and a flood risk walkover) to inform understanding of local topography, land drainage regimes, and watercourse conditions and characteristics;
- Relevant Shoreline Management (Ref 9.24) and Water Resources Management (Ref 9.25) Plans; and
- Consented Discharge to Controlled Waters dataset from the Environment Agency's Public Register (Ref 9.15) and abstraction licenses from surface water.

Proposed methodology

9.9.4 The water environment assessment has been based on the Design Manual for Roads and Bridges (DMRB) LA 113: Road Drainage and the Water Environment (Ref 9.4). Whilst primarily intended for use in assessing the impacts of highway projects on the water environment, the methodology is widely accepted as suitable for assessing the effects of other types of linear infrastructure. DMRB LA 113 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.

9.9.5 Given the size of the English Onshore Scheme and the presence of areas of Flood Zone 3 within the draft Order Limits, an FRA of the Project will be produced in accordance with the requirements of the Overarching National Policy Statement for Energy EN-1 (Ref 9.26) and the National Policy Statement for Electricity Networks Infrastructure EN-5 (Ref 9.27) and local flood risk management guidelines published by the LLFA. The FRA will consider flood risk from all relevant sources during both construction and operation, incorporating allowance for climate change in accordance with published guidance (Ref 9.21). It will also include details of the measures proposed to adhere to local drainage and flood risk planning policies.

9.9.6 A WFD Screening Assessment will also be produced for the Project, guided by Planning Inspectorate advice on the WFD (Ref 9.1). It is noted that there is an overlap between

terrestrial and coastal in the inter-tidal area. As stated in Paragraph 9.4.9, transitional / coastal waterbodies up to 1 nautical mile will be considered within the WFD Assessment. Stage 1 and Stage 2 of the Assessment is presented in **Volume 2, Part 2, Appendix 9.A: Onshore Water Framework Directive Assessment Stage 1 & 2 Report**.

- 9.9.7 In the next stages of the WFD Assessment, the effects of the Project on the Anglian River Basin Management Plan (Ref 9.25) and the waterbodies therein will be described, and the assessment will set out how the Project design has been developed to align with the requirements of the Regulations. A qualitative approach is proposed, and the assessment will identify how the Project design will avoid waterbody deterioration, as well as any other mitigation necessary.
- 9.9.8 The method set out in the DMRB provides guidance on assigning value (sensitivity) to receptors, for example watercourses and floodplains (Table 3.70 of LA113). The values presented in **Table 9-10** will be refined using any new data that has been collected. The DMRB also provides criteria for assigning impact magnitude (Table 3.71 of LA113). These criteria consider the scale / extent of the predicted change and the nature and duration of the impact.
- 9.9.9 DMRB LA113 (Ref 9.4) does not provide a prescriptive assessment methodology for hydromorphology. The criteria within **Table 9-10** and **Table 9-11** below, and the assessment of effects relating to hydromorphology, are informed by published literature, namely the 'Guidebook of Applied Fluvial Geomorphology' (Ref 9.28) and the 'River Hydromorphology Assessment Technique Training Manual' (Ref 9.39).

Receptor sensitivity / value

- 9.9.10 The preliminary classification of receptor sensitivity has been guided by Table 3.70 of the DMRB LA113 (Ref 9.4). The criteria from Table 3.70 are reproduced below in **Table 9-10**.

Table 9-10 Assessment of receptor value criteria, adapted from DMRB LA 113

Value / sensitivity	Typical criteria	Criteria
Very high	Nationally significant attribute of high importance	<p>Watercourse having a WFD classification shown in a River Basin Management Plan (RBMP) and $Q_{95}^* \geq 1.0 \text{ m}^3 / \text{s}$. Flow that is equalled or exceeded 95% of the time, is indicative of a summer, low flow, condition.</p> <p>Site protected under European legislation for example, special protection area (SPA), special area of conservation (SAC) and Ramsar site with designated interest features dependent on the hydrological / surface water regime.</p> <p>Land uses defined as 'essential infrastructure' or 'highly vulnerable' development under the NPPF.</p> <p>River supporting a regionally important abstraction for potable water supply.</p> <p>Varied morphological features with no sign of channel modification, displaying natural flow regime and fluvial processes. Sediment regime that is in equilibrium and provides a diverse mosaic of habitat types suitable for species sensitive to changes in turbidity.</p>

Value / sensitivity	Typical criteria	Criteria
High	Regionally significant attribute of high importance	<p>Watercourse having a WFD classification shown in a RBMP and Q95 <1.0 m³/s.</p> <p>Land uses defined as 'more vulnerable' under the NPPF.</p> <p>River supporting a locally important abstraction for potable water supply.</p> <p>Predominantly natural water feature with a range of morphological features. Limited signs of artificial modifications. Sediment regime that provides suitable habitat for species sensitive to changes in turbidity (e.g. migratory salmon, freshwater pearl mussel).</p>
Medium	Locally significant, of moderate quality and rarity	<p>Watercourses not having a WFD classification shown in a RBMP and having a Q95 >0.001 m³/s.</p> <p>Site protected under UK legislation whose designated interest is dependent on the hydrological / surface water regime e.g. Local Wildlife Site, salmonid waters.</p> <p>Land uses defined as 'less vulnerable' under the NPPF. River supporting abstraction for non-potable water supply at the local scale.</p> <p>Water feature with channel cross-section partially modified in places but exhibiting some morphological features. Varied flow types but with an obviously impacted natural flow regime. Sediment regime that provides some physical habitat for species sensitive to changes in turbidity.</p>
Low	Lower quality	<p>Watercourses not having a WFD classification shown in a RBMP and Q95 ≤0.001 m³/s.</p> <p>Land uses defined as 'water compatible' under the NPPF.</p> <p>Water feature that has been extensively modified. Exhibits limited to no morphological diversity, with uniform flow, bed and bank profiles and low energy. Sediment regime that provides for very limited physical habitat for species sensitive to changes in turbidity.</p>

Magnitude of impact

- 9.9.11 The preliminary classification of the magnitude of impact has been assigned in line with Table 3.71 of the DMRB LA113 (Ref 9.4). The magnitude of impact criteria considers the expected scale, extent and duration of change, and the magnitude is assigned following consideration of the measures embedded into the design of the Project 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 from Table 3.71 are reproduced in **Table 9-11** below.

Table 9-11 Assessment of impact magnitude criteria

Value / sensitivity	Typical criteria	Criteria
Major Adverse	Results in loss of attribute and / or quality and integrity of the attribute	<p>Loss or extensive change to a fishery.</p> <p>Loss of regionally important public water supply.</p> <p>Reduction in water body WFD classification.</p> <p>Increase in peak flood level (>100 mm).</p> <p>Significant impacts on the bed, banks, and vegetated riparian corridor, resulting in changes to sediment transport, load, and turbidity. Significant shift away from baseline conditions at the waterbody scale.</p>
Moderate adverse	Results in effect on integrity of attribute, or loss of part of attribute	<p>Partial loss in productivity of a fishery.</p> <p>Degradation of regionally important public water supply or loss of major commercial / industrial / agricultural supplies.</p> <p>Contribution to reduction in waterbody WFD classification.</p> <p>Increase in peak flood level (>50 mm).</p> <p>Some changes to bed, banks, and vegetated riparian corridor, resulting in some changes to sediment transport, load, and turbidity at the multi-reach scale.</p>
Minor adverse	Results in some measurable change in attributes, quality, or vulnerability	<p>Potential for a low risk of pollution.</p> <p>Increase in peak flood level (>10 mm).</p> <p>Slight change from baseline conditions of channel bed / banks.</p> <p>Limited impacts on bed, banks, and vegetated riparian corridor resulting in limited changes to sediment characteristics.</p>
Negligible	Results in effect in attribute, but of insufficient magnitude to affect the use or integrity	<p>No measurable change to baseline surface water quality or WFD waterbody status.</p> <p>Negligible change to peak flood level ($\leq + / - 10$ mm).</p> <p>Minimal or no measurable change from baseline conditions. Any impacts highly localized; no impacts at the reach scale.</p>
Minor beneficial	Results in some beneficial effect on attribute or a reduced risk of adverse effect occurring.	<p>Minor contribution to improvement in water body WFD classification.</p> <p>Creation of flood storage and decreased in peak flood level (>10 mm).</p>

Value / sensitivity	Typical criteria	Criteria
Moderate beneficial	Results in moderate improvement of attribute quality	Moderate contribution to improvement in water body of WFD classification. Creation of flood storage and decrease in peak flood level (> 50 mm).
Major beneficial	Results in major improvement of attribute quality	Removal of existing polluting discharge or removing the likelihood of polluting discharges occurring to a watercourse. Improvement in water body WFD classification. Creation of flood storage and decrease in peak flood level (<100 mm).
No change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Significance of effect

9.9.12 In accordance with the assessment methodology, the significance of an effect on a receptor is assigned based on a combination of the sensitivity (or value) of the receptor and the magnitude of change (impact) likely to be caused by the Project. The preliminary significance of effects has used the matrix set out in **Volume 1, Part 1, Chapter 5: PEIR Approach and Methodology**, applying professional judgement, which where applicable, has been explained to give the rationale behind the values assigned. Potentially significant effects, in the context of the EIA Regulations, are effects of moderate or greater significance.

Preliminary assessment of cumulative effects

9.9.13 At the current stage of the Project (PEIR stage), design information for the Project is insufficient to allow for a robust cumulative assessment to be undertaken. Furthermore, given the current position in relation to baseline data collection, with much of the environmental surveys still to be undertaken during 2026, the baseline identified at this PEIR stage cannot be taken as a complete picture of the potential presence and significance of sensitive receptors. Therefore, cumulative assessment has not been undertaken at this stage; however, **Volume 1, Part 4, Chapter 27: Cumulative Effects** and **Volume 2, Part 4, Appendix 27.A: Long List of other Developments** present the long and short lists of 'other developments' for the inter-project cumulative effects which will be considered at the ES stage (with updates as necessary), and the methodology which allowed for the identification of these other developments, to allow consultation bodies to form a view and provide comment on the other developments included. The long list will be reviewed and if necessary, updated, in the lead up to the ES, as the Project design further evolves and in response to any comments raised at statutory consultation.

9.9.14 Intra-project cumulative effects result principally from different types of impacts from one development acting in combination on a specific receptor.

9.9.15 In this chapter, the following intra-project cumulative effects have been assessed:

- Intra-project cumulative effects relating to changes in the groundwater regime (assessed in **Volume 1, Part 2, Chapter 10: Geology and Hydrogeology**) on surface water receptors, in particular potential for changes in groundwater quality and quantity of flow to impact on the baseflow (low flow) regimes of watercourses;
- Intra-project cumulative effects relating to changes in soil properties (assessed in **Volume 1, Part 2, Chapter 11: Agriculture and Soils**) on baseline land drainage and rainfall runoff regimes, and subsequent potential for increases in surface water flood risk; and
- Changes to water quality and flow regimes of watercourses that support designated interest features of protected areas / nature conservation sites will be presented in the ES, pending ongoing ecology survey work / awaited data.

9.10 Preliminary Assessment of Water Environment Effects

9.10.1 The preliminary potentially significant effects of the Project have been assessed using current available data relating to both the construction and operation (and maintenance) phases of the English Onshore Scheme. The preliminary potential residual effects are outlined below. The assessment assumes that all environmental measures are in place before assessing the effects. It should be noted that this assessment is ongoing and is subject to change through ongoing development of the English Onshore Scheme's proposals. A full detailed assessment will be presented within the ES submitted with the DCO application. This will be informed by an FRA and WFD Assessment.

Preliminary phase effects – Sites designated for Nature Conservation

9.10.2 The protected areas / nature conservation interest sites with a hydrological dependence are still to be identified and confirmed. However, effects on these receptors would be avoided or mitigated by the environmental control measures that have been identified. A full assessment of effects will be presented in the ES, informed by further data and ecology surveys.

Preliminary phase effects – Watercourses

9.10.3 During construction, new crossings of watercourses would be required for temporary access (see **Volume 2, Part 2, Appendix 9.C: Preliminary Watercourse Crossing Schedule**) and could result in channel bed / bank modifications causing disruption to flow regimes and increased flood risk. There is also an associated risk of pollution from construction activities that have been scoped in for further assessment including drilling for trenchless crossings (with potential for outbreaks of drilling muds). These activities have a risk of opening pollution pathways to water environment receptors.

9.10.4 There is only one main river in the draft Order Limits, as detailed in Section 9.5. There are also numerous ordinary watercourses within the draft Order Limits. Proposed watercourse crossings are listed in the watercourse crossing schedule (**Volume 2, Part 2, Appendix 9.C: Preliminary Watercourse Crossing Schedule**). The method of crossing a watercourse would depend upon several factors and details of proposed watercourse crossings will be confirmed in the ES. Assumptions relating to watercourse crossings are described in Section 9.8.

- 9.10.5 All watercourse crossing designs would follow the environmental measures set out in the **Volume 2, Part 2, Appendix 5.B Outline CoCP**. In addition, the haul road would be put in place in accordance with conditions set out within the consents and permits from the relevant authorities (Environment Agency for main river, the LLFA / IDB for ordinary watercourses as required).
- 9.10.6 Whilst temporary adverse effects on the hydromorphology of the watercourses that are crossed by culverts cannot be avoided, the design of temporary crossings would reduce temporary effects on the watercourses' flow regimes and channel forms.
- 9.10.7 The degree of physical disturbance to the channels, beds, riparian corridors, and flow regimes of watercourses would also depend on the cable crossing methodology. For example, physical disturbance to the channels, beds, riparian corridors, or flow regimes of the main river, crossed using a trenchless methodology, would be avoided. Where open cut methodologies are proposed to install the cable at ordinary watercourses, adverse effects would be limited by the environmental measures that would be in place.
- 9.10.8 Temporary effects on the hydromorphology of ordinary watercourses (medium to low value) are hence anticipated to be of minor adverse magnitude and therefore not significant (minor adverse significance). For Woldgrift Drain (medium value) the magnitude of effects is expected to be negligible and therefore not significant (negligible significance).
- 9.10.9 Where permanent infrastructure is proposed in the Indicative zone for the converter station an ordinary watercourse diversion is required, there will be potential for temporary impacts on water quality during the works and potential for permanent changes to the land drainage regime (medium value). Considering the environmental measures that would be put in place, the magnitude of impact on these attributes would vary from minor to moderate adverse, depending on the length and nature of the diversions required, with an overall significance of minor to moderate significance. The ES will provide more detailed assessment and clarify which receptors may be potentially significantly affected. The watercourse diversion also has the potential for permanent changes to the hydromorphology (low value) of the watercourses. With the environmental measures that would be put in place, the magnitude of impact on these receptors would be minor to moderate adverse and not significant (minor significance).
- 9.10.10 While trenchless crossings would avoid physical disturbance to the flow regime and form of channel and riparian corridors, the technique is not without risk of pollution, associated with inadvertent releases of drilling fluids / muds. This is also applicable to the proposed trenchless crossing at the Anderby Creek Landfall. Open cut crossings of watercourses could also cause disturbance of bed sediments. The design of the crossing methods would follow standard practice measures and trenchless crossings would be informed by ground investigation data to reduce the risks of breakout of drilling muds. The designs and installation methods would also accord with any conditions set out within secondary consents and permits for the works from the relevant authorities. These may include for example, seasonal restrictions on the works to avoid key periods for fish migration and specifications for over-pumping to maintain downstream flow in watercourses and manage flood risk during construction.
- 9.10.11 Consequently, any potential adverse effects on water quality would be temporary and localised. Effects on main rivers (assumed high to medium value) are therefore anticipated to be of a negligible magnitude and not significant (minor adverse significance). For ordinary watercourses (assumed medium to low value), a negligible magnitude of impact is assessed with a minor adverse

to negligible significance of effect depending on the watercourse. This is not significant in EIA terms.

9.10.12 Interactions with groundwater in the cable section and where topsoil stripping is required is assessed in **Volume 1, Part 1, Chapter 10: Geology and Hydrogeology**.

Preliminary phase effects – Flood risk and land drainage

9.10.13 There is the potential for the English Onshore Scheme to increase flood risk during construction through the creation of soil stockpiles and temporary working areas, which could result in the temporary loss of floodplain storage or could impede flood flows. There would be a small area of land raising behind the defences at Anderby Creek Landfall to facilitate the proposed trenchless crossing.

9.10.14 Land raising for Transition Joint Bays (TJBs) has been considered in the February 2026 communication with the Environment Agency (as mentioned in **Table 9-4**) and will be assessed in the FRA to inform the ES.

9.10.15 There are existing flood defences along the Woldgrift Drain within the draft Order Limits and along the coast at the proposed Anderby Creek Landfall including coastal defences such as beach nourishment. There will be further discussions with the Environment Agency to understand the effects of any temporary works on the design and integrity of these and agree mitigation measures. It is anticipated that any requirements in relation to the flood defences would be agreed under the protective provisions secured for the Environment Agency and measures to reduce the effects of any temporary works on the integrity of these assets will be secured within the DCO. Such measures may include construction techniques that reduce ground movement and vibration and ensuring sufficient depths of cover between defence foundations and any excavation activities.

9.10.16 The FRA will outline the proposed mitigation measures / commitments to ensure no detrimental effects on flood risk from rivers and the sea or the functioning of flood defences. Implementation of these would reduce potential adverse effects on the flood storage and floodplain flow attributes of watercourses in the study area. Considering the nature and footprint of the English Onshore Scheme and using professional judgement, the effect is anticipated to be not significant.

9.10.17 The English Onshore Scheme would introduce new areas of temporary impermeable land cover, such as construction compounds and haul routes, along with topsoil stripping and earthworks which could disrupt the current land drainage regime. This could locally reduce rainfall infiltration rates, increase runoff rates, and induce overland flow during construction. This could contribute to localised changes to the land drainage regime, resulting in ponding of water or waterlogging of soils. Areas with a sloping topography where topsoil has been stripped would be particularly vulnerable to these changes. The works may also disrupt or sever existing field drainage systems. Temporary measures would be put in place to maintain such drainage routes during construction, then the systems would be reinstated post-construction. Stripped topsoil will be reinstated, and sites would be restored to their original function, subject to any planting constraints or agreements established with landowners.

- 9.10.18 Access roads, haul roads, and compound areas would have suitable drainage provisions, providing for attenuation of runoff and encouraging infiltration of surface water runoff to ground, where conditions are suitable. These components, including associated temporary structures such as bridges and culverts, will typically be decommissioned and removed unless identified during the design process as providing long-term environmental or land-use benefits, subject to agreement with the landowner.
- 9.10.19 Consequently, adverse effects on the land drainage regime and rainfall infiltration and runoff patterns would be limited on receptors which include local land uses and the English Onshore Scheme itself. In addition, works affecting the land drainage regime would be temporary and localised, with any existing field drainage systems reinstated on completion of construction works. Where required, replacement land drainage systems will be installed. A specialist drainage contractor will undertake a detailed review of the drainage designs and provide technical advice to NGET and the Contractor throughout all relevant construction and reinstatement phases. Comprehensive records of the land drainage networks will be documented and transferred to the respective landowners or occupiers for future reference.
- 9.10.20 As outlined in **Table 9-1**, based on a precautionary preliminary assessment, the Project could result in potentially significant adverse effects on the water environment. However, considering the nature and footprint of the Project and the environmental measures that would be in place, effects relating to the land drainage regime and surface water flood risk are anticipated to be of negligible magnitude resulting in effects of minor adverse significance for receptors of medium value and of negligible significance for receptors of low value, both of which would be not significant.
- 9.10.21 During operation (and maintenance), interactions with Flood Zone 3 occur across the location of the converter station and in the wider draft Order Limits. The FRA will outline the proposed mitigation measures / commitments to ensure the Project is safe from flooding over its lifetime and that there are no detrimental effects on flood risk from rivers and the sea because of these interactions. The exact requirements for any potential mitigation measures have not been fully developed at this stage but may include flood compensation proposals if necessary. Subject to the implementation of such measures, if required, potential adverse effects on flood risk from rivers and the sea are expected to be not significant. The FRA will also consider the resilience of the Projects' infrastructure located within Flood Zone 3 that would need to remain operational in the event of a flood. The FRA and ES will also account for future flood risk using up-to-date climate change projections in line with the credible maximum scenario and national guidance.
- 9.10.22 There would be a permanent impermeable footprint associated with the converter station, including its associated permanent access route. The design of these elements of the English Onshore Scheme would incorporate appropriate surface water drainage measures and suitable drainage provisions would also be included for accesses. Due to the robust design and environmental measures that would be adopted, no likely significant effects on flood risk and land drainage in this part of the Project are anticipated.

9.11 Further Work to be Undertaken

9.11.1 The information provided in this PEIR is preliminary, the final assessment of potentially significant effects will be reported in the ES. This section describes the further work to be undertaken to support the water environment assessment presented in the ES.

Baseline

9.11.2 An extensive programme of ecological desk study and field survey is ongoing. In particular surveys and desk study of datasets for aquatic invertebrates, fish and macrophytes will inform the assessment provided in the Onshore WFD Assessment and ES.

9.11.3 Further understanding of baseline flood risk over the lifetime of the Project will be developed through interrogation, and where necessary refinement, of existing Environment Agency flood models. Engagement regarding the scope of the FRA with technical stakeholders is ongoing to agree these requirements.

9.11.4 The ES will be informed by a site walkover of key surface water receptors and areas of interest to increase understanding of local topography, land drainage regimes, and watercourse conditions and characteristics.

9.11.5 The ES will also be informed by further information regarding the water use needs of the Project. during its construction and operation, and proposals for managing foul water generated by the Project.

Assessment

9.11.6 The assessment undertaken for the PEIR will be reviewed following stakeholder consultation feedback and further design refinement, in particular to aid in the assessment of the effects of the Project on water resource use and Anglian Water assets and interactions with key flood risk and land drainage assets.

9.11.7 Full details of the assessment methodology will be presented within the ES, together with further assessment detail. The ES will be informed by the FRA and WFD Assessment which will be prepared in parallel to the impact assessment. The ES will also be informed by ongoing collaborative discussions with the Project's aquatic ecologists and the ecological / water specialists working on the English Offshore Scheme, particularly with reference to matters relating to the WFD Assessment.

Further environmental measures

9.11.8 On the basis of ongoing discussions with the Environment Agency, it is expected that an environmental measure will be shaped for the ES with regard to floodplain compensation storage requirements.

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