Immingham Green Energy Terminal

Environmental Impact Assessment

Preliminary Environmental Information Report

Volume I – Non-Technical Summary

Associated British Ports

December 2022

Document History

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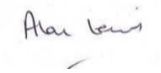
Signed		Date	20/12/2022
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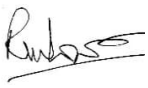
Signed		Date	20/12/2022
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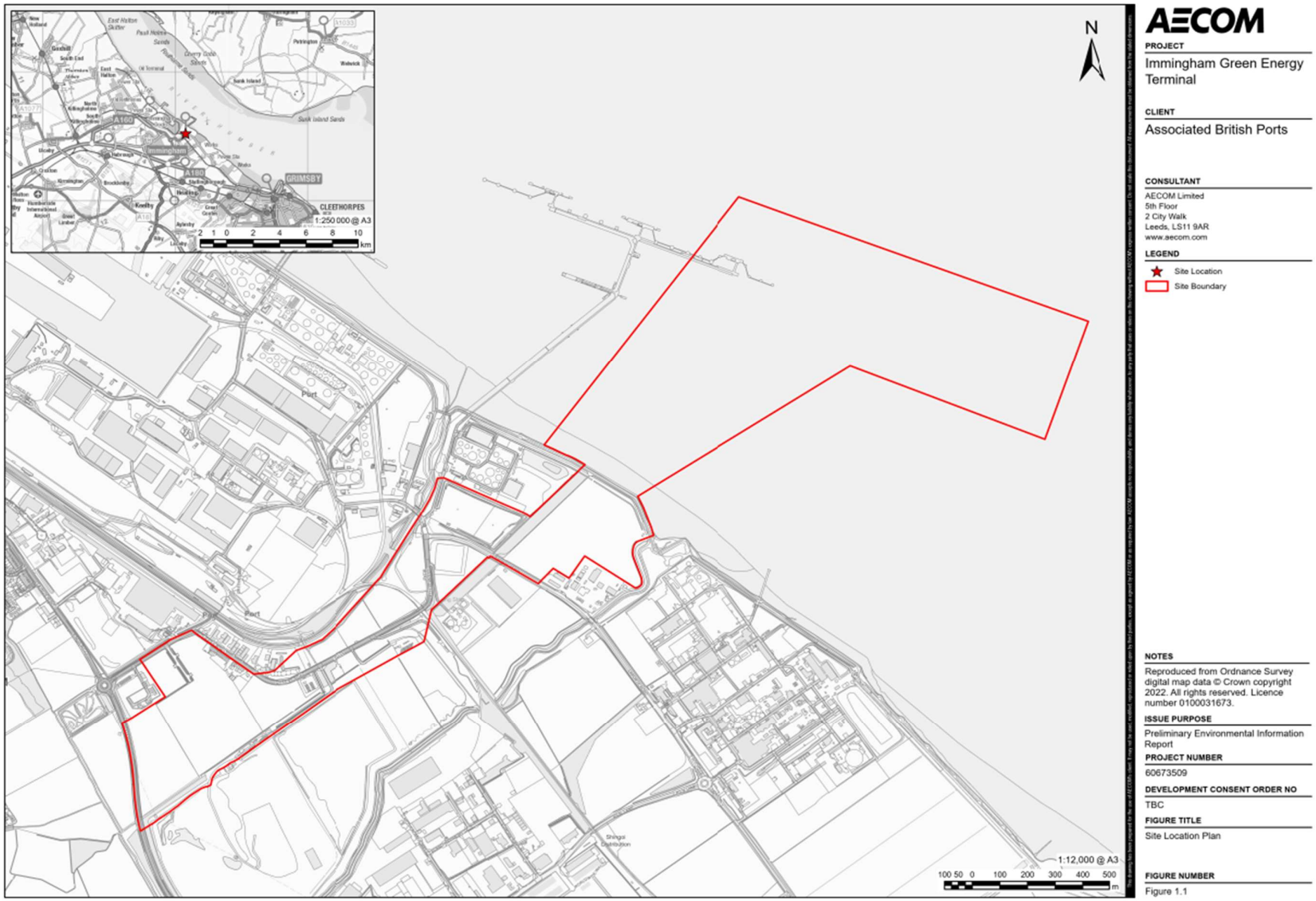
1 Introduction

1.1 Overview

1.1.1 This Preliminary Environmental Information (PEI) Report has been prepared by AECOM Ltd (AECOM) on behalf of Associated British Ports ('ABP') ('The Applicant'). It supports a proposed application ('the Application') to be made to the Secretary of State for Transport seeking Development Consent to construct and operate a multi-user bulk energy liquid jetty and its first associated landside facility as associated development, which would be located on the eastern side of the Port of Immingham (hereafter 'the Port) as shown in **Figure 1.1**. The overall project is called the Immingham Green Energy Terminal (hereafter 'the Project').

1.1.2 This document is the Non-Technical Summary (NTS), Volume I of the Preliminary Environmental Information (PEI) Report. The rest of the PEI Report comprises three further volumes which are the main body (Volume II), figures (Volume III) and appendices (Volume IV).

1.1.3 The PEI Report enables stakeholders and consultees to develop an informed view of the likely significant environmental effects of the Project. The Applicant will take into consideration any comments received through consultation, to identify opportunities for the refinement of the Project design. The Project will be assessed through the ongoing Environmental Impact Assessment (EIA) process and the technical assessments will be brought together in an Environmental Statement (ES) that will accompany the Development Consent Order (DCO) Application.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Site Location
Site Boundary
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ISSUE PURPOSE
Preliminary Environmental Information Report
PROJECT NUMBER
60673509
DEVELOPMENT CONSENT ORDER NO
TBC
FIGURE TITLE
Site Location Plan
FIGURE NUMBER
Figure 1.1

1.2 Purpose of the Non-Technical Summary

1.2.1 The NTS provides a summary of the information and assessments that have been undertaken and presented in detail in PEI Report Volumes II – IV. The structure of the PEI Report is detailed in **Table 1.1**.

Table 1.1: Structure of the PEI Report

PEI Report Volume I: Non-Technical Summary	
The Non-Technical Summary [This document] is presented in a separate volume and provides a concise and accurate description of the Project, considered alternatives, the environmental baseline, assessment methodology, potential environmental effects and mitigation measures. The NTS is designed to present information about the Project in an accessible format that can be understood by a wide audience. This will assist interested parties in becoming familiar with relevant aspects of the Project.	
PEI Report Volume II: Main Report	
Volume II is the main body of the PEI Report. Its purpose is to detail preliminary results of the environmental assessments being undertaken at the time of writing and based on baseline information available and sourced to date, report on the emerging likely significant effects arising from the Project, and the proposed mitigation measures to alleviate these. The PEI Report is divided into a number of background and technical chapters, each supported by figures and appendices as required. The Table of Contents for the PEI Report is displayed below:	
Chapter 1	Introduction
Chapter 2	The Project
Chapter 3	Need and Alternatives
Chapter 4	Legislative and Consenting Framework
Chapter 5	EIA Approach
Chapter 6	Air Quality
Chapter 7	Noise and Vibration
Chapter 8	Nature Conservation (Terrestrial Ecology)
Chapter 9	Nature Conservation (Marine Ecology)
Chapter 10	Ornithology
Chapter 11	Traffic and Transport
Chapter 12	Marine Transport and Navigation
Chapter 13	Landscape and Visual Impact
Chapter 14	Historic Environment (Terrestrial)
Chapter 15	Historic Environment (Marine)
Chapter 16	Physical Processes

Chapter 17	Marine Water and Sediment Quality
Chapter 18	Water Quality, Coastal Protection, Flood Risk and Drainage
Chapter 19	Climate Change
Chapter 20	Materials and Waste
Chapter 21	Ground Conditions and Land Quality
Chapter 22	Major Accidents and Disasters
Chapter 23	Socio-Economics
Chapter 24	Human Health and Wellbeing
Chapter 25	Cumulative and In-Combination Effects
Chapter 26	Summary of Likely Significant Effects
PEI Report Volume III: Figures	
A complete set of figures provided for reference in Volume III, which support the preliminary assessments set out in Volume II of this PEI Report.	
PEI Report Volume IV: Appendices	
A complete set of appendices provided for reference - this can include background data, technical reports and survey data which support the preliminary assessments set out in Volume II of this PEI Report.	

2 Need for the Project and Consideration of Alternatives

2.1 Need for the Project

2.1.1 The need for the Project arises from Government strategy to deliver the UK's decarbonisation and net zero targets and the subsequent need to provide additional infrastructure to support meeting those targets. Ports will play an important role in industrial decarbonisation through the provision of enabling infrastructure for the energy sector, allowing the technologies and measures needed for a transition to net zero to be deployed.

2.1.2 As such, there is a compelling need to provide port infrastructure, both landside and within the marine area, to meet the growing and changing nature of demand from the energy sector as the transition to net zero gains momentum.

2.1.3 There is a growing need to develop green hydrogen capacity in the UK and while some of this is being facilitated through UK production, the opportunity exists to import green hydrogen from other countries where surplus renewable energy can be harnessed. The safest and most appropriate way to transport hydrogen is in the form of ammonia. As shipping will continue to provide the most effective way to move ammonia in and out of the UK, sufficient port and landside infrastructure is required for its subsequent storage and processing to convert it to hydrogen.

2.1.4 The Project seeks to provide the necessary infrastructure and capacity not only for bulk ammonia imports but also for future carbon dioxide movements including importing captured CO_2 from industrial processes for subsequent permanent storage under the North Sea via the proposed Viking CCS carbon dioxide transport and storage proposals and other potential future users.

2.2 Alternative Sites

2.2.1 While other port locations are potentially available for a Green Energy Terminal, it is considered that the Port of Immingham represents the most suitable location to meet the objectives of this Project for the following reasons:

a. It is an established Port in a central UK location and therefore suitably well connected to import or export green energy bulk liquids into and out of the UK;

b. The Port of Immingham is ideally located to be able to connect to the Viking CCS and East Coast carbon capture and storage clusters – Humberside is one of the main industrial decarbonisation regions being developed in the UK. This is a major differentiator for this location over other UK ports when considering the wider use of the Green Energy Terminal;

c. It is a deep water port with sufficient available adjacent space to construct a new jetty which can accommodate large gas transporter vessels. It is in an industrial location away from large conurbations; and

d. There is space within the area to accommodate the Associated Development of the green hydrogen production facility in close proximity to the jetty (explained further below).

2.2.2 The proposed jetty location within the Port is considered to be the most suitable, given:

a. The need to reach the deep-water channel and minimise interfaces with other vessels;

b. The need for space on the adjacent land side to support a pipeline corridor, storage and production facilities; and

c. The need to make best use of existing infrastructure and services and to facilitate the green hydrogen production facility.

2.2.3 A number of alternative locations within and around the Port have been considered for the green hydrogen production facility taking into account the Port development plans, ground conditions, the presence of existing structures, proximity to residential and ecological receptors, access and proximity to the jetty. The three plots of land identified within the Site boundary were selected as the most suitable for the following reasons:

a. Availability of sufficient largely brownfield land for the development;

b. The west site is allocated for employment use (B1, B2, B8) in the North East Lincolnshire Local Plan. A green hydrogen production facility would be classified as B2 use, comprising development that would be suitable on this site;

c. Proximity to the jetty to minimise onshore transport distances for ammonia, for safety reasons; and

d. Local access to existing gas and grid connections.

2.3 Alternative Technologies

2.3.1 The need for a green hydrogen production facility was identified as an essential part of the Project at an early stage, to align to the Government's ambition to deliver at least 10GW of low carbon hydrogen by 2030 in order to help decarbonise the UK transport sector.

2.3.2 Large scale global deployment of green ammonia is emerging as the safest and most efficient way to transport bulk quantities of green hydrogen from worldwide locations where sustainable solar and wind energy production can be used to make green hydrogen from the electrolysis of water. While transport of green hydrogen could be achieved in other ways, such as direct shipping of hydrogen, the transport risks, costs and scale achievable make alternative transport methods (to the use of ammonia) less viable and more hazardous.

2.3.3 A production facility to subsequently produce and temporarily store green hydrogen from the ammonia is therefore required and there are limited alternative technologies to facilitate this.

3 The Project

3.1 Introduction

3.1.1 The Project would comprise the construction and operation of a terminal to facilitate the import and export of bulk liquids associated with the energy sector. The terminal would consist of a jetty and associated loading / unloading infrastructure, pipelines and metering systems.

3.1.2 Initially, the terminal would be used for the import and export of green ammonia to be converted to green hydrogen. To facilitate this, a hydrogen production facility, comprising associated ammonia handling equipment, storage and processing units would be constructed as part of the Project. The Project is anticipated to produce up to 300MW of hydrogen per annum. Depending on market demand, it is estimated that this will meet up to 3% of Government's hydrogen production capacity target.

3.1.3 Other proposed uses for the green energy terminal will come forward in due course and separately from the Project.

3.2 Key Elements of the Project

3.2.1 As illustrated on **Figure 2.3** (PEI Report, Volume III), the Site is split into the following areas:

a. Terminal - comprising a jetty, including up to two berths and infrastructure to assist with the loading and unloading of vessels, to provide maintenance access and to allow for supporting utilities for handling liquid bulk shipments;

b. A corridor to provide a pipeline from the jetty to the East site and an access road to the jetty from Laporte Road;

c. East Site - ammonia storage and hydrogen production;

d. West Site - hydrogen production, hydrogen liquefaction, hydrogen storage and vehicle loading;

e. Pipeline corridor between the East and West Sites; and

f. Temporary construction areas.

3.3 Construction

3.3.1 Subject to the DCO being granted, there would be a phased approach to the construction of the Project, with the construction of Phase 1 expected to start in early 2025.

3.3.2 **Table 3.1** illustrates an indicative construction timeline for the Terminal. Construction of the first berth is likely to commence in early 2025 and become operational in 2027. Construction of the second berth may commence after the first berth is complete although this would depend on demand and there may therefore be a pause before the second berth is built.

Table 3.1: Indicative Construction Timeline for the Terminal

Berth	Year 1	Year 2	Year 3	Year 4
Berth 1				
Berth 2			Earliest possible start year for Berth 2 (year 1)	

3.3.3 In the marine environment the structures would rest upon an open piled network of steel tubular piles. Driving these piles will likely involve vibro and percussive piling techniques. The deck for the approach trestle and jetty would be supported by either a concrete deck or precast and/or in-situ concrete deck. The topside pipework would be manufactured off-site and floated and/or craned into position. The high-level walkways between dolphins would be manufactured off-site and lifted into position.

3.3.4 It has been determined that an initial dredge would be required to provide the larger western berth. At this preliminary stage, the maximum extent of the dredge is currently estimated at being approximately 45,000m^2. The area in which ships would be berthed would be dredged to maintain a maximum depth of approximately 16m below mean sea level. The dredge volume associated with construction and in particular the creation of the jetty berths would be up to 100,000m^3 of boulder clay and sand/silt. The dredged material would be taken to licensed disposal sites in the Humber.

3.3.5 For the purposes of the PEI Report, it is assumed that the green hydrogen production facility would be constructed incrementally to increase the processing capacity as the market for green hydrogen increases. Construction of the green hydrogen production facility would likely commence in early 2025, and as detailed in **Table 3.2**, with construction undertaken over six phases and full completion taking an eleven-year period. It is assumed that each phase of the green hydrogen production facility would become operational following its construction.

Table 3.2: Indicative Construction Phasing Timeline for the Green Hydrogen Production Facility

Phase	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Phase 1											
Phase 2											
Phase 3											
Phase 4											
Phase 5											
Phase 6											

3.3.6 The start of construction of Phase 2 (here shown in Year 4), will depend on a number of factors including market demands for hydro

3.3.7 gen at that point in time and the timing of subsequent phases would be subject to the same tests. Construction of Phases 2 – 6 may take eight years if built consecutively as shown in **Table 3.2**.

3.3.8 Each phase of the Project's development would involve construction of buildings and infrastructure within the relevant area of the Site, as presented in **Table 3.3**.

Table 3.3: Anticipated Buildings and Infrastructure within the Site by Phase

Phase	Jetty	Pipeline Corridors	East Site	West Site
Phase 1 **Construction:** **Y1 – Y3**	Jetty structure and Berth 1 Berth 2 (start) Jetty topside infrastructure	Ammonia pipeline from the jetty Jetty access road Hydrogen, Ammonia and Natural Gas pipelines between East and West Site Utilities and cabling to East and West sites	Ammonia tank One hydrogen production unit Internal access roads, drainage and utilities	One liquefier Tanker loading bays Administrative offices Other supporting building and facilities Internal access roads, drainage and utilities
Phase 2 **Construction:** **Y4 – Y5 (TBC)**	Berth 2 (complete)			One hydrogen production unit One liquefier
Phase 3 **Construction:** **Y6 – Y7 (TBC)**			One hydrogen production unit	One liquefier

Phase	Jetty	Pipeline Corridors	East Site	West Site
Phase 4 Construction: Y8 – Y9 (TBC				One liquefier One hydrogen production unit
Phase 5 Construction: Y9 – Y10 (TBC)			One hydrogen production unit	
Phase 6 Construction: Y10 – Y11 (TBC)				One hydrogen production unit

3.3.9 The Applicant would require the construction contractor to produce and maintain a Construction Environmental Management Plan (CEMP) to control construction activities to minimise, as far as reasonably possible, impacts on the environment. An Outline CEMP will be produced and appended to the ES as part of the DCO application and the contractor's CEMP will need to be prepared in accordance with the principles set out in the Outline CEMP.

3.4 Operation and Maintenance

Hydrogen Production Facility Operation

3.4.1 The hydrogen production facility is intended to be a continuous operation. The intention is therefore that the facility would operate 24 hours a day, seven days a week and 365 days a year. It is anticipated that once fully operational, a fleet of up to 50 tanker trailers and tractor units would operate in distributing the green hydrogen throughout the UK. The fleet would operate 24 hours a day.

Terminal Operation

3.4.2 The Terminal will operate 24 hours a day, seven days a week and 365 days a year (though with lower activity at night compared to the day). The Terminal would have capacity to accommodate up to 400 vessel calls per year and it is anticipated that up to 12 of these calls would be associated with the import of green ammonia for the hydrogen production facility.

Maintenance Dredging and Disposal

3.4.3 During operation of the Project, periodic maintenance dredging to maintain the depth beneath the jetty berths would be required. The overall volumes of the maintenance dredging associated with the Project would be smaller than that required during the construction phase. An estimate of the annual future maintenance dredge volume will be provided in the ES.

3.5 Decommissioning

3.5.1 The Project does not make any provision for the decommissioning of the marine facilities of the Project. This is because the marine facilities would, once constructed, become part of the fabric of the Port estate and would be maintained accordingly.

3.5.2 The landside elements of the Project have a design life of approximately 25 years, although their operational life could be longer, depending on their integrity and market conditions at that time. When appropriate, this infrastructure would be decommissioned.

3.5.3 Decommissioning would be undertaken safely, in line with specific procedures and subject to risk assessment and permit to work schemes, and with regard to the environmental legislation at the time of decommissioning. The required licences and permits would also be acquired.

3.5.4 Decommissioning of the landside elements of the Project would likely involve leaving any emptied underground pipelines in situ and making them safe. The plant would be modular which would make decommissioning easier. All above ground infrastructure associated with the Project would likely be dismantled and all materials removed would be reused or recycled where possible or disposed of in accordance with relevant waste disposal regulations at the time of decommissioning. Land would be restored to a satisfactory state. If required and appropriate, refurbishment or replacement of specific plant would be performed to extend the life of the Project.

3.5.5 A Decommissioning Environmental Management Plan (DEMP) will be produced prior to decommissioning or demolition works being undertaken, which will detail measures to be implemented to avoid or reduce environmental impacts during the decommissioning of the landside elements. The provision of a DEMP will be secured by requirement of the DCO.

4 Consultation

4.1.1 Consultation is integral to the preparation of DCO applications and to the EIA process. The views of consulted parties and the local community serve to focus the environmental studies undertaken to inform the EIA and to identify specific issues that require further investigation, as well as to inform aspects of the Project design. Consultation is an ongoing process up to submission of the DCO application and the publication of this PEI Report forms an important part of that process.

4.1.2 The Project has a wide range of stakeholders with differing interests. Specific communication activities will be undertaken to meet the needs of specific individuals and groups. This requires an understanding of the stakeholders and their interests in the Project.

4.1.3 The key stakeholders to be consulted as part of the pre-application process include (but are not limited to):

a. Prescribed statutory bodies;

b. Local authorities;

c. Landowners/those with interests in the land;

d. Local communities; and

e. Other key interest groups.

4.1.4 In addition to the stages of pre-application consultation, the Applicant will hold informal engagement with the key prescribed consultees, as appropriate, to refine the Project and the EIA and to assist in the development of any required mitigation or other environmental measures.

5 Summary of Preliminary Environmental Effects

5.1 Introduction

5.1.1 The PEI Report presents a description of the Project and its likely significant environmental effects during construction, operation (including maintenance, where relevant) and decommissioning, based on the preliminary environmental information available at the time. It also details measures to avoid or reduce such effects and the alternatives considered.

5.1.2 The PEI Report summarises the outcome to date of the following ongoing EIA activities:

a. Scoping opinion;

b. Review of secondary information, previous environmental studies, publicly available information and databases;

c. Physical surveys and monitoring;

d. Establishing baseline conditions (the environment as it currently is without the Project);

e. Consultation with statutory and non-statutory consultees;

f. Consideration of relevant local, regional and national planning policies, guidelines and legislation relevant to the EIA;

g. Reference to current guidance;

h. Consideration of technical standards for the development of effect significance criteria and specialist assessment methodologies;

i. Desk-top studies;

j. Design review;

k. Modelling and calculations; and

l. Expert opinion.

5.1.3 These activities enable the prediction of impacts of the projects in relation to the current and future baseline[1], and a prediction based on the information available of the likely significance of effects on environmental receptors[2].

5.1.4 The term ‘impact’ refers to changes arising from the Project, whereas the term ‘effect’ is used to describe the result of the impact on a receptor.

5.1.5 **Table 5.1** shows the generic significance evaluation matrix that has been applied to the assessment of this Project. **Table 5.2** explains the generic significance of effect description.

[1] Also known as the ‘Do-Minimum scenario’, the minimum works that are likely to go ahead in the absence of the Project. The future baseline scenario has been set as Q2 2025 for the Project.
[2] Receptors have the potential to be affected by the construction, operation and decommissioning of the Project, this can include designated environmental sites, humans and protected species. Receptors that could potentially be affected by any stage of the Project are clearly defined in each technical chapter.

Table 5.1: Generic Significance Evaluation Matrix

		Magnitude of Change			
		Very Low	Low	Medium	High
Sensitivity of Receptor	High	Minor (not significant)	Moderate (potentially significant)	Major (significant)	Major (significant)
	Medium	Minor (not significant)	Minor (not significant)	Moderate (potentially significant)	Major (significant)
	Low	Negligible (not significant)	Minor (not significant)	Minor (not significant)	Moderate (potentially significant)
	Very Low	Negligible (not significant)	Negligible (not significant)	Minor (not significant)	Minor (not significant)

Table 5.2: Generic Significance of Effect Description

Significance Category	Indicative Description
Major	Very large or large change in environmental conditions. Effects, both negative and positive, which are likely to be important considerations at a national to regional level because they contribute to achieving national or regional objectives, or which are likely to result in exceedance of statutory objectives or breaches of legislation. These effects are considered to be very important considerations and are likely to be material in the decision-making process.
Moderate	Intermediate change in environmental conditions. Effects are likely to be important considerations at a regional or local level and important in informing the decision-making process.
Minor	Small change in environmental conditions that are unlikely to be critical in the decision-making process.
Negligible	No discernible change in environmental conditions. An effect that is likely to have a neutral or negligible influence.

5.1.6 Further explanation of the approach to assessing impacts and effects, and the specific criteria to be used for each topic is set out in **Chapter 5: EIA Approach** (PEI Report, Volume II), with any deviation from this standard approach noted.

5.1.7 For each environmental topic the EIA process systematically identifies impacts and effects and take into consideration environmental measures that the Project would adopt. These environmental measures include avoidance, best practice and design commitments as follows:

5.1.8 Embedded Mitigation Measures: modifications to the location, design or operation of a development made during the pre-application phase that are an inherent part of the Project and do not require additional action to be taken.

5.1.9 Standard Mitigation Measures: measures comprising management activities and techniques, which would be implemented during construction or operation of the Project to limit impacts through adherence to good site practice and achieving legal compliance.

5.1.10 Additional Mitigation Measures: these comprise measures over and above any embedded and standard mitigation measures, for which the EIA has identified a requirement to further reduce significant environmental effects.

5.1.11 Each technical chapter within the PEI Report (**Chapters 6** to **24**, Volume II) follows the same structure for ease of reference, where appropriate, as follows:

a. Introduction;
b. Approach to assessment;
c. Baseline conditions;
d. Design, mitigation and enhancement measures;
e. Potential impacts and effects;
f. Residual effects and whether significant or not; and
g. Summary of preliminary assessment.

5.1.12 A summary of each technical chapter's assessment for the Project is presented below. For a full assessment, refer to the corresponding technical chapter (**Chapters 6** to **24** in the PEI Report, Volume II).

5.2 Air Quality

5.2.1 **Chapter 6: Air Quality** includes a review of available data sources and the results of a nitrogen dioxide diffusion tube survey in order to characterise baseline conditions. Background pollutant concentrations for NO_X, NO_2, PM_{10} and $PM_{2.5}$ provided by Defra and NO_2 concentrations from the local air quality monitoring network have been presented as part of the baseline. Air quality is currently monitored by North East Lincolnshire Council and North Lincolnshire Council. North East Lincolnshire Council's monitoring data from 2021 and North Lincolnshire Council's from 2019 indicate NO_2 concentrations below their air quality objective.

5.2.2 With the implementation of standard construction practices that will be outlined in the Outline CEMP, it is considered that the residual construction phase air quality effects due to the Project would be insignificant.

5.2.3 Air quality effects during the Project operational phase, taking into account emissions from site plant, operational vessels and traffic, have been considered. This preliminary assessment indicates that these sources would have insignificant air quality effects given the controls that will be put in place including the use of appropriate stack heights for any releases of emissions to air. Operation of the facility will be regulated by the Environment Agency through an

Environmental Permit, which will specify emissions monitoring requirements and emission limits that must not be exceeded.

5.3 Noise and Vibration

5.3.1 **Chapter: 7 Noise and Vibration** details that sources contributing to the baseline sound environment at Noise Sensitive Receptors (NSRs) in the vicinity of the Project are primarily road traffic and industrial/commercial/port activities. There are three NSRs within the vicinity of the Project covering the northern and southern end of Queens Road and the eastern edge of Immingham. Existing noise levels are currently dominated by traffic noise from Queens Road and also wind rustle in surrounding scrub. Other sources include factory noises, more distant traffic and distant playground noise from nearby schools. Assessments for daytime and night-time and for each phase of the Project were undertaken in line with British Standard BS4142 (Ref 1-13).

5.3.2 Mitigation measures that are being considered as part of the Project design development for both the construction and operational phases include:

a. Limits on noise emissions from plant and equipment at source;

b. Acoustic barriers/screens or earth bunds to reduce transmission of noise; and

c. Recommendation for the provision of a package of sound insulation to nearby NSRs as a last resort, where other applied measures are unlikely to be adequate.

5.3.3 Based on the implementation of the impact avoidance measures and following implementation of additional noise specific measures (which would be included in the Outline CEMP), the preliminary assessment indicates that construction noise effects at residential NSRs on Queens Road may be moderate adverse (and thus significant) due to on-site works and off-site traffic. However, as explained in **Table 22.2** of **Chapter 22: Major Accidents and Disasters** (PEI Report, Volume II), further assessment is required of the consequences of the operation of the hydrogen production facility on surrounding land uses in terms of major hazard planning. It is currently anticipated that the HSE will advise against the continued use of the seven residential properties (the residential NSRs) on the west side of Queens Road and therefore that those residential properties are likely to need to be acquired for the Project. Air Products is currently in discussions with those landowners/occupiers with a view to negotiating acquisition of the seven residential properties. Where it is not possible to acquire those properties through negotiation, acquisition powers for these properties will be sought through the DCO. In the event of acquisition of the properties ahead of the either construction or operation commencing, the adverse effect would not arise.

5.4 Nature Conservation (Terrestrial Ecology)

5.4.1 **Chapter 8: Nature Conservation (Terrestrial Ecology)** characterises the baseline environment by identifying the statutory and non-statutory designated sites in the vicinity of the Project, as well as presenting records of known habitats and protected species in the area, which have been gathered through a combination of survey work and desk-based study. There are no terrestrial

statutorily designated sites with Impact Risk Zones that overlap the Site boundary or that have qualifying interest features of relevance to the assessment. The marine elements of the Project are located within the Humber Estuary European Marine Site which is covered in **Section 5.5.** The closest non-statutory site is the Laporte Road Brownfield Site Local Wildlife Site which is located approximately 150m south-east of the Site boundary. The Site is relatively poor for protected species although small number of bats have been recorded near the Long Strip woodland and water voles and otters have been recorded in nearby ditches.

5.4.2 The Project has been designed, as far as possible, to avoid and minimise impacts and effects to terrestrial ecology through the process of design development, and by embedding mitigation measures into the design. This includes minimising lighting impacts through an indicative lighting strategy for the Project. In addition, the following measures would be included in the Outline CEMP to mitigate potential terrestrial ecology effects:

a. An Environmental or Ecological Clerk of Works would be present during construction;

b. Precautionary working methods would be adopted to manage any residual risk of protected species being encountered e.g. reptiles, and a Precautionary Working Method Statement would be prepared as part of the CEMP;

c. Precautionary measures would be implemented to prevent trapping wildlife in construction excavations, in order to ensure compliance with animal welfare legislation; and

d. Construction temporary lighting would be arranged so that glare would be minimised outside the construction site.

5.4.3 Taking into account the mitigation measures detailed above, the residual effects of the Project in relation to terrestrial ecology have been assessed. The preliminary assessment identifies that there is limited potential for significant adverse effects on terrestrial ecology features. This is because the land affected by the Project is generally of low biodiversity value and surveys undertaken to date indicate that there is little potential for protected and notable species to occur. However, the Project could result in the loss of a large part of the deciduous Long Strip woodland during construction of the pipeline to the jetty and the jetty access road, resulting in a potential moderate adverse effect on woodland habitat, which would be significant. Mitigation measures for woodland loss, including off site woodland planting, are being explored and will be further reported in the ES. All other terrestrial ecology effects are expected to be not significant.

5.5 Nature Conservation (Marine Ecology)

5.5.1 **Chapter 9: Nature Conservation (Marine Ecology)** characterises the baseline environment by presenting a summary of the relevant designated sites, including the Humber Estuary Special Area of Conservation, Ramsar and Site of Special Scientific Interest, protected species, benthic habitats and species, fish and marine mammals using desk-based sources. A site-specific subtidal survey was also undertaken to collect samples for macrofaunal analysis and Particle Size

Analysis. The Project falls within the boundaries of the Humber Estuary Special Area of Conservation, Special Protection Area and Ramsar site (collectively forming the Humber European Marine Site). The primary reason for designation of the Special Area of Conservation is the presence of estuary and mudflats and sandflats habitats whilst the Special Protection Area is designated for its international importance for wader and wildfowl (ducks and geese) populations (covered further under Ornithology below).

5.5.2 In order to minimise and avoid effects on marine ecology, the Project aims to minimise the requirements for dredging as far as possible. In addition, standard mitigation measures being considered for implementation during the Project construction phase includes the use of soft start procedures for piling, the use of vibro piling where possible and if necessary seasonal/night-time piling restrictions specifically for migratory fish species and to meet Joint Nature Conservation Committee piling protocols for marine mammals. If required, these measures would reduce the level of potential impact associated with underwater noise and vibration on fish and marine mammals. Other measures include the even disposal deposition of dredged material across disposal sites, adherence to biosecurity management procedures and application of environmental management best practice to manage the risk of accidents and spillages/leaks during construction.

5.5.3 Taking into account the mitigation measures as detailed above, the preliminary assessment indicates that effects on marine ecology receptors, including habitats, would not be significant.

5.6 Ornithology

5.6.1 **Chapter 10: Ornithology** characterises the baseline environment by presenting a summary of the relevant designated sites, including the Humber Estuary Special Protection Area, Ramsar and Site of Special Scientific Interest, protected species and coastal waterbirds using desk-based sources at this preliminary stage. The Project falls within the boundaries of the Humber European Marine Site. The Humber Estuary Site of Special Scientific Interest overlaps part of Study Area and is designated for its nationally important habitats of intertidal mudflats and sandflats, and coastal saltmarsh) geological interest, its importance to breeding, wintering and passage birds, breeding grey seals and the presence of river and sea lamprey. The Humber Estuary is a site of national and international importance for its wader and wildfowl (ducks and geese) populations.

5.6.2 Potential impacts on coastal waterbirds as a result of the construction phase of the Project have been assessed on a preliminary basis. The following impact pathways were assessed:

a. Direct loss to intertidal feeding and roosting habitat as a result of the piles;

b. Direct loss of terrestrial habitat that is functionally linked to the Humber Estuary Special Protection Area/Ramsar;

c. Direct loss of breeding habitat used by non- Special Protection Area/ Ramsar birds;

d. Indirect changes to intertidal foraging and roosting habitat as a result of changes to hydrodynamic and sedimentary processes; and

e. Airborne noise and visual disturbance to coastal waterbirds using intertidal habitats and functionally linked terrestrial habitats outside the boundary of the Humber Estuary Special Protection Area/ Ramsar Site.

5.6.3 Standard mitigation measures which are being considered include undertaking vegetation clearance outside the nesting bird season where possible, or where not possible then pre-clearance checks will be undertaken.

5.6.4 A potential requirement for additional mitigation was identified to mitigate for the loss of the arable land within the temporary construction compound off Laporte Road, if it is concluded to be functionally linked to the Humber Estuary. Additional mitigation is also being considered in relation to the potential disturbance of coastal waterbirds during construction. Possible mitigation measures being considered include the use of soft start procedures for piling during construction, cold weather construction restrictions, seasonal working restrictions and the use of acoustic barriers and screening.

5.6.5 Taking into effect the mitigation measures detailed above, the residual effects in ornithology receptors have all been assessed as not significant with the level of confidence in these predictions ranging from low to high at this preliminary stage.

5.7 Traffic and Transport

5.7.1 **Chapter 11: Traffic and Transport** characterises the baseline environment by presenting the local highway network, cycle networks, public rights of way and existing traffic flows using survey data and other desk based sources. The existing baseline highway network comprises an area that is largely industrial in nature, with very few residential properties. The only major residential area is the town of Immingham located to the south of the Port. In terms of National Cycle Networks and Public Rights of Way, there are no routes within this area that would likely be affected by traffic associated with the Project based on the proposed traffic routing. During the construction and decommissioning phases, there may be temporary impacts on the use of the Bridleway which runs from Laporte Road to the Humber and would be either closed or diverted in these periods.

5.7.2 Traffic and transportation impacts during construction would be managed by minimising waste generation as far as is possible as this would minimise the need for traffic trips. In addition, all access points onto Site that require the creation of a junction would be designed in accordance with the Design Manual for Road and Bridges and in consultation with the local highway authority.

5.7.3 Prior to the start of the construction phase, the contractor would prepare a Construction Traffic Management Plan to control Heavy Goods Vehicle movements, as well as a Construction Worker Travel Plan to control the trips made by construction workers (including encouraging car sharing) and thus reduce the impact of the workforce upon the highway network. These plans would set out measures and controls to limit the number of trips on the network in the peak hours, and as such would aim to limit the traffic impact of the construction phase as far as possible.

5.7.4 With the implementation of the measures above, the preliminary assessment indicates that traffic and transport effects associated with the peak construction phase for the Project would be negligible or minor, and therefore not significant.

5.7.5 Operational traffic flows would be significantly less than those occurring during the peak of Project construction and so traffic and transportation effects during Project operation would also be not significant.

5.8 Marine Transport and Navigation

5.8.1 **Chapter 12: Marine Transport and Navigation** characterised the existing vessel activity in the vicinity of the Site boundary using 12 months of Automatic Identification System to ensure seasonal variations were considered. This recorded passing cargo vessel tankers, passenger ships, fishing vessels, recreational vessels, etc., as well as port-related vessel movements such as pilot vessels and tugs. The Project, if consented, will be located fully within an extended Port of Immingham Statutory Harbour Authority area where the Applicant is the Statutory Harbour Authority. A sample of vessels transiting the river in the vicinity of the Project recorded two vessels, a cargo vessel and a tanker, crossing the Project during this period. A number of other vessels passed to the north, including a passenger vessel.

5.8.2 Historical maritime incidents and accidents were also researched and analysed from a variety of sources including Humber Estuary Services and the Royal National Lifeboat Institution (RNLI). The most common incidents were collisions (between vessels), contacts (with port infrastructure), groundings, and equipment failure.

5.8.3 The potential hazards to marine transport and navigation as a result of the construction and operation of the Project have been identified, which included collision, contacts, groundings and equipment failure. A preliminary list of standard industry mitigation measures has been identified which is appropriate to the construction and operational activities being undertaken, such as construction method statements and allowable weather limits.

5.8.4 During the formal risk assessment process undertaken as part of the Navigational Risk Assessment, more detailed and specific mitigation measures will be evaluated through the use of vessel simulations and consultation with stakeholders at a local hazard review workshop. The objective of the Navigational Risk Assessment will be to ensure all residual navigational risks are either broadly acceptable or tolerable with suitable risk controls in place. The Navigational Risk Assessment, when finalised, will be appended to the ES.

5.9 Landscape and Visual Impact

5.9.1 **Chapter 13: Landscape and Visual Impact** characterises the baseline environment in the vicinity of the Project by presenting the surrounding National Character Areas (NCA), Regional Character Assessments (RCA) and Local Character Assessments as well as the development of a Zone of Theoretical Visibility (ZTV) for the Project. The Project is partly located within National Character Area 41: Humber Estuary. The character area is broadly split into two components, the largest being the expanse of water associated with the Humber

Estuary which, due to its strategic position, facilitates important, busy trade routes. The land adjacent to the coast is described as a '*low-lying estuarine landscape with extensive stretches of intertidal habitats*'.

5.9.2 Views within the wider study area are generally extensive due to the low-lying land along the coast and lack of intervening vegetation. Visibility is restricted within closer proximity to the Site by existing buildings, infrastructure and vegetation.

5.9.3 The Project is being designed, as far as possible, to avoid and minimise impacts and effects to landscape/seascape and visual receptors through the process of design development, and by embedding mitigation measures into the design. The provision of landscape planting will be considered further at the ES stage but on-site opportunities would be limited. Mitigation will be implemented during construction to ensure the protection of retained trees with appropriate root protection areas, and these will be clearly marked in the CEMP. Proposed construction mitigation includes perimeter fencing, maintaining tidy sites and temporary screen bunding.

5.9.4 The preliminary landscape and seascape assessment has not identified any significant effects during the construction phase or operation of the Project. However, the preliminary visual amenity assessment indicates that potential significant adverse visual amenity effects could be experienced at some representative viewpoints, including residential receptors on Queens Road, during Project construction, operation and decommissioning. The visual amenity effects associated with the Project will be re-assessed once further design details are available and once mitigation features are further developed.

5.9.5 As explained in **Table 22.2** of **Chapter 22: Major Accidents and Disasters** (PEI Report, Volume II), further assessment is required of the consequences of the operation of the hydrogen production facility on surrounding land uses in terms of major hazard planning. It is currently anticipated that the HSE will advise against the continued use of the seven residential properties (the residential NSRs) on the west side of Queens Road and therefore that those properties are likely to need to be acquired for the Project. Air Products is currently in discussions with those landowners / occupiers with a view to negotiating acquisition of the seven residential properties. Where it is not possible to acquire those properties through negotiation, acquisition powers for these properties will be sought through the DCO. In the event of acquisition of the properties ahead of the either construction or operation commencing, the adverse effect would not arise.

5.10 Historic Environment (Terrestrial)

5.10.1 **Chapter 14: Historic Environment** characterises the baseline historic environment (terrestrial) in the vicinity of the Project. This confirms that there are no World Heritage Sites, Scheduled Monuments, Grade I and II* listed buildings, conservation areas, registered parks and gardens, registered battlefields within the 2km study area for designated heritage assets. There are, however, three Grade II listed buildings of medium value located within the 2km study area, comprising of the Immingham War Memorial, Churchfield Manor and an Iron Bungalow.

5.10.2 Archaeological investigation has found evidence of a high-status Roman settlement and industrial site, located approximately 1.4km south-west of the Project Site. There is one asset (pair of ditches) of prehistoric date recorded within the 1.6km study area. An undated possible oval enclosure situated to the east of the West Site, outside of the Site boundary, could be related to the Roman settlement. Undated cropmarks of rectangular ditched enclosures, located approximately 1.1km to the south-east of the Site centre, could form part of the Roman landscape.

5.10.3 There is evidence for medieval (AD 1066-1540) settlement activity within the study area, to the west of the Site boundary, including a possible deserted medieval settlement. Aerial photography has recorded the remains of post-medieval field boundaries and narrow ridge and furrow cultivation features at Harborough Marsh as well as the presence of either singular or a series of drainage ditches.

5.10.4 Within the study area, a series of historic roads and trackways of post-medieval date are recorded on the early Ordnance Survey (OS) maps which may have origins in the medieval period. Several woodland features are located within the study area.

5.10.5 Multiple modern era (1901-present) features are found within the study area including historic flood defences, Immingham Dock and its associated features and World War II activity.

5.10.6 The Project has been designed, as far as possible, to avoid and minimise environmental impacts and effects through the siting of the Project. However, there are eight non-designated heritage assets recorded in the study area that have the potential to be subject to physical impacts or impacts to the significance of assets as caused by changes to their setting as a result of the construction of the Project. Of these the preliminary assessment indicates six potentially significant effects upon non-designated heritage assets that would be impacted by Project construction activities on the Site. However, until the results of the archaeological evaluations are available, it is not possible to confirm the significance of the effects. The significance of effects on the historic environment (terrestrial) will therefore be revisited in the ES, taking account of the evaluation results.

5.10.7 The preliminary assessment predicts that it would be possible to mitigate the Project's potential impact upon any buried archaeological resource found by chance at the Project Site through a staged programme of archaeological investigation using the approach and programme defined in a Written Scheme of Investigation. The purpose of the investigation would be to ensure that any remains are recorded prior to construction activities commencing. The first stage would consist of evaluation measures to identify the extent and survival of archaeological remains, followed, where required, by the excavation of features to ensure that they are fully understood and recorded. Any further stages of archaeological excavations, such as strip map and record, would be designed using the results of the evaluations. Archaeological mitigation requirements will be detailed in the Outline CEMP.

5.11 Historic Environment (Marine)

5.11.1 **Chapter 15: Historic Environment (Marine)** presents a marine archaeological baseline study of the Site based on desk-based assessment of records held by national and local inventories and secondary sources relating to the marine and intertidal historic environment. This archaeological baseline also includes an assessment of the value and sensitivity of any identified marine or intertidal archaeological receptors within the Site.

5.11.2 The study area for the marine archaeology topic comprises the footprint of the marine works associated with the Project and a 2km buffer zone. Twenty known heritage receptors have been identified within the study area, including seven records of wrecks, with two considered likely to still be located on the riverbed out with the Site boundary. There is also the potential for as yet undiscovered heritage receptors to be present within the study area. Within the study area, no features have been confirmed as having high archaeological value.

5.11.3 The preliminary assessment has identified that the construction phase would potentially result in adverse impacts on known and potential marine heritage receptors.

5.11.4 These impacts are associated with:

a. Construction of port infrastructure; and

b. Capital dredging.

5.11.5 The following mitigation measures are being considered as a result of the marine historic environment assessment:

a. Archaeological assessment of geophysical surveys undertaken to support the Project design, which would support baseline enhancement and identification of unknown marine cultural heritage receptors;

b. Geoarchaeological assessment of any future obtained marine borehole logs obtained as part of the detailed design ground investigation, which would enhance the baseline understanding of submerged palaeolandscapes;

c. Avoidance of known marine cultural heritage receptors through , for example, Implementation of Archaeological Exclusion Zones, if required; and

d. A Protocol for Archaeological Discoveries to ensure reporting and investigation of unexpected archaeological discoveries encountered during Project construction activities.

5.11.6 During construction, the application of the mitigation as suggested above through further investigation could result in the confirmation that either:

a. There are no marine heritage receptors located within the Project footprint, therefore confirming no adverse effects; or

b. That marine heritage receptors are present but can be avoided through the use of Archaeological Exclusion Zones, leading to negligible adverse effects.

5.11.7 Should seabed prehistory receptors be confirmed at the Site, a positive effect could be achieved through contributing to the knowledge base of seabed

prehistory receptors, for example through geophysical and geoarchaeological assessment.

5.11.8 With the implementation of the appropriate mitigation measures, marine archaeology effects are predicted to be negligible and not significant during the Project operational phase. It is anticipated that further details on the measures will be provided at the ES stage.

5.11.9 The DCO would not make any provision for the decommissioning of the marine infrastructure above and below water level. As such, no impacts are therefore considered for the decommissioning phase.

5.12 Physical Processes

5.12.1 **Chapter 16: Physical Processes** characterises the baseline environment by summarising the bathymetry and morphology of the Humber Estuary, the tides and water levels, extreme water levels, sea level rise predictions, flows, waves and geology and sediments using desk-based sources at this preliminary stage. The Humber Estuary has a meandering funnel shape widening towards the mouth. The form of the estuary can be divided into three regions for the consideration of physical processes:

a. The Inner Humber (Trent Falls to Humber Bridge): characterised by a number of extensive intertidal banks composed of sand/silt;

b. The Middle Humber (Humber Bridge to Grimsby): similar in its characteristics to the Inner Humber; and

c. The Outer Humber (Grimsby to Spurn Point): dominated by a three-channel system at the mouth, a large, submerged sandbank, and a single deep channel leading to the Middle Humber.

5.12.2 The Humber Estuary is tidal with a mean spring tidal range between 5.7m to 7.4m.

5.12.3 Embedded mitigation includes minimising the dredge requirements as far as possible to minimise changes in physical processes.

5.12.4 The assessment considers the extent of the changes to hydrodynamic and sedimentary processes and informs the assessment of effects in other chapters such as **Chapter 9: Nature Conservation (Marine Ecology)** and **Chapter 17: Marine Water and Sediment Quality**. Numerical modelling tools and conceptual analyses have been used to predict coastal processes and hydrodynamic effects by comparing the baseline and future environmental conditions created by the Project. This includes predicting the changes to tidal water levels, currents, and waves. It also includes modelling of sediment transport pathways (including assessment of potential changes to erosion and accretion patterns) and the fate of sediment plumes from marine construction and maintenance dredging and disposal activities.

5.12.5 Overall, the physical processes changes brought about by the construction and operation of the Project are currently considered small in both magnitude and extent and the resultant exposure to change assessed as low. The consequent significance of effects resulting from physical processes changes on other

environmental features/ receptors would be assessed in other topic-specific chapters.

5.13 Marine Water and Sediment Quality

5.13.1 **Chapter 17: Marine Water and Sediment Quality** characterises the baseline environment by identifying waterbodies, water-related protected areas, and water quality monitoring sites. There are no Shellfish Water Protected Areas or Sensitive Areas in the vicinity of the Project and the nearest Bathing Water is over 11km away. The available information on sediment quality in the vicinity of the Site has also been summarised using desk-based sources. The Humber Lower water body (ID: GB530402609201) within and surrounding the Site is recorded as a heavily modified water body due to coastal protection use, flood protection use, and navigation use. The current (2019) overall status of this waterbody is 'moderate', with an ecological potential of 'moderate', and a chemical status of 'fail'.

5.13.2 Standard mitigation being considered includes following best practice guidance such as Pollution Prevention Guidance and application of environmental management best practice such as maintaining plant and providing spill kits to manage the risk of accidents and spillages/leaks during construction.

5.13.3 Taking into effect the mitigation measures detailed above, the preliminary assessment of impacts on marine water and sediment quality receptors is that the residual effects would be not significant with a medium level of confidence.

5.14 Water Quality, Coastal Protection, Flood Risk and Drainage

5.14.1 **Chapter 18: Water Quality, Coast Protection, Flood Risk and Drainage** characterises the baseline environment by identifying water bodies, source protection zones, Drinking Water Safeguard Zones (ground and surface water), drains and drainage, coastal protection, fluvial and tidal sources, reservoirs and groundwater and surface water flooding records in the vicinity of the Project. The following key water environment receptors have been identified in the vicinity of the Project:

a. The Humber Estuary (Humber Estuary TraC Operational Catchment) and in particular the Lower Humber (GB530402609201) which forms the eastern boundary of the Site boundary;

b. North Beck Drain, Middle Drain and Habrough Marsh Drain (a North East Lindsey internal drainage board watercourse skirts the southern and western perimeters of the port estate flowing from south to north) are all located in the vicinity of the Site boundary (part of Becks Northern Operational Catchment);

c. On-shore Water Framework Directive water bodies: North Beck Drain (GB104029067575) and North Lincolnshire Chalk Unit waterbody (GB40401G401500). The conditions of these waterbodies are Moderate ecological status and Poor overall status, respectively. These classifications by the Environment Agency are based on 'lowest' category, which for the surface water body is ecological status and for groundwater is around resources. A summary of WFD data for 2019 for North Beck Drain and North

Lincolnshire Chalk Unit waterbody are provided in **Table 18.5** of **Chapter 18: Water Quality** (PEI Report, Volume II); and

d. Various ecological sites:

   i Humber Estuary (Ramsar, SPA and Special Area of Conservation).

   ii On-shore limited conservation value apart from small patches of Priority Habitat (Coastal and Floodplain Grazing Marsh and Good quality semi-improved grassland: Non-Priority).

5.14.2 There are a number of large source protection zones (SPZ) local to the Project, including an SPZ1 (inner zone) lying very close to the edge of the Immingham Docks site. The other source protection zones are located west of the coastal strip (presumably designed to minimise saline intrusion).

5.14.3 Lying further to the west of the coast (west of A180) are various Drinking Water Safeguard Zones (Groundwater) associated with catchments of the source protection zones as described above. There are no Drinking Water Safeguard Zones (Surface Waters) in the vicinity of the Site.

5.14.4 These water environment constraints are being taken into account during the design of the Project, particularly with regard to the routeing of pipelines, the approach to the installation of any footings for above ground pipelines near to watercourses, and surface water drainage proposals. A Flood Risk Assessment is being undertaken and will be submitted with the DCO application. The Flood Risk Assessment will assess the flood risk both to and from the Project and demonstrate how flood risk would be managed over the Project's lifetime, giving due regard to climate change. Mitigation measures could include, but are not limited to, flood resistant and resilient design, appropriate finished floor levels and emergency evacuation.

5.14.5 In addition, a range of measures would be included in the Outline CEMP to protect the water environment during the construction phase such as:

a. Use of buffer strips between any drains/boundary of the Site and construction activity;

b. Bunding of assets that have a risk of causing contamination to surface waters and land by the spillage of hazardous liquids;

c. Spill kits placed in areas where there is a risk of spillages of hazardous liquids;

d. Avoiding construction activities when particularly wet conditions exist, which may cause surface runoff to be generated; or at a minimum putting in place enhanced monitoring at such times; and/or

e. Undertaking regular water quality monitoring be that by visual inspection or testing using hand-held probes.

5.14.6 Such measures would also be applicable to protect the water environment during the decommissioning of the hydrogen production facility.

5.14.7 The preliminary assessment has identified that construction, operation and decommissioning of the Project all have the potential to have adverse impacts and effects on both water quality and flood risk, but that with the implementation

of embedded and standard mitigation, residual effects are not likely to be significant.

5.15 Climate Change

5.15.1 **Chapter 19: Climate Change** presents the preliminary findings of (i) a lifecycle greenhouse gas impact assessment which considers the impact of greenhouse gas emissions arising from the Project on the climate; and (ii) a climate change resilience assessment which considers the resilience of the Project to climate change impacts, including how the design would consider projected impacts of climate change.

5.15.2 The Project is being designed, as far as possible, to avoid and minimise impacts and effects through the process of design development, and by embedding mitigation measures into the design. The Project itself is intended to support the UK's net zero ambitions through the provision of a terminal for import and export of energy products and the associated green hydrogen production facility.

5.15.3 As part of the lifecycle greenhouse gas assessment, the following additional mitigation measures are currently being considered, these include energy saving measures and the use of sustainable fuels.

5.15.4 As part of the climate change resilience assessment the following embedded mitigation measures are currently being considered:

a. Finished floor levels set in line with the Strategic Flood Risk Assessment at 300mm above the Critical Flood Level (i.e. above a level that doesn't result in additional loss of life or damage to property);

b. Flood resilient and resistant design measures; and

c. Ensuring the Site receives Environment Agency Flood Warning Service announcements.

5.15.5 Additional mitigation measures are being considered as part of the design development of the Project:

a. All new assets, structures and buildings will either be designed for projected climatic conditions e.g. increased average temperatures using appropriate design guidance where available, or adaptive capacity will be built into the designs;

b. Storm-proof infrastructure will be incorporated where possible (e.g., underground power supplies); and

c. Use of materials with superior properties which offer increased tolerance to high temperatures to be considered.

5.15.6 The main contractors' Environmental Management System will consider all measures deemed necessary and appropriate to manage severe weather events and should as a minimum cover training of personnel and prevention and monitoring arrangements. These would include:

a. Use of storm defences (e.g., walls, riprap);

b. Design site with refuges, storm-resilient materials and form; and

c. Ensure appropriate storage of plant and materials.

5.15.7 The preliminary lifecycle greenhouse gas assessment indicates that the significance of construction and operational phase greenhouse gas emissions would be minor adverse and therefore not significant. By way of wider context, one of the key drivers for the Project is to assist the UK in meeting its net zero targets through the production and distribution of green hydrogen to help decarbonise the transportation sector and to help facilitate the use of carbon capture and storage. As noted above, the Project is anticipated to produce up to 300MW of hydrogen per annum. Depending on market demand, it is estimated that this will meet up to 3% of Government's hydrogen production capacity target.

5.15.8 The preliminary climate change resilience assessment indicates that the construction and operation of the Project may be subject to adverse impacts from climate change unless appropriate measures are applied. A number of mitigation measures have been proposed in **Table 19.12** and **Table 19.13** of **Chapter 19: Climate Change** (PEI Report, Volume II) as part of the climate change resilience assessment. Incorporating these measures into the design of the Project will provide a level of resilience to climate change and reduce pre-mitigation moderate adverse effects down to low. The measures to be taken will be defined and confirmed in the ES.

5.16 Materials and Waste

5.16.1 **Chapter 20: Materials and Waste** presents a preliminary assessment of the likely effects of the Project on materials and waste. Materials are defined as "*physical resources that are used across the lifecycle of a development. Examples include key construction materials such as concrete, aggregate, asphalt and steel*" whereas waste is described as "*any substance or object which the holder discards or intends or is required to discard*".

5.16.2 A wide range of measures would be implemented during Project construction, operation and decommissioning to minimise and mitigate potential materials and waste impacts.

5.16.3 The Project would use the waste hierarchy and prioritise waste prevention, followed by re-use, recycling and recovery. Waste disposal to landfill would be minimised.

5.16.4 Measures to minimise materials and waste impacts will be defined in the Outline CEMP which will be submitted with the ES. In addition, an Outline Site Waste Management Plan (OSWMP) will be prepared and will accompany the DCO application. The contractor will prepare a Site Waste Management Plan (SWMP) before the commencement of construction, based upon the OSWMP. The OSWMP will set out the generic measures that would be implemented by the contractor to manage waste generated by the Project construction. To ensure suitable re-use of materials such as crushed concrete and soils, a Materials Management Plan (MMP) would be prepared and implemented for the Project that would detail measures to classify, track, store, dispose and potentially re-use excavated materials encountered.

5.16.5 An Outline DEMP including an estimate of the types and quantities of waste that would arise from decommissioning of the landside elements will be submitted

with the DCO application, a detailed DEMP would be prepared based upon the Outline DEMP.

5.16.6 Based on the current understanding of material and waste quantities associated with the Project, no significant effects are anticipated. Estimates of material and waste quantities will be further refined as the Project design progresses and the likely effects of the Project on materials and waste will be re-assessed and reported within the ES.

5.17 Ground Conditions and Land Quality

5.17.1 **Chapter 21: Ground Conditions and Land Quality** uses a wide range of data sources to establish baseline conditions at the Site and its surrounds. In order to further characterise site ground conditions, additional intrusive investigations at the Site are currently being undertaken which will inform the detailed design and which will support assessment. An Agricultural Land Classification survey will also be undertaken to confirm soil grades within the Site boundary.

5.17.2 The site of the green hydrogen production facility is within a Nitrate Vulnerable Zone associated with the North Beck Drain.

5.17.3 A wide range of mitigation measures as related to ground conditions and land quality would be implemented during the Project construction phase, including the following:

a. The Outline CEMP will detail measures to limit the dispersal and accidental release of soil derived dusts, uncontrolled run-off and accidental releases of potential contaminants. An Outline Remediation Strategy will be prepared to support the DCO application. The Outline Remediation Strategy will define the mitigation measures required for significant/unacceptable contamination risks and outline how the earthworks would be undertaken during construction; and

b. To ensure suitable re-use of materials such as crushed concrete and soils, the MMP (see above) would detail measures to classify, track, store, dispose and potentially re-use excavated materials encountered.

5.17.4 During Project operation, the hydrogen production facility would be regulated by the Environment Agency through an Environmental Permit. The facility would be operated in accordance with an operational Environmental Management Plan (EMP), which would detail the mitigation measures to minimise potential human health effects and effects upon the environment.

5.17.5 Based on the current understanding of the Site and the implementation of defined mitigation measures, the preliminary assessment indicates that Project construction, operational and decommissioning phases would result in neutral to slight adverse effects which are not significant.

5.18 Major Accidents and Disasters

5.18.1 **Chapter 22: Major Accidents and Disasters** presents a preliminary assessment which identifies and describes the potential, credible major accident and disaster (MA&D) scenarios which could be relevant to the Project.

5.18.2 The industrial area associated with the port of Immingham contains a number of existing upper tier Control of Major Accident Hazards (COMAH) sites which are regulated in accordance with the COMAH Regulations. The existing major accident hazard pipelines located in the study area are used to transport gas and petroleum products. In addition to the major accident hazard sites and pipelines, the baseline area consists of critical road, rail and seaport infrastructure and is an important industrial area within the UK.

5.18.3 A total of 15 potential hazardous scenarios have been identified and considered in the assessment. These Risk Events include incidents such as fire and/or explosion caused by a major loss of containment of flammable and toxic gases.

5.18.4 The potential consequences of scenarios identified are primarily harm caused to people present on-site. This could be as a result of any exposure to thermal radiation generated by fire, exposure to explosion overpressure, impact with objects and exposure to toxic ammonia gas. An application for hazardous substances consent is being submitted to North East Lincolnshire Council for consent. Through this process, HSE sets consultation distances, known as land use planning zones. The compatibility of the proposed hydrogen production facility and the existing uses within those zones will be considered. The Project consultation zones, if consent is given, are likely to impact the seven residential properties located on the west side of Queens Road which are therefore included within the Site boundary. Once the hydrogen production facility on the West Site is fully operational, it is likely that these properties will fall within or close to the Inner Zone associated with the operational Project. Further design work and consultation with the HSE are being undertaken relating to the consultation zones for the Project. It is currently anticipated that the continued residential use of those properties is unlikely to be compatible with the operation of the hydrogen production facility on the West Site and will need to cease. Discussions have commenced with the owners and occupiers with a view to negotiating their acquisition. Where it is not possible to acquire those properties through negotiation, acquisition powers for these properties will be sought through the DCO.

5.18.5 As defined in **Chapter 2: The Project,** a number of businesses are also present in the same area on the west side of Queens Road. It is likely that the ongoing operation of those businesses will be compatible with the operation of the hydrogen production facility. As part of HSE advice on the hazardous substance consent application, the HSE will determine if there are relevant impacts on these businesses. Whilst it is possible that powers to compulsorily acquire the properties or undertake appropriate works may be sought as part of the DCO, this is currently considered unlikely.

5.18.6 Where risks cannot be eliminated, they would be reduced to being ‘as low as reasonably practicable’ (ALARP). Residual risks associated with construction identified hazards would be managed via the CEMP, ensuring compliance with the Construction (Design and Management) (CDM) Regulations (Ref 22-8).

5.18.7 There are potentially harmful consequences to the environment as a result of the identified Risk Events. These include direct harm from thermal radiation to flora and fauna in and around the Humber Estuary caused by a major fire. A release of

harmful substances such as Marine Fuel Oil (MFO) from vessels transporting ammonia to Site could also cause harm.

5.18.8 The presence of toxic and flammable gases during Project operation means that their associated hazards cannot be entirely eliminated, but they must be managed to reduce risks to ALARP, in accordance with the Health and Safety Executive (HSE) requirements under the Control of Major Accident Hazards (COMAH) Regulations (COMAH) Regulations. Risk reduction and mitigation would be via compliance with all applicable UK legislation and the adoption of UK and worldwide industry standards and best practice used for the design of process equipment. In addition, the facilities would be subject to continuous monitoring, all personnel associated with the operation of the Project facilities would be subject to the highest standards of training and competency assurance, whilst applicable emergency plans would be prepared.

5.18.9 The hazards associated with activities undertaken during the decommissioning phase of the hydrogen production facility would be substantially the same as construction, however, as the process equipment and pipework would have contained dangerous substances, additional safety precautions would be required. Risks would be reduced to ALARP during decommissioning via appropriate controls, such as the use of equipment including electrical tools. These controls would be defined in the DEMP. Comprehensive plans for safety and environmental management during decommissioning would be developed prior to work commencing, to risk assess tasks and produce method statements for the work. This would be required as part of the COMAH Safety Report.

5.18.10 All risks during construction, operation and decommissioning have been reduced to ALARP.

5.18.11 The Project would comply with all relevant safety and environmental legislation for the management of risks on industrial facilities, from the design and construction phase, through operation and eventual decommissioning.

5.18.12 Further analysis of the level of potential harm to people and the environment, and more detailed information on the mitigation and control measures associated with the Project will be available as the design progresses and will be included within the ES.

5.18.13 The conclusions of the MA&D chapter are a qualitative assessment of the significance of identified foreseeable credible events and the residual risks after mitigation measures are taken into account. Risk management will be part of an ongoing process throughout the lifecycle of the Project and a requirement for compliance with applicable legislation including COMAH, Environmental Permitting, a Hazardous Substances Consent and Pipelines Safety Regulations (PSR).

5.19 Socio-Economics

5.19.1 **Chapter 23: Socio-economics** presents the preliminary findings of the assessment of the likely effects of the Project on socio-economic factors, including potential impacts on employment (including training and apprenticeship opportunities) and effects on the local community; users of recreational routes and Public Rights of Way and private assets (including residential properties,

development land, local businesses, community facilities, open space and visitor attractions relevant for tourism).

5.19.2 The Project is located within an area characterised as an industrial landscape type for the areas surrounding the Port. Beyond the industrial landscape, the wider area is largely agricultural. The Project is located near to Immingham, which lies approximately 1km west of the Site boundary, whilst Grimsby town centre is located approximately 5km to the south-east. The study area is mostly industrial and relatively sparsely populated with residential properties.

5.19.3 Within the North East Lincolnshire area, the population has reduced from 159,616 in 2011 to 156,900 in 2021 (or by 1.7%) (Ref 1-14). In 2020, the workforce of North East Lincolnshire comprised of approximately 66,000 employees.

5.19.4 There are two Public Rights of Way located within the boundary of the Site, Public Bridleway number 36 (part of England's Coast Path, connecting Laporte Road to Grimsby) and Public Footpath number 32 (connecting Queens Road to the Redwood Industrial Park).

5.19.5 During the construction and decommissioning phases, there may be temporary impacts on the use of the Bridleway which runs from Laporte Road to the Humber and would be either closed or diverted in these periods. Any temporary closure or diversion would be supported by an appropriate and clearly signed alternative route as relevant and these would be planned and programmed to minimise disruption to users. If the existing route is closed during these periods and no alternative provided, this would be considered to be a significant adverse effect.

5.19.6 Based on this preliminary assessment of socio-economic impacts, it is considered that there are likely to be residual significant effects associated with the construction period. These are construction employment generation (moderate beneficial), generation of gross value added (moderate beneficial), effects on identified residential properties (moderate adverse) and effects on businesses (moderate adverse). It is considered that there are no residual significant effects associated with the operational and decommissioning periods of the Project.

5.19.7 The final outcomes of the likely significant effects of the Project on Socio-economics will be reported within the ES.

5.20 Human Health and Wellbeing

5.20.1 **Chapter 24: Human Health and Wellbeing** draws upon the technical assessments included within the PEI Report to assess potential Project impacts on a range of human health and wellbeing determinants.

5.20.2 The baseline for the human health and wellbeing assessment considers the local wards in which the Project is located in or in close proximity to, compared where relevant to wider geographical areas of the Yorkshire and Humber Region, and England and Wales as a whole.

5.20.3 The total population of the study area, according to mid-year population estimates in 2020, is 42,470 (Ref 1-15). In 2020, the average proportion of

working age residents (aged 16 to 64) in the study area was 59.6% which is slightly lower than is typical for the Yorkshire and The Humber region (62.1%) and across England and Wales as a whole (62.2%).

5.20.4 The proportion of residents who self-identify as of White ethnicity within the study area (98.5%) is far greater than is typical for the Yorkshire and The Humber region (88.8%), and across England and Wales (86.0%) (Ref 1-16). Accordingly, the proportion of residents of other ethnic groups is below the equivalent regional and national rate.

5.20.5 North East Lincolnshire is the 66th most deprived local authority of 317 in England (where 1st is most deprived). North Lincolnshire is the 120th most deprived in England. West Lindsey is the 146th most deprived local authority in England (Ref 1-17).

5.20.6 The preliminary assessment has indicated that the Project has the potential to have positive and negative effects on human health and wellbeing determinants. It is possible that where positive or negative effects are reported this could ultimately result in a significant effect with respect to health and wellbeing, but this will depend on further assessment; the final outcome of which will be presented in the ES.

5.20.7 The Project has been designed, as far as possible, to avoid and minimise impacts and effects on health and wellbeing through the process of design development, and by embedding mitigation measures into the design. Relevant design, mitigation and enhancement measures have been recommended in the relevant related chapters (**Chapter 6: Air Quality, Chapter 7: Noise and Vibration, Chapter 11: Traffic and Transport, Chapter 19; Climate Change** and **Chapter 23: Socio-economics** of the PEI Report, Volume II) and are outlined above in this NTS including, for example, limits on noise emissions from plant and equipment at source and regular site inspections.

5.21 Cumulative and In-Combination Effects

5.21.1 **Chapter 25: Cumulative Effects and In-Combination Assessment** considers the following:

a. **In-combination or Combined effects**: effects that occur where a single receptor is affected by more than one impact from different aspects of the Project. An example of a combined effect could be where a local resident is affected by dust, noise and traffic disruption during the construction of the Project, with the result being a greater nuisance than each individual effect alone.

b. **Cumulative effects**: effects that occur as a result of a number of developments, which individually might not be significant, but when considered together could create a significant cumulative effect on a shared receptor when considered together with the Project.

5.21.2 The preliminary assessment indicates that there are a number of developments in the vicinity of the Project that need to be considered for their potential to generate cumulative effects. Of these developments, the one with the greatest potential to lead to significant cumulative effects is the Immingham Eastern Ro-

Ro Terminal (IERRT) development which comprises a new roll-on/roll-off terminal with a new jetty in the Port of Immingham.

5.21.3 Preliminary assessment indicates that there are not likely to be any significant cumulative effects in relation to IERRT when considered together with the Project (IGET), for the following topics: Nature Conservation (Terrestrial), Landscape and Visual, Historic Environment (terrestrial), Water Quality, Coastal Protection, Flood Risk and Drainage, Climate Change, Materials and Waste, Ground Conditions and Land Quality, Major Accidents and Disasters and Human Health and Wellbeing.

5.21.4 The preliminary assessment concludes that there is the *potential* for significant cumulative effects in relation to IERRT when considered together with the Project (IGET), for the following topics: Air Quality, Noise and Vibration, Natural Conservation (Marine Ecology), Ornithology, Traffic and Transport, Marine Traffic and Transport, Historic Environment (Marine), Physical Processes, Marine Water and Sediment Quality and Socio Economics. However, the mitigation measures employed, as necessary in respect of each project, will minimise the potential for adverse effects arising from each project alone in relation to these technical areas and this will then also minimise cumulative effects between the two projects through both construction and operation. Further details on mitigation measures to be deployed will be defined in the ES for the Project at which point the potential for cumulative effects will be assessed further and reported as necessary.

5.21.5 The potential for the IERRT development, and any other developments in the vicinity of the Project, to generate significant cumulative effects will be reported in greater detail in the ES. In the event that significant cumulative effects are identified, the ES will identify any additional mitigation measures that are required.

5.21.6 An initial assessment of in-combination effects is presented for receptors which could potentially be affected by more than one environmental topic in the form of a ‘Shared Receptor List’ which illustrates where there is the potential for overlap and in-combination effects across technical chapters for the Project. In-combination or combined effects have not been fully assessed at this stage and will be assessed within the ES.

6 Summary and Conclusions

6.1.1 The preliminary assessments summarised above indicate that the Project has the potential to generate some adverse environmental effects, a limited number of which have the potential to be significant after impact avoidance measures and mitigation is applied. These effects are outlined below in **Table 6.1**.

6.1.2 Following statutory consultation, the Applicant will consider any comments received in order to identify opportunities for the refinement of the Project design, and confirmation of mitigation approaches. The environmental effects associated with the resultant Project design will be assessed within the ES to be submitted with the DCO application.

Table 6.1: Summary Table of Significant Effects

Chapter	Project Stage	Effect
Chapter 7: Noise and Vibration	Construction	Construction noise from landside works for houses on Queens Road - potentially up to moderate/major (significant) effect
		Construction traffic noise for houses on Queens Road - minor/moderate adverse (potentially significant)
	Operation	On-site plant noise and operations for houses on Queens Road - up to moderate/major adverse (significant) (daytime and night-time)
		Project traffic on local roads for houses on Queens Road - minor/moderate adverse, (potentially significant)
Chapter 8: Nature Conservation (Terrestrial Ecology)	Construction	Pipeline construction resulting in loss of/damage to mature deciduous woodland habitat - moderate adverse (Significant)
Chapter 13: Landscape and Visual	Construction	Change in visual amenity for recreational users of public rights of way/bridleway and proposed English Coastal Path route - major adverse (significant)
		Change in visual amenity for motorised users and commercial receptors on Queens Road - moderate adverse (significant)
		Change in visual amenity for residential receptors on Queens Road - major adverse (significant)
	Operation	Change in visual amenity for recreational users of public rights of way/bridleway and proposed English Coastal Path route - moderate adverse (significant)
		Change in visual amenity for residential receptors on Queens Road - major adverse (significant)

Chapter	Project Stage	Effect
	Decommissioning	Change in visual amenity for motorised users and commercial receptors on Queens Road - moderate adverse (significant)
		Change in visual amenity for motorised users and commercial receptors on Queens Road - moderate adverse (significant)
		Change in visual amenity for residential receptors on Queens Road - major adverse (significant)
Chapter 23: Socio-Economics	Construction	Employment generation during the construction phase and Gross Value Added (GVA) generation during the construction phase – moderate beneficial (significant)
		Loss of residential properties on Queens Road and permanent displacement of businesses on Queens Road - moderate adverse (significant)

7 References

Ref 1-1 The Stationery Office Limited (2008). Planning Act 2008.

Ref 1-2 European Commission (1985). Council Directive of 27 June 1985 of the assessment of the effects of certain public and private projects on the environment (85/ 337/ EEC).

Ref 1-3 European Commission (2011). Directive 2011/ 92/ EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment.

Ref 1-4 European Commission (2014). Directive 2014/ 52/ EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/ 92/ EU on the assessment of the effects of certain public and private projects on the environment.

Ref 1-5 The Stationery Office Limited (2017). The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

Ref 1-6 Department for Transport (2012). The National Planning Policy Statement for Ports.

Ref 1-7 Department of Energy & Climate Change (2011). Overarching National Policy Statement for Energy (EN-1).

Ref 1-8 The Stationery Office Limited (2011). UK Marine Policy Statement.

Ref 1-9 Department for Business, Energy & Industrial Strategy (2021). Draft Overarching National Policy Statement for Energy (EN-1).

Ref 1-10 Ministry of Housing, Communities and Local Government (2021). National Planning Policy Framework.

Ref 1-11 North East Lincolnshire Council (2018). North East Lincolnshire Local Plan.

Ref 1-12 Maritime Management Organisation (2016). East Inshore and East Offshore Marine Plans.

Ref 1-13 British Standards Institute (BSI). (2019). BS 4142:2014+A1:2019: 'Methods for rating and assessing industrial and commercial sound'.

Ref 1-14 Office of National Statistics; Census 2021.

Ref 1-15 ONS, (2020); Mid-Year Population Estimates.

Ref 1-16 Office for National Statistics, (2020); Mid-Year Population Estimates

Ref 1-17 Ministry of Housing, Communities and Local Government (2019); English indices of deprivation 2019.

8 Abbreviations and Glossary of Terms

Table 8.1: Abbreviations and Glossary of Terms

Term	Acronym	Meaning
As Low As Reasonably Practicable	ALARP	ALARP is a principle in the regulation and management of safety-critical and safety-involved systems. The principle is that the residual risk shall be reduced as far as reasonably practicable.
Associated British Ports	ABP	One of the UK's leading and best-connected ports groups, owning and operating 21 ports and other transport-related businesses across England, Wales and Scotland.
British Standards Institution	BSI	A group which produces British Standards across industry sectors and which is formally designated as the National Standards Body for the UK.
Construction (Design and Management) 2015 Regulations	CDM	The Construction (Design and Management) 2015 Regulations aims to improve health and safety in the industry by helping to sensibly plan work so the risks involved are managed from start to finish.
Construction Environmental Management Plan	CEMP	A Construction Environmental Management Plan describes the specific mitigation measures to be followed by the appointed construction contractor to reduce potential nuisance impacts.
Control of Major Accidents and Hazards Regulations 2015	COMAH	The Control of Major Accidents and Hazards Regulations 2015 aims to prevent and mitigate the effects of major accidents involving dangerous substances which can cause serious damage/ harm to people and/ or the environment.
Decommissioning Environmental Management Plan	DEMP	A Decommissioning Environmental Management Plan describes the specific mitigation measures to be followed by the appointed construction contractor to reduce potential nuisance impacts during decommissioning.
Department for Environment, Foods and Rural Affairs	Defra	The Government department responsible for policy and regulations on environmental, food and rural issues. The department's priorities are to grow the rural economy, improve the environment and safeguard animal and plant health.
Development Consent Order	DCO	The consent for a Nationally Significant Infrastructure Project required under the Planning Act 2008.

Term	Acronym	Meaning
Environmental Impact Assessment	EIA	The statutory process through which the likely significant effects of a development project on the environment are identified and assessed.
Environmental Management Plan	EMP	A document (or set of documents) that set out the mitigation needed to manage environmental effects associated with a project during its construction and operational phases.
Environmental Statement	ES	A statutory document which reports the EIA process, produced in accordance with the EIA Directive as transposed into UK law by the EIA Regulations.
European Economic Community	EEC	The European Economic Community (EEC) was a regional organisation created by the Treaty of Rome of 1957 to create a common market for its members through the elimination of most trade barriers.
Greenhouse gas	GHG	Atmospheric gases that absorb and emit infrared radiation emitted by the Earth's surface, the atmosphere and clouds.
Gross Value Added	GVA	A measure of the value of goods and services produced in an area, industry or sector of the economy.
Health and Safety Executive	HSE	The Health and Safety Executive is a UK government agency responsible for the encouragement, regulation and enforcement of workplace health, safety and welfare.
Immingham Eastern Ro-Ro Terminal	IERRT	The proposed ro-ro facility.
Immingham Green Energy Terminal	IGET	A multi-user liquid bulk jetty, located on the eastern side of the Port of Immingham,
Major Accidents and Disasters	MA&Ds	Major Accidents and Disasters was introduced into the EIA Regulations as a result of EU Directive 2014/ 52/ EU to assess potentially significant adverse effects of a development on the environment deriving from its vulnerability to risks of relevant major accidents and/ or disasters.
Marine Fuel Oil	MFO	A fraction obtained from the distillation of petroleum.
Materials Management Plan	MMP	A plan which sets out provisions for the reuse of excavated material resulting from the construction of the Project.
National Character Area	NCA	Areas of England defined by their unique combination of landscape, biodiversity, geodiversity, history and cultural an economic activity.

Term	Acronym	Meaning
Non-Technical Summary	NTS	This section of the Environmental Statement provides a summary of each document that makes up the Environmental Statement.
Noise Sensitive Receptor	NSR	Receptors which are potentially sensitive to noise. These comprise mainly residential buildings, but also include educational buildings, hospitals and places of worship.
Ordnance Survey	OS	The national mapping agency for the UK.
Outline Site Waste Management Plan	OSWMP	An outline plan to manage waste arising from the construction of the Project and which the SWMP will be based upon.
Pipeline Safety Regulations	PSR	The Pipelines Safety Regulations replace earlier prescriptive information on the management of pipelines safety with an more integrated, goal-setting, risk-based approach encompassing both onshore and offshore pipelines.
Preliminary Environmental Information	PEI	The information referred to in Part 1 of Schedule 4 of the EIA Regulations that has been reasonably compiled by the applicant and is reasonably required to assess the environmental effects of a project.
Preliminary Environmental Information Report	PEI Report	A report that compiles and presents the Preliminary Environmental Information gathered for a project.
Regional Character Area	RCA	Referred to within the regional character assessment by English Heritage and Lincolnshire County Council.
Royal National Lifeboat Institution	RNLI	The Royal National Lifeboat Institution is a charity that saves lives at sea through lifeboat search and rescue, lifeguards, water safety education and flood rescue.
Site of Special Scientific Interest	SSSI	Area of land notified by Natural England under section 28 of the Wildlife and Countryside Act 1981 as being of special interest due to its flora, fauna or geological or physiological features.
Site Waste Management Plan	SWMP	A management plan to manage site waste arising from the construction of the Project.
Special Protection Area	SPA	Sites designated under the European Directive on the Conservation of Wild Birds for the protection of birds in member states.
Transitional and Costal Waters	TraC	The transitional zone of water between river and sea.

Term	Acronym	Meaning
Water Framework Directive	WFD	A European Union Directive which commits member states to achieve good status of all waterbodies (both surface and groundwater), and also requires that no such waterbodies experience deterioration in status. Good status is a function of good ecological and good chemical status, defined by a number of elements.
Zone of Theoretical Visibility	ZTV	Map produced (usually digitally) to specific criteria to illustrate the area(s) from which a project can theoretically be visual.