



# Immingham Green Energy Terminal

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Volume 6

## 6.5 Outline Construction Environmental Management Plan

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Regulation 5(2)(a)

Infrastructure Planning (Applications: Prescribed  
Forms and Procedure) Regulations 2009 (as  
amended)

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## Infrastructure Planning

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#### The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended)

# Immingham Green Energy Terminal Development Consent Order 2023

## 6.5 Outline Construction Environmental Management Plan

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## Executive Summary

This Outline Construction Environmental Management Plan (“CEMP”) accompanies a proposed application (‘the Application’) to be made by ABP to the Secretary of State (“SoS”) for Transport, seeking development consent to construct, operate and maintain the Immingham Green Energy Terminal. The Terminal would facilitate the import and export of liquid bulks associated with the energy sector and is supported by associated development on the landside.

Subject to the grant of consent for the Project by the SoS, Final CEMPs (including relevant supporting plans) will be provided in relation to relevant parts of the Project in accordance with the measures contained within this Outline CEMP following the appointment of the contractor(s), as set out in the **draft Development Consent Order (“DCO”) [REP1-016]**.

This Outline CEMP sets out a series of proposed measures that would be applied by the contractor through compliance with the Final CEMP(s) to provide effective planning, management and control during construction to mitigate the impacts and effects of the construction of the Project on people, businesses, and the natural and historic environment.

The main part of the Outline CEMP is **Section 3**, which comprises the ‘Impact Avoidance and Mitigation Measures Implementation Plan’. This presents a Register of Environmental Actions and Commitments (“REAC”) for each environmental topic assessed within the Environmental Impact Assessment (“EIA”). Each table sets out the mitigation and management measures to be included as a minimum within the Final CEMP. It also sets out, where relevant, whether monitoring is required and identifies the responsible party for each mitigation/enhancement measure or monitoring requirement.

## 2 Introduction

### 2.1 Overview

- 1.1.1 This CEMP has been prepared by AECOM Ltd (“AECOM”) on behalf of Associated British Ports (“ABP”) (“the Applicant”). It accompanies a proposed application (‘the Application’) to be made to the SoS for Transport, seeking Development Consent to construct, operate and maintain a multi-user green energy terminal to facilitate the import and export of bulk liquids associated with the energy sector, together with associated development on the landside.
- 1.1.2 The Terminal would be operated by ABP and would consist of a jetty and associated landside infrastructure (including jetty access ramp), loading/unloading infrastructure, and pipelines, which would be located on land and in the marine area on the eastern side of the Port of Immingham (“the Port”). These elements alongside the landside associated development are collectively termed “the Project” and the land on which the Project is to be constructed is termed “the Site”. A substantive part of the associated development is for the first user of the Terminal and comprises the construction and operation of a green hydrogen production facility. Air Products (BR) Limited (Air Products) will build and operate the green hydrogen production facility to produce green hydrogen from imported green ammonia.
- 1.1.3 Subject to the grant of consent for the Project by the SoS, Final CEMPs (including relevant supporting plans) will be provided in relation to relevant parts of the Project in accordance with the measures contained in this Outline CEMP following the appointment of the contractor(s), as set out in the **draft DCO [REP1-016]**. The Final CEMPs must be approved by North East Lincolnshire Council (“NELC”), or, in the case of the Final CEMP for the marine aspects of Work No.1, by the Marine Management Organisation (“MMO”). More than one Final CEMP (including its appendices, as relevant) may be submitted and approved under the Draft DCO so as to facilitate the Project coming forward as individual Works (as defined in Schedule 1 of the **draft DCO [REP1-016]**) or brought forward in phases. For example it is envisaged that a separate Final CEMP (including relevant supporting plans) for the marine works (the majority of **Work No. 1**) will be produced and approved separately from the Final CEMP(s) for relevant phases of the terrestrial works.
- 1.1.4 This Outline CEMP sets out a series of proposed measures that would be applied by the contractor through compliance with the Final CEMP(s) to provide effective planning, management and control during construction to mitigate the impacts and effects of the construction of the Project on people, businesses, and the natural and historic environment.
- 1.1.5 The **draft DCO [REP1-016]** requires works undertaken to construct the Project to be in accordance with the Final CEMP(s). The purpose of this is to control construction activities so as to minimise, as far as reasonably practicable, impacts on the environment. This would include implementing industry best practice measures and Project-specific measures, as set out in this Outline

CEMP. The **draft DCO [REP1-016]** ensures that the contractor's Final CEMP(s) is in accordance with the principles set out in the Outline CEMP.

- 1.1.6 The likely significant environmental effects of the Project have been identified through the EIA process and are reported in the Environmental Statement ("ES"). The standard or best practice mitigation and construction management and control measures accounted for in the EIA process, as presented within the ES, will be implemented during construction of the Project. This Outline CEMP explains how these commitments will be implemented and sets out the monitoring and auditing activities to be undertaken to demonstrate that such mitigation and measures are carried out and are effective.
- 1.1.7 The structure of this Outline CEMP is as follows:
- a. **Section 2** introduces the Outline CEMP, the Project and the Applicant.
  - b. **Section 3** sets out the construction programme, working hours, traffic management protocols, site lighting, recycling requirements, and best practice measures.
  - c. **Section 4** presents additional information to be included under each sub-section within the Final CEMP, which includes:
    - i. Impacts and effects identified throughout the EIA process.
    - ii. Mitigation and enhancement measures to be delivered, where the ES has assumed the measure would be applied in the detailed design or construction phase of the Project.
    - iii. The responsible person who will deliver the mitigation and enhancement measures.
- 1.1.8 The following secondary outline management plans and working method statements are appended to this Outline CEMP and final versions are proposed to be appended to the Final CEMP:
- a. Appendix A: Outline Site Waste Management Plan
  - b. Appendix B: Outline Soils Management Plan
  - c. Appendix C: Outline Dust Management Plan
  - d. Appendix D: Outline Reptile Precautionary Working Method Statement
  - e. Appendix E: Outline Asbestos Management Plan
  - f. Appendix F: Outline Water Vole Precautionary Working Method Statement
  - g. Appendix G: Outline Badger Precautionary Working Method Statement
- 1.1.9 The following final secondary management plans and working method statements will be prepared and incorporated into the Final CEMP:
- a. **Arboricultural Method Statement:** to assess the final impact of the Project based on the detailed design. This will set out the phasing of site operations, the finalised tree protection measures for the Site and provide detail on how sensitive elements of work are to be achieved in proximity to retained trees.

The method statement will follow the working techniques set out within **Appendix 8.F: Arboricultural Impact Assessment [APP-185]**.

- b. **Materials Management Plan (“MMP”)**: A written MMP in compliance with the provisions of the CL:AIRE Definition of Waste Code of Practice (“DoW CoP”) demonstrating that material has been deposited in an appropriate manner and will not pose an unacceptable risk to human health or the environment will be produced and finalised at the design and planning stage of the Project and incorporated into the Final CEMP. Once the DCO has been granted, a completed MMP will be submitted to a Qualified Person for approval and issue of a declaration (made under the CL:AIRE DoW CoP), the declaration will be approved by CL:AIRE and submitted to the Environment Agency for its records, before any works to which the MMP relates commence.
- c. **Water Management Plan (“WMP”)**: to include measures necessary to avoid, prevent and reduce adverse effects where possible upon the local surface water environment. This will include steps to remove the risk of damage to water assets.
- d. **Soil Resource Plan**: A written strategy for the management of soil during the works at the Site would be prepared and would detail the arrangements for areas where soil material would be stripped and stored before being returned to its original location or reused elsewhere on the Site.
- e. **Asbestos Management Plan**: An Asbestos Management Plan will be prepared and implemented in accordance with the Outline Asbestos Management Plan (**Appendix E** to this **Outline CEMP**) as part of the final CEMP should asbestos or asbestos containing materials be encountered during the ground investigation.

1.1.10 The DCO application is supported by a number of other management plans, which, in addition to this OCEMP, outline proposed mitigation and management measures that would be adhered to in order to mitigate the impacts and effects of the Project on people, businesses and the natural and historic environment. These management plans are secured by Requirements in the **draft DCO [REP1-016]**:

- a. **Outline Construction Traffic Management Plan (“CTMP”) [REP1-006]**.
- b. **Outline Construction Worker Travel Plan (“CWTP”) (Appendix A** to the CTMP).
- c. **Outline Woodland Compensation Strategy [APP-224]**.
- d. **Outline Landscape and Ecology Management Plan [APP-225]**.

1.1.11 The DCO application is also supported by an **Outline Marine Archaeological Written Scheme of Investigation (“WSI”) [APP-204]** for the marine aspects of Work No. 1. The final WSI is secured by a Condition in the Draft Marine Licence.



## 2.2 The Applicant

- 2.2.1 ABP was established in 1981 following the privatisation of the British Transport Docks Board. It is the largest ports group in the UK, owning and operating 21 ports and other transport-related businesses across England, Wales and Scotland.
- 2.2.2 On the Humber, ABP owns and operates four ports, namely the Port and the ports of Hull, Grimsby and Goole, which together constitute the largest ports complex in the UK. The Port is the largest and busiest of ABP's four Humber ports.
- 2.2.3 ABP's statutory undertaking at Immingham, the 'statutory port estate', covers some 480 hectares (ha). The majority of the port estate falls within the administrative boundary of NELC, although the western part of the Port falls within the administrative boundary of North Lincolnshire Council ("NLC").
- 2.2.4 The Port comprises a number of discrete operational areas handling a diverse trade base including liquid fuels, solid fuels, ores, and ro-ro freight being handled from existing in-river jetties. These include the Eastern and Western Jetties, the Immingham Oil Terminal, the Immingham Gas Terminal, Immingham Outer Harbour and the Humber International Terminal ("HIT").
- 2.2.5 The Project, if consented, will be located fully within an extended Port of Immingham SHA area where the Applicant is the Statutory Harbour Authority ("SHA"). In this capacity, the Applicant is responsible, with a set of powers and duties which include the management and regulation of the safety of navigation and marine operations in its SHA area.

## 2.3 Air Products BR Ltd

- 2.3.1 Air Products (BR) Ltd is a world-leading industrial gases company in operation for nearly 80 years, and more than 60 years in the UK and Ireland with over 1000 UK&I employees working across 35 production facilities in addition to a number of hydrogen refuelling stations and hydrogen, nitrogen and oxygen plants. The company develops, engineers, builds, owns and operates some of the world's largest industrial gas projects.

## 2.4 The Project

- 2.4.1 In summary, the Project would comprise:

- a. The Nationally Significant Infrastructure project ("NSIP"), **Work No. 1**, comprising:

On the marine side, a Terminal for liquid bulks, comprising:

- i A jetty (defined by **Work No. 1a**) including a loading platform, associated dolphins, fenders and walkways, topside infrastructure but not limited to control rooms, marine loading arms, pipe-racks, pipelines and other infrastructure.
- ii A single berth, with a dredged berthing pocket.

- iii Related landside infrastructure including, but not limited to, a jetty access ramp, a flood defence access ramp and works to raise the seawall locally under the jetty access ramp.
- b. Associated Development on the landside, comprising:
  - i. A corridor between the new jetty and Laporte Road which would support a private road (the 'jetty access road'), pipe-racks, pipelines to enable the ammonia import to the East Site, as well as security gates, a security building, a power distribution building and associated utilities – (**Work No. 2**).
  - ii. 'East Site - Ammonia Storage' (**Work No. 3**) on which an ammonia storage tank and related plant including an ammonia tank flare stack would be constructed (**Work No. 3a**) as well as additional buildings (including welfare building, power distribution building and a process instrumentation building), pipe-racks, pipelines, pipes, cable-racks, utilities and other infrastructure.
  - iii. Construction of a culvert (**Work No. 4**) under Laporte Road for pipelines, pipes and cables and other conducting media linking the two parts of the East Site.
  - iv. 'East Site – Hydrogen Production Facility' (**Work No. 5**) on which up to three hydrogen production units and associated plant including flue gas stacks and flare stacks would be constructed (**Work No. 5a**) together with additional buildings (including process control building, power distribution buildings, process instrumentation buildings, analyser shelters), pipe-racks, pipelines, pipes, utilities and other infrastructure.
  - v. Underground pipelines, pipes, cables and other conducting media (**Work No. 6**), between the East and West Sites, for the transfer of ammonia, hydrogen, nitrogen and utilities, with cathodic protection against saline corrosion.
  - vi. 'West Site' (**Work No. 7**) involving the construction of up to three hydrogen production units with associated flue gas stacks and flare stacks and up to four liquefier units (**Work No. 7a** and **Work No. 7b** combined); hydrogen storage tanks, hydrogen trailer filling stations, a hydrogen vent stack and associated process equipment (**Work No. 7c**); and hydrogen vehicle and trailer filling stations, hydrogen compressors and associated process equipment (**Work No. 7d**). Also additional buildings (including but not limited to control room and workshop building, security and visitor building, contractor building, warehouse, driver administration building, safe haven building, electrical substation and metering station, power distribution buildings, process instrumentation buildings, analyser buildings and additional temporary buildings during construction), process and utility plant including cooling towers and pumps, fire water tank, instrument air equipment, pipe-racks, pipelines, pipes, cable-racks, utilities and other infrastructure.
  - vii. Formation of temporary construction and laydown areas on Queens Road (**Work No. 8**) and off Laporte Road (**Work No. 9**).

viii. Temporary removal of street furniture and modification of overhead cables on Kings Road (**Work No. 10**) associated with the transport of large construction components from the Port to the Site.

2.4.2 The Terminal would operate 24 hours a day, seven days a week and 365 days a year. The Terminal would have capacity of approximately 11 million tonnes per annum and so be able to accommodate up to 292 vessel calls per year and it is anticipated that up to 12 of these calls would be associated with the first user's hydrogen production facility. The vessels which make up the remaining 280 calls to the terminal are expected to serve the future carbon capture and storage market and other liquid bulk energy product markets.

2.4.3 Further information on the Project is provided in **Chapter 2: The Project [APP-044]**. See **Section 2.4** within **Chapter 2: The Project** for further details regarding Work No's which are referenced throughout this document.

## 2.5 Construction Activities

2.5.1 The approach to Project construction described in the following sections is considered to be representative of a reasonable worst-case scenario of how the Project would be implemented. The approach to construction would be further refined and finalised during the detailed design phase, subject to the granting of the DCO, and inform the production of the Final CEMP.

2.5.2 The main aspects of constructing the Project's marine and landside infrastructure components are detailed in the following sections. Construction of the Project is anticipated to require the following activities:

- a. Installation and use of temporary site facilities and laydown areas comprising fencing, vehicle parking, material storage areas, fuel storage bunds and worksites.
- b. Installation and use of temporary accesses and haul routes, vegetation clearance and soil removal.
- c. Transportation of materials and labour throughout the construction phase.
- d. Potential use of a concrete batching plant.
- e. Ground works.
- f. Piling (land-side and marine-side).
- g. Continuous flight auger piles.
- h. Vibro and percussive piling techniques.
- i. Infrastructure construction activities, routing or services and utilities.
- j. Capital dredge: It has been determined that a capital dredge would be required for the berth. The maximum spatial extent of the dredge is 10,000m<sup>2</sup>. Dredging of up to 4,000m<sup>3</sup> of material would be required.

## 2.6 Project Site Description

2.6.1 The proposed Terminal would extend seawards into the Humber Estuary and the jetty would be located to the east of the existing Immingham Oil Terminal jetty.

This area falls within the boundaries of the Humber Estuary Special Area of Conservation (“SAC”), Special Protection Area (“SPA”) and Ramsar Site, which collectively form the Humber European Marine Site (“EMS”). The indicative site layout for the Project is shown in **Figure 2.3 [APP-072]** and the parameters for the marine works are defined in **Section 2.7** below.

- 2.6.2 The East Site itself comprises two parcels of land, which are bisected by Laporte Road. The first parcel of land consists of an area of hardstanding to the north of Laporte Road which is currently in use by the Applicant as a storage area. The second parcel of land is a triangular shaped area of brownfield land that is currently covered by gravel and various stockpiles, which is accessed via Queens Road (A1173) and lies to the south of Laporte Road. The Associated Petroleum Terminals works complex is situated to the north/north-east of the East Site, whilst to the south are various industrial facilities. To the west and north-west is the Port and associated industrial facilities and the ‘Immingham Dock East Gate’ Port entry point from Queens Road. To the east of the East Site is the Long Strip woodland.
- 2.6.3 The West Site currently comprises three agricultural fields, which are bounded by linear hedgerows and drainage ditches. An electrical sub-station and a gas-fired power generator installation are situated to the north-west. The north-west and western boundaries of the West Site are defined by Kings Road and the A1173, including the Grimsby to Immingham ‘Cycle Superhighway’ which runs along the A1173 between the Kings Road and Kiln Lane roundabouts. A landfill is located to the south separated by a landscape buffer strip. Queens Road forms the north-eastern boundary of the West Site with a number of residential and commercial properties located within the Site boundary. The east and south-eastern boundary is adjacent to another gas fired power generator installation, a community recycling centre and a large waste gypsum landfill. A short tarmac access road has been constructed from Kings Road into the West Site, associated with an extant planning consent. A series of overhead power cables run across the middle and southern boundaries of the West Site, with a buried mains water and a buried high-pressure gas pipeline present along the southern boundary. The existing utilities, as currently known, and how these will be protected during construction are detailed within the **Utilities Statement [APP-239]**.
- 2.6.4 A proposed underground Pipeline Corridor connects the West Site to the East Site and extends to the terminal. It runs through an area that has been impacted by industrial development alongside Queens Road and Laporte Road, and also crosses the Grimsby Docks Branch Line.
- 2.6.5 Underground gas mains, water mains and overhead electricity transmission infrastructure cross the Site.

## 2.7 Marine Parameters

- 2.7.1 The parts of **Work No.1** comprising the approach jetty, the jetty head and loading platform including breasting dolphins and mooring dolphins that lie to the seaward side of the mean high water springs mark will be constructed within the parameters for **Work No.1a** shown on Sheets 1 to 4 of the **Works Plans [AS-**

**002**]. The dredge pocket will be located in accordance with the co-ordinates for it provided in a Condition of the Deemed Marine Licence (“DML”) which forms Schedule 3 of the **draft DCO [REP1-016]**. The details that have been used as the basis for the modelling reported in the marine chapters of the ES [**APP-051, APP-054, APP-057, APP-059**] and the **Shadow Habitats Regulation Assessment Report [REP1-012]** are primarily:

- a. The orientation of the jetty, defined by Work No. 1a.
- b. The number of piles and pile diameters (in the marine environment, see **Table 1** below).
- c. The geometry of the dredge pocket. **Table 1** below provides the parameters for the Terminal (Work No. 1a):

**Table 1: Parameters for Work No. 1a**

Work element	Parameter
Jetty head and related topside infrastructure	Jetty head– up to +13.5m above chart datum  Topside infrastructure – up to +35m above chart datum
Mooring dolphins	Up to eight mooring dolphins, four to the east of the jetty head and 4 to the west of the jetty head.  Each dolphin up to 13m long and up to 15m wide with a height of up to +13.5m above chart datum
Approach jetty length	Up to 1,200m
Approach jetty height	Up to +13.5m above chart datum
Approach jetty width	Up to 16m wide save for in the location of vehicle passing places where it will be up to 19m wide and in the vicinity of the jetty operations building where it will be up to 29m wide
Pile number and spacing	Approach jetty between point “A” in Sheets 3 and 4 of the <b>Works Plans [AS-002]</b> and point “B” on Sheet 2 and 3 of the <b>Works Plans [AS-002]</b> up to 59 piles. Two piles in each row will have a maximum diameter of 1.575m; the remaining piles in the row will have a maximum pile diameter of 1.2m. The pile rows will be spaced at a minimum of 25m (save for the final row at point B as the jetty changes angle where the separation will be less than 25m) and no more than four piles per row (save for the location of the jetty operations building where there will be no more than seven

Work element	Parameter
	<p>per row and vehicle passing places where there will be no more than five per row).</p> <p>Approach jetty between point “B” on Sheets 2 and 3 of the <b>Works Plans [AS-002]</b> and point “C” on Sheets 1 and 2 of the <b>Works Plans [AS-002]</b> – up to 156 piles. Two piles in each row will have a maximum diameter of 1.575m; the remaining piles in the row will have a maximum diameter of 1.2m. There will be no more than four piles per row (save for the location of vehicle passing places where there will be no more than five per row).</p> <p>Jetty head and breasting dolphins – up to 104 piles each up to 1.5m diameter.</p> <p>Mooring dolphins – up to 72 piles (each up to 1.5m in diameter) across up to 8 mooring dolphins.</p> <p>Four monopole fenders each up to 2.3m in diameter.</p>

### 3 Construction Phase

#### 3.1 Construction Programme

- 3.1.1 There would be a phased approach to the construction of the Project. The construction of the Terminal and first phase of the green hydrogen production facility (including works on both the East Site and West Site as outlined above and described below) would comprise the first phase of development, which, subject to securing the relevant consents, is likely to start in early 2025 and last for between two and a half and three years.
- 3.1.2 Following completion of the first phase of the hydrogen production facility, a further five phases would be constructed incrementally to increase the processing capacity as the market for green hydrogen increases. There could therefore be six phases of development in total.
- 3.1.3 An indicative construction phasing timeline over an indicative eleven-year period is illustrated in **Table 2** and assumes that each phase of the Associated Development would become operational following its construction. Phase 1 represents the peak of construction activity.

**Table 2: Indicative Construction Phasing Timeline for Associated Development**

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											

- 3.1.4 The start of construction of Phase 2 (here shown in Year 4), would depend on a number of factors including market demands for hydrogen at that point in time, whilst the timing of subsequent phases would be subject to the same tests. Construction of Phases 2 – 6 may take up to eight years.

#### 3.2 Construction Laydown and Welfare Facilities

- 3.2.1 Proposed construction laydown areas, including storage, site offices, welfare facilities and car parking, will be located at various places within the Site. **Figure 2.3 [APP-072]** shows the areas of land that are proposed for construction laydown and contractors’ compound(s). Construction laydown areas are required for materials and plant storage and laydown; field-based fabrication and erection of components on-site; siting of concrete batching facilities; vehicle and cycle

parking facilities; and construction offices and construction staff welfare facilities. The construction compound and laydown areas would be secured by security fencing and gates as appropriate.

- 3.2.2 Clearance, levelling and ground preparation works for these laydown areas may be required to provide a suitable surface material. The surface material will be permeable so as to allow rainwater to percolate to ground, with suitably bunded locations identified as storage areas for any hazardous or polluting materials or chemicals to reduce the risk of pollution. This is detailed in **Table 11**.

### 3.3 Working Hours

- 3.3.1 In months where percussive piling is permitted within the water body spatial, diurnal and duration restrictions apply for certain periods as set out in the DML. For example, it is anticipated that night time restrictions will apply to piling works within the water body, seaward of the mean highwater mark outside the hours of sunrise and sunset in certain summer months (June and August) and between 19:00 and 07:00 in certain winter months (March, September and October), seven days a week. Other marine construction activities including dredging, are assumed to be undertaken on a 24-hour basis and continue until completion for safety or quality reasons.
- 3.3.2 Core landside construction working hours would be between 07:00 and 19:00 Monday to Saturday. However, it is likely that some construction activities may need to be undertaken outside of these core working hours. This is partly because certain construction activities cannot be stopped, such as concrete pouring, but also to manage the construction programme. Where on-site works are to be conducted outside the core hours, they would comply with any restrictions secured in the Requirements or DML or agreed with the local planning authority, in particular regarding control of noise and traffic. The need for any such works would be minimised where possible and would be carefully managed to reduce effects on local people.
- 3.3.3 The following works are permitted outside the hours stated above provided such works do not give rise to any materially new or materially different effects than those assessed in the ES:
- Works that cannot be interrupted, including concrete pours, or that need to be conducted outside of normal work hours for safety reasons, including radiographic testing.
  - Emergency works (any emergency works must be notified to the relevant planning authority within 72 hours of their commencement).
  - Works that are carried out with the prior approval of the relevant planning authority.
  - Works necessary to support the construction of **Work No. 1**.
  - Works that do not exceed maximum permitted levels of noise at each agreed monitoring location to be determined with reference to the ABC Assessment Method for the different working time periods, as set out in BS 5228-



1:2009+A1:2014, unless otherwise agreed with the relevant planning authority for specific construction activities.

3.3.4 The capital dredge methodology is anticipated to be backhoe dredge with split hopper barge. The dredger would be sized appropriately to rip the chalk. This would ensure that only one type of dredger would need to be mobilised. Dredge operations would be continuous and operate 24 hours a day and seven days a week.

3.3.5 Construction hours are secured by a Requirement under the **draft DCO [REP1-016]**.

### 3.4 Traffic Management

3.4.1 It is estimated that the construction workforce, across both the marine and terrestrial construction works, would peak at 919 personnel per day. There would be a total of 1,224 two-way worker trips and 196 HGV trips generated at the peak of construction, to and from the Site.

3.4.2 Construction traffic and the construction workforce are anticipated to travel to the Site via the A180 and A1173. Prior to the start of the construction phase, the contractor would prepare a Final CTMP to control HGV movements, as well as a Final CWTP to control the trips made by the construction workers (including encouraging car sharing) and thus reduce the impact of the workforce upon the highway network. The Final CTMP and CWTP would be based on, and incorporate, the contents and requirements of the **Outline CTMP [REP1-006]** and **Outline CWTP** (which forms Appendix A to the **Outline CTMP**), which form part of the DCO application.

3.4.3 These two plans would set out measures and controls to limit the number of trips on the network in the peak hours, so as to limit the traffic impact of the construction phase as far as possible. Such plans would be implemented for the duration of the Project construction phase.

### 3.5 Parking Provision

3.5.1 Parking demand will vary throughout the construction phase and parking areas will be set aside within the Site to accommodate parking for construction workers.

3.5.2 It is proposed that sections of the car park will gradually be opened up as construction develops, with a defined number of construction worker car parking spaces to be provided during construction. Managing the number of parking spaces available onsite would help ensure that the number of vehicles is controlled, and that sustainable transport options are promoted. It would be the responsibility of the Travel Plan Co-ordinator (a role required by the CWTP), working closely with the Site Manager, to determine the number of spaces to be provided.

3.5.3 Car parking at the Site would be monitored by the Travel Plan Co-ordinator, with restricted access. The Site Manager and the Travel Plan Co-ordinator will set the appropriate criteria for construction workers to receive a pre-allocated parking space.

- 3.5.4 The Travel Plan Co-ordinator will review the split of vehicles between cars, vans and minibuses, ensuring that the contractor encourages its workers to travel to and from the Site by the sustainable options.
- 3.6 Wheel Cleaning Facility
- 3.6.1 In the interests of highway safety, wheel cleaning facilities will be installed at the Site from the start of the construction phase. All HGVs will be required to use the wheel wash prior to exiting the Site. The need for this measure and the location of the wheel cleaning facilities will be periodically reviewed throughout the construction phase.
- 3.7 Site Lighting
- 3.7.1 Construction lighting will be required in areas where natural lighting is unable to reach (sheltered/confined areas) and prior to permanent lighting being installed. Lighting may also be required around the Site for night-time construction and during core working hours within winter months.
- 3.7.2 Artificial lighting would be provided to maintain sufficient security and health and safety for the Site. A **Lighting Assessment** (see **Appendix 2.B [APP-173]**) accompanies the DCO application and outlines measures proposed to avoid excessive glare and minimise spill of light to nearby receptors (including local residents and some ecological receptors) outside of the Site as far as reasonably practicable.
- 3.7.3 Construction temporary lighting will be arranged so that glare is minimised outside the construction site. Lighting will be designed so as not to cause a nuisance outside of the Site in relation to views from residential receptors or light disturbance to ecological receptors.
- 3.7.4 A Lighting Management Plan (“LMP”) will be incorporated into the Final CEMP that addresses use and monitoring of lighting, particularly around sensitive areas. The LMP will follow the principles set out within the **Lighting Assessment** (see **Appendix 2.B [APP-173]**).
- 3.8 Recycling and Disposal of Waste
- 3.8.1 In order to manage and monitor waste, including any spoil generated on-site, an **Outline Site Waste Management Plan (“OSWMP”)** is included as **Appendix A** to this Outline CEMP, setting out how waste streams would need to be estimated and monitored and goals set with regards to the waste produced. The Final CEMP would be required to incorporate the principles of the OSWMP as appropriate. The contractor will minimise the creation of waste, maximise the use of recycled materials and assist the collection, separation, sorting, recycling and recovery of waste arisings, as far as reasonably practicable.
- 3.8.2 The contractor will be required to segregate waste streams on-site, prior to them being taken to a waste facility for recycling or disposal. All waste removal from the Site would be undertaken by licensed waste carriers and taken to licensed waste facilities.

### 3.9 Best Practice Measures

3.9.1 Construction industry guidance (e.g. from the Construction Industry Research and Information Association (“CIRIA”)) will be adopted as far as reasonably practicable to assist in reducing the potential for pollution and nuisance (Ref 6-1). This will be achieved by employing best practice measures.

### 3.10 Soil Management

3.10.1 All soils will be managed in accordance with the Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites (Ref 6-2) to minimise impacts on soil structure and quality.

1.1.12 An **Outline Soils Management Plan** is included within **Appendix B** of this Outline CEMP.

### 3.11 Cable Installation

3.11.1 It will be ensured that worker exposure to any Electric and Magnetic Fields (“EMF”) risks are managed through full compliance with relevant policies and procedures on EMF exposure during any cable installation and commissioning works.

### 3.12 Training

Prior to commencement of construction of Work Nos. 3, 5 or 7 (the “HPF Works”), the Applicant will prepare a Construction Training and Employment Plan relating to the HPF Works which shall set out the Applicant’s strategy for helping local people secure employment opportunities where reasonably practicable in the construction of the HPF Works and shall provide a copy of the plan to NELC for comment. Following commencement of construction of the HPF Works, the Applicant will undertake construction of the HPF Works in accordance with the Construction Training and Employment Plan or such updated plan as the Applicant shall produce and provide to NELC from time to time.

## 4 Impact Avoidance and Mitigation Measures Implementation Plan

### 4.1 Management and Mitigation Plan

- 4.1.1 This section of the Outline CEMP presents a REAC for each environmental topic assessed within the EIA. Each table sets out the mitigation and management measures to be included as a minimum in the Final CEMP. It also illustrates how the monitoring strategy will be set out and the responsible party identified for each mitigation/enhancement measures or monitoring requirement.
- 4.1.2 The Final CEMP would be reviewed, revised and updated as the Project progresses towards construction to ensure all potential impacts and residual effects are considered and addressed as far as practicable, in keeping with available good practice at that point in time.
- 4.1.3 The relevant **Work No's** that each potential impact and mitigation/enhancement measure relates to, as well as the enforcing body for the mitigation/enhancement measures are detailed in **Table 3** to **Table 20** for each technical topic.

**Table 3: Air Quality**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Construction dust emissions.	<p>The Contractor will develop and implement a Dust Management Plan (“DMP”) in accordance with the <b>Outline Dust Management Plan</b> included as <b>Appendix C</b> of this Outline CEMP.</p> <p>The Plan will adopt a range of industry standard good practice construction phase dust mitigation and monitoring measures, and general control measures, relating to:</p> <p>a. Dust management;</p>	<p>Terrestrial aspect of <b>Work No. 1</b> and <b>Work No's 2 - 10</b> (inclusive)</p> <p>Dust is not expected to be</p>	Contractor and Travel Plan Co-Ordinator	NELC

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>b. General and Project specific construction activities; and</p> <p>c. Community liaison and complaints procedure.</p> <p>These measures will be applied during all works undertaken based on the level of construction dust risk at sensitive receptors identified in <b>Chapter 6: Air Quality [APP-048]</b>.</p>	generated in marine environment		
<p>Emissions from non-road mobile machinery and site plant.</p> <p>Marine vessel emissions.</p> <p>Road traffic emissions.</p>	<p>It is best practice to mitigate emissions to air. Measures to reduce emissions from construction phase vessel and road traffic emissions sources include taking steps to:</p> <p>a) Prohibit unnecessary vehicle or vessel movements;</p> <p>b) Prohibit unnecessary idling of vehicle and vessel engines;</p> <p>c) Encourage/promote the use of cleaner engines and fuel, noting that construction vessels will be required to comply with the MARPOL Regulations; and</p> <p>d) Discourage single-user car journeys.</p>	All Work No's	Contractor	<p>NELC Highways Department</p> <p>Maritime and Coastguard Agency (for marine aspects of Work No. 1)</p>

**Table 4: Noise and Vibration**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Construction noise and construction traffic noise at nearby Noise Sensitive Receptors (NSR).	<p>Construction noise levels are likely to vary during different construction phases, depending on the location of work sites and proximity to Noise Sensitive Receptors (“NSRs”). The nearest residential NSRs to the Site Boundary are on Queens Road (NSRs 1 and 2) and on the eastern edge of Immingham (NSRs 3 and 4). Based on the current ambient available noise levels at monitoring locations in both of these areas and the BS 5228 ABC category guidance in <b>Table 7.3 of Chapter 7: Noise and Vibration</b> of the ES [APP-049], construction noise limits based upon the measured data are:</p> <p>NSR1 and NSR2 – representative of residential NSRs on Queens Road:</p> <ul style="list-style-type: none"> <li>a) 75 dB LAeq,12hr during daytime.</li> <li>b) 65 dB LAeq,12hr during evening and weekends.</li> <li>c) 55 dB LAeq, 8hr during the night-time.</li> </ul> <p>NSR3 and NSR 4 – residential NSRs on the eastern edge of Immingham:</p> <ul style="list-style-type: none"> <li>a) 65 dB LAeq, 12hr during daytime.</li> <li>b) 55 dB LAeq, 12hr during evening and weekends.</li> <li>c) 50 dB LAeq, 8hr during the night-time.</li> </ul>	<b>Work No. 7</b>	Contractor	NELC

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Construction noise and vibration impacts associated with activities on-site, during construction.	<p>Where on-site construction works are to be conducted outside the core hours, they would comply with any restrictions agreed with the local planning authority. Any such works would be minimised and be carefully managed to reduce effects on local people.</p> <p>Measures to mitigate noise and vibration would be implemented during the construction phase in order to minimise impacts at local NSRs, particularly with respect to any activities required outside of core working hours. Mitigation to be included in the Final CEMP will include, but not be limited to:</p> <ul style="list-style-type: none"> <li>a) Ensuring that processes are in place to minimise noise and vibration before works begin and ensuring that best practical means (“BPM”) are being achieved throughout the construction programme, including the use of localised screening around the main noise producing plant and activities.</li> <li>b) All contractors will be familiar with current legislation and the guidance in BS 5228 (Parts 1 and 2) (Ref 6-4, Ref 6-5), which will be a prerequisite of their appointment.</li> <li>c) Ensuring that modern plant is used, complying with applicable UK noise emission requirements, and selection of inherently quiet plant where possible.</li> <li>d) All pneumatic percussive tools will be provided with effective silencers/acoustic covers.</li> </ul>	All Work No's	Contractor	<p>NELC for terrestrial aspects</p> <p>MMO for marine aspects</p>

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<ul style="list-style-type: none"> <li>e) Acoustic covers to engines will be kept closed when the engines are in use and idling.</li> <li>f) Hydraulic techniques for breaking to be used, where practical, in preference to percussive techniques where reasonably practicable.</li> <li>g) Use of lower noise and vibration piling rather than driven piling techniques, where reasonably practicable.</li> <li>h) No start-up or shut down of vibratory rollers near to receptors.</li> <li>i) Off-site pre-fabrication for components of the Project, where reasonably practicable.</li> <li>j) All plant and equipment being used for the works to be properly maintained, silenced where appropriate, operated to prevent excessive noise and vibration and switched off when not in use.</li> <li>k) Machines such as cranes that may be in intermittent use will be shut down between work periods or would be throttled down to a minimum. Machines will not be left running unnecessarily.</li> <li>l) Where reasonably practicable, the contractor will use quieter working methods, the most suitable plant and, reasonable hours of working for noisy operations.</li> <li>m) Where possible, the noisiest items of plant will be located the furthest distance from the nearby NSRs. Plant known to emit noise</li> </ul>			



Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>strongly in one direction will, when possible, be orientated so that the noise is directed away from NSRs.</p> <p>n) Loading and unloading of vehicles, dismantling of site equipment such as scaffolding or moving equipment or materials within the Site to be conducted in such a manner as to minimise noise and vibration generation, as far as reasonably practicable.</p> <p>o) No employees, subcontractors and persons employed on the Site will cause unnecessary noise from their activities e.g. excessive 'revving' of vehicle engines, shouting and other noisy behaviour. No radios or other audio equipment will be allowed on site.</p> <p>p) Electrically powered plant will be used over diesel power generators where possible and feasible.</p> <p>q) Audible warning systems (including reversing alarms) will be switched to the minimum setting required by the Health and Safety Executive.</p> <p>r) Any tannoy system on site will be used for emergency use only.</p> <p>s) All contractor communication devices will be used at a minimum audible level.</p> <p>t) Appropriate routing of construction traffic on public roads and along access tracks, to reduce construction traffic noise, as far as reasonably practicable (see <b>Outline CTMP [REP1-006]</b>).</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>u) Provision of information to NELC and local residents to advise of potential noisy works that are due to take place.</p> <p>v) Monitoring of noise and vibration complaints and reporting to the contractor for immediate investigation.</p> <p>Regular communication with the local community throughout the construction period will also serve to publicise the works schedule, giving notification to residents regarding periods when higher levels of noise and vibration may occur during specific operations, and providing lines of communication where complaints can be addressed.</p> <p>The need for monitoring of noise levels during construction will be determined through the detailed assessment undertaken in the Final CEMP.</p>			

**Table 5: Nature Conservation (Terrestrial Ecology)**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Any impacts on terrestrial habitats	<p><b>All Impacts</b></p> <p>Measures to be followed for the prevention of surface and ground water pollution, fugitive dust management and noise prevention or amelioration are set out below:</p>	<b>Terrestrial aspect of Work No. 1 and Work Nos.</b>	Contractor and ECoW	NELC

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>a) An Environmental or Ecological Clerk of Works (“ECoW”) will be present during construction as appropriate to oversee implementation of impact avoidance commitments.</p> <p>b) Precautionary working methods would be adopted to manage any residual risk of protected species being encountered e.g. reptiles and badger, and a Precautionary Working Method Statement (“PWMS”) will be prepared as part of the Final CEMP. These measures would include staged removal of potentially suitable vegetation under the supervision of an ecologist, and the covering of excavations overnight to prevent animals becoming trapped.</p> <p>c) All necessary protected species licences would be applied for and obtained prior to undertaking any works that might result in offences under the relevant legislation.</p> <p>d) Precautionary measures will be implemented to prevent trapping wildlife in construction excavations, in order to ensure compliance with animal welfare legislation. Any excavations would be covered overnight, or where this is not practicable, a means of escape would be fitted (e.g. battered soil slope or scaffold plank situated at or below a 45 degree angle), to allow animals (e.g. otter, badger, hedgehog, amphibians) to vacate excavations should they fall in. Where excavations have to be left uncovered over night they would be checked for presence of animals prior to infilling.</p> <p>e) Construction temporary lighting will be arranged so that glare would be minimised outside the construction site. Measures to minimise the impact of construction lighting would be detailed in the Final CEMP.</p> <p>f) Vegetation that may support nesting birds will be removed outside the breeding bird season (avoiding the period March to August inclusive),</p>	<p><b>2 – 10</b> (inclusive)</p>		

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>where possible, for compliance with the Wildlife and Countryside Act 1981 (as amended). Where this is not possible, pre-clearance nest checks by an ECoW will be undertaken. Where active and occupied nests are identified, an appropriate buffer zone will be established around the nest site and the nest monitored until any young have fledged. The ECoW will advise on an appropriate exclusion zone. Typical minimum exclusion zones are 5m for tree/hedge nesting birds and 10-20 m for ground nesting birds (not including Schedule 1 birds).</p>			
<p>Loss of woodland habitat and bat roosts in Long Strip.</p>	<p>Where mature trees within the Long Strip woodland with low bat roost potential would be impacted and cannot reasonably be avoided, trees will be soft-felled under ECoW supervision.</p> <p>Any trees to be removed that support confirmed bat roosts, following completion of emergence surveys in summer 2023, will be removed under the supervision of an ecologist holding a Bat Low Impact Class Licence from Natural England. This is on the basis that the woodland is likely to only support, at most, up to three 'low conservation status' roosts (i.e. feeding, day, night and transitional roosts) based on the very low numbers of bats recorded during walked transects undertaken over spring, summer and autumn 2022, and therefore tree removal would fall within the remit of a Low Impact Class Licence.</p> <p>In the event that a higher number of confirmed roost trees, and/ or the roosts are not considered to be low conservation status, then a European Protected Species Mitigation ("EPSM") derogation licence would be obtained from Natural England.</p>	<p><b>Terrestrial aspect of Work No. 1 and Work No. 2</b></p>	<p>Contractor and ECoW</p>	<p>NELC and Natural England</p>

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>Felled material to be retained for the creation of habitat log piles within retained woodland as set out in the <b>Outline Woodland Compensation Strategy [APP-224]</b>.</p> <p>Appropriate root protection zones around retained trees to be implemented as identified on the Tree Protection Plan (see <b>Appendix 8.F: Arboricultural Impact Assessment [APP-185]</b>) must be fully respected and their location and significance is to be highlighted to all site staff and contractors during the formal site briefing.</p>			
Damage/ loss of habitat supporting water vole	<p>Vegetation clearance prior to the commencement of culvert construction on Ditch 5 (Work No. 1), which is confirmed to support water voles, will require a Natural England licence (<b>Figure 2 of Appendix 8.D: Otter and Water Vole Survey Report [APP-183]</b>).</p> <p>Given that the length of bank from which water vole would be displaced for the Project (within <b>Work No. 1</b>) is less than 50m, mitigation through a Water Vole Class Licence approach will be adopted for the construction phase; this requires sensitive timing of vegetation clearance to achieve natural displacement of water voles through habitat manipulation under the supervision of an ecologist holding a Water Vole Class Licence from Natural England.</p> <p>The mitigation approach would require appropriate seasonal timing of habitat clearance works to displace water voles prior to damage/ destruction of habitats within Ditch 5, and as such initial vegetation clearance works would be limited to the period 15 February to 15 April. Subsequent works to maintain the cleared area can be undertaken after</p>	<b>Terrestrial aspect of Work No. 1 and Work No. 9</b>	Contractor and ECoW	Natural England

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>this initial seasonally restricted clearance period to ensure the habitats remain unsuitable for water vole prior to the commencement of construction. Construction works to the ditch would not be seasonally constrained following the completion of the initial vegetation clearance works under the Class Licence, assuming the banks are maintained as unsuitable for water vole in the period between the initial clearance and the commencement of construction activities at this location.</p> <p>A demarked buffer zone (minimum 10m) would be established between temporary construction compound (<b>Work No. 9</b>) and the adjacent water course (North Beck Drain) which supports water voles.</p> <p>No fenced exclusions or translocations of water voles are proposed.</p> <p>A draft PWMS for water vole is included as Appendix F to this Outline CEMP, and a final version will be prepared, by the Contractor, as part of the Final CEMP.</p>			
Potential damage to/ loss of reptile habitat	<p>The low risk of presence of grass snake on the main drain at the foot of the flood embankment (Ditch 5 in <b>Work No. 1</b>) would be addressed through a precautionary approach where a staged strip of bankside vegetation is undertaken to encourage natural dispersal of any reptiles that may be present.</p> <p>A draft PWMS for reptiles is included as Appendix G of this Outline CEMP, and a final version will be prepared, by the Contractor, as part of the Final CEMP.</p>	<b>Terrestrial aspect of Work No. 1</b>	Contractor and ECoW	NELC

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Potential damage to/ loss of badger sett(s)	<p>Pre-clearance checks of any habitats that may conceal badger setts that were not identified during surveys for the Project will be undertaken. In the event that badger setts are discovered and damage/ disturbance cannot be avoided, a licence will be obtained from Natural England to close the sett within the seasonal period (June to November inclusive)</p> <p>A draft PWMS for badger is included as Appendix H of this Outline CEMP, and a final version will be prepared, by the Contractor, as part of the Final CEMP.</p>	<b>Work No's 2 and 3</b>	Contractor and ECoW	Natural England
Loss of/ damage to woodland and trees	<p>Where trees and to be retained within the Site Boundary, for example in the Long Strip woodland, any tree surgery recommendations contained within <b>Appendix 8.F Arboricultural Impact Assessment [APP-185]</b> would be undertaken in accordance with BS3998:2010 Tree work – Recommendations by suitably qualified and insured contractors.</p> <p>All construction site facilities including site huts, staff and contractor parking and areas for storage will be located outside of the root protection area (“RPA”) or crown spread of retained trees, including those not specifically covered in <b>Appendix 8.F: Arboricultural Impact Assessment [APP-185]</b>. Space is likely to be constrained on the Site and will need to be carefully considered. The Construction Exclusion Zones identified on the Tree Protection Plan (see <b>Appendix 8.F: Arboricultural Impact Assessment [APP-185]</b>) must be fully respected and their location and significance is to be highlighted to all site staff and contractors during the formal site briefing.</p>	<b>Terrestrial aspect of Work No. 1 and Work Nos. 2 – 10 (inclusive)</b>	Contractor and ECoW	NELC

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>The use, mixing and washing of materials can lead to run off or inadvertent spillage into tree root zones. Many substances often used on construction sites can be toxic to tree roots (such as concrete, fuels, salts, builders sand and herbicides) and can result in the death of tree roots and beneficial soil organisms and can have a significant impact on the future health and appearance of the tree.</p> <p>The storage of materials and any washing, mixing or refuelling will take place in agreed allocated areas at least 5m from the edge of the RPA of retained trees.</p> <p>All necessary protective fencing would be installed prior to the commencement of any site clearance or construction works.</p> <p>Any slope effect must be taken into account and where there is a potential for run off, heavy duty polythene sheeting and sandbags must be in place as bunding to prevent toxic materials reaching Root Protection Areas (“RPAs”).</p> <p>Particular care is required where high sided vehicles, long reach machinery and plant with jibs, booms and counterweights are to operate with in proximity to retained trees. A banksman will be used where the movement of plant or long reach machinery occurs within 5m of any part of a retained tree to ensure no damage is sustained.</p> <p>The advice of a suitably qualified engineer must be obtained to inform any potential issue of heave.</p>			



Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>Ground protection will be installed within the RPAs, specified to the highest expected load and installed in accordance with the Outline Tree Protection Measures included within Annex E of <b>Appendix 8.F: Arboricultural Impact Assessment [APP-185]</b>.</p> <p>In addition, T414 will require an outer RPA incursion to facilitate the construction of a new access road and a footway. The access road will only require a very minor RPA incursion and prior to its construction a trench is to be excavated by hand (using compressed air and a soil vacuum where available) under the supervision of an Arboriculturist to a depth of 1m along the outermost extent of the proposed footprint for the new road and edging within the RPA. Roots will be carefully exposed and severed with a clean sharp tool to leave a clean cut end (set back 200mm from the edge of the excavation). Root pruning will be timed to avoid times of high physiological activity for the tree (e.g. in winter or late summer avoiding periods of drought) and will be supervised by an Arboriculturist.</p> <p>Installation of the footway must follow 'no dig' principles to avoid adverse effects to the structure of the soil and excavation which would require root severance. This can be achieved with the use of a three dimensional load bearing surface (such as Cellweb, ArborRaft or equivalent) that is designed to meet the highest expected loads and is positioned on top of the existing ground level.</p> <p>This methodology will increase the final level of the hard surfacing and this must be taken into consideration.</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>Edging is often not required to stabilise the load bearing surface and the edge of the surface. If edging is required, this must be installed without excavation and can be cast directly onto the load bearing surface with any uncured concrete contained within impermeable sheeting to prevent leaching into the RPA.</p> <p>These works must be supervised by an Arboriculturist and will not negatively impact the physiological or structural condition of the tree.</p> <p>A tree condition survey would be undertaken by a competent Arboriculturist immediately following the tree removal works within the Long Strip woodland to identify any safety risks to the Site. Following this a periodic inspection regime will be implemented and an initial tree condition survey would be undertaken one month following the commencement of site works and then six monthly for the first two years. After the first two years the Arboriculturist will advise on the recommended frequency of surveys.</p> <p>The suitability for pollarding or coppicing would be assessed by a walkover of the Site by the Site Arboriculturist and agreed with the NELC Tree Officer prior to the commencement of site works.</p> <p>An Arboricultural Method Statement will be developed as part of the detailed design. Issues to be addressed by the method statement:</p> <ul style="list-style-type: none"> <li>a) Summary of the final arboricultural impacts related to the detailed design.</li> </ul>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<ul style="list-style-type: none"> <li>b) Pre commencement meeting, site briefing and assessment of trees to be removed by an arboriculturist for their suitability for tree pruning.</li> <li>c) Order and phasing of operations.</li> <li>d) Site supervision and monitoring of implementation.</li> <li>e) Tree works and confirmation of the final extent of tree loss.</li> <li>f) Tree protection fencing.</li> <li>g) Ground protection.</li> <li>h) Site storage and facilities.</li> <li>i) Movement of people, plant and materials.</li> <li>j) Enabling works.</li> <li>k) Installation of new surfacing.</li> <li>l) Installation of new structures.</li> <li>m) Installation of new services and/or diversion of existing services.</li> <li>n) Hard landscaping.</li> </ul>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>o) Soft Landscaping.</p> <p>p) Removal of tree protection measures.</p> <p><u>Tree Planting</u></p> <p>Existing areas of unsurfaced ground must be protected during the demolition and construction phases if they are to be re-used for new plantings. Protection can be achieved using fit for purpose ground protection measures as set out in BS5837:2012 Section 6.2.3 or by creating a fenced exclusion zone. Where protection is not feasible, soil amelioration or replacement works will be required to ensure suitable growing conditions for new trees to fully establish.</p> <p>Where new trees are to be planted, the minimum planting distances detailed in Annex A of <b>Appendix 8.F: Arboricultural Impact Assessment [APP-185]</b>, Table A.1 of BS5837:2012 must be adhered to, to prevent direct damage to services and structures from future tree growth.</p> <p>New tree planting would be implemented in accordance with the guidance set out in BS8545: 2014 Trees: from nursery to establishment in the landscape – Recommendations.</p> <p><u>Services</u></p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>Where services must be routed within the RPA of a retained tree this process will be subject to a detailed method statement with approval from the Planning Authority.</p> <p>The principles of the National Joint Utilities Group (“NJUG”) Volume 4 (Ref 6-26) guidance must be adhered to.</p> <p>All services would be bundled as far as possible and installed within RPAs using hand/compressed air excavation (e.g. for shallow service runs) or trenchless techniques such as impact moling (thrust boring) with all access pits and inspection chambers being located outside of the RPA. The route would run as far from the main stem of a retained tree as possible and would be at a minimum depth so that the upper 2m of the soil profile is undisturbed. The depth of the run may need to be adjusted to account for soil type and species variation and this would be determined subject to the advice of an arboriculturist.</p> <p>Any water pipes would be constructed so as to be resistant to ingress by tree roots (both existing trees, and newly planted trees) which would include the use of root barriers where appropriate.</p> <p><u>Outline Tree Protection Measures</u></p> <p>The default position as set out by BS 5837:2012 is that retained trees must be protected from construction operations with the erection of robust protective fencing positioned on the outer edge of the RPA or crown spread (whichever is greatest). All site operations will be restricted to the area outside of tree protection fencing and this area will form a</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>Construction Exclusion Zone (“CEZ”) unless agreed otherwise. Protection measures will be installed as set out in the Tree Protection Plan included as Annex D of <b>Appendix 8.F: Arboricultural Impact Assessment [APP-185]</b>.</p> <p>The area inside the fence and any additional tree protection measures will be sacrosanct and must not be removed or altered without the prior approval of an arboriculturist. Any damage to tree protection measures must be reported immediately.</p> <p>Fencing shall be constructed with robust vertical and horizontal scaffold framework with weldmesh panels firmly attached as per BS 5837:2012 Figure 7. Vertical support poles and bracing poles must be located with care to avoid underground utility services and will be sited to avoid the structural roots of retained trees.</p> <p>Alternative equivalent robust and immovable fencing specification including site hoarding will also be appropriate.</p> <p>Suitable all weather signage will be fixed to fencing to notify site staff and visitors of the construction exclusion zone and its purpose.</p> <p>When entering and exiting the Site, the fencing contractor must avoid the production of ruts on the unprotected surface of the ground.</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>Protective fencing and ground protection shall stay in place until all development operations have been completed and the prior consent of the project arboriculturist has been obtained.</p> <p>Should access be unavoidable within the RPA of a retained tree, fit for purpose ground protection must be in place which is sufficient to protect the structure of the soil from damage based on the heaviest anticipated load.</p> <p>As set out in section 6.2.3.3 of BS5837:2012 the following ground protection measures will be appropriate:</p> <ul style="list-style-type: none"> <li>a. Suitable ground protection for pedestrian only access will comprise a single thickness of scaffold boards set on a compressible layer of 100mm of woodchip on a geotextile separation layer.</li> <li>b. Pedestrian operated plant up to two tonnes in weight would require the use of a proprietary ground protection system (such as Ground Guards or Eve Trakway or equivalent) set on a minimum depth of 150mm woodchip or sharp sand.</li> <li>c. Heavier loads will require ground protection to an engineering specification in conjunction with arboricultural advice.</li> </ul> <p>As a guide the threshold beyond which root development is significantly affected is a bulk density ranging from 1.4g per cm<sup>3</sup> for clay soils, to 1.75g per cm<sup>3</sup> for sandy soils.</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>Tree protective measures shall stay in place until all construction operations are completed, and removal is agreed with the project arboriculturist.</p> <p>Excavation must only take place within the RPA of a retained tree with the prior agreement of the project arboriculturist. All excavation must be undertaken using hand tools or compressed air (such as an air spade).</p> <p>The following general principles will apply:</p> <ul style="list-style-type: none"> <li>a. Individual or small groups of roots less than 25mm in diameter will be retained where possible but can be severed with a sharp tool such as secateurs or pruning saws to leave a clean cut end (ideally 100mm back from the face of the excavation to account for future regrowth) where they pose an obstruction.</li> <li>b. Where roots are encountered which are larger than 25mm in diameter or where significant groups of smaller roots are found, the advice of an arboriculturist must be sought to decide an appropriate course of action.</li> <li>c. Roots must only be exposed for the minimum period possible. In the interim period any exposed roots must be completely covered with dampened hessian sacking (which may require ongoing re wetting) to avoid drying out and exposure to light (which can result in the death of roots). Backfill for excavations would utilise the parent material and must not be significantly compacted.</li> </ul>			



Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>The storage of materials and any washing, mixing or refuelling must take place in agreed allocated areas at least 5m from the edge of the RPA of retained trees.</p> <p>Any slope effect must be taken into account and where there is a potential for run off, heavy duty polythene sheeting and sandbags must be in place as bunding to prevent toxic materials reaching RPAs.</p> <p>Where works in close proximity to retained trees cannot be practicably avoided, these works would be undertaken in accordance with current best practice at the time of the works as set out within <b>Appendix 8.F: Arboricultural Impact Assessment [APP-185]</b>. In August 2023, current best practice is defined in:</p> <ul style="list-style-type: none"> <li>a. British Standard (BS) 5837: 2012 Trees in relation to design, demolition and construction – Recommendations.</li> <li>b. British Standard (BS) 3998: 2010 Treework – Recommendations.</li> <li>c. National Joint Utilities Group (NJUG) Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.</li> </ul> <p>All tree works recommended as a result of the preliminary tree survey of the Site which considered trees in the context of the current use of the Site (these works are included as preliminary management recommendations in the Tree Schedule in Annex B of <b>Appendix 8.F:</b></p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<b>Arboricultural Impact Assessment [APP-185]</b> should be actioned within the recommended timescales.			

**Table 6: Nature Conservation (Marine Ecology)**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Any marine impact	Marine Compliance Manager  An ABP compliance manager would be put in place who would have over-arching responsibility for year-round compliance with the programme of environmental mitigation.	Marine aspect of Work No. 1	ABP	MMO/ Natural England
Commonly occurring environmental effects	Biosecurity control measures outlined below would be included within the Final CEMP.  <b>Preventing a breach in biosecurity:</b>  ABP's existing biosecurity management procedures will be followed during construction.  Best practice guidance has been developed on how to manage marine biosecurity risks and invasive non-native species (INNS) at sites and when undertaking activities through the preparation and implementation	<b>Marine aspect of Work No. 1</b>	Contractor	MMO

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>of biosecurity plans. This has been used to develop measures that will be followed during the dredging process:</p> <p><b>‘Check, Clean and Dry’ method:</b> Following the ‘Check, Clean and Dry’ method, prior to use, marine construction equipment will be checked for mud, aquatic animals or plant material and anything found will be removed. Equipment will be cleaned thoroughly and allowed to fully dry to kill off any organisms that may have attached. This process will also be undertaken once relevant marine construction activities are completed and before equipment is removed from the site.</p> <p><b>Hull Cleaning:</b> The hulls of any vessels used during construction will be maintained through regular cleaning to minimise the number of fouling organisms present. Hull cleaning can take place on land or in-water. In both cases, care will be taken to prevent the organisms and coating particles from being released into the water.</p> <p><b>Protective Coatings:</b> The use of protective coatings on any vessels used during construction will be employed to reduce the fouling of the vessel’s hull and other below-water surfaces. These coatings usually contain a toxic chemical (such as copper) or an irritant (such as pepper) that discourages organisms from attaching. Other coatings, such as those that are silicone-based, provide a surface that is more difficult to adhere to firmly, making cleaning of the hull less laborious. The type and concentration of coatings that can be applied to a boat hull is regulated and can vary between countries.</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Impacts on fish and marine mammals resulting from underwater noise and vibration	The gradual increase of marine piling power, incrementally, until full operational power is achieved will be used as part of the marine piling methodology. This will give fish and marine mammals the opportunity to move away from the area before the onset of full impact strikes. The duration of the soft start would be at least 20 minutes in line with the JNCC marine piling protocol (Ref 6-6).	<b>Marine aspect of Work No. 1</b>	Contractor	MMO
	Vibro piling will be used where possible which produces lower peak source noise levels than percussive piling (although it is recognised that impact marine piling is anticipated to always be required to reach the required design depths).	<b>Marine aspect of Work No. 1</b>	Contractor	MMO
	Seasonal piling restrictions will be placed on percussive marine piling as follows: <ul style="list-style-type: none"> <li>1. No percussive marine piling is to take place within the waterbody between 1 April and 31 May inclusive in any calendar year. This will minimise the potential impact on the greatest number of different migratory fish in the Humber Estuary in accordance with the periods identified in <b>Table 9.16 of Chapter 9: Nature Conservation (Marine Ecology)</b> of the ES <b>[APP-051]</b> and also the more vulnerable earlier life stages of a number of migratory fish species. This restriction will not apply to percussive marine piling that can be undertaken outside the waterbody at periods of low water.</li> <li>2. The duration of percussive marine piling is to be restricted within the waterbody from 1 June to 30 June and 1 August to 31 October</li> </ul>	<b>Marine aspect of Work No. 1</b>	Contractor	MMO

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>inclusive in any year to minimise the impacts on fish migrating through the Humber Estuary during this period such as silver eels, river lamprey and returning adult Atlantic salmon. The maximum amount of percussive marine piling permitted within any 24-hour period must not exceed 270 minutes, with an agreed contingency period of an additional 60 minutes within any 24-hour period which can be used in exceptional circumstances (in line with the piling reporting protocol). The measurement of time during each work-block described above must begin at the start of each timeframe, roll throughout it, then cease at the end, where measurement will begin again at the start of the next timeframe, such process to be repeated until the end of marine piling works. This restriction does not apply to percussive marine piling that can be undertaken outside the waterbody at periods of low water.</p>			
	<p>Restrictions will be placed on night time marine piling as follows:</p> <p>a. During the periods 1 March to 31 March, 1 June to 30 June and 1 August to 31 October inclusive, piling will be restricted at night. Specifically, no piling will be undertaken from 7 pm to 7 am in March, September and October and between sunset and sunrise in June and August. Marine piling operations that have already been initiated will, however, be completed where an immediate cessation of the activity would form an unsafe working practice. This restriction would not apply to marine piling that can be undertaken outside the waterbody at periods of low water which</p>	<p><b>Marine aspect of Work No. 1</b></p>	<p>Contractor</p>	<p>MMO</p>

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	will limit the potential effects of underwater marine piling noise on the nocturnal movements of river lamprey and glass eels.			
	<p>The JNCC Statutory Nature Conservation Agency Protocol for Minimising the Risk of Injury to Marine Mammals During Piling (Ref 6-6) will be followed during percussive marine piling. The key procedures highlighted in this document include the following:</p> <ul style="list-style-type: none"> <li>a. Establishment of a 'mitigation zone' of 500 m from the marine piling locations, prior to any percussive marine piling. Within this mitigation zone, observations of marine mammals would be undertaken by a trained member of the construction team using marine mammal identification resources.</li> <li>b. 30 minutes prior to the commencement of percussive marine piling, a search should be undertaken by the Marine Mammal Observer to determine that no marine mammals are within the mitigation zone. Percussive marine piling activity would not be commenced if marine mammals are detected within the mitigation zone or until 20 minutes after the last visual detection.</li> <li>c. During percussive marine piling, the Marine Mammal Observer would observe the mitigation zone to determine that no marine mammals are within this area. Construction workers will be alerted if marine mammals are identified, and marine piling will cease whilst any marine mammals are within the mitigation zone. Marine piling can recommence when the marine mammal exits the mitigation zone and there is no further detection after 20 minutes.</li> </ul>	<b>Marine aspect of Work No. 1</b>	Contractor and marine ECoW	MMO

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>If there is a pause in percussive marine piling operations for any reason over an agreed period of time, then another search (and soft-start procedures for marine piling) would be repeated before activity recommences. If, however, the mitigation zone has been observed while marine piling has ceased and no marine mammals have entered the zone, marine piling activity can recommence immediately.</p>			
	<p>Cumulative seasonal piling restrictions will be placed on percussive marine piling where it is occurring in IGET and IERRT at the same time, as follows:</p> <p>Where piling operations for IERRT and IGET are occurring at the same time a combined percussive piling restriction is proposed for the Project.</p> <p>For the period 1 June to 30 June and 1 August to 31 October inclusive the maximum duration of percussive piling permitted within any four-week period is a total of 196-hours where any percussive pile drivers for either one or both projects are in operation. Where percussive piling is occurring simultaneously across the two projects, these respective time periods will not be double counted as the temporal exposure to this effect is not increased.</p> <p>The measurement of time during each 196-hour work-block must begin at the start of each timeframe, roll throughout it, then cease at the end, where measurement will begin again at the start of the next timeframe,</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>such process to be repeated until the end of piling works. This restriction does not apply to percussive piling that can be undertaken outside of the waterbody at periods of low water.</p> <p>The 196-hours is inclusive of any percussive piling arising from the need to trigger the contingency period from either project.</p> <p>An ABP consents manager will be responsible for overall compliance with this requirement, including the combined reporting, detailing the total duration of piling each day, across the two projects. This will again be communicated to the MMO via the agreed reporting and meeting schedule.</p>			
	<p>A Piling reporting protocol will be adhered to as follows:</p> <p>All marine piling operations will comply with a piling reporting protocol agreed with the MMO and secured under Condition 15 of the Deemed Marine Licence.</p> <p>Weekly reports must be submitted to the MMO on the duration of percussive piling that is undertaken on any given day on which piling takes place during the construction of the authorised development, unless otherwise agreed in writing with the MMO.</p> <p>The reports submitted to the MMO must include a log of the number and approximate location of piling rigs which are in operation on any given day, along with the number of piles driven.</p>	<b>Marine aspect of Work No. 1</b>	Contractor and marine ECoW	MMO



Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>Fortnightly meetings must be held with the MMO to discuss the weekly reports submitted and agree any corrective action if required, unless otherwise agreed in writing with the MMO.</p> <p>Where percussive piling is paused the recommencement of such percussive piling may take place for a contingency period of up to a total of 60 minutes within any 24-hour period in addition to the otherwise maximum amount of percussive piling permitted within any 24-hour period.</p>			
Impacts on fish from light spill	The jetty decking will be designed to avoid any unnecessary light-spill on the water to avoid disruption or blocking of migratory routes for fish. The jetty decking will be lit for safety and operational purposes.	<b>Marine aspect of Work No 1</b>	Contractor	MMO

**Table 7: Ornithology**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Impacts to SPA birds	<p>Ecological Clerk of Works</p> <p>An ecological Clerk of Works (ECoW) will be implemented during the overwintering period (October to March inclusive) to ensure the agreed mitigation measures for the SPA birds are adhered to and that the appropriate guidance can be provided throughout the construction works.</p>	Marine aspect of Work No. 1	ECoW	MMO/ Natural England

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Direct loss to intertidal feeding and roosting habitat as a result of the piles</p> <p>Direct changes to waterbird foraging habitat as a result of the capital dredge and dredge disposal</p> <p>Indirect changes to foraging and roosting habitat as a result of changes to hydrodynamic and sedimentary processes</p> <p>Changes to seabed habitats</p>	<p><b>Additional Mitigation Measures</b></p> <p><u>Winter marine construction restriction from 1 October to 31 March (approach jetty)</u></p> <p>In order to minimise potential disturbance effects on wintering populations of coastal waterbirds on the foreshore it is proposed that marine construction activity associated with the approach jetty can only be undertaken at distances greater than 200 m of Mean Low Water Springs (“MLWS”) during the period 1 October to 31 March inclusive. This restriction applies until an acoustic barrier/visual screen has been installed on both sides of the semi-completed structure. Construction activity can then be undertaken on the approach jetty itself, behind the screens. The barrier/visual screen will only be required for the period 1 October to 31 March and for sections of the approach jetty within 200m of MLWS. With the addition of acoustic barriers, noise levels on the intertidal mudflat will be less than 70 dB(A) which is the range of existing background noise levels of operational port activities in the Port of Immingham area.</p> <p><u>Noise suppression system (approach jetty)</u></p> <p>It is proposed that a noise suppression system (consisting of a piling sleeve with noise insulating properties) is used during all percussive marine piling activities associated with the approach jetty (during all periods of the year) to reduce noise levels on nearby foreshore areas.</p> <p>The noise suppression system is predicted to reduce noise levels to &lt;70dB Lmax at distances greater than approximately 200m from marine</p>	<p><b>Marine aspect of Work No.1</b></p>	<p>Contractor and ECoW</p>	<p>MMO/ Natural England</p>

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>and species as a result of sediment deposition during piling</p> <p>Airborne noise and visual disturbance to coastal waterbirds using intertidal habitats</p> <p>Airborne noise and visual disturbance to coastal waterbirds using functionally linked terrestrial habitats outside the boundary of the Humber Estuary SPA/ Ramsar</p>	<p>piling and also in the range of existing background noise levels of operational port activities in the Port of Immingham area.</p> <p><u>Soft starts</u></p> <p>Using soft starts (as outlined in <b>Chapter 9: Nature Conservation (Marine Ecology) [APP-051]</b>) will allow birds to become more tolerant to marine piling noise by allowing a more gradual increase in noise levels which will reduce the potential for birds to become startled. This will be applied to all marine piling activity.</p> <p><u>Cold weather construction restriction</u></p> <p>Coastal waterbirds are considered particularly vulnerable to bird disturbance during periods of extreme winter weather. On this basis a temporary cessation of all construction activity within 200 m of Mean Low Water Spring (“MLWS”) would be implemented following seven consecutive days of freezing (zero or sub-zero temperature) weather conditions. The restriction should not be lifted until after 24 hours of above freezing temperatures and also that Metrological Office weather forecasts indicate that freezing conditions will not return for the next five days. Similar measures have been implemented for other nearby developments and also as part of the JNCC scheme to reduce disturbance to waterfowl due to shooting activity during severe winter weather.</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Noise and visual disturbance during capital dredge disposal				
<p>Direct loss of terrestrial habitats that are functionally linked to the Humber Estuary SPA/ Ramsar</p> <p>Direct loss of breeding bird (SPA/ Ramsar) habitats</p> <p>Direct loss of breeding bird (non-SPA/ Ramsar) habitats</p>	<p><b>Standard Mitigation Measures</b></p> <p><u>Impacts on Nesting Birds (construction)</u></p> <p>Vegetation clearance will be undertaken outside the nesting bird season where possible, and clearance works will be avoided in the period March to August inclusive to ensure compliance with the Wildlife and Countryside Act 1981 (as amended) (Ref 6-7).</p> <p>Where this is not possible, pre-clearance checks of vegetation would be undertaken to identify any nesting species. If occupied nests are identified, an appropriate buffer zone (at least 2m) would be established around the nest to ensure it is protected from damage/ destruction during construction. No clearance of vegetation within the buffer zone would be undertaken until any young had fledged and the nest was confirmed to be unoccupied.</p>	All Work No's	Contractor and ECoW	MMO/ Natural England

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Loss of Woodland in the Long Strip	A compensation strategy for the loss of woodland (a UK Priority Habitat) will be agreed with NELC pursuant to the draft DCO to ensure compliance with Local Planning Policy 41, which states that the council will seek to “.. <i>minimise the loss of biodiversity features, or where loss is unavoidable and justified ensure appropriate mitigation and compensation measures are provided..</i> ”.	<b>Terrestrial aspect of Work No.1 and Work No. 2</b>	ECoW	NELC pursuant to Requirement 11

**Table 8: Traffic and Transport**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Traffic impacts of abnormal loads movements across wider road network	<p>Where practicable, the Project would use modularisation to reduce on-site works and maximise the works completed in specialised fabrication facilities off-site. This would require the use of delivery by sea to the Port of Immingham of large prefabricated elements of operational plant and then the use of large HGVs to transport abnormal loads from the Port to the relevant parts of the Site.</p> <p>In addition to the large modules and large equipment items which may be abnormal loads, there will also be other smaller modules and equipment items shipped through the port wherever practicable.</p>	<b>Work No’s 3, 5 and 7</b>	<p>Travel Plan Co-ordinator to oversee management, monitoring and implementation of the individual measures within the CTMP and CWTP.</p> <p>Other responsibilities to be confirmed</p>	NELC Highways Department (pursuant to Requirement 7 in respect of the CTMP and CWTP)

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
			by the contractor.	

**Table 9: Marine Transport and Navigation**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>C1: Allision of the Project Works Craft with Port Infrastructure</p> <p>C2: Allision of Passing Vessel with the Project Marine Works</p> <p>C3: Collision of Passing Vessel with the Project Works Craft</p> <p>C4: Collision of the Project</p>	<p>Standard industry mitigation measures will be followed which are appropriate to the construction and operational activities being undertaken:</p> <p>a. Updated port controls, plans and procedures - existing port documents including the Port Marine Safety Management System (“MSMS”), Humber Passage Plan (“HPP”), and Humber Emergency Plan (“HEP”), will be updated to take into account the Project.</p> <p>b. Vessel Traffic Service (“VTS”) - adherence of vessels to Humber Vessel Traffic Services requirements and instructions. Humber VTS will help control vessel movements and avoid dangerous encounter situations, e.g., involving construction vessels.</p> <p>c. Aids to Navigation (“AtoNs”) - the marine works shall be appropriately lit as soon as there are items which pose a hazard to navigation. Once operational, aids to navigation shall be provided and maintained so that the structure and berth can be identified. The safe navigation of all vessels in the Humber is aided by numerous existing AtoNs.</p>	<b>Marine aspect of Work No 1</b>	Contractor	MMO & HES (Humber Estuary Services)

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Vessel during Navigation</p> <p>C5: Collision during Towing Operations</p> <p>C6: Increased Collision Risk between other vessels due to Displacement away from the Construction Site</p> <p>C7a: Increased Grounding Risk for Other Vessels due to Displacement from the Project Construction Area</p> <p>C7b: Grounding Risk for the</p>	<p>d. AIS Equipment - the vast majority of vessels using the Humber broadcast on AIS and therefore can be tracked by other vessels for collision avoidance, as well as by the VTS. The majority of Project vessels, including gas carriers and construction barges, will broadcast on AIS.</p> <p>e. Passage Planning - project vessels will have in place appropriate passage plans as well as adhering to the Humber Passage Plan when applicable.</p> <p>f. COLREGS - vessels will adhere to the Convention on the International Regulations for Preventing Collisions at Sea, 1972 ("COLREGS").</p> <p>g. Availability of secondary channel - there is a secondary channel (Foul Holme) that can be used by certain vessels within a set tidal range.</p> <p>h. Circulation of Information - information will be circulated about the Project to users of the Humber via Notices to Mariners and river warnings broadcast by the VTS every 2 hours (or more frequently if required) which consist of maritime safety information, and designated no-go zones. Temporary construction information not on Admiralty charts would be marked by other means, e.g., Portable Pilot Unit ("PPU").</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Project Works Craft  C8: Payload Related Incidents	<p>i. Stakeholder liaison - stakeholder engagement and liaison will be held with recreational and fishing representatives to make them aware of the Project and related vessel activities during the different phases.</p> <p>j. Communications between Project/Port - discussion of upcoming activities shall take place with the personnel at Immingham, HES and where relevant, the Pilots and IOT.</p> <p>k. Hydrographic surveys - the current programme of surveying at the Port of Immingham shall be updated to include the Project. The results of the survey shall be provided to the UKHO for use in navigational charts and compared with previous surveys to inform potential requirements for maintenance dredging.</p> <p>l. Weather limits - the maximum weather limits for operations shall be assessed and set for all activities. These shall be monitored against real time and forecasted weather conditions throughout the construction process. In addition, operational weather limits shall also be considered for vessels using the terminal during the operational phase.</p> <p>m. Weather monitoring - weather forecasting and monitoring shall be carried out and compared with the allowable weather limits for reliable planning and assessment of risk regarding the weather operating limits, which will vary between phases and activities, e.g., construction vs. normal operation.</p>			



Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>n. Tidal Limits - tidal limits will apply to certain activities (analogous to weather limits).</p> <p>o. Speed limits - a maximum speed limit of 5 knots will apply to vessels passing the Project Berth (similar to IOT). VTS will monitor for unsafe speeds, including during construction work. Sanctions may be used against repeat offenders, e.g., removal of PEC.</p> <p>p. Emergency plans, exercises and response resources - these will be in place, as appropriate, for each phase. For example, construction contractors shall have tier 1 oil spill response equipment to ensure any pollution events can be contained.</p> <p>q. Approval of tidal works - this is required before any construction activity can commence. This will follow on from a contractor approval process.</p> <p>r. Contractor RAMS and SMS - contractors shall have Risk Assessment Method Statement (RAMS) and Safety Management System (SMS) covering all of the construction activities which shall be reviewed by the Harbour Authority prior to the commencement of activities.</p> <p>s. CDM Regulations - The Construction (Design and Management) Regulations 2015 will be adhered to, to help protect employee health during construction projects.</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>t. Standard Operating Procedures (“SOP”) - suitable procedures will be in place during construction work</p> <p>u. Vessel Checks - checks will be carried out to make sure construction vessels are fit for purpose.</p> <p>v. Non-Routine Towage (“NRT”) Assessments - these will be carried out when necessary to assess the risks and establish requirements, e.g., if pilotage is required, number of tugs, radius of towage, tidal restrictions, etc. Covered in HES Towage Guidelines.</p> <p>w. Designated Point of Contact - during construction activities, there will be a designated PoC to provide appropriate information and respond to emergency situations. This role shall be the main line of communication between the works and the SHA.</p> <p>x. Safety Vessel - a safety vessel will be ready and on standby during construction activities. The availability of a safety vessel in the area of the marine works shall provide for rapid response to emergency situations and an overview of the activity being conducted; during Construction.</p> <p>y. Dropped Object Procedure - a dropped object procedure will be in place to report and respond to any drop incidents.</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>z. Construction Surveys - pre &amp; post-construction surveys will be carried out to confirm that under keel clearance remains unchanged (in case of unreported incidents).</p> <p>aa. Loading/unloading plan - equipment and materials being delivered by barge shall have plans specifying the order and method of loading and unloading at the marine works site.</p>			

**Table 10: Landscape and Visual Impact**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Visibility of new landscape features.</p> <p>Increased visibility of construction activities and vehicles.</p> <p>Minor loss of scattered scrub, temporary prevention of</p>	<p>Valued trees, woodland, existing vegetation and other landscape features will be retained wherever possible, and will be protected in accordance with BS5837:2012 (Ref 6-8). Trees in relation to design, demolition and construction. During construction trees would be clearly fenced or marked so that site operatives are in no doubt as to which ones are to be kept and protected.</p> <p>Construction temporary lighting will be arranged so that glare would be minimised outside the construction site. Measures to minimise the impact of construction lighting would be detailed in the Final CEMP.</p>	All Work No's	Contractor	<p>NELC for terrestrial aspects</p> <p>MMO for marine aspects</p>

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>farming of areas of arable farmland, loss of trees within the Long Strip woodland.</p> <p>Introduction of construction lighting.</p>				

**Table 11: Historic Environment (Terrestrial)**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Impacts on setting of heritage assets.</p> <p>Partial or total removal or truncation of known and/or unknown heritage assets.</p>	<p>Construction methods which will “do no harm” will be employed at two locations within the Project Boundary, specifically:</p> <p>1) Deep Horizontal Directional Drilling (“HDD”) will be utilised to install the main pipeline within the Pipeline Corridor (Work No. 6), which will place the new pipeline below the archaeological horizon in such a manner which does not damage the archaeological horizon. There is a possibility that an additional utility pipeline may need to be installed using a c.1m wide trench cut along the length of the Pipeline Corridor. If remains which are deemed to be significant in nature are encountered during these utility corridor works, the utility works will be halted and the NELC Heritage</p>	<p><b>Work No’s</b> <b>2 - 10</b></p>	<p>Contractor and Archaeologist.</p>	<p>NELC</p>

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Compaction of archaeological remains.</p> <p>Changes to local hydrology that could result in the drying out of underlying peat deposits and affect preservation levels of heritage assets.</p> <p>Damage to heritage assets.</p>	<p>officer consulted in order to understand if further works are required in relation to the asset in order to characterise, record and understand it. There are no known heritage assets which will be subject to a significant impact from this work, at this location.</p> <p>2) "No impact" methodologies within the area of the Temporary Construction Area (Work No. 9). Specifically, there will be:</p> <ul style="list-style-type: none"> <li>a. No permanent buildings other than containers and/or storage sheds.</li> <li>b. No foundation or excavation work.</li> <li>c. No topsoil removal.</li> <li>d. Ground protection via matting or similar.</li> <li>e. Ground compaction to be avoided by use of suitable ground matting and other protection measures.</li> </ul> <p>Impacts upon the peat and organic alluvium deposits present within the West Site (and identified via the geoarchaeological evaluation) would be mitigated by further laboratory analysis of the retained deposits, and a report detailing the findings of this work would be provided to the Heritage Officer at NELC once this work has been undertaken.</p> <p>If remains which are deemed to be significant in nature are encountered during any works, the relevant part of the works will be halted and NELC Heritage officer consulted in order to understand if further works are</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	required in relation to the asset in order to characterise, record and understand it.			

**Table 12: Historic Environment (Marine)**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Direct impacts (e.g. physical damage) on known and potential marine cultural heritage receptors and deposits of archaeological importance as a result of construction and capital dredging	<p><b>Written Scheme of Investigation (WSI)</b></p> <p>All mitigation measures would be secured through a WSI. An Outline WSI is included as <b>Appendix 15.B [APP-204]</b> of the DCO application. The final WSI will need to take account of any relevant matters emerging through the ongoing detailed design process and any relevant matters emerging through the examination of the DCO application.</p> <p>The following measures will be included in the WSI:</p> <p><b>Archaeological Exclusion Zones</b></p> <ol style="list-style-type: none"> <li>As no A1 anomalies have been identified for this assessment, no AEZs are currently recommended for the Project. For any A1 anomalies discovered during the works then this mitigation will be used.</li> <li>A2 anomalies - for anomalies assigned an A2 archaeological classification, especially A2_h anomalies (<b>Appendix 15.A [APP-203]</b>), no AEZs are currently recommended. However, avoidance of these anomalies by micro-siting will be carried out, if possible, if they are directly impacted by the Project. If micro-siting is not possible, then further appraisal and investigation to ascertain the nature of the anomalies would take place.</li> </ol>	<b>Marine aspect of Work No.1</b>	Contractor and Archaeologist	MMO

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Indirect impacts to known and potential marine cultural heritage receptors due to altered sediment or hydrological processes</p>	<p><b>Palaeogeography</b></p> <p>Geophysical surveys undertaken to support the project design, would be assessed by a suitably qualified archaeological contractor to support baseline enhancement and identification of unknown marine cultural heritage receptors.</p> <p>A geoarchaeological assessment of any future marine borehole logs obtained as part of this detailed design ground investigation will be undertaken, especially in respect of any logs that contain organic deposits for dating purposes. This will aid in refining the interpretation and therefore help determine the archaeological potential of the area.</p> <p><b>Protocol for Archaeological Discoveries (“PAD”)</b></p> <p>If previously unknown sites or material are encountered during the different phases of the Project, measures would be taken to reduce the level of impact. In order to provide for these unexpected discoveries a PAD would be adopted. A PAD is a system for reporting and investigating unexpected archaeological discoveries encountered during construction activities, with a Retained Archaeologist providing guidance and advising on the implementation of the PAD.</p>			

**Table 13: Physical Processes**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Increased SSC and potential sedimentation</p> <p>Changes in seabed bathymetry and composition</p> <p>Changes in local flow speeds (and potential impact on local sediment dynamics)</p> <p>Local changes to hydrodynamic regime (flow speed and direction) &amp; associated local changes to the sediment transport pathways</p> <p>Local changes to the wave regime</p>	<p>Even disposal deposition: The targeting of disposal loads in the central/deeper areas of the disposal sites (HU056 and HU060) will be undertaken to reduce depth reductions. This will minimise the initial reduction in water depth and any environmental changes at these disposal sites</p>	<p><b>Marine aspect of Work No.1</b></p>	<p>Contractor</p>	<p>MMO</p>



Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Potential impacts on existing features, including existing marine infrastructure, outfalls and estuary banks and channels				

**Table 14: Marine Water and Sediment Quality**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Changes to dissolved oxygen concentrations as a result of increased Suspended Sediment Concentrations (“SSC”) during piling, capital dredging and disposal activities (or during the maintenance	<p>The following guidance will be adopted:</p> <ul style="list-style-type: none"> <li>a. ‘Pollution prevention for businesses’ Guidance in England (Ref 6-11).</li> <li>b. Pollution Prevention Guidance (“PPG”), or Guidance for Pollution Prevention (“GPP”) in the UK (Ref 6-12). <ul style="list-style-type: none"> <li>i. Understanding Your Environmental Responsibilities – Good Environmental Practices (“PPG1”).</li> <li>ii. Works and maintenance in or near water (“GPP5”).</li> </ul> </li> </ul>	<b>Marine aspect of Work No.1</b>	Contractor	MMO

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>dredging and disposal activities)</p> <p>Changes to chemical water quality as a result of potential sediment-bound contaminants being released during piling, capital dredging and disposal activities (or during maintenance dredging and disposal activities);</p> <p>Redistribution of sediment-bound contaminants during piling, capital dredging and disposal activities (or during maintenance dredging and</p>	<ul style="list-style-type: none"> <li>iii. Working at construction and demolition sites (“PPG6”).</li> <li>iv. Safe storage and disposal of used oils (“GPP8”).</li> <li>c. The Oil Care Code.</li> <li>d. CIRIA’s Environmental Good Practice on Site (Ref 6-13).</li> </ul> <p>All wastes generated on site will be removed in a timely manner and any materials and containers giving rise to possible spills or contamination of the surrounding environment will be taken from site to be processed at a licensed facility.</p> <p>Liquid oils/chemicals required for use during construction will be stored in suitable containers/bunded storage areas. In the event of a pollution incident measures to report, manage, and minimise any impacts will be pursued, with construction spill response procedures to contain any accidental spills. In addition, an oil spill contingency plan is currently in place for the Port of Immingham to minimise any impacts in the event of a spill entering the water and these measures would also be applicable to the Project. Plant will also be maintained regularly, and spill kits will be available for use in the event of a spill onsite. Refuelling will be in designated areas to limit the potential for spillages. Fuel will be stored in the Site compound overnight, limiting the potential for fuel theft and vandalism which could cause pollution. Should any pollution incidents occur, they will be reported</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
disposal activities); and  Changes to marine water quality from accidental spillages or leaks during construction	immediately to the relevant authorities. The workforce will be trained in preventing and dealing with pollution incidents.			

**Table 15: Water Quality, Coastal Protection, Flood Risk and Drainage**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Contamination from suspended solids or other chemical contaminants.  Surface water runoff.  Chemical spillages or fire.	The Final CEMP will include a Water Management Plan (“WMP”) as a technical appendix.  The Final CEMP will be informed by the following Guidance for Pollution Prevention (“GPPs”):  a. GPP 1: Understanding your environmental responsibilities – good environmental practices;  b. GPP 2: Above ground oil storage;	All Work No’s	Contractor	NELC and Environment Agency for terrestrial aspects  MMO for marine aspects

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Alteration in fluvial and overland flow paths.</p> <p>Flood risk increase.</p> <p>Increased risk of blockage of drains.</p> <p>Changes in tidal regime.</p> <p>Increase in risk to aquatic life from potential water use and discharges to the environment.</p> <p>Construction works mobilising contamination.</p>	<p>c. GPP 3: Use and design of oil separators in surface water drainage systems;</p> <p>d. GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer;</p> <p>e. GPP 5: Works and maintenance in or near water;</p> <p>f. GPP 8: Safe storage and disposal of used oils;</p> <p>g. GPP 13: Vehicle washing and cleaning;</p> <p>h. GPP 19: Vehicles: Service and Repair;</p> <p>i. GPP 20: Dewatering underground ducts and chambers;</p> <p>j. GPP 21: Pollution Incident Response Plans;</p> <p>k. GPP 22: Dealing with spills; and</p> <p>l. GPP 26: Safe storage – drums and intermediate bulk containers.</p> <p>Construction phase operations would be carried out in accordance with relevant guidance contained within the following PPG:</p> <p>a. PPG6: Working at construction and demolition sites;</p> <p>b. PPG7: Safe storage – the safe operation of refuelling facilities; and</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>c. PPG18: Managing fire water and major spillages.</p> <p>Additional good practice guidance for mitigation to protect the water environment can be found in the following key CIRIA documents and British Standards Institute documents which would inform the Final CEMP:</p> <ul style="list-style-type: none"> <li>a. British Standards Institute (2009) BS6031:2009 Code of Practice for Earth Works.</li> <li>b. British Standards Institute (2013) BS8582 Code of Practice for Surface Water Management of Development Sites.</li> <li>c. C753 (2015) The SuDS Manual (second edition);</li> <li>d. C744 (2015) Coastal and marine environmental site guide (second edition);</li> <li>e. C741 (2015) Environmental good practice on site guide (fourth edition);</li> <li>f. C648 (2006) Control of water pollution from linear construction projects, technical guidance;</li> <li>g. C609 (2004) Sustainable Drainage Systems, hydraulic, structural and water quality advice; and</li> </ul>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>h. C532 (2001) Control of water pollution from construction sites – Guidance for consultants and contractors.</p> <p><b>Fine sediment, surface water runoff, flooding and de-watering</b></p> <p>There are a wide range of measures that can be adopted by the Contractor to reduce the risk of excessive fine sediment in runoff (timing of works, minimising earthworks and seeding or covering them), to intercept runoff to prevent uncontrolled runoff from the Site (e.g. by using cut off drains, fabric silt fences, bunds and straw bales, designated areas for cleaning plant and equipment, wheel washes and road sweepers), and to treat runoff to remove excessive levels of fine sediment (e.g. settlement lagoons, sumps, spraying on to land or even proprietary measures such as lamella clarifiers).</p> <p>Temporary drainage facilities will be provided within the Work No. areas, including the Temporary Construction areas (including around the concrete batching plant in the East Site (Works No.5a)), throughout the construction phases, where necessary, to ensure controlled discharge of surface water run-off. Measures that would be considered for temporary drainage include:</p> <p>a. installation of measures such as swales, silt fences and appropriately sized settlement tanks/ ponds to reduce sediment load;</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>b. cut-off ditches or geotextile silt-fences, installed around excavations, exposed ground and</p> <p>c. stockpiles to prevent uncontrolled release of sediments from the Project;</p> <p>d. Site access points will be regularly cleaned to prevent build-up of dust and mud:</p> <p>e. a valve will be installed to isolate the settlement tank/ ponds in the event of a polluted discharge; and</p> <p>f. oil interceptors to be installed (notably the outflow from the settlement pond/ tank) to reduce the potential risk for contamination of groundwater and surface water.</p> <p>The Contractor would monitor the need for measures depending on the nature of the works being undertaken the weather conditions, and the performance of sustainable drainage systems installed.</p> <p>Best practice guidance and mitigation measures would be implemented to manage the risk of accidental spillages on site and potential conveyance to nearby waterbodies via surface runoff or land drains. These measures would be included in the WMP and adopted during the construction works. Measures would be in accordance with prevailing pollution prevention legislation and follow best practice guidance. They would include details of how fuel and other chemicals (including cement) would be stored, used on site, and equipment and</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>plant cleaned, as well as how leaks and spillages would be prevented or remediated if needed. This would also include the implementation of a Pollution Prevention Plan and an Emergency Response Plan. In addition, any site welfare facilities would be appropriately managed, and all foul waste disposed of by a licensed contractor to a suitably permitted facility. Measures include:</p> <ul style="list-style-type: none"> <li>a. containment measures will be implemented, including drip trays, bunding or double-skinned tanks of fuels and oils; all chemicals will be stored in accordance with their Control of Substances Hazardous to Health (COSHH) guidelines, whilst spill kits will be provided in areas of fuel/ oil storage;</li> <li>b. an Emergency Spillage Plan will be produced, which site staff will have read and understood;</li> <li>c. the mixing and handling of materials will be undertaken in designated areas and away from surface water drains; and</li> <li>d. plant and machinery will be kept away from surface water bodies wherever possible and will have drip trays installed beneath oil tanks/ engines/ gearboxes and hydraulics, which will be checked and emptied regularly. Refuelling and delivery areas will be located away from surface water drains.</li> </ul> <p>Temporary Construction Areas for laydown and construction compounds (Work No. 8 and Work No.9) would be suitably enclosed with fencing in order to stop construction plant etc. becoming buoyant</p>			



Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>and floating away should flooding from a breach or overtopping event occur.</p> <p>Construction materials would be suitably stored in line with best practice and COSHH/COMAH regulations. Siting construction materials in areas of low flood risk where possible and planning works by reference to regularly monitored weather forecasts. In the event of extreme weather and a flood warning being in place construction plant would be removed from the Site for the duration of the flood warning event.</p> <p>During the construction phase, the Contractor would monitor weather forecasts on a monthly, weekly and daily basis, and plan works accordingly. For example, works adjacent to the flood defences, works adjacent to the channel of any watercourse would be avoided or halted were there to be a risk of high flows or even flooding. In addition, the Contractor would sign up to Environment Agency flood warning alerts and produce an Emergency Response Plan which details the actions it would take in the event of a possible flood event. These actions would be hierarchal meaning that as the risk increases the Contractor would implement more stringent protection measures. This is important to ensure all workers, the construction site and third-party land, property and people are adequately protected from flooding during the construction phase.</p> <p>If groundwater is encountered during below ground construction, suitable de-watering methods would be used. A dewatering scheme will be prepared and implemented to manage groundwater arising</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>from the operations and water treatment prior to controlled discharge. Any significant volumes of groundwater dewatering required, dependent on disposal methods, would require an Environmental Permit. Potential for groundwater emergence in excavations would be assessed prior to commencing works on site to establish volumes and points of discharge, and ultimately any residual flood risks.</p> <p>Safe egress and exits would be maintained at all times when working in excavations. When working in excavations a banksman would be present at all times.</p> <p>All construction workers would undergo site induction training prior to being allowed access onto site. This would include instructions on what to do in the event of emergency incidents such as flooding, access and egress routes and the location of safe refuge, if required.</p> <p>As part of the proposed works, the standard of protection afforded by the existing flood defences in proximity to the jetty access road and pipe rack would be increased as the crest height of the defences would be increased to 7m AOD and designed to tie in with the defences along either side.</p> <p>A small area to the south east of the Temporary Construction Area (Work Area 9), adjacent to the watercourse, is located in Flood Zone 2. During the construction phase no temporary buildings, plant or materials will be located within this area of fluvial floodplain to allow storage of flood water should high flows occur on the North Beck.</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>The drainage approach for Temporary Construction Area (Work No. 8) 's surface water and drainage approach would allow for a filter drain system to be installed to collect surface water run-off along the perimeter. The run-off would then be taken to an oil interceptor, silt buster or similar to treat run-off to an acceptable quality level.</p> <p>The ground within Temporary Construction Area (Work No. 9) will be covered with breathable heavy duty ground mat protection to prevent any undue environmental impact. This will allow the Temporary Construction Area to continue to drain at current greenfield runoff rates.</p> <p>The Environment Agency require an 8m clear strip from the landward toe of the fluvial defence along the watercourse to allow for maintenance and access. Any compound or storage area located within the Temporary Construction Area (Work No.9) would therefore be located further than 8m from the landward toe.</p> <p><b>Continuity of the Tidal Flood Defences</b></p> <p>During the construction period piling will be located a sufficient distance away from the flood defence and designed so that the defence is not adversely affected. On the landward side, temporary works and contingency measures will be put in place, as necessary, for the construction of the proposed ramps and new section of flood defence to ensure the continuity of the flood defence throughout the works.</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>The contractor will be required to provide a contingency plan for deployable or temporary flood defence works methods, approved by the Environment Agency, prior to the commencement of the works, or through structuring the works in such a way that the existing defence wall can remain in-situ until the new structure is completed.</p> <p>Further information will be provided and consultation with the Environment Agency undertaken when the design and construction method are finalised. Mitigation measures will include a combination of detailed weather forecasting with construction works only undertaken at low tide.</p> <p>The flood defences and any future works to the defences will not be impacted as a result of the Project. Sufficient clearance between the flood defences and the jetty access road and pipe-rack will be incorporated to enable machinery to access the flood defences for inspection/maintenance purposes.</p> <p>Bridleway 36 will be rerouted around the perimeter of Work No. 9, on the North Beck side. The bridleway diversion shall be fenced on both sides to prevent any access to either Work No. 9 or to the North Beck flood defence. The route of the bridleway shall be more than 1m away from the landward toe of the flood defence. Reference is made to a layout drawing given in the response to (Appendix 7) <b>[REP1-025]</b>, which includes the indicative route of the bridleway diversion.</p> <p>The Bridleway 36 diversion will include a temporary bridge over the drainage ditch running parallel to the sea wall. The design of this</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>bridge shall be such that flow in the ditch is not restricted and an air gap is always present beneath it. The design of the temporary bridge shall be agreed with the Environment Agency.</p> <p><b>Water Assets</b></p> <p>The WMP included within the Final CEMP will include steps to remove the risk of construction works causing damage to water assets including underground water utility pipelines. Project notifications would be communicated to utility service providers, including Anglian Water and others. This service ensures up-to-date information is available on the location of above and below ground cables and pipelines on drawings/maps.</p>			

**Table 16: Climate Change**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Greenhouse gas emissions.</p> <p>Risks related to severe weather events.</p>	<p>A risk assessment of severe weather impacts on the construction process would be produced by the main contractor to inform the need for construction mitigation measures. Any receptors and/or construction-related operations and activities potentially sensitive to severe weather events will be considered in that assessment. Climate change projections will be considered in the risk assessments.</p>	All Work No's	Contractor	<p>NELC for terrestrial aspects</p> <p>MMO for marine aspects</p>

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>The main contractors' Environmental Management System ("EMS") would consider all measures deemed necessary and appropriate to manage severe weather events and would as a minimum cover training of personnel and prevention and monitoring arrangements. These would include (as required):</p> <ul style="list-style-type: none"> <li>a) Use of storm defences (e.g., walls, riprap);</li> <li>b) Designing the Site with refuges and storm-resilient materials and form; and</li> <li>c) Ensuring appropriate storage of plant and materials.</li> </ul> <p>As appropriate, construction method statements will also consider severe weather events where risks have been identified. The design of tall structures and jetties will be reviewed to ensure stability of tall structure in stronger wind and wave actions.</p> <p>Risk for crane work will be assessed to make sure the impact of increased wind speeds and gusts are adequately covered.</p> <p>Prevention measures and health and safety plans will be developed to prevent worker exhaustion due to heat, manage flood risk during construction.</p> <p><b>GHG Assessment</b></p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>Measures would be implemented to reduce embodied carbon in construction materials. Examples include:</p> <ul style="list-style-type: none"> <li>a) Prioritising sourcing secondary/recycled materials, particularly for materials with energy-intensive processing (e.g., green steel)</li> <li>b) Utilising locally-sourced products and those with higher recycled content wherever feasible</li> <li>c) Incorporating recycled content into concrete/replacing cementitious materials with secondary materials (e.g., PFA, GGBS, silica, limestone fines)</li> <li>d) Designing for minimal waste creation</li> <li>e) Reusing site-won materials wherever possible, to minimize the use of natural resources and unnecessary materials (e.g., reclaim waste from enabling works as aggregates/ sub-base)</li> </ul> <p>Other measures that would reduce construction-related emissions include:</p> <ul style="list-style-type: none"> <li>a) Switching vehicles and plant off when not in use and ensuring all vehicles conform to current EU emissions standards;</li> <li>b) Pursuing alternatively/renewably powered plant (e.g., biodiesel, hydrogen-powered, battery-powered); and</li> </ul>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	c) Conducting regular planned maintenance of all operating plant and machinery to optimize efficiency.			

**Table 17: Materials and Waste**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Reduction in materials required for construction available in the relevant markets.</p> <p>Effects that on-site generated materials have on the existing and future landfill void capacity during Project construction.</p> <p>Changes to allocated/ safeguarded waste site access.</p>	<p>The Project will aim to prioritise waste prevention, followed by preparing for re-use, recycling and recovery and lastly waste disposal to landfill as per the waste hierarchy.</p> <p>A number of designing out waste mitigation measures will be implemented during the Project design and subsequent construction phase and are included in the OSWMP (Appendix A of this Outline CEMP) with the aim of minimising material use, designing for reuse and recovery, future proofing of materials as well as suggested targets for waste recovery and recycled content. A final SWMP will be prepared where appropriate and appended to the relevant final CEMP.</p> <p>The reuse of excavated material would be covered by a CL:AIRE DoW CoP (Ref 6-14) MMP developed by the Contractor before the commencement of construction and for obtaining all necessary approvals (in accordance with the Final CEMP). This would support the re-use of excavated materials; minimise off-site disposal; and demonstrate the necessary lines of evidence to support the proper</p>	All Work No's	Contractor	<p>NELC for terrestrial aspects</p> <p>MMO for marine aspects</p>



Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	reuse/ offsite disposal of materials and ensure compliance with regulatory guidance.			

**Table 18: Ground Conditions and Land Quality**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Risks to construction workers</p> <p>[Direct contact with contamination and inhalation of dust/soil derived vapours]</p>	<p>Construction workers on Site will adhere to site-specific health and safety assessments.</p> <p>Site-specific risk assessments and the use of personal protective equipment will form a pre-requisite for workers coming onto Site and would be produced as part of the Construction Phase Plan to be prepared by the Contractor.</p> <p>Entry into excavations or any other enclosed space on a construction site will comply with confined space legislation and be assessed prior to entry.</p> <p>To minimise the risk to off-site human health, general best practice guidance will be followed on Site to minimise dust generation, as outlined in “Environmental Good Practice on Site”, 4th Edition, CIRIA Publication C762 (Ref 6-23) and other relevant guidance and good practice.</p>	<p>Terrestrial aspect of <b>Work No. 1</b> and <b>Work Nos. 2 – 10</b> (inclusive)</p>	<p>Contractor</p>	<p>NELC</p> <p>Environment Agency</p>

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Degradation of soil resources.</p> <p>Generation of waste soils.</p>	<p><b>Testing of soils:</b></p> <p>Potentially contaminated soils will be tested in accordance with BS1997:2004 Eurocode 7, BS16907-1 to 7:2018 Earthworks, BS6031:2009 Code of Practice for earthworks and National Highways (“NH”) guidelines including DMRB Series 600 ‘Earthworks’.</p> <p><b>Reuse of soils:</b></p> <p>If it is identified that surplus materials can be reused on Site, the Final Remediation Strategy/Strategies will define any treatment measures required and a risk-based compliance criteria for soils to be screened against prior to reuse.</p> <p>If soil materials are considered to be surplus, the soil materials will be classified under the Waste Framework Directive (“Waste FD”) (2009/98/EC) (Ref 6-15) as hazardous (17-05-03) or non-hazardous (17-05-04) soils using a propriety assessment tool (e.g., “HazWasteOnlineTM”).</p> <p>Waste acceptance criteria (“WAC”) testing will be required if waste is deemed as hazardous before disposal in a landfill.</p>	<p>Terrestrial aspect of <b>Work No. 1</b> and <b>Work Nos. 2 – 10</b> (inclusive)</p>	<p>Contractor</p>	<p>NELC</p> <p>Environment Agency</p>
<p>Impact to Soils</p>	<p>Topsoil removal or stockpiling is not proposed in the Laporte Road Temporary Construction Area (Work No. 9) as soils will need to be levelled and compacted, prior to use as a laydown area. This area will be subject to light grading, with a breathable heavy duty ground mat</p>	<p>Work No. 9</p>	<p>Contractor</p>	<p>NELC</p>

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>protection applied following these works to reduce potential compaction from materials laydown and associated activities.</p> <p>Following the completion of construction activities, agricultural land taken on a temporary basis will be restored and returned to the landowner for agricultural use.</p>			
Impact to Soils	<p>Potential impacts specific to contamination impacting on soil resources will be mitigated through the following measures:</p> <ul style="list-style-type: none"> <li>a) Works will be in compliance with BS 3882:2015 'British Standard Specification for Topsoil and Requirements for Use' (2015) and the Construction Code of Practice for the sustainable use of soils on construction sites (Ref 6-24).</li> <li>b) The source of topsoil will be investigated carefully with respect to its suitability for the intended use.</li> <li>c) A Soil Management Plan, based on the Outline Soil Management Plan (Appendix B to this Outline CEMP) will be prepared by the contractor prior to the start of construction and will form an appendix to the Final CEMP, where relevant, detailing the areas and type of topsoil/subsoil to be stripped, stripping method, haul routes and the management of the soil stockpiles.</li> <li>d) Topsoil will be handled only in the appropriate conditions of weather and soil moisture, and with suitable machinery.</li> </ul>	<p>Terrestrial aspect of <b>Work No. 1</b> and <b>Work Nos. 2 – 10</b> (inclusive)</p>	Contractor	<p>NELC</p> <p>Environment Agency</p>

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>e) The stockpiling of soils will be avoided whenever possible. Where stockpiling is unavoidable, heaps would be tipped loosely and the surface firmed and shaped to shed water.</p> <p>f) Where possible, topsoil will be re-used on site as applicable.</p> <p>g) The movement of traffic will be confined to designated haul routes to reduce the amount of heavy machinery going over soil materials which could cause compaction of soil materials. Such routes would exclude areas of proposed landscaping.</p>			
Impacts to surface waters	<p>To minimise the potential for run-off from material stockpiles to surface water bodies, any stockpiled material stored on the Site will be stored at a suitable distance from watercourses. If such material stockpiles are not used within three months, temporary covers or reseeded measures, for soils, will be implemented. Erosion protection matting may also be used. Collectively, these measures will minimise the potential for sediment mobilisation via wind and water flows.</p> <p>To further prevent the potential for surface run-off and mobilisation of potential contaminants, any washing of vehicles and equipment will be undertaken in controlled areas only. Such locations will be agreed with the local planning authority and/or the EA and will be defined in the Final CEMP.</p> <p>Stockpiled materials will be located away from watercourses and will be reseeded or temporarily covered if they are not to be used within 3 months and following the reinstatement of the proposed development.</p>	Terrestrial aspect of <b>Work No. 1</b> and <b>Work Nos. 2 – 10</b> (inclusive)	Contractor	NELC Environment Agency

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>Erosion protection matting may be used to minimise sediment in water flow or wind.</p> <p>Impermeable surfacing and bunding has been incorporated into the design of the Project, where appropriate, to mitigate potential effects associated with the accidental spillage of polluting materials.</p> <p>Measures will be set out in the Final CEMP and adhered to during construction, in order to prevent or minimise spillage risks and impacts during the construction phase. The measures will also address accidental spillages associated with building construction, foundations, concrete usage and the management of concrete batching.</p> <p>Vehicle and equipment washing will only take place in controlled areas.</p>			
Impacts to groundwater	<p><b>Piling and deep foundations:</b></p> <p>Following any further Ground Investigation and geotechnical assessments, the construction methodology of the Project will be assessed prior to commencement of the Project to consider and reduce if necessary the potential risk associated with the development of preferential pathways if piling, other deep foundations or ground improvements are required.</p> <p>Preferential pathways may be created between the Made Ground, superficial Secondary Undifferentiated Aquifers and the Principal</p>	<p><b>Work No. 3 and Work No. 5</b></p>	Contractor	<p>NELC</p> <p>Environment Agency</p>

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>Aquifer in the bedrock as a result of the construction of the Project. For example, if piled foundations are required and contamination is identified on the Site, it is anticipated that a piling risk assessment will be undertaken which will comply with industry best practice such as the EA Guidance “Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention” (Ref 6-17) and “Piling in Layered Ground: risks to groundwater and archaeology – Since Report SC0200074/SR” (Ref 6-18). Piling method statements would detail measures to protect the aquifer if there is potential to cause pollution.</p> <p><b>Groundwater monitoring:</b></p> <p>Groundwater monitoring would be undertaken as defined in the <b>Outline Remediation Strategy (Appendix 21.C of the ES [APP-217])</b></p>			
Impacts from ground gases	<p><b>Updated Ground Gas Risk Assessment:</b></p> <p>The Ground Gas Risk Assessment (See <b>Appendix 21.B</b> of the ES <b>[APP-216]</b>) (RB17 methodology), using the average TOC of 1.25% in Made Ground, has classified the Site areas as Characteristic Situation CS2. The Characteristic Situation rating is based on the CL:AIRE RB17 (Ref 6-14) Methodology and is anticipated to represent the worst-case scenario. CS2 is defined as a low risk associated with ground gas.</p>	<b>Work No. 3 and Work No. 5</b>	Contractor	NELC  Environment Agency

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p><b>Ground gas monitoring:</b></p> <p>Additional ground gas monitoring would be undertaken for <b>Work No. 3</b> and <b>Work No. 5</b>, prior to construction, to confirm the gas and flow rate regime across these parts of the site including gas sampling and laboratory analysis to identify the potential source of the gas and validate the results of the monitoring.</p> <p>The additional ground gas monitoring defined above will be used to confirm the existing Ground Gas Risk Assessment.</p> <p>It is anticipated that buildings will be designed for a Characteristic Situation CS2.</p> <p><b>Design Response:</b></p> <p>During construction, access to confined spaces and excavations would be restricted. Where work in confined spaces is unavoidable, a site-specific and task specific risk assessment would be undertaken prior to the commencement of the works. This assessment would cover potential risks to both the construction staff and the local population. Monitoring of confined spaces for potential ground gas accumulation would be carried out and the works would be undertaken by suitably trained personnel with the use of specialist personal protective equipment where necessary.</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Impacts to underground assets	Prior to the commencement of any underground works, the Applicant will undertake any required additional utility surveys to identify any underground infrastructure where underground construction works are planned.	All Work No's	Contractor	Utilities companies as relevant
Risks associated with coal mining hazards	The Project lies within a coal mining area which may contain unrecorded coal mining related hazards. If any coal mining feature is encountered during development, this would be reported immediately to the Coal Authority on 0345 762 6848.	All Work No's	Contractor	Coal Authority

**Table 19: Major Accidents and Disasters**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Potentially harmful substances causing injury or entering the environment e.g. into watercourses.</p> <p>Use of diesel: release which is ignited could cause harm to people via exposure to thermal radiation in a fire, or if unignited, diesel can cause harm to people if</p>	<p>Measures to prevent spillages to watercourses are covered in <b>Table 3.13</b>.</p> <p>The Construction, Design and Management Regulations (“CDM”) regulations (Ref 6-25) will be followed as required throughout the design phase which includes the development of design Risk Register(s). These are live documents, maintained by the Project Manager throughout the design and construction phases of projects to identify and document risks, assign ownership, priority and mitigation measures.</p> <p><b>Standard Mitigation Measures</b></p>	All Work No's	Contractor	NELC and HSE/EA (pursuant to the COMAH Regulations)



Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>inhaled, ingested or exposed to skin. A release of diesel to the environment such as the Humber could result in harm to flora and fauna.</p> <p>Construction work can include potentially hazardous activities such as working near to overhead power supplies or buried services such as power cables and gas transmission mains.</p> <p>Electrical systems strike leading to harm to people including fatal injuries.</p> <p>Underground gas main/unexploded ordnance ("UXO") strike leading to release of gas and fire/explosion with harm</p>	<p>Formal risk assessments to identify potential hazards during construction (HAZCON) are typically carried out prior to completion of the design phase for process facilities such as the Project to ensure compliance with the COMAH Regulations. This will involve development of the pre-construction information package to be included in the tender documents for review by the Principal Contractor. Once appointed, the Principal Contractor will develop a Construction Phase Plan in compliance with CDM Regulations. It is anticipated that the construction of this facility will be a HSE notifiable project.</p> <p>During construction, a formal risk assessment of the potential hazards of simultaneous operations ("SIMOPS") will be carried out where activities at the Project are in close proximity to existing operational facilities and there is a potential for conflict. This risk assessment will involve representatives from the Project alongside stakeholders such as neighbouring facilities, electricity and gas transmission specialists where there are existing high voltage electrical systems and gas pipelines and others as appropriate.</p> <p>Established protocols will be used to develop Safety Systems of Work ("SSoW") for activities carried out in the vicinity of high pressure ("HP") gas transmission pipelines and high voltage ("HV") electricity transmission systems. These protocols include guidance documents published by the HSE, National Grid and other network operators:</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>to people including potential for fatal injuries.</p> <p>Incident during construction</p>	<p>a) HP gas pipelines can operate at pressures up to 90 barg and are normally buried to a depth of at least 1.1 m. An excavation of 0.3 m or more above the pipeline must have prior agreement with the pipeline operator whose representative will typically be on site while the work is in progress to provide information and supervise activities.</p> <p>b) HV electrical cables operate at voltages up to 400kV and can either be connected to overhead transmission systems or buried below ground level. There are defined clearance distances to be observed between these cables and any structure or work activity.</p> <p><b>Contact with high voltage electricity</b></p> <p>Project notifications would be communicated to utility service providers, including National Grid and others. This service ensures up-to-date information is available on the location of above and below ground electrical cables on drawings/maps.</p> <p>Locations of utilities will be confirmed by use of specialist tools to detect underground cables and pipes.</p> <p>During the construction phase of the Project, activities which would be carried out in proximity to HV electrical distribution networks would be carefully controlled via risk assessments.</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>Appropriate techniques including hand-dig would be used as required by these risk assessments.</p> <p>Protective measures and safety signage would be used to alert personnel to overhead and below ground electrical hazards.</p> <p>Only suitably qualified and experienced personnel (“SQEP”) would operate equipment such as cranes and excavators.</p> <p><b>Contact with underground gas main or UXO</b></p> <p>Measures as Risk Event 1 for underground services such as gas mains.</p> <p>The Project would work with UK Gas Transmission services to ensure work is carried out safely where gas infrastructure has been identified as present.</p> <p>An UXO survey would be completed for the Site and any remedial activities safely completed prior to construction commencing.</p> <p><b>Construction incident – structural collapse, collision</b></p> <p>The engineering design of the Project, in particular civil and structural engineering would be carried out in accordance with all applicable legislative requirements and industry standards.</p>			

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
	<p>Groundworks to ensure site stability would be carried out as part of the Project development.</p> <p>Equipment and vehicles used during construction would be carefully selected and appropriate temporary construction access installed.</p> <p>Security controls would be in place throughout construction including guards and CCTV to prevent unauthorized access to Site.</p>			

**Table 20: Socio-Economics**

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
<p>Potential effects on PRow includes impacts on users of footpaths, bridleways, byways and National Cycle Network (“NCN”) routes from disruption to or diversion of journeys.</p> <p>Potential impacts to residents of Kings</p>	<p>As a result of the diversion of Public Bridleway 36 during the construction phase, adequate signage will be put into place.</p> <p>During construction, residents along Kings Road would be notified via a letter drop of the timings, duration and details of any works to utilities along Kings Road.</p>	<b>Work No’s 2,9 and 10</b>	Contractor	NELC

Potential Impact	Mitigation/Enhancement Measure	Relevant Work Nos	Responsibility	Enforcing body
Road during construction				

## 4.2 Implementation and Operation

4.2.1 The Final CEMP will set out all roles, responsibilities and actions required in respect of implementation of the measures described in this Outline CEMP, including:

- a. An organogram showing team roles, names and responsibilities.
- b. Training requirements for relevant personnel on environmental topics.
- c. Information on site briefings and toolbox talks that will be used to equip relevant staff with the necessary level of knowledge to follow environmental control procedures.
- d. Measures to advise employees of changing circumstances as work progresses.
- e. Communication methods.
- f. Document control.
- g. Environmental emergency procedures.

## 5 Monitoring

- 5.1.1 To meet the requirement of the Final CEMP, environmental monitoring of the Project and its impacts will be undertaken throughout the construction phase. In particular, the following requirements of the Final CEMP will be closely monitored:
- a. Licences, permits and approvals
  - b. Dust and noise monitoring
  - c. Water pollution prevention
  - d. Vegetation protection
- 5.1.2 Specific monitoring requirements outlined within the topic specific tables within **Section 4** above are presented in **Table 21** below:

**Table 21: Monitoring Requirements**

ES Chapter	Monitoring Requirements
<p><b>Chapter 6: Air Quality</b></p>	<p>Record of meteorological conditions to be kept each day to include:</p> <ul style="list-style-type: none"> <li>• Date;</li> <li>• Description of conditions in AM and PM (sunny, dry, cloudy, wet, windy, etc);</li> <li>• Predominant wind direction in AM and PM;</li> <li>• Wind speed in AM and PM.</li> </ul> <p>Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This will include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of the Site Boundary, with cleaning to be provided if necessary. This would include the following information:</p> <ul style="list-style-type: none"> <li>• Date and time</li> <li>• Summary of meteorological conditions</li> <li>• Whether or not evidence of dust deposition is found</li> <li>• If so, where and to what extent</li> <li>• A summary of the operational activities undertaken that day</li> </ul>

ES Chapter	Monitoring Requirements
	<ul style="list-style-type: none"> <li>• A description of the remedial actions taken and changes made to operational procedures, in order to eliminate or minimise dust emissions</li> <li>• Details of any complaints received.</li> </ul> <p>Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.</p> <p>Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.</p> <p>Agree dust deposition, dust flux, or real-time PM<sub>10</sub> continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences.</p> <p>It is not anticipated that quantitative monitoring will be required during the works. However, should the regular visual inspections identify that significant quantities of dust have traversed the Site Boundary, and or if there are regular substantiated complaints, then quantitative monitoring will be required.</p>
<b>Chapter 7: Noise and Vibration</b>	Monitoring of noise and vibration complaints and reporting to the contractor for immediate investigation.
<b>Chapter 8: Nature Conservation (Terrestrial Ecology)</b>	<p>An ECoW will be present during construction as appropriate to oversee implementation of impact avoidance commitments.</p> <p>A Water Vole Class Licensed Ecologist will be appointed to oversee the works to Ditch 5 that will be undertaken under a Natural England Water Vole Class Licence.</p>
<b>Chapter 11: Traffic and Transportation</b>	Travel Plan Co-ordinator to oversee monitoring of the individual measures within the CTMP and CWTP.
<b>Chapter 12: Marine Transport and Navigation</b>	<p>Weather forecasting and monitoring shall be carried out and compared with the allowable weather limits for reliable planning and assessment of risk regarding the weather operating limits.</p> <p>A maximum speed limit of 5 knots will apply to vessels passing the Project Berth (similar to IOT). VTS will monitor for unsafe speeds, including during construction work.</p>



ES Chapter	Monitoring Requirements
	<p>Load monitoring. Monitoring will be in place to detect any ranging of a berthed vessel prior to a potential breakout.</p> <p>CCTV will be used to monitor the jetty area.</p>
<b>Chapter 15: Historic Environment (Marine)</b>	Monitoring of AEZs
<b>Chapter 18: Water Quality, Coastal Protection, Flood Risk and Drainage</b>	<p>It will be for the Contractor to continually monitor fine sediment and water runoff and the need for measures depending on the nature of the works being undertaken the weather conditions, and the performance of sustainable drainage systems installed.</p> <p>During the construction phase, the Contractor would monitor weather forecasts on a monthly, weekly and daily basis, and plan works accordingly.</p>

- 5.1.3 As part of the monitoring process the contractor will allocate a designated Environmental Site Officer(s), who will be present on Site throughout the construction process and when new activities are commencing. The Environmental Site Officer will observe site activities and report any deviations from the Final CEMP in a logbook, along with the action taken and general conditions at the time. The Applicant will be informed of any deviations from the Final CEMP as soon as possible following identification of such issues. The Environmental Site Officer would also act as day-to-day contact with the relevant stakeholders.
- 5.1.4 During construction, the Environmental Site Officer will conduct daily walkover surveys to ensure all requirements of the Final CEMP are being met. Action from these surveys will be documented on an Environmental Action Schedule, discussed with the Site Foreman for programming requirements and issued weekly for actioning.
- 5.1.5 The Environmental Manager/ Project Manager will arrange regular formal inspections to ensure the requirements of the Final CEMP are being met. After completion of the works, the Environmental Site Officer will conduct a final review.
- 5.2 Records**
- 5.2.1 The Environmental Manager/Project Manager together with the EcoW will retain records of environmental monitoring and implementation of the Final CEMP. This will allow provision of evidence that the Final CEMP is being implemented effectively. These records will include:
- a. Environmental Action Schedule

- b. Licences, permits and approvals
- c. Results of inspections by Environmental Manager/Project Manager
- d. Other environmental surveys and investigations
- e. Environmental equipment test records

5.2.2 The Final CEMP will be updated as necessary, with a full review as required (at least quarterly) throughout the construction period.

## 6 References

- Ref 6-1 Construction Industry Research and Information Association (CIRIA) (2015). Environmental Good Practice on Site, 4th Edition, CIRIA Publication C741.
- Ref 6-2 Defra (2009). Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites. Accessed February 2023.
- Ref 6-3 Holman et al. (2014), Guidance on the assessment of dust from demolition and construction. Version 1.
- Ref 6-4 British Standards Institute (BSI). (2014). BS 5228:2009+A1:2014: Code of practice for noise and vibration control on construction and open site– Part 1: Noise’.
- Ref 6-5 British Standards Institute (BSI). (2014). BS 5228:2009+A1:2014: Code of practice for noise and vibration control on construction and open site – Part 2: Vibration’.
- Ref 6-6 JNCC (2010). Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise.
- Ref 6-7 The Stationery Office (1981). Wildlife and Countryside Act 1981.
- Ref 6-8 The British Standard (2012). Trees in Relation to Design, Demolition and Construction to Construction - Recommendations (BS 5837).
- Ref 6-9 JNAPC (2006). JNAPC Code of Practice for Seabed Development. York, Joint Nautical Archaeology Policy Committee.
- Ref 6-10 Historic England (2016) The Assessment and Management of Marine Archaeology in Port and Harbour Development. Swindon, Historic England
- Ref 6-11 The Stationary Office Limited (1991). Water Resources Act 1991.
- Ref 6-12 HM Government (2014). The Water Act 2014.
- Ref 6-13 Environment Agency (2022). Catchment Data Explorer.
- Ref 6-14 Contaminated Land: Applications in Real Environments (CL:AIRE), (2011), Definition of Waste: Development Industry Code of Practice (DoWCoP), Version 2.
- Ref 6-15 European Parliament and Council. (2008). Directive 2008/98/EC Waste Framework Directive.
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- Ref 6-19 British Standards Institute. (2004). BS EN 1997:2004+A1:2013. Eurocode 7. Geotechnical design – General rules.
- Ref 6-20 British Standards Institute. (2018) BS16907-1 to 7:2018 Earthworks
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- Ref 6-22 Highways England. (2016). Manual of Contract Documents for Highway Works Volume 1 Specification for Highway Works. Series 600 Earthworks. Amendment February 2016
- Ref 6-23 Law (eds), Charlie and D'Aleo (eds), Sirio. (2016). CIRIA C762 Environmental Good Practice on Site Pocket Book (Fourth Edition). London : CIRIA.
- Ref 6-24 British Standard, BS 3882:2015, Specification for Topsoil and Requirements for Use' (2015) and the Construction Code of Practice for the sustainable use of soils on construction sites.
- Ref 6-25 HMSO (2015). The Construction (Design and Management) Regulations 2015.
- Ref 6-26 National Joint Utilities Group (NJUG) (2007). Vol 4 Issue 2 – Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.