

# H2Teesside Project

Planning Inspectorate Reference: EN070009/APP/5.12

Land within the boroughs of Redcar and Cleveland and Stockton-on-Tees, Teesside and within the borough of Hartlepool, County Durham

Document Reference: 5.12: Framework Construction Environmental Management Plan (CEMP)

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 – Regulation 5(2)(q)



**Applicant: H2 Teesside Ltd**

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## 1.0 INTRODUCTION

### 1.1 Proposed Development

1.1.1 The Proposed Development comprises the construction, operation (including maintenance where relevant) and decommissioning of up to 1.2-Gigawatt Thermal (GWth) Lower Heating Value (LHV) Carbon, Capture and Storage (CCS) enabled Hydrogen Production Facility (the 'Hydrogen Production Facility') located in Teesside, along with the pipeline infrastructure required to supply hydrogen (H<sub>2</sub>) to offtakers (customers) and the necessary utility connections. Carbon dioxide captured by the Proposed Development will be transported by pipeline to the separately consented Northern Endurance Partnership infrastructure on the adjacent Net Zero Teesside site for high-pressure compression and offshore transport and underground storage.

1.1.2 For further information relating to the Proposed Development, please refer to Chapter 4: Proposed Development (ES Volume I, EN070009/APP/6.2).

### 1.2 Purpose of the Framework Construction Environmental Management Plan

1.2.1 This Framework Construction Environmental Management Plan (CEMP) is a standalone document which is appended to the Environmental Statement (ES) (ES Volume I, EN070009/APP/6.2) (ES Volume II, EN070009/APP/6.3) (ES Volume III, EN070009/APP/6.4) for the Proposed Development.

1.2.2 The aim of the Framework CEMP is to ensure that design and impact avoidance measures reported in the ES are both implemented and effective, together with any additional mitigation measures identified as being required to reduce significant adverse effects associated with the construction of the Proposed Development. This Framework CEMP will form the basis for the Final CEMP(s)<sup>1</sup>, which will be produced by the Applicant's Engineering, Procurement and Construction (EPC) Contractor(s) prior to construction.

1.2.3 This Framework CEMP details how environmental effects resulting from the construction of the Proposed Development would be managed by:

- Ensuring all identified actions and measures in the tables in Section 7 are implemented by the EPC Contractor(s);
- Ensuring all identified actions and measures are accountable, verifiable and auditable;
- Ensuring compliance with relevant environmental legislation; and
- Ensuring best practice measures detailed within this Framework CEMP are implemented.

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<sup>1</sup> It is possible that more than one Final CEMP(s) (and its associated sub-plans) could be brought forward for approval by the EPC Contractor(s) depending on the phasing / work packaging approach undertaken. For the purposes of this Framework CEMP, references to 'the' or 'a' Final CEMP(s) / SWMP(s) / WMP(s), should therefore be read as meaning any Final CEMP(s) / SWMP(s) / WMP(s) that is brought forward.

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- 1.2.4 The Final CEMP(s) must be approved by Redcar and Cleveland Borough Council (RCBC), Stockton-on-Tees Borough Council (STBC), and Hartlepool Borough Council (HBC) prior to the commencement of the construction phase of the Proposed Development.
- 1.2.5 Site-specific controls, which will be included within the Final CEMP(s), will be developed in accordance with the measures within this Framework CEMP. Furthermore, the Framework CEMP describes the environmental guidance and procedures that will be required and must be complied with during the construction period to support successful management of potential adverse environmental effects as a result of construction activities.
- 1.2.6 It is expected that the EPC Contractor(s) will comply, as a minimum, with applicable environmental legislation at the time of construction, together with any additional environmental controls contained in the Draft Development Consent Order (DCO) (EN070009/APP/4.1).
- 1.2.7 The Framework CEMP will be followed by a Permitted Preliminary Works (PPW) CEMP and a Final CEMP(s), which will be produced for the Proposed Development prior to construction of the Proposed Development, following the appointment of the EPC Contractor(s). This is secured by a Requirement in the draft DCO (EN070009/APP/4.1).

#### Structure of the Framework CEMP

- 1.2.8 Sections 1 to 3 of the Framework CEMP present the structure and purpose of the document, as well as details of PPWs and the construction programme of the Proposed Development.
- 1.2.9 Sections 4 to 6 of the Framework CEMP focuses on the good practice measures and mitigation measures embedded within the working practices and procedures employed by the EPC Contractor(s) as well as the general operation of the construction compounds and welfare facilities in supporting the construction of the Proposed Development.
- 1.2.10 Section 7 of the Framework CEMP considers the potential impacts identified within each technical chapter of the ES (Chapters 8 to 22, ES Volume I, EN070009/APP/6.2). A range of best practice mitigation and construction management measures, as well as additional mitigation measures identified as being required to reduce significant adverse effects, have been accounted for and presented within the ES where applicable. These measures will be implemented during construction of the Proposed Development as demonstrated by the methods and procedures detailed within this Framework CEMP. The Framework CEMP also sets out the monitoring and auditing activities designed to demonstrate that the measures are carried out and that they serve as effective mitigation and management.
- 1.2.11 This Framework CEMP includes a series of supplementary outline management plans relating to environmental topics within the ES. These supplementary management plans are proposed to manage and minimise the effects of the construction of the Proposed Development, as follows:

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- Appendix A: Outline Site Waste Management Plan (SWMP);
  - Appendix B: Outline Water Management Plan (WMP); and
  - Appendix C: Indicative Lighting Strategy (Construction).
- 1.2.12 In addition, a series of other construction management plans have been prepared to support the DCO Application, and should be read alongside this Framework CEMP, as follows:
- Framework Construction Workers Travel Plan (ES Volume III, EN070009/APP/5.15);
  - Framework Construction Traffic Management Plan (ES Volume III, EN070009/APP/5.16); and
  - Outline Landscape and Biodiversity Management Plan (EN070009/APP/5.9).
- 1.2.13 SWMPs are used as a good practice measure on construction projects and to support planning and consenting applications and covers the requirements of paragraph 5.15.8 of the Overarching NPS for Energy (EN-1) (DESNZ, 2023a) as follows:
- “The applicant should set out the arrangements that are proposed for managing any waste produced and prepare a report that sets out the sustainable management of waste and use of resources throughout any relevant demolition, excavation and construction activities.”*
- 1.2.14 An Outline SWMP has been developed to act as a template for site staff on how to manage material assets (construction materials) and waste, in accordance with both legal and best practice requirements. The EPC Contractor will use this Outline SWMP as a basis for producing the Final SWMP for use throughout the duration of the Proposed Development’s construction phase, as secured through a Requirement of the Draft DCO (EN070009/APP/4.1).
- 1.2.15 The Final WMP will include an outline of responsibilities with regard to water management, required water quality monitoring, pollution prevention measures, training requirements for construction workers with regard to the water environment, an outline of likely relevant permissions and consents required, and a Pollution Incident and Response Plan.
- 1.2.16 Impacts that have been identified through the EIA for the operational phase of the Proposed Development are managed through the Environmental Permit and are not within the scope of this document.
- 1.2.17 Impacts during decommissioning of the Proposed Development will be assessed at a later stage and are not within the scope of this document or the Final CEMP(s).
- 1.3 Legislation, Planning Policy Context and Other Guidance**
- 1.3.1 Relevant environmental legislation, policy and guidance is detailed in Chapter 7: Legislative and Planning Policy Context (ES Volume I, EN070009/APP/6.2). Each technical chapter (Chapters 8 to 22 (ES Volume I, EN070009/APP/6.2)) also details
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legislation, policy and guidance relevant to their respective chapter and this applies to each respective chapter table in Section 7 below.

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## 2.0 PERMITTED PRELIMINARY WORKS AND NEXT STEPS

### 2.1 Introduction

2.1.1 Some early works are needed to facilitate the construction of the Proposed Development, these are known as Permitted Preliminary Works (PPWs) and will take place in advance of the construction of Phase 1 to facilitate both phases of construction as per Table 3-1 below.

2.1.2 Permitted Preliminary Works mean works consisting of, but not limited to, the following:

- environmental surveys;
- geotechnical surveys;
- surveys and protection of existing infrastructure;
- other investigations for the purpose of assessing ground conditions;
- the preparation of facilities for the use of contractors;
- the provision of temporary means of enclosure and site security for construction;
- temporary access roads;
- paving;
- diversion of existing services and laying of services;
- the temporary display of site notices or advertisements; and
- any other works agreed by the relevant LPA (confirmed in the PPW CEMP), provided that these will not give rise to any materially new or materially different environmental effects from those assessed in the Environmental Statement.

2.1.3 To facilitate these works, a PPW CEMP will be produced by the EPC Contractor(s) prior to construction, produced in accordance with the relevant parts of this Framework CEMP and secured via a Requirement of the Draft DCO (EN070009/APP/4.1). The PPW CEMP will be produced following receipt of development consent, if granted, and must be approved by Redcar and Cleveland Borough Council (RCBC), Stockton-on-Tees Borough Council (STBC), and Hartlepool Borough Council (HBC).

2.1.4 The PPW CEMP will cover the PPWs listed above and in the Draft DCO (EN070009/APP/4.1), commencing prior to the start of the main Phase 1 construction works.

### 2.2 Next Steps: Permitted Preliminary Works Construction Environmental Management Plan

2.2.1 The PPW CEMP will be produced in-line with the Framework CEMP, following receipt of development consent, if granted, and must be approved by RCBC, STBC,



and HBC, as secured through a proposed Requirement of the Draft DCO (EN070009/APP/4.1).

## **2.3 Next Steps: Final Construction Environmental Management Plans**

2.3.1 The Final CEMP(s) will be produced in-line with the Framework CEMP, following receipt of development consent, if granted, and must be approved by RCBC, STBC, and HBC. This will include and account for design details unavailable at this stage, as secured through a proposed Requirement of the Draft DCO (EN070009/APP/4.1).

2.3.2 The Final CEMP(s) will be produced alongside a number of other supplementary plans and assessments including but not be limited to the following:

- Final Site Waste Management Plan (produced in substantial accordance with Appendix A);
- Final Water Management Plan (produced in substantial accordance with Appendix B);
- Final Lighting Strategy (Construction) (produced in substantial accordance with Appendix C);
- Pollution Prevention Plan;
- Emergency Response Plan;
- Construction Dewatering Strategy;
- Flood Risk Management Action Plan;
- Materials Management Plan;
- Hazardous Materials Management Plan, including an Asbestos Management Plan;
- Invasive Non-Native Species Management Plan(s) which will include a biosecurity protocol for site traffic;
- Groundwater Risk Assessment;
- UXO Emergency Response Plan;
- Foundation Works Risk Assessment;
- Hydraulic Fracture Risk Assessment;
- Code of Construction Practice;
- Drilling Method Statement;
- a scheme for the notification of any significant construction impacts on local residents and for handling any complaints received from local residents relating to such impacts during construction of the Proposed Development; and
- HDD Collapse Clean-up Plan.

2.3.3 The above list of additional plans to be produced for the Final CEMP(s) do not need to be separate documents as listed above, so long as they achieve the desired effect

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- as set out in the REAC tables below. When the Final CEMP(s) is produced prior to construction, related subsets of plans may be merged into fewer documents as required and reasonably practicable.
- 2.3.4 The Final CEMP(s), including any site-specific controls, will be prepared with the objective of compliance with relevant environmental legislation and the mitigation measures set out within the ES and this Framework CEMP. Any additional construction licence, permits, or approvals that are required will be listed in the Final CEMP(s), including any environmental information submitted in respect of these.
- 2.3.5 A list of other licences and permits being sought for the Proposed Development at this stage is presented in the Other Consents and Licences Statement (EN070009/APP/5.7).
- 2.3.6 This Framework CEMP covers the principal construction activities, following the PPWs, envisaged at the time of preparation of the ES. The scope of the Final CEMP(s) will be determined through consultation with RCBC, STBC, HBC, and other relevant regulatory authorities. The key elements of the Final CEMP(s) will include:
- an overview of the Proposed Development and associated construction programme;
  - reduction of potential adverse impacts through design and other mitigation measures;
  - corrective action procedure(s); and
  - links to other complementary plans and procedures.
- 2.3.7 The Final CEMP(s) will identify how commitments made in the ES will be translated into actions on site and will include a schedule for implementing the actions through allocation of key roles and responsibilities.
- 2.3.8 Nothing in this Framework CEMP would prevent the modification or omission of the control measures set out in sections 3.0 – 9.0 of this Framework CEMP where the construction methodology means that the measures can be so modified or omitted. This will be confirmed (including confirming that the absence or change to such control measures would not lead to any materially new or materially different effects from those assessed in this ES) at the time of submission of the Final CEMP(s).
- 2.3.9 The EPC Contractor(s) will be responsible for working in accordance with the Final CEMP(s). The overall responsibility for implementation of the Final CEMP(s) will lie with the Applicant as overseer of the EPC Contractor(s).
- 2.3.10 Where possible, the Proposed Development has sought to follow existing linear infrastructure, however, the Hydrogen Pipeline Corridor will need to cross existing assets at several locations along the proposed route including buried gas pipelines, overhead lines, roads, railways and ditches. A combination of controls will be imposed on the construction works in these areas such as monitoring, protection, exclusion zones, hand digging, and temporary road closures, this is detailed further
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in Section 7 below The design and installation methodology for pipeline crossings will need to be discussed with the relevant asset owners during the next phase of design development. This will be detailed within the Final CEMP(s).

### 3.0 CONSTRUCTION PROGRAMME

#### 3.1 Introduction

3.1.1 The Proposed Development construction programme is anticipated to commence shortly after the DCO is granted (projected to be in the third quarter (Q3) 2025) and after the Final Investment Decision (FID).

3.1.2 The Proposed Development will be constructed in two phases as outlined in Chapter 5: Construction Programme and Management (ES Volume 1, EN070009/APP/6.2). Phase 1 will consist of a single Hydrogen Production Unit, on-site hydrogen storage and supporting utilities. The majority of the Hydrogen Pipeline Corridor will be constructed and completed in Phase 1 (except for specified short additional spurs within the Hydrogen Pipeline Corridors, to be completed in Phase 2) to facilitate transportation of H<sub>2</sub> to offtakers. Phase 2 will consist of a further Hydrogen Production Unit, on-site H<sub>2</sub> storage and supporting utilities constructed thereafter.

3.1.3 Subject to granting of the DCO, PPWs are expected to start in Q3 of 2025, with the construction of Phase 1 anticipated to begin in Q4 of 2025. Construction of Phase 1 is anticipated to last approximately 32 to 36 months and is expected to be complete in Q2 2028.

3.1.4 The early enabling works for Phase 2 may overlap with commissioning for Phase 1 in Q2 2028. It is expected that the construction of Phase 2 will begin in Q3 of 2028 (after Phase 1 is commissioned) and be completed by Q4 of 2030. It is proposed that there will be no overlap between the main construction phases of Phases 1 and 2.

3.1.5 If the duration of the construction of Phase 2 is extended (when compared to that for Phase 1 due to potential overlaps in Phase 1's operation and Phase 2's construction activities), ongoing management of the simultaneous operation and construction activities and minimisation of the associated risks and impacts would be required. The Applicant would be in control of both, and would be able to implement any management required directly when operating Phase 1 and constructing Phase 2 sequentially.

3.1.6 The key stages of all phases of the construction programme are outlined at a high level in Table 3-1 (below). It is anticipated that within this high-level programme the following activities will take place (following site clearance and remediation works anticipated to be undertaken by STDC in advance of site handover to the Applicant, which is not within the scope of this document):

- construction of temporary construction compounds and welfare facilities  
**(Work No. 9);**

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- construction of the Hydrogen Production Facility (Phase 1) – Main Site works (including new Air Separation Unit (ASU), if required) and any further remedial works required following, or in place of, STDC remediation for Phase 1 (**Work No. 1**);
  - construction of utility connections tie ins for natural gas, electricity, water supply and discharge, CO<sub>2</sub> export, N<sub>2</sub> and O<sub>2</sub> import (**Work Nos. 2, 3, 4, 5, 7 and 8**);
  - construction of Hydrogen Pipeline Corridor and spurs (**Work No. 6**);
  - plant, utility and Hydrogen Pipeline Corridor commissioning (Phase 1) (**Work No. 6**);
  - construction of Hydrogen Production Facility Phase 2 elements and any further remedial works required following, or in place of, STDC remediation for Phase 2 (**Work No. 1**); and
  - Phase 2 plant and network commissioning (**Work No. 1**).

3.1.7 Further details of the proposed construction programme and detailed descriptions of the construction methods for each element of the Proposed Development is provided in Chapter 5: Construction Programme and Management (ES Volume I, EN070009/APP/6.2).

**Table 3-1: Indicative Construction Programme for the Proposed Development**

DEVELOPMENT PHASE	2025				2026				2027				2028				2029				2030			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
PPW Phase 1																								
Construction Phase 1																								
Phase 1 Operation Commences																								
Enabling Works Phase 2																								
Construction Phase 2																								
Phase 2 Operation Commences																								

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## 3.2 Site Clearance and Remediation

3.2.1 Site remediation will be completed by STDC prior to the commencement of construction of the Proposed Development (involving demolition of existing structures within the boundary of the Main Site). It is currently anticipated that STDC will obtain the necessary consents and permits to do remedial works at the Main Site. The scope of works anticipated to be undertaken by STDC' demolition and civils contractor (or by the Applicant if STDC do not complete it) include the following activities:

- demolition of existing structures within the boundary of the Main Site;
- turn-over of made ground within the boundary of the Main Site to a depth of up to 2.5 m below ground level (bgl), including removal of derelict underground structures and obstructions and removal and treatment of historic environmental contamination, as required (where not already dealt with by the landowner prior to the Proposed Development);
- targeted removal of additional underground obstructions and remediation as requested by the Applicant, that might extend beneath 2.5m bgl; and
- placement of suitable material (either recovered excavation spoil or imported fill) to form the appropriate platform levels for development.

3.2.2 The Applicant will also review the scope of any additional remedial measures considered to be required following the completion of, or in place of, the remedial works undertaken by STDC. Additional remedial measures before or during construction, could include measures such as a discovery strategy for unexpected contamination, and will be reviewed following review of both ground investigation findings and relevant remediation specifications and verification reports from STDC. The process for securing the delivery of these remedial measures is secured by DCO Requirement. Where required, these works would be managed and controlled through the Final CEMP(s).

## 3.3 Construction Working Hours

3.3.1 The working hours at the construction compounds depend on the construction activities. Core construction working hours must not take place outside the hours of 07:00 to 19:00 on weekdays and 07:00 to 13:00 on Saturday, plus, up to one hour before and / or after for mobilisation (start-up and close down) procedures, this is secured via a Requirement of the Draft DCO (EN070009/APP/4.1).

3.3.2 A mobilisation period (i.e. the period up to one hour after and / or before the standard hours) is required in relation to daily start-up and close down procedures, including the following:

- deliveries and unloading;
- workforce movement to place of work;
- site briefings;

- inspections, refuelling and maintenance; and
  - general preparation and housekeeping works.
- 3.3.3 During the mobilisation period, activities will not include operation of plant or machinery and will be limited to activities that do not cause a disturbance to local residents, schools, businesses or other sensitive environmental receptors identified in the EIA.
- 3.3.4 In line with existing Redcar Bulk Terminal (RBT) operational constraints, materials movements from ships docked at RBT facilities to the adjacent temporary construction compounds will be tidally dependent.
- 3.3.5 Extended working hours for repair and maintenance (where required) on Sundays will be able to take place from 08:00 to 17:00. Repair and maintenance activities will comprise general mechanical maintenance to construction machinery and plant, cranes, excavators, compressors, grouting equipment and dewatering pumps.
- 3.3.6 These core working hours will apply to all works authorised under the DCO except in specific circumstances where it is likely that some construction activities will require 24-hour working at certain times. These circumstances relate to the items listed in Appendix 11A (ES Volume III, EN070009/APP/6.4) of Chapter 11: Noise and Vibration (ES Volume I, EN070009/APP/6.2).
- 3.3.7 Above and beyond those items, activities outside standard working hours that could give rise to disturbance will be kept to a reasonably practicable minimum. Where any other on-site works other than those listed in Appendix 11A are to be conducted outside the core hours, they will comply with any restrictions agreed with the LPAs, particularly regarding the control of noise and traffic. This will be confirmed within the Final CEMP(s).
- 3.3.8 Chapter 11: Noise and Vibration (ES Volume I, EN070009/APP/6.2) sets out specific mitigation and control measures required in order to prevent disturbance from such night-time construction activities, this is presented below in Table 7-4.

## 4.0 CONSTRUCTION COMPOUNDS AND WELFARE FACILITIES

### 4.1 Overview of Construction Compounds and Welfare Facilities

- 4.1.1 To optimise the management of construction, construction compounds and welfare facilities are needed to provide appropriately located areas for specific activities including (but not limited to), equipment and material storage, site offices, managing and maintaining plant, workers’ welfare facilities, car parking, environmental/waste handling areas, vehicle wheel wash areas, and operational activities such as concrete batching.
- 4.1.2 Seven construction compounds are required for the construction of the Proposed Development, as shown on Figure 5-1 (ES Volume II, EN070009/APP/6.3).
- 4.1.3 The construction compounds and welfare facilities will be required for varying amounts of time in support of Phase 1 and Phase 2 construction, depending upon their specific use and location (as shown in Table 4-1). Some will be required for the full duration of the construction phase, across both phases. Construction access and temporary construction compounds are depicted on Figure 5-1 (ES Volume II, EN070009/APP/6.3).

**Table 4-1: Indicative Location, Period Required and Uses of Construction Compounds**

LOCATION	USE
Main Site Compound: The Main Site Compound is located within the Main Site.	Temporary construction compounds (including parking) to service construction of the Hydrogen Production Facility.
RBT Satellite Compound: RBT Construction Compound comprising of Quayside and North of Red Main areas	The Quayside area Compound includes the temporary storage area for modules; the North of Red Main area includes parking & welfare offices.
Wilton International Satellite Compound: South bank of Tees, within Wilton International site.	Temporary construction compounds (including parking) to service pipeline works on the Wilton International site.
Seal Sands Compound: North bank of Tees, in Seal Sands within or adjacent to the Ineos site.	Temporary construction compounds (including parking) to service pipeline works
Greatham Satellite Compound: North bank of Tees, adjacent to Seaton Carew Road.	Temporary construction compounds (including parking) to service pipeline works.
Cowpen Bewley Satellite Compound. North bank of Tees, adjacent to Statera Energy Operations – Saltholme Power Station.	Temporary construction compounds (including parking) to service pipeline works.



LOCATION	USE
Billingham Industrial Park Satellite Compound: North bank of Tees, in Billingham Industrial Park site.	Temporary construction compounds (including parking) to service pipeline works.

4.1.4 Site clearance, levelling and ground preparation works for construction compounds and welfare facilities may be required to provide a suitable working area. Where appropriate, the surface material of construction compounds will be permeable to allow rainwater to percolate into the ground. Suitably bunded and lined locations will be identified as storage areas for any hazardous or polluting materials and chemicals, to control the risk of pollution. Further detail can be found in Table 7-2 below and Chapter 9: Surface Water, Flood Risk and Water Resources (ES Volume I, EN070009/APP/6.2).

#### 4.2 Drainage from the Proposed Development Site, Construction Compounds and Welfare Facilities

##### Land Drainage and Private Water Supply

- 4.2.1 Prior to any development taking place on agricultural land, the EPC Contractor(s) will liaise with the landowner to ascertain the locations of any land drainage or private water supply infrastructure on the land, to the extent that this is not already known.
- 4.2.2 Where works are carried out within proximity to private water supplies or land drainage, a 'Watching Brief' will be conducted during the works.
- 4.2.3 The Watching Brief should be used to clearly mark and demarcate any sensitive areas around the pipes and aim to isolate pipes from construction works and avoid impact on the pipe infrastructure.
- 4.2.4 Construction workers will be briefed of the pipework/drains and locations and be briefed on any controls and conditions put in place prior to the commencement of works.
- 4.2.5 Should any works cross water supply pipes or drains then measures will be implemented to prevent damage to the pipes or drains, such as laying of steel matting or concrete above the pipework.
- 4.2.6 An alternative temporary potable source (for example, a water bowser) will be on standby, in case of any impacts being caused notwithstanding the protections above.
- 4.2.7 If any water supply pipes or drains are damaged during construction works, this will be remedied.

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### Management of Contamination Risk from Runoff

- 4.2.8 Rainfall runoff from areas where there is a risk of contamination will be managed using temporary drainage systems and tankered offsite for treatment (including settlement of suspended solids and or oil interceptors) prior to discharge to local watercourses with the approval of the Environment Agency. The drainage systems will incorporate pollution control systems designed in line with the Control of Water Pollution from Construction Sites – Guidance for consultants and contractors C532 (CIRIA, 2001a) or as agreed with the relevant authorities.
- 4.2.9 Surface watercourses and waterbodies near construction compounds and welfare facilities will be regularly inspected by the EPC Contractor(s) for signs of siltation or other forms of pollution in line with CIRIA Environmental Good Practice on Site Guide C741 (CIRIA, 2015), whilst pumped groundwater, process effluents and construction site runoff will be tested to ensure compliance with discharge consent requirements.
- 4.2.10 Any significant groundwater dewatering will be managed through the Final CEMP(s), undertaken in accordance with the requirements of the Environment Agency (under the Water Resources Act 1991 as amended) (HM Government, 1991) and Environmental Permitting Regulations (HM Government, 2016). Water will be settled, tested and treated (as required) to ensure that only uncontaminated water will be discharged. To avoid flooding, drains / controlled waters will be assessed to confirm that they have capacity to receive the volume of water likely to be produced.
- 4.2.11 It is assumed as a worst case that open-cut methods will be required for the Connection Corridor Crossings of all watercourses other than those listed as using trenchless crossing techniques (refer to Chapter 5: Construction Programme and Management (ES Volume I, EN070009/APP/6.2)). In such cases, it is assumed that flow will be temporarily over-pumped, diverted around or flumed through the working area and the watercourse fully reinstated as before, this will be confirmed in the Final CEMP(s).

### **4.3 Vegetation Management at Construction Compounds and Welfare Facilities**

- 4.3.1 Associated requirements for the protection of retained vegetation (e.g. during vehicle movements and construction/re-instatement works), vegetation restoration soil protection and handling, and temporary soil storage will be included in the Final CEMP(s), building on the suggested measures set out in Table 7-3 below. These specifications will reflect current industry good practice and will be location specific. For further details on vegetation management and reinstatement refer to the Outline LBMP (EN070009/APP/5.9).

### **4.4 Security of Construction Activities**

- 4.4.1 The EPC Contractor(s) will have a duty to prevent unauthorised access to construction compounds and welfare facilities.

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4.4.2 The following list of measures will be used by the EPC Contractor(s) to maintain security of construction activities, not limited to:

- closed circuit television (CCTV) – the location and direction of view of security cameras or blocking software to prevent intrusion into residential properties will be considered;
- infra-red surveillance and alarm systems where necessary;
- use of high perimeter fencing or hoarding, but only where necessary for site security and public safety;
- site lighting at site perimeters (subject to the conditions set out in Section 7);
- adequate security guards and patrols;
- consultation with neighbours on site security matters; and
- immobilisation of plant out of hours, removing or securing hazardous materials from site and securing fuel storage containers and preventing unauthorised use of any scaffolding to gain access to restricted areas and neighbouring properties.

4.4.3 A full list of measures will be confirmed in the Final CEMP(s).

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## 5.0 TRAFFIC MANAGEMENT AND OFF-SITE DELIVERY ROUTES

- 5.1.1 During construction, the EPC Contractor(s) will ensure that the impacts from construction traffic on the local community (including local residents, businesses, and users of the surrounding transport network) are minimised where reasonably practicable. This will be ensured by implementing the measures set out in Framework Construction Workers' Travel Plan (CWTP) (EN070009/APP/5.15) and Framework Construction Traffic Management Plan (CTMP) (EN070009/APP/5.16).
- 5.1.2 Final versions of the CWTP and CTMP will be produced in accordance with the frameworks, secured via Requirements of the Draft DCO (EN070009/APP/4.1).
- 5.1.3 It is proposed in the Framework CWTP that all construction workers associated with the construction of the Main Site, will access via the A1085 Trunk Road via the existing junction at the A1085/ West Coatham Lane Roundabout. This includes workers on the Main Site and workers associated with the Connection Corridors to the south of the River Tees.
- 5.1.4 Construction workers on the Connection Corridors to the north of the River Tees would travel directly to the relevant compound, using either the A1185 or the B1275 / A1046.
- 5.1.5 The Proposed Development will accommodate on-site parking spaces to accommodate construction traffic, both at the Main Site and on the construction compounds. There is a further possibility that STDCs Park and Ride site accessed off the A1085 Trunk Road located approximately 500m north from the Steel House Gate / A1085 / West Coatham Lane roundabout could be utilised during construction, this will be confirmed in the Final CWTP(s), but has not been assumed for ES purposes.
- 5.1.6 The Framework CTMP (EN070009/APP/5.16) provides details of the designated routes for Heavy Goods Vehicle (HGV) movements. It is proposed that all construction HGVs associated with the Main Site and the Connection Corridors to the south of the River Tees, would arrive and depart the Site via the existing site entrance to the former Redcar Steelworks site located off the A1085 / West Coatham Lane Roundabout.
- 5.1.7 Materials required to carry out the construction of the Connection Corridor on the north bank of the River Tees, will be delivered direct to the relevant compound rather than the Main Site, using the B1275 and A1046 to access the Strategic Road Network.
- 5.1.8 To minimise the impacts on the local highway network, transportation of Abnormal Indivisible Loads (AILs) during construction for the Hydrogen Production Facility using the local ports is proposed.
- 5.1.9 The transportation of AILs during the construction of the Hydrogen Production Facility will utilise Lift on Lift off (Geared Vessels), Barges, Roll on Roll off, and Coastal Vessels. There is the potential for equipment vendors and fabrication yards to be located overseas, within the UK, or a combination of the two. This will be confirmed in the Final CEMP(s). These movements will be facilitated through local
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ports. The nearest commercial port to the Proposed Development Site is Teesport, which could be used for the import of containerised equipment or modular plants. Additionally, the use of the existing wharf at RBT will be considered for the transportation of AILs. No dredging activities will be carried out by the Proposed Development.

- 5.1.10 The Final CEMP(s) will provide final details of the designated routes for HGV movements and construction workers' vehicle movements, with reference to the Final CWTP(s) and CTMP(s).

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## 6.0 WASTE MANAGEMENT

6.1.1 Waste will primarily arise from the construction of the Main Site and associated Connection Corridors, as well as PPWs.

6.1.2 The EPC Contractor(s) will take all reasonable measures to apply the waste hierarchy to all arisings. This hierarchy, in priority order, is as follows:

- prevention (i.e. design-out waste arising);
- preparing for reuse onsite or offsite (i.e. use as a whole or as a part of new asset);
- recycling onsite or offsite (i.e. use as material for new asset);
- other recovery (i.e. onsite recovery of spoil via a Deposit for Recovery Permit, use of waste offsite to generate energy); and
- disposal offsite (i.e. landfill or incineration without energy recovery).

6.1.3 During PPWs and construction works, spoil arising (including from micro-bored tunnelling) will be temporarily stockpiled within the Proposed Development Site boundary before, in order of priority:

- beneficial recovery of made ground via a Deposit for Recovery Permit as part of the Proposed Development, such as foundation works/development platform construction on the Main Site and if appropriate the reuse of soils from the Connection Corridors in accordance with a Materials Management Plan (MMP) onsite;
- delivery off site by HGV for treatment at a local permitted facility (if required) and beneficial reuse (Connection Corridor soils only) in other local development sites; or
- delivery off site by HGV for treatment (if required) and management at a permitted waste facility.

6.1.4 Measures to minimise the impact of spoil on flood risk and water quality are outlined below:

- Spoil will be stockpiled in areas at low risk of flooding (Flood Zone 1 and, where possible, Low Risk of Surface Water Flooding) within the Main Site or a temporary construction compound within the Proposed Development Site and near the area of reuse including areas alongside the excavated pipeline trench, where reasonably practicable. The size of each stockpile (segregated by material type) will be minimised where possible by excavation works being undertaken in parallel with foundation works/development platform construction, which will utilise spoil arisings directly where these are geotechnically and chemically suitable under appropriate permitting. In addition, there will be progressive off-site removal of geotechnically unsuitable or contaminated materials for off-site reuse, treatment, or disposal as outlined above. Stockpile heights are therefore expected to be low and there is sufficient area within the Proposed Development Site boundary to
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accommodate the volume of spoil to be stockpiled at any given time. Further details and mitigation measures regarding stockpiles, including a specified maximum height will be provided in the Final CEMP(s).

- Suitable measures will be put in place to prevent material from stockpiles being washed into watercourses, such as covering or seeding, and the stockpile(s) will be visually monitored for wash away during and after periods of prolonged rainfall.
- Spoil will be sampled and any contamination will be managed in accordance with the SWMP, the Deposit for Recovery permit for made ground on the Main Site and if appropriate a MMP for soils along the Connection Corridors. The SWMP and MMP will be prepared and appended to the Final CEMP(s). An Outline SWMP has been developed and is included within this Framework CEMP (Appendix A), to allow for waste streams to be estimated and monitored and for goals to be set for the waste arisings. The MMP, if appropriate, will specify that any potentially contaminated materials will be managed in accordance with:
  - Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites (Defra, 2009); and
  - Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011).

6.1.5 Any suspected contaminated spoil will be placed on an impermeable membrane to prevent the leaching of contaminants into the subsurface or watercourses, then collected and disposed of to an approved offsite location. Site-specific Screening Verification Criteria for the classification of soils for recovery, reuse or disposal will be derived by the Applicant in accordance with the permitting and the MMP.

6.1.6 For tunnelling, a slurry discharge line would remove spoil for treatment using a suitable segregation system and settlement tank positioned at the top of the launch shaft and removed offsite for treatment/disposal at a permitted waste facility as required. Further details will be stipulated by the EPC Contractor(s) in the Final CEMP(s).

6.1.7 All spoil will be processed and managed in accordance with The Waste (England and Wales) Regulations 2011 (as amended) (HM Government, 2011).

## 6.2 Recycling, Recovery and Disposing of Waste

6.2.1 In order to control the waste generated on site during enabling works and construction, the EPC Contractor(s) will separate the main waste streams. This must be done within the Proposed Development Site, prior to the wastes being recovered onsite or taken to a permitted waste facility for recycling, recovery, or disposal as required. Transportation of waste from the Proposed Development Site will be undertaken by a licensed waste carrier.

6.2.2 As outlined above, spoil will be minimised where possible and beneficially recovered / reused within the Proposed Development Site where possible to minimise the volume of spoil which requires off-site treatment or disposal.

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- 6.2.3 A Final SWMP will be included in the Final CEMP(s), which will specify the waste streams to be estimated and monitored and the goals to be set for waste arisings. Under a proposed Requirement of the Draft DCO (EN070009/APP/4.1), the SWMP will be submitted to and approved by the relevant LPAs prior to construction. An Outline SWMP to allow for initial estimations is appended (Appendix A) to this Framework CEMP.



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## 7.0 MANAGEMENT AND MITIGATION PLAN

7.1.1 This section of the Framework CEMP sets out the mitigation and management measures to be included as a minimum in the Final CEMP(s). It also illustrates the responsible party identified for each mitigation/enhancement measure.

7.1.2 In addition to the structure of the management and mitigation tables set out below, the corresponding tables in the Final CEMP(s) will include further columns and information on the actions and mitigations to be delivered during the construction phase of the Proposed Development, as follows:

- How the action / measure is to be implemented or achieved;
- Assigning responsibility for the action / measure;
- Achievement criteria and reporting requirements of the action / measure;
- Stage / date of implementation of the action / measure;
- Greater detail of the level and type of monitoring required to achieve the action / measure (as required); and
- Date and signature for completion of an action / measure.

**Table 7-1: Chapter 8: Air Quality (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Increased NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> from on-site demolition and construction vehicle/ plant emissions; and</p> <p>Increased particulates and deposited dust from earthworks, demolition, construction and trackout.</p>	<p>Appropriate good practice measures must be implemented during construction (drawn from the ‘high risk’ site schedule in IAQM guidance (IAQM, 2024)) that have been identified are:</p> <ul style="list-style-type: none"> <li>● avoid mechanical roughening or grinding of concrete surfaces;</li> <li>● store sand and aggregates in bunded areas and store cement powder and fine materials in silos;</li> <li>● use water suppression and regular cleaning to minimise mud on roads, and control dust during earth moving activities;</li> <li>● cover vehicles leaving the construction site that are carrying waste materials or spoil;</li> <li>● employ wheel wash systems at site exits;</li> <li>● restrict where practicable the use of unmade road accesses;</li> <li>● minimising duration of storage of topsoil or spoil during pipeline construction; and</li> <li>● prohibit open fires on-site.</li> </ul> <p>Good practice must also be employed for the siting and operation of Non-Road Mobile Machinery to control associated emissions, including:</p> <ul style="list-style-type: none"> <li>● minimise vehicle and plant idling; and</li> <li>● where possible, locating static plant away from sensitive boundaries or receptors.</li> </ul>	<p>EPC Contractor(s)</p>

**Table 7-2: Chapter 9: Surface Water, Water Resources and Flood Risk (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Temporary impacts on surface water quality due to deposition or spillage of soils, sediments, oils, fuels or other construction chemicals, or through mobilisation of contamination following disturbance of contaminants in sediments, ground or groundwater, or through uncontrolled site run off;</p> <p>Temporary impacts on the hydromorphology of watercourses from open-cut watercourse crossings;</p> <p>Potential impacts on groundwater resources and local water supplies (licensed and unlicensed abstractions) and potentially the baseflow to watercourses from temporary dewatering of excavations or changes in hydrology;</p>	<p>Within the Final CEMP(s) as a technical appendix will be a Final Water Management Plan (WMP) which will outline the mitigation measures necessary to avoid, prevent and reduce adverse effects where possible upon the local surface water (and groundwater) environment during construction. An Outline Water Management Plan is included as Appendix B.</p> <p><u>Good Practice Guidance</u></p> <p>The following good practice guidance from the NetRegs website (NetRegs, n.d.) must be applied during construction:</p> <ul style="list-style-type: none"> <li>● GPP 1: Understanding your environmental responsibilities – good environmental practices;</li> <li>● GPP 2: Above ground oil storage;</li> <li>● GPP 3: Use and design of oil separators in surface water drainage systems;</li> <li>● GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer;</li> <li>● GPP 5: Works and maintenance in or near water;</li> <li>● GPP 6: Working on construction and demolition sites;</li> <li>● GPP 8: Safe storage and disposal of used oils;</li> <li>● GPP 13: Vehicle washing and cleaning;</li> <li>● GPP 19: Vehicles: Service and Repair;</li> <li>● GPP 20: Dewatering underground ducts and chambers;</li> <li>● GPP 21: Pollution Incident Response Plans;</li> <li>● GPP 22: Dealing with spills;</li> <li>● GPP 26: Safe storage – drums and intermediate bulk containers; and</li> <li>● GPP 27: Installation, decommissioning and removal of underground storage tanks.</li> </ul>	<p>EPC Contractor(s)</p>

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Potential increase in volume and rate of surface water runoff from new impervious areas, leading to an impact on flood risk;</p> <p>Increased risk of groundwater flooding or recharge as a result of the below ground installation of the CO<sub>2</sub> Export Corridor, Natural Gas Connection Corridor, Electrical Connection Corridor and CO<sub>2</sub> Gathering Network; and</p> <p>Alteration in fluvial and overland flow paths as a result of works associated with the Hydrogen Pipeline Corridor, Water Connections Corridor, Other Gases Connection Corridor and Electrical Connection Corridor.</p>	<p>Construction phase operations will consider guidance contained within the following PPGs:</p> <ul style="list-style-type: none"> <li>● PPG7: Safe storage – the safe operation of refuelling facilities (Environment Agency, 2011); and</li> <li>● PPG18: Managing fire water and major spillages (Environment Agency, 2000).</li> </ul> <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 and must be followed during construction:</p> <ul style="list-style-type: none"> <li>● British Standards Institute (BSI) (2009) BS6031:2009 Code of Practice for Earth Works (BSI, 2009).</li> <li>● British Standards Institute (2013) BS8582 Code of Practice for Surface Water Management of Development Sites (BSI, 2013a).</li> <li>● C753 (2015) The SuDS Manual (second edition) (CIRIA, 2015a);</li> <li>● C744 (2015) Coastal and marine environmental site guide (second edition) (CIRIA, 2015b);</li> <li>● C811 (2023) Environmental good practice on site guide (fifth edition) (CIRIA, 2023);</li> <li>● C649 (2006) Control of water pollution from linear construction projects, technical guidance (CIRIA, 2006);</li> <li>● C609 (2004) Sustainable Drainage Systems, hydraulic, structural and water quality advice (CIRIA, 2004);</li> <li>● C532 (2001) Control of water pollution from construction sites – Guidance for consultants and contractors (CIRIA, 2001a); and</li> <li>● C736F Containment systems for prevention of pollution (CIRIA, 2014).</li> </ul> <p><u>Management of Construction Site Run-off</u></p> <p>The risk of excessive fine sediment in runoff during construction can be controlled via the following measures:</p>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<ul style="list-style-type: none"> <li>● timing of works;</li> <li>● minimising earthworks; and</li> <li>● seeding or covering stockpiles.</li> </ul> <p>The following measures can be implemented to intercept runoff to prevent uncontrolled runoff from the Proposed Development Site:</p> <ul style="list-style-type: none"> <li>● the use of cut off drains;</li> <li>● the use of fabric silt fences and matts (in channel);</li> <li>● the use of bunds and straw bales (that may be placed in small channels); and</li> <li>● designated areas for cleaning plant and equipment, wheel washes and road sweepers.</li> </ul> <p>The following measures can be implemented to treat runoff to remove excessive levels of fine sediment:</p> <ul style="list-style-type: none"> <li>● settlement lagoons;</li> <li>● sumps;</li> <li>● spraying on to land; and</li> <li>● proprietary measures such as lamella clarifiers or flocculation.</li> </ul> <p>It will be for the EPC Contractor(s) to continually monitor the need for the measures outlined above depending on the nature of the works being undertaken, the weather conditions, and the performance of sustainable drainage systems installed, these measures must be confirmed within the Final CEMP(s).</p> <p><u>Management of Construction Chemical Spillage Risk</u></p> <p>Measures must be implemented to manage the risk of accidental spillages on the Proposed Development Site and potential conveyance to nearby water features via surface runoff or land drains following the best practice guidance summarised above (e.g. utilising self-bunded leak proof</p>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>containers for potentially polluting chemicals, having spill kits available on site and fully trained staff).</p> <p>The Final CEMP(s) will include a Pollution Prevention Plan<sup>2</sup> and an Emergency Response Plan<sup>3</sup> Health and Safety Executive (HSE) (2015). In addition, any site welfare facilities must be appropriately managed, and all foul waste disposed of by a licensed contractor to a suitably permitted facility.</p> <hr/> <p><u>Management of Construction Dewatering</u></p> <p>A Construction Dewatering Strategy will be prepared by the EPC Contractor(s) in accordance with a Groundwater Risk Assessment to be developed post consent and will be included within the Final CEMP(s). The purpose of the Construction Dewatering Strategy will be to:</p> <ul style="list-style-type: none"> <li>● review GI data and estimate volume of water that may need to be dewatered and the likely quality of that water;</li> <li>● consider how phasing / sequencing of excavations will influence the amount of water that may need to be managed at any given time;</li> <li>● undertake a feasibility assessment of options to remove water, including undertaking appropriate ecological and hydromorphological surveys, and hydraulic modelling (if necessary).</li> </ul> <p>Disposal options may include, but are not limited to:</p> <ul style="list-style-type: none"> <li>– re-use of water on-site (e.g. for dust suppression);</li> <li>– discharge to local watercourses; and</li> <li>– spraying to nearby fields.</li> </ul>	

<sup>2</sup> A Pollution Prevention Plan will include details of how fuel and other chemicals (including cementitious products) will be stored, used on site, and equipment and plant cleaned, as well as how leaks and spillages will be prevented or remediated if needed.

<sup>3</sup> An Emergency Response Plan deals with the management of potential emergency situations involving the loss of containment of hazardous substances, in accordance with Regulation 9 of the COMAH Regulations.

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>When discharging water to a nearby watercourse the rate of discharge must be agreed with the Environment Agency. Where the required rate of discharge to keep the excavations dry exceeds what may be allowed to a single watercourse, additional locations for discharging the water will need to be provided or storage provided. Any discharge must be undertaken with the agreement of the Environment Agency and must comply with the pollution prevention requirements set out in the Pollution Prevention Plan.</p> <p>If groundwater contains high concentrations of suspended fine sediment, this will be filtered by using storage basins in combination with other proprietary measures (for example lamella clarifiers).</p> <p><u>Construction of Hydrogen Pipeline Corridor – Trenchless Crossings</u> The use of Trenchless technologies (i.e. HDD, MBT or auger boring) for larger river crossings avoids direct impact of the estuary bed and river banks which occurs with open cut construction methods.</p> <p>The methodology for trenchless crossings , shall include the following measures to minimise risks to the environment as required:</p> <ul style="list-style-type: none"> <li>● performing appropriate geotechnical investigations along the trenchless crossing alignment;</li> <li>● designing the bore profile to pass at an appropriate depth below the watercourse (minimum depth assumed to be 10 m), however this will be further determined following ground investigations and the outcome of a frac-out risk assessment;</li> <li>● Designing the bore profile to pass through competent soil layers identified in geotechnical investigations;</li> <li>● the detailed design of the launch and exit points of the HDD to take account of geological layers and the intended drill path;</li> <li>● performing drilling fluid hydrofracture analysis for each drilling operation and maintaining downhole pressures within recommended limits;</li> </ul>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<ul style="list-style-type: none"> <li>● using appropriate downhole pressure monitoring equipment;</li> <li>● using a drilling fluid appropriate for the anticipated ground conditions;</li> <li>● monitoring of drilling fluid parameters during drilling; and</li> <li>● performing regular monitoring of the ground above the bore alignment for drilling fluid leaks to the surface. The final list of measures will be confirmed in the Final CEMP(s).</li> </ul> <p>In addition, for horizontally directionally drilled holes, casing pipe to contain drilling fluid may be installed through less competent shallow ground layers at HDD entry or exit points if necessary. This will be confirmed in the Final CEMP(s).</p> <p>A site-specific Hydraulic Fracture Risk Assessment will be developed prior to construction following further investigation of specific ground conditions at the crossing locations, and appropriate mitigation developed in line with best construction practice. The drilling fluid returns will be cleaned for re-use within the drilling process. Any wastewater/drilling products that are not re-used must be stored and removed by a suitable waste management contractor and disposed of at a permitted waste/wastewater facility.</p> <p>The exact dimensions of the launch and receiver pits will be determined by site and ground conditions but will be kept to a safe minimum in terms of length, width and depth. Such pits are typically 5 m long x 5 m wide x 3 m deep. A shoring system appropriate to the ground conditions will be used as appropriate to minimise water ingress into the pits. This may be timbers, sheet piling, or a modular system and will be chosen based on suitability for the site conditions. The ingress of any groundwater will be carefully managed through design of the launch or reception pit, shoring method, and a pumping and treatment system. These details will be confirmed in the Final CEMP(s).</p> <p>Furthermore, to reduce the works required adjacent to the Teesmouth and Cleveland Coast SPA, for HDD operations any pipe stringing area must be established a minimum of 30 m away from the</p>	



POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>boundary of the SPA. The pipe stringing area would be used to fabricate manageable lengths of pipe string. The sections of pipe string would subsequently be carried into position along the spread and dummy spread to allow the remaining joints to be fabricated and complete the pipeline.</p> <p>Once the Hydrogen Pipeline is installed beneath the watercourse, the pits or shafts and any trenches must be backfilled to the original ground level and seeded to reduce the risk of runoff and fine sediments entering watercourses. The drill fluids used within the drilling machine must be water based, using additives such as naturally occurring bentonite clay. The fluid component of the drilling mud must be mains water, obtained from a nearby supply and tankered to site when required. There will be some recycling of drilling muds by the drilling plant used.</p> <p>Directional drilling, or other trenchless techniques, must be undertaken by a specialist contractor and the water column above the drill path must be continuously monitored during drilling. It is noted that drill fluid leakage into a watercourse is not a common problem, particularly given the proposed depths. However, where there is an increased perceived risk (i.e. lack of drilling mud returns), the drilling/boring operation will be suspended, remediation action implemented, and subsequently the methodology for that crossing re-evaluated.</p> <p>A Code of Construction Practice will be produced as part of the Final CEMP(s) which would specify measures designed to minimise the risk of collapse of any HDD crossing.</p> <p>The appointed EPC Contractor(s) will produce a Drilling Method Statement as part of the Final CEMP(s) which will form the basis of contingency plans and provide details of specific clean-up and pollution control measures to be used in the event of an accidental spillage.</p> <p>The EPC Contractor(s) Drilling Method Statement must include pollution prevention measures to minimise the risk of accidental spillage</p>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>Natural England, and any landowner of land crossed by the HDD, would be consulted on the effectiveness of the proposed measures in reducing effects on designated sites.</p> <p>The EPC Contractor(s) will undertake analysis to identify key parameters to be monitored during installation and subsequently monitor the drilling operations.</p> <p>A review of the HDD works undertaken for Net Zero Teesside will be undertaken to assess the effectiveness of site procedures and whether any 'lessons learned' would be beneficial to HDD operations of the Proposed Development.</p> <p>A Clean-up plan (to deal with any pollution impacts arising from any HDD collapse) will be produced as part of the Final CEMP (see Paragraph 2.3.2 above).</p> <p><u>Construction of Hydrogen Pipeline Corridor – Above Ground and Open-Cut Crossings</u></p> <p>Where open-cut installation of pipelines are required, the following mitigation must be implemented:</p> <ul style="list-style-type: none"> <li>● A pre-construction hydromorphological Survey of all proposed open-cut watercourse crossings will be undertaken to inform a Channel Reinstatement Scheme. This will ensure that the channel is reinstated as found or better, with riparian bankside reinstatement (either by re-planting or allowing to re-vegetate naturally) to return the watercourse corridor to at least its original condition, this is secured through the Outline LBMP (EN070009/APP/5.9).</li> <li>● At this stage it is assumed that where open-cut crossings are required, water flow will be maintained by: <ul style="list-style-type: none"> <li>– damming and over pumping or fluming;</li> <li>– works will be carried out in the drier months where possible; and</li> </ul> </li> </ul>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<ul style="list-style-type: none"> <li>– Once the watercourses are reinstated, silt fences, geotextile matting or straw bales must be used initially to capture mobilised sediments until the watercourse has returned to a settled state.</li> <li>• It will be a Requirement of the Draft DCO (EN070009/APP/4.1) that the watercourses are reinstated as found and water quality monitoring will be undertaken prior to, during, and following on from the construction activity. Regular observations of the watercourses will also be required post-works during vegetation re-establishment of the banks, especially following wet weather., the procedure to the monitoring and evaluation of reinstated vegetation is outlined in the Outline LBMP (EN070009/APP/5.9) and will be formalised within the detailed LBMP.</li> </ul> <p>Where there is a need for transformers and switchgear, these must be banded given that they may contain hydraulic oils.</p> <p><u>Water Quality Monitoring</u>                      During construction of the Proposed Development, a water quality monitoring programme will be undertaken to ensure that mitigation measures are operating as planned and preventing pollution. This is standard practice for construction works of this type, and full details will be outlined in the Final WMP accompanying the Final CEMP(s) (also refer to Appendix B for further details).                      The water quality monitoring programme will be developed by the EPC Contractor(s) in consultation with the Environment Agency and MMO and will also reflect any requirements of secondary environmental permits/licences for works affecting, or for temporary discharges to, watercourses within the Proposed Development Site.                      The programme must include a combination of daily observations and monitoring using a calibrated, handheld water quality probe through the upstream and downstream reaches of water features hydrologically connected to the Proposed Development Site. It is expected that water quality sampling will be undertaken on a periodic as well as ad-hoc basis, dependent upon</p>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>circumstances/activities on site. Monitoring and sampling must be undertaken prior to the commencement of construction to allow for sufficient baseline data.</p> <p><u>Management of Flood Risk</u>                      All construction materials and temporary compounds associated with the construction of the Proposed Development must be located in Flood Zone 1.                      During the construction phase, the EPC Contractor(s) must monitor weather forecasts and plan works accordingly.                      In addition, the EPC Contractor(s) must sign up to Environment Agency flood warning alerts and describe in the Emergency Response Plan (produced as part of the Final CEMP(s)) the actions it will take in the event of a possible flood event. These actions will be hierarchal meaning that as the risk increases the EPC Contractor(s) will implement more stringent protection measures.</p> <p>The EPC Contractor(s) will be required to produce a Flood Risk Management Action Plan (produced as part of the Final CEMP(s)) which will provide details of the response to an impending flood and include:</p> <ul style="list-style-type: none"> <li>● a 24-hour availability and ability to mobilise staff in the event of a flood warning;</li> <li>● the removal of all plant, machinery and material capable of being mobilised in a flood for the duration of any holiday close down period;</li> <li>● details of the evacuation and site closedown procedures; and</li> <li>● arrangements for removing any potentially hazardous material and anything capable of becoming entrained in floodwaters, from the temporary works area.</li> </ul> <p>If water is encountered during below ground construction, suitable de-watering methods MUST be used in accordance with the Construction Dewatering Strategy (produced as part of the Final CEMP(s)). Any significant groundwater dewatering that is required (i.e., more than 20 m<sup>3</sup> per day)</p>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>must be undertaken in line with the requirements of the Water Resources Act 1991 (HM Government, 1991) and Environmental Permitting Regulations (HM Government, 2016).</p> <p>Safe egress and exits are to be always maintained when working in excavations. When working in excavations a banksman is to be always present. Refer to the Appendix 9A: Flood Risk Assessment (ES Volume III, EN070009/APP/6.4) for further details of flood resistance and resilience measures.</p> <p><u>Works in Proximity to Flood Defences</u></p> <p>The Environment Agency require the existing standard of protection provided by the flood defences to be maintained both during the construction and after completion of the Proposed Development. This will be secured through the EA approving the details of works (including HDD and pipeline works) pursuant to Protective Provisions for the EA within the Draft DCO (EN070009/APP/4.1).</p> <p>These provisions will also ensure that the EA is able to maintain access to its flood defences.</p> <p>Consultation with the Environment Agency will be maintained to ensure no impacts to flood defence assets. In order to minimise the impact of the Proposed Development Site on the flood defences, the following matters will be taken into account:</p> <ul style="list-style-type: none"> <li>• load case for top water level;</li> <li>• access for EA maintenance and inspection;</li> <li>• preventing debris and localised increases in water levels;</li> <li>• prevention of water ponding at the toe of the flood defence; and</li> <li>• ensuring that the excavation design does not affect the stability of the defence.</li> </ul>	

**Table 7-3: Chapter 10: Geology, Hydrogeology and Contaminated Land (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Creation of new contaminant linkages (e.g. pile foundation construction through existing Made Ground into underlying natural soils or bedrock, pile foundation construction or excavation through an existing aquiclude (impermeable fine / cohesive soils) into an aquifer (comprised of coarse or sandy soils);</p> <p>The mobilisation of existing contaminants via the exposure of soils / increases in rainwater infiltration through changes in ground cover / in excavations or bulk earthworks;</p> <p>Changes to the hydrogeological regime (e.g. dewatering activities) may impact groundwater;</p>	<p>In order to manage and monitor waste generated on the Proposed Development Site during construction, an Outline SWMP has been developed as part of this Framework CEMP (Appendix A). The Outline SWMP will require that the EPC Contractor(s) segregates waste streams on-site, prior to them being taken to a waste facility for reuse, recycling, recovery or disposal in accordance with an appropriate permit. All waste removal from the Proposed Development Site must be undertaken by fully licensed waste carriers and taken to permitted waste facilities.</p>	<p>EPC Contractor(s)</p>
	<p>The Final CEMP(s) will include a MMP and a Hazardous Materials Management Plan including an Asbestos Management Plan (AMP).</p>	
	<p>The Draft DCO (EN070009/APP/4.1) provides mechanisms for the control of Ground investigations, remediation, and related controls.</p>	
	<p>The Proposed Development Site design will take into account existing ground conditions and the potential constraints that they pose. Prior to the design and construction of the Proposed Development on the Main Site, confirmatory GI will be undertaken which will include assessing whether and to what extent contamination is present at the Main Site. The GI will be specified in accordance with the UK Specification for Ground Investigation (Site Investigation Steering Group, 2012) and carried out in accordance with British Standards Institute (BSI) BS EN 1997-2:2007 (BSI, 2007), BS5930:2015+A1:2020 (BSI, 2020) and BS10175:2011+A2:2017 (BSI, 2017). GI will also be undertaken as required, dependant on the depth of construction, where below ground works are to be completed along the Connection Corridors. This is secured under a Requirement of the Draft DCO (EN070009/APP/4.1).</p>	
<p>The GI findings will feed into the detailed design process so that appropriate measures can be taken. Specific measures include building and foundation design. In addition, existing pipeline</p>		

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Surface water quantity and quality changes, and potential effects on surface water supplies, surface water run-off and drainage quantity and quality could result due to activities relating to bulk earthworks;</p> <p>Activities relating to foundation construction, earthworks and excavations and associated transportation activities have the potential to expose construction workers to potentially contaminated dust;</p> <p>On site construction traffic, through compaction of the existing soils, could increase the speed of surface water run-off and increase the potential for erosion and transportation of sediment;</p> <p>and</p> <p>Potential temporary impacts may result from the accidental</p>	<p>infrastructure will be used where possible, running along existing pipe racking and using existing culverts and overbridges, to minimise impacts upon the ground and groundwater.</p>	
	<p>The results of the GI may indicate the need to undertake a further risk-based assessment to develop the current Conceptual Site Model (CSM) that has been produced. This will also involve further assessment of the contamination sources, receptors, and plausible pollutant linkages at the Proposed Development Site, in accordance with government guidance and the UK framework for the assessment of risk arising from contaminated land. The assessment will use principles adopted by the EA in Land Contamination: Risk Management (2023). The significance of impacts will take into account the principles of assessment identified in CIRIA Report C552, (CIRIA, 2001) and EAs guiding principles for land contamination in assessing risks to controlled waters (EA, 2010). Any such risk-based assessment may indicate the need for mitigation measures additional to those as detailed herein. Any updated CSM and associated assessments will be included in the final CEMP(s) for approval.</p>	
	<p>If physical expansion of material occurs from chemical changes in slag-dominant material, potentially adopt piled foundations to transfer structure loads to soils or bedrock of adequate strength. If necessary, consider the use of sleeved piles to accommodate lateral expansion and / or heave.</p>	
	<p>It is currently anticipated that STDC will complete remediation works required to create a suitable development area before the Applicant’s commencement of the construction of the Proposed Development. The scope of STDCs remedial works will include mitigation of any identified risks to controlled waters and / or human health, with STDC to obtain all necessary consents and permits for the works.</p>	
	<p>The Applicant understands that STDC are to submit reserved matters approval applications for remedial works in central and southern areas of the Main Site, under their existing outline planning approval for the Foundry site. It is currently anticipated that STDC would submit additional</p>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>leak of fuels and oils from vehicular plant or from stored liquids. Other temporary impacts may also result from the use of materials and substances polluting potential (e.g. concrete, fuel, oils and soil) which have the potential to be mobilised to ground or controlled waters.</p>	<p>reserved matters approval, or planning applications, for further site clearance and remedial works, if the Applicant proposed construction in the north-west or north-east of Main Site for Phase 2 of the Proposed Development, in accordance with STDCs stated aim to redevelop and regenerate the larger STDC site. If, for any reason, STDC do not bring forward these reserved matters planning applications, or the remediation works are not undertaken in the timescales required, the Applicant would undertake remedial activities required for the development, and this has been assumed as a worst-case assumption for the purposes of the ES.</p>	
	<p>The Applicant will also review the scope of any remedial measures considered to be required following the completion of (referred to herein as 'Additional'), or in place of, the remedial works undertaken by STDC. Additional remedial measures before or during construction, could include measures such as a discovery strategy for unexpected contamination, and will be reviewed following review of both GI and relevant remediation specifications and verification reports from STDC. The process for securing the delivery of these remedial measures including the Additional measures is secured by DCO Requirement.</p>	
	<p>Estimates of waste from the Proposed Development Site in Chapter 21: Materials and Waste Management (ES Volume I, EN070009/APP/6.2), conservatively assume that some hazardous and non-hazardous material generated during any Applicant remediation works before or during construction activities, could require disposal from the Proposed Development Site, with recovery/reuse of some soil materials under appropriate permitting. The volume estimates will be further refined following both GI and relevant remediation specifications and verification reports from STDC (if taken forward by them) but it is not anticipated that there would be significant changes that would materially increase the HGV movements required.</p>	
	<p>A piling risk assessment will be undertaken and its recommendations followed (pursuant to a Requirement of the Draft DCO (EN070009/APP/4.1), to reduce as far as reasonably practicable the</p>	



POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>risk of development of preferential pathways between the Made Ground present and the underlying Secondary 'A' or 'B' bedrock Aquifers. Low noise piling techniques must be adopted.</p> <p>Soil resources must be protected and conserved through adherence to best practice guidance such as DEFRA's 2009 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites' (DEFRA, 2009).</p> <p>Best practice will be adopted during construction to prevent or reduce as far as reasonably practicable spillage risk and spillage effects by adhering to the CEMP. The Final CEMP(s) will address the management of concrete batching, concrete usage and accidental spillage relating to foundation and building construction.</p> <p>The suitability of excavated materials for potential recovery, re-use, and / or any permitting required to re-use excavated materials, will be subject to relevant consents and permits and the details will be confirmed within the Final CEMP(s). All earthwork operations will need to be undertaken in accordance with BS6031:2009 (BSI, 2009) and applicable guidelines, including the Manual for Contract Documents for Highway Works (MCHW) Series 600 'Earthworks' (National Highways, 2017).</p> <p>Land disturbance will be reduced as far as is reasonably practicable and disturbed areas will be revegetated as soon as possible after construction. Soil excavation will be undertaken with consideration given to the prevailing ground and weather conditions when programming the execution of the works. If encountered, topsoil and subsoil will be kept separate during excavation.</p> <p>Stockpiled excavation material will be kept to a minimum as far as is reasonably practicable and stored away from watercourses to prevent surface water entering or leaving the stockpile area.</p> <p>All areas of stockpiled material may be reseeded or otherwise covered temporarily until restoration activities commence as needed. All areas of unused and exposed soil following reinstatement of the Proposed Development Site must be reseeded or otherwise covered as soon as possible.</p>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	Erosion protection matting must also be used to reduce as far as is reasonably practicable sediment being entrained by water flow or becoming entrained by the wind if allowed to dry out.	
	Temporary construction compound areas will be located away from all significant surface water bodies where possible. If the buffer zone has to be reduced to a minimum of 8 m from the top of the bank of a main river or 16 m for a tidal main river, impermeable liners and bunds will need to be used to prevent materials entering watercourses.	
	Washing of vehicles or equipment must only take place in controlled areas, specified in the Final CEMP(s).	
	The preparation of a map that highlights all potential contamination sources will be included as part of the Final CEMP(s), SWMP, MMP, and a Hazardous Materials Management Plan (including an AMP).	
	The preparation of an inventory of all chemicals, fuels and oils will be kept up to date and be available on-site. Spill contingency plans will be created for each of the items on the inventory. These will be supported by warning notices and appropriate spillage containment equipment and materials at key locations. This will be prepared as part of the Final CEMP(s) and kept up to date throughout the construction of the Proposed Development.	
	Chemicals, fuels and oils will be stored in secure and designated storage areas in accordance with the appropriate regulatory requirements, including the Control of Pollution (Oil Storage) (England) Regulations 2001 (HM Government, 2001) and Control of Substance Hazardous to Health (COSHH) Regulations 2002 (Health and Safety Executive (HSE), 2002). Storage areas will need to be located on hardstanding areas to prevent the possible infiltration of contaminants into soils.	
	Re-fuelling of plant will take place in appropriate areas to be agreed in the Final CEMP(s) i.e. in locations with an impervious base and are bunded or provided with interceptor drains.	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>Spill kits will be kept with all vehicles on-site and all bowsers are to be double skinned or have a bund. Vehicles and equipment must not be left unattended during re-fuelling. To prevent materials leaking from static plant, such as pumps and generators, static plant must be placed on drip trays.</p> <p>All pumps, generators and similarly fuelled equipment must be placed on drip trays or in a bunded area, and no vehicles or equipment will be allowed to enter any watercourses at any stage. Refuelling areas must be positioned a minimum of 50 m away from any watercourse or drain. All vehicles, generators and similarly fuelled equipment must be maintained to a high standard to reduce as far as is reasonably practicable potential pollution incidents.</p> <p>All valves, hoses and associated re-fuelling equipment must be regularly inspected to ensure that they are still in a suitable condition. This equipment will be protected from vandalism and unauthorised interference and must be turned off and securely locked when not in use.</p> <p>All storage of drums containing hazardous material must be located within the Main Site temporary construction compound. Any spillages or leaks will be dealt with promptly and all waste disposed of in an appropriate manner. All tanks, drums and other containers must be clearly marked as to their contents. Before any tank is removed or perforated, all contents and residues must be emptied by a competent operator for safe disposal.</p> <p>All bunds must have a capacity of at least 110% of the storage volume of the largest container within the bund and must be covered where practical to prevent the collection of rainwater.</p> <p>Any staff involved in fuel handling must be given appropriate training, and site-specific procedures will be developed for all staff. Workers will be made aware of their statutory responsibility under Section 85 of the Water Resources Act 1991 (HM Government, 1991) not to ‘cause or knowingly permit’ water pollution. In addition, they will be made aware of their statutory responsibility under Regulations 38(1) and 12(1) of the Environmental Permitting Regulations 2019 (HM Government,</p>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>2019) not to cause or knowingly permit' a water discharge activity or groundwater activity without an appropriate permit.</p>	
	<p>The potential for any contamination of underlying superficial and bedrock aquifers in the proximity of the Proposed Development will be managed via the preparation of a Foundation Works Risk Assessment (prepared as part of the Final CEMP(s)) prior to construction and in consultation with the Environment Agency and relevant LPAs.</p>	
	<p>There will be GI and groundwater quality testing and monitoring (pursuant to a Requirement of the Draft DCO (EN070009/APP/4.1).</p> <p>This includes measures for preventing adverse impacts on controlled waters as part of the remediation strategy (pursuant to a Requirement of the Draft DCO (EN070009/APP/4.1). Such as obtaining appropriate discharge permits to allow discharge to existing sewerage network, system, subject to the agreements with the utility providers, or in locations where a sewer connection is not reasonably practicable, wastewater will be collected and taken off site by tankers for disposal at a permitted waste treatment facility.</p> <p>Rainfall runoff from areas where there is a risk of contamination would be managed using temporary drainage systems and then tankered offsite and would be subject to treatment prior to discharge.</p>	
	<p>Rainfall runoff from areas of low contamination risk will be captured and stored in settlement ponds for reuse where reasonably practicable to reduce consumptive water use (e.g. to supply wheel wash facilities or for dust suppression).</p>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>A Detailed Unexploded Ordnance (UXO) Desktop Survey was obtained for the Main Site, with the report concluding that given that extensive WWII bombing was recorded potentially on-site and/or in the immediate vicinity of the Main Site, combined with the extensive military installations and minefields located on-site and the possibility that the proposed intrusive works will encounter previously undisturbed ground below ground level in areas of the Main Site, a combination of the following is required to be in place for construction:</p> <ul style="list-style-type: none"> <li>● Provision of detailed report for the Main Site from specialist UXO data provider.</li> <li>● Specialist UXO clearance surveys undertaken as part of all future below ground works.</li> <li>● If necessary, re-route sections to avoid known UXO constraints.</li> <li>● UXO Emergency Response Plan (to be prepared as part of the Final CEMP(s));</li> <li>● UXO Safety and Awareness Briefing;</li> <li>● Explosive Ordnance Disposal Engineer Watching Brief – for Open Intrusive Works; and</li> <li>● Intrusive Magnetometer Survey – for Closed Intrusive Works.</li> </ul>	

**Table 7-4: Chapter 11: Noise and Vibration (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Noise effects during construction on the Main Site</p> <p>Noise effects during construction of the Connection Corridors</p> <p>Noise effects due to construction traffic</p> <p>Vibration effects during Pipeline Construction</p>	<p>The working hours will take place in accordance with Section 3.3 of this Framework CEMP and the relevant Requirement of the Draft DCO (EN070009/APP/4.1).</p> <p>The EPC Contractor(s) will undertake construction using Best Practicable Means. This must include, but is not limited to:</p> <ul style="list-style-type: none"> <li>● abiding by agreed construction noise limits (Chapter 11: Noise and Vibration, table 11.18) at nearby NSRs;</li> <li>● avoidance of working in the evening and night times where practicable, and mindful of Section 3.3 of this Framework CEMP; ;</li> <li>● Using modern plant, complying with the latest European noise emission requirements (“Noise Emission in the Environment by Equipment for Use Outdoors Regulations 2001”);.</li> <li>● selection of inherently quiet plant where practicable;</li> <li>● hydraulic techniques for breaking to be used in preference to percussive techniques where practical;</li> <li>● use of rotary bored rather than driven piling techniques (if required), where practical or permitted;</li> <li>● off-site pre-fabrication where practical;</li> <li>● all plant and equipment being used for the works to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use;</li> <li>● all contractors to be made familiar with current legislation and the guidance in BS 5228 (Parts 1 and 2) (BSI, 2014a and 2014b);</li> <li>● loading and unloading of vehicles, dismantling of site equipment such as scaffolding or moving equipment or materials within the Proposed Development Site to be conducted in such a manner as to minimise noise generation;</li> </ul>	<p>EPC Contractor(s)</p>

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<ul style="list-style-type: none"> <li>• Where practicable, the noisiest items of plant will be located the furthest distance from the nearby NSRs. Plant known to emit noise strongly in one direction will, where practicable, be orientated so that the noise is directed away from NSRs; Machines such as cranes that may be in intermittent use will be shut down between work periods or will be throttled down to a minimum. Machines will not be left running unnecessarily;</li> <li>• appropriate routing of construction traffic on public roads and along access tracks, to minimise noise level increase (as per the Framework CTMP (EN070009/APP/5.16));</li> <li>• consultation with the local authorities (RCBC, STBC and HBC) and local residents to advise of potential noisy works that are due to take place; and</li> <li>• noise complaints should be monitored, reported to the EPC Contractor and immediately investigated. These complaints will be kept in a log book available upon request.</li> </ul> <p>Method statements regarding construction management and overall site management must be prepared for the Final CEMP(s) in accordance with best practice and relevant British Standards, to help minimise impacts of the construction works. One of the main aims of such method statements will be to minimise noise disruption to local residents during the construction phase.</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 may occur during specific operations, and providing lines of communication where complaints can be addressed.</p> <p>The EPC Contractor(s) would be encouraged to be a member of the ‘Considerate Constructors Scheme’ which is an initiative open to all contractors undertaking building work.</p> <p>To assist in the preparation of the Final CEMP(s), a detailed noise and vibration assessment will be undertaken once the EPC Contractor(s) is appointed to identify specific mitigation measures for the Proposed Development (including construction traffic), that will be set out in the Final CEMP(s).</p>	

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POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>Additional noise-control equipment may be implemented (to be confirmed in the Final CEMP(s)), such as but not limited to:</p> <ul style="list-style-type: none"><li>• jackets on pneumatic drills;</li><li>• acoustic covers on compressors;</li><li>• shrouds on piling rigs and cranes; and</li><li>• use of temporary barriers or screens.</li></ul>	



**Table 7-5: Chapter 12: Ecology and Nature Conservation (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION / ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Direct/ Indirect habitat effects Loss of functionally linked land Noise and visual disturbance of species Atmospheric pollution Changes in water quality Physical or chemical pollution resulting in degradation of habitats Changes in hydrology Changes in water quality (chemical or physical) resulting from watercourse crossings (open-cut or otherwise) or a pollution event, or mobilisation of sediment during HDD Crossing or culverting of watercourses Damage to habitats due to encroachment of machinery Compaction of soil or a pollution event.</p>	<p>An Environmental or Ecological Clerk of Works (ECoW) must be present during Proposed Development construction to supervise and instruct implementation of impact avoidance commitments as detailed in the Final CEMP(s).</p> <p><u>Habitats</u> Reinstatement of habitats subject to temporary disturbances during construction will be provided, as required by planning policy, in accordance with the approach set out in Chapter 5: Construction Programme and Management (ES Volume I, EN070009/APP/6.2). The high-level measures likely to be required are also described in the Outline LBMP (EN070009/APP/5.9). In specifying final requirements for re-instatement of land, consideration would be given to requirements of landowners, the baseline habitat conditions, and priorities for nature conservation on a location-by-location basis (including opportunities to secure enhancement).</p> <p><u>Noise Mitigation in the Teesmouth and Cleveland Coast SPA/ Ramsar</u> Mitigation measures for noise impacts are set out in Chapter 11: Noise and Vibration (ES Volume I, EN070009/APP/6.2). A list of relevant measures for noise mitigation in the Teesmouth and Cleveland Coast SPA / Ramsar includes:</p> <ul style="list-style-type: none"> <li>● No construction works at all within the SPA / Ramsar site;</li> <li>● Applying measures to limit noise wherever possible and to achieve Best Practicable Means (BPMs) are achieved;</li> <li>● Applying maintenance and silencing (where possible) of all plant, equipment and machinery used;</li> <li>● Turning any equipment off when not in use;</li> <li>● Loading / unloading machinery and dismantling equipment in less noise sensitive locations and/or providing screens to minimise disturbance of SPA / Ramsar birds; and</li> </ul>	<p>EPC Contractor(s)</p>

POTENTIAL IMPACT	MITIGATION / ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Killing, injury or disturbance of Protected Species</p> <p>Loss or severance of commuting habitats</p> <p>Disturbance through noise or changes in light</p> <p>Spread of INNS resulting in a legal offence.</p>	<ul style="list-style-type: none"> <li>Routing of construction traffic along public roads and access tracks with longest potential distance to the SPA / Ramsar.</li> </ul>	
	<p><u>Invertebrates</u></p> <p>The landscaping and habitat restoration post construction will avoid the introduction of nutrient-rich substrates / soils. Whilst ground remediation works may be required, areas identified for biodiversity will aim to retain the biochemical and physical nature of the existing baseline substrate, i.e. low nutrient, free-draining and uneven topography.</p>	
	<p><u>Amphibians</u></p> <p>A district level licence will be used to avoid significant effects upon GCN. In addition, reasonable avoidance measures to avoid harm to GCN or other amphibians which may be present during site clearance and construction must be adhered to, as follows:</p> <ul style="list-style-type: none"> <li>Prior to the commencement of works, a briefing (a ‘toolbox’ talk) from an ECoW will be provided to all site personnel involved in licensable works. For further detail on the toolbox talk, please refer to the Outline LBMP (EN070009/APP/5.9).</li> <li>Where habitats are suitable, sensitive and phased vegetation clearance will be undertaken to make habitats less suitable for newts / amphibians within areas which are soon to be cleared/soil stripped. Best practice is to do this in phases: first cut any scrub and other tall vegetation to a height of c.250 mm with all arisings removed; 48 hrs later cut remaining vegetation to a height of c.150 mm. The second phase should be undertaken in a directional manner, moving towards suitable areas of retained habitat, with arisings removed from the site. Soil strip can progress 48 hrs after the second phase of vegetation clearance, again working towards retained habitat areas (Natural England, 2019).</li> </ul>	

	<p><u>Reptiles</u></p> <p>Prior to works commencing, habitats within working areas must be appraised by an ECoW for their potential to support common lizard. Advice on suitable working requirements will be advised on a case-by-case basis.</p> <p>The ECoW must deliver a toolbox talk to outline the legal protections afforded to reptiles and to make sure the EPC Contractor(s) are aware of the measures necessary to ensure compliance with the relevant legislation.</p> <p>The following measures to prevent harm to reptiles must be adhered to during construction, as follows:</p> <ul style="list-style-type: none"> <li>● Vegetation disturbance and removal will be undertaken from mid-April to October to coincide with the period when common lizard is likely to be active and able to disperse away from works areas;</li> <li>● Any works outwith mid-April to October could be undertaken provided that the area has been checked / cleared (of vegetation) and any potential hibernacula (shelter) dismantled by the ECoW during the active period<sup>4</sup>;</li> <li>● Removal of areas of suitable dense vegetation will involve incremental strimming to allow opportunity to find and displace/capture any common lizards present;</li> <li>● Any common lizards found within construction areas will be removed by an ecologist to a nearby place of safety outside construction areas (the dunes to the north and east of the Proposed Development Site). The ECoW will attend site prepared for the potential for these species to occur, and will have a suitable means to transport any reptiles found (e.g. bucket with sealable lid);</li> <li>● A record will be kept on the numbers and locations of reptiles found during the restoration works; and</li> <li>● Arisings from vegetation clearance and construction material will not be stored in a manner that might risk them being used as a place of refuge by common lizard during the construction period.</li> </ul>	
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POTENTIAL IMPACT	MITIGATION / ENHANCEMENT MEASURE	RESPONSIBILITY
	<p><u>Fish and aquatic (freshwater) species</u></p> <p>The following measures to prevent impacts to fish and other aquatic (freshwater) species must be adhered to during construction:</p> <ul style="list-style-type: none"> <li>• Develop a method statement to ensure works within watercourse crossings include suitable measures to allow the passage of fish, such as a flume, throughout construction (i.e., during fluctuating water levels), this will be included in the Final CEMP(s);</li> <li>• Avoidance of spawning season for freshwater fish (mid-March to mid-June ‘closed season’), and upstream migratory season for European eel (March to June) for all affected water bodies, including those to be HDD unless the HDD are of sufficient depth (10 m minimum below bed-level, however, this will be determined following the ground investigation at the detailed design phase and the outcome of a frac-out risk assessment) to reduce the impact of noise and vibration on these species;</li> <li>• Water quality monitoring will be undertaken pre, during and post-construction on all watercourses alongside daily inspections. Where effects are identified through monitoring during construction then additional mitigation should be identified and must be carried out;</li> <li>• Watercourse crossing locations will be micro-sited to make the crossing as close to perpendicular to the watercourse as reasonably practicable, ensuring the crossing is as short as possible and for open cut / temporary access crossings reducing the risk of localised scour at the embankments;</li> <li>• Surface water runoff from the pipeline spread will be managed to prevent discharge of silted or contaminated water into any surface water feature or land drain. Details will be included in the Final Water Management Plan;</li> <li>• Watercourses near work sites must be inspected daily when work activity is being carried out. Inspections will need to consider locations upstream (control) and downstream of the working</li> </ul>	

<sup>4</sup> The active period refers to the time period when common lizard is active, this is weather dependent.

POTENTIAL IMPACT	MITIGATION / ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>area so comparisons can be made. The EPC Contractor(s) should familiarise themselves with any other potential sources of contamination in advance of the works starting. During inspections any signs of pollution should be considered using visual and olfactory observations and in-situ water quality testing using hand-held water quality meters (that may include temperature, dissolved oxygen, pH, turbidity, and electrical conductivity). Evidence of water pollution may include, but not be limited to, siltation, deposits of aggregates and other materials or litter, turbidity, oil sheens, odours, dis-colourisation, surface foam and scum. Monitoring must continue daily for the duration of the works affecting each watercourse;</p> <ul style="list-style-type: none"> <li>• For water features that are being flumed, a phased approach of flume removal should be undertaken to remove the risk of large sediment plumes. There are multiple watercourses which drain into sensitive receptors which have the potential to increase the cumulative effects on the water features, particularly through sediment inputs. A phased approach of removal would ensure that water features would not be impacted by multiple sources of sediment from upstream receptors simultaneously; and</li> <li>• Careful consideration of placement of lighting column and luminaire positioning so that lighting is aimed away from waterbodies, refer to the Indicative Lighting Strategy (Construction) (Appendix C).</li> </ul> <p>In the event that construction activities, including watercourse crossings, result in deposition of sediment within watercourses resulting in siltation of riverbeds, changes to morphology or result in loss of channel capacity, post-works restoration must be applied.</p> <p><u>Foraging and Commuting Bats</u> Please refer to the Outline LBMP (EN070009/APP/5.9) and Indicative Lighting Strategy (Construction) (EN070009/APP/5.12).</p>	

POTENTIAL IMPACT	MITIGATION / ENHANCEMENT MEASURE	RESPONSIBILITY
	<p><u>If the trees within the Cowpen Bewley Woodland Park are identified for removal at detailed design stage, it is recommended that precautionary soft felling methods are followed. This approach is considered proportionate for a low suitability or PRF-I tree.</u></p> <p><u>Water Vole</u>                      Water vole are confirmed present on watercourses within the proposed development site (refer to Appendix 12F: Water vole and Otter Survey Report (ES Volume III, EN070009/APP/6.4)), however no burrows were identified at locations where crossing points are currently proposed therefore no licence from Natural England is required at this time.                      Update surveys will be completed to confirm the continued absence of water vole burrows from crossing point locations once the proposed pipeline crossing point locations are fixed. Update water vole surveys will be completed between April and September with reference to the water vole mitigation guidelines (Dean et al, 2016). The temporary watercourse crossings will be designed to maintain downstream flows and to allow continued and unobstructed passage for mammals using river corridors. At watercourses where water vole are present, a mitigation licence from Natural England will be required where water vole will be affected. The licence will detail the appropriate timing and ecological watching brief of construction to permit the temporary dispersal of water vole from the working area. Habitat will be reinstated / enhanced following completion of the works.</p> <p><u>Otter</u>                      A precautionary pre-construction check must be completed to confirm there are no new otter holts or couches within 200 m of the proposed works. If a new holt or couch is identified, micro-siting of works will be considered to avoid effects. If this is not possible, a mitigation licence from Natural England will be required.</p> <p><u>Other Mammals</u></p>	

POTENTIAL IMPACT	MITIGATION / ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>The following good practice working measures must be followed to prevent adverse effects on mammals during the construction phase:</p> <ul style="list-style-type: none"> <li>● Excavated holes, pits or trenches will be temporarily fenced off to deter large mammals and / or a shallow ramp provided as a means of escape should they fall in;</li> <li>● Excavations will be checked each morning for trapped animals prior to the start of any works;</li> <li>● No harmful substances to be left uncovered; and</li> <li>● Site fencing will be used to prevent access to sensitive areas outside working areas where sensitive species may be disturbed / harmed.</li> </ul> <hr/> <p><u>Invasive Non-Native Species</u></p> <p>An Invasive Non-Native Species Management Plan (targeting plants and animals) will be developed (this will form part of the Final CEMP(s)), identifying relevant invasive non-native species within the area to make sure that all necessary precautions are taken to prevent their spread. This plan will include a biosecurity protocol for site traffic.</p>	

**Table 7-6: Chapter 13: Ornithology (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Temporary habitat losses within designated sites and functionally linked land resulting in losses of breeding, roosting and/or feeding habitats.</p> <p>Noise and visual disturbance of breeding and or non-breeding birds.</p> <p>Physical or chemical pollution from emissions of dust and/or particulates and chemical spills to ground and/or water resulting in degradation of habitats used by feeding birds.</p> <p>Increased surface water runoff and flood risk resulting in degradation of nesting and feeding habitats and/or loss of nests.</p> <p>Morphological and hydrological effects on surface waters resulting in dewatering</p>	<p>In specifying final requirements for the re-instatement of land, consideration would be given to the requirements of baseline habitat conditions, and priorities for nature conservation on a location-by-location basis (including opportunities to secure enhancement), this will be confirmed in the Detailed LBMP.</p>	<p>EPC Contractor(s)</p>
	<p>A pre-commencement walkover survey must be undertaken by a ECoW prior to works commencing. The date of this survey will depend upon the start date for construction and the schedule of works, to be confirmed within the Final CEMP(s). The purpose of the walkover will be to review the site conditions prior to works commencing, to identify any changes on site or ecological constraints.</p>	
	<p>An ECoW must advise on working methods and timings to avoid disturbance of birds during sensitive periods. For example, construction may be suspended within certain areas during conditions of inclement weather (storms / onshore winds) and high tides / spring tides when more birds are sheltering inland.</p>	
	<p>For indicative noise and visual screening locations please refer to Figure 14a and 14b of the Report to Inform Habitats Regulations Assessment (EN070009/APP/5.10). The use of acoustic measures (e.g. barriers, sheds etc.) are to minimise noise to below significance/disturbance thresholds at HDD locations.</p> <p>To reduce noise effects in sensitive locations the following measures as shown in Figure 14a and 14b must be applied:</p> <ul style="list-style-type: none"> <li>Fully screening barriers (so the construction noise sources are not visible from the receptor locations) this is potentially all of the construction (Main Site, construction compounds, HDD locations, pipelines);</li> </ul>	



POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>of wetland habitats used by birds.</p> <p>Noise and visual disturbance of foraging during the breeding season.</p> <p>Temporary loss of nesting habitat.</p> <p>Destruction of nests, eggs and young.</p> <p>Noise and visual disturbance of breeding birds and their dependent young.</p>	<ul style="list-style-type: none"> <li>● HDD drilling within an acoustic shed;</li> <li>● All Hydraulic and electric tools fit with muffler or sound reduction equipment to reduce noise;</li> <li>● All pumps, generators and compressors within acoustic enclosures; and</li> <li>● All earthworks plant to be fit with exhaust silencers, super silenced plant to be selected.</li> </ul> <p>At the Greatham Creek crossing the timing of works within and adjacent to the SPA will be completed between September and 30 November inclusive to avoid the most sensitive periods for breeding and wintering birds.</p> <p>The same timing will be put in place for pipeline installation on existing racking between Saltholme Substation and Cowpen Bewley Road to avoid impacts on SPA qualifying birds present within Pipeline Pools and RSPA Saltholme Reserve.</p> <p>Works to install pipelines using open cut methods through Brinefields; and between Saltholme Substation and Cowpen Bewley Woodland Park will occur during the breeding season and under the supervision of an ECoW to prevent disturbance or displacement of non-breeding SPA birds from feeding and roosting habitats while ensuring that breeding birds are not disturbed and their nests are protected.</p> <p>For indicative restrictions of work timings please refer to Figure 14a and 14b of the Report to Inform Habitats Regulations Assessment (EN070009/APP/5.10).</p> <p>Sensitive lighting must be utilised during the construction phase to avoid disturbance of nocturnal wildlife including nesting, foraging and roosting birds as described in Appendix C: Indicative Lighting Strategy (Construction) and which will be updated to a Final Lighting Strategy (Construction) as part of the Final CEMP(s). The following lighting principles are set out:</p> <ul style="list-style-type: none"> <li>● lighting required during the construction of the Proposed Development will be designed to reduce unnecessary light spill outside of the Site boundary-see below for summary;</li> </ul>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<ul style="list-style-type: none"> <li>● adopting a lighting control strategy that turns lights off or dims as necessary for site safety and security;</li> <li>● using photocells as a primary means of control to prevent light from being used when sufficient daylight is available;</li> <li>● where possible, adopting LED luminaires to control obtrusive light due to their high directionality and accordingly the achievable ratio of useful light to spill light;</li> <li>● careful consideration of placement of lighting column and luminaire positioning;</li> <li>● adopting luminaires with minimal upward lighting ratio and full cut-off, where possible;</li> <li>● not tilting luminaires to have uplift above the horizontal, if this is not possible add shielding, hoods baffles, louvres as necessary to ensure potential upward light is controlled;</li> <li>● optimising column heights to allow for sufficient light coverage and minimal tilt of luminaires;</li> <li>● minimising building mounted luminaire heights;</li> <li>● adopting lamps with similar correlated colour temperatures;</li> <li>● using lamps with a limited UV spectrum in locations which might affect ecological receptors;</li> <li>● using shields and baffles to luminaires;</li> <li>● lighting the site boundaries with low power periphery lighting with an asymmetric forward optic having good back-light cut-off characteristics; and</li> <li>● directing luminaires away from ecologically sensitive receptors (woodland, hedgerows, waterbodies and ponds, watercourses and coastal habitats).</li> </ul> <p>For all areas not subject to specific seasonal restrictions as shown on Figures 14a and 14b, where possible, vegetation clearance works will be completed outside of the nesting bird season (which is from March to September). If this is not possible, each area of habitat to be cleared will be checked for nesting birds prior to clearance (a maximum of 48 hours before works commencing) by the ECoW.</p>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>If an active nest is found, then the nest and its immediate surroundings will need to be left undisturbed until nesting is complete and the birds have fledged. A suitable species dependent buffer will need to be implemented (as advised by the ECoW).</p> <p>Ground nesting species may be dissuaded from nesting in construction / site access routes by removing the surface vegetation from the desired area before the breeding season commences. Where this is not possible bird deterrent measures must be deployed to deter birds from nesting, followed by the completion of a pre-commencement walkover survey conducted by the ECoW to check for the presence of nests.</p> <p>If Schedule 1 species are found breeding within the working area, or close enough to the working area that works would result in disturbance of the breeding birds, works will stop immediately and Natural England must be advised.</p>	

**Table 7-7: Chapter 14: Marine Ecology (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Changes in Marine Water Quality During Construction Activities including Surface Water Runoff.</p> <p>Changes in Water Quality from Accidental Spills and Vessel Fuels and Oils.</p> <p>Collision Risk between Proposed Development Vessels and Marine Mammals.</p> <p>Changes in Airborne Soundscape during Construction.</p> <p>Changes in Visual Stimuli, including from Artificial Lighting.</p> <p>Introduction, Transportation and Spread of Invasive Non-Native Species.</p>	<p><u>Management of Construction Surface Water Runoff and Marine Water Quality</u></p> <p>An Outline WMP is included at Appendix B. The Outline WMP include detail on the measures to manage:</p> <ul style="list-style-type: none"> <li>● fine sediment in surface water runoff;</li> <li>● the risk of accidental spillages on the Proposed Development site; and</li> <li>● the management of construction dewatering.</li> </ul> <p>The Final WMP will also outline drainage and runoff strategies during construction phases, a pollution prevention plan, and an emergency response plan.</p> <hr/> <p>A Water Quality Monitoring Programme will be undertaken to ensure that mitigation measures are operating as planned and preventing pollution. This is standard practice for construction works of this type, and full details will be outlined in the Final WMP accompanying the Final CEMP(s).</p> <hr/> <p><u>Management of Construction Vessel and Accidental Spillages</u></p> <p>Vessels including barges and geared vessels will be required for transportation and delivery of construction materials and for construction support. It is required that all vessels associated with the Proposed Development will adhere to the following:</p> <ul style="list-style-type: none"> <li>● Harbour Authority approvals;</li> <li>● International Convention for the Control and Management of Ships’ Ballast Water and Sediments with the aim of preventing the spread of marine INNS (IMO, 2017);</li> <li>● International Maritime Organisation (IMO) Guidelines for the control and management of ships’ biofouling to minimize the transfer of invasive aquatic species (Biofouling Guidelines) (IMO, 2011);</li> </ul>	<p>EPC Contractor(s)</p>

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<ul style="list-style-type: none"> <li>● International Regulations for Preventing Collisions at Sea (IMO, 1972) and regulations relating to International Convention for the Prevention of Pollution from Ships (the MARPOL Convention 73/78) (IMO, 2021) with the aim of preventing and minimising pollution from ships; and</li> <li>● The Shipboard Oil Pollution Emergency Plan (SOPEP) (IMO, 2019); all vessels must have a contingency plan for marine oil pollution.</li> </ul> <p><u>Construction of Hydrogen Pipeline Corridor – Trenchless Crossings</u></p> <p>The use of trenchless technologies avoid any direct impact to the estuary bed, the worst case depth below the bed is assumed to be a minimum of 10 m, however, this will be determined following the ground investigation at the detailed design phase and the outcome of a frac-out risk assessment (pursuant to a Requirement of the Draft DCO (EN070009/APP/4.1)). This will ensure that there is no risk of exposure of the pipeline.</p> <p>There are risks associated with the use of drilling muds and plant close to Greatham Creek and the Tees Estuary. Risk of hydraulic fracture will be minimised by:</p> <ul style="list-style-type: none"> <li>● performing appropriate geotechnical investigations along the HDD alignments;</li> <li>● designing the trenchless crossings profile to pass at an appropriate depth below the watercourse (&gt;10 m for Greatham Creek and &gt;25 m for the Tees River). The depth should be sufficient to minimise the risk of failure or collapse based on the expected ground conditions (&gt;25 m);</li> <li>● designing the trenchless crossing to pass through competent soil layers identified in geotechnical investigations;</li> <li>● performing drilling fluid hydrofracture analysis for each drilling operation and maintaining downhole pressures within recommended limits;</li> <li>● using appropriate downhole pressure monitoring equipment;</li> <li>● designing a drilling fluid appropriate for the anticipated ground conditions;</li> </ul>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<ul style="list-style-type: none"> <li>• appropriate monitoring of drilling fluid parameters during drilling; and</li> <li>• performing regular monitoring of the ground above the HDD alignment for drilling fluid leaks to the surface.</li> </ul> <p>In addition, for HDD casing pipe to contain drilling fluid may be installed through less competent shallow ground layers at entry or exit points when considered necessary. Similarly, MBT shafts will be lined with concrete rings for stability.</p> <p>A site-specific Hydraulic Fracture Risk Assessment will be developed prior to construction (as part of the Final CEMP(s)) following further investigation of specific ground conditions at the crossing locations, and appropriate mitigation developed in line with best construction practice. The drilling fluid that returns to the drilling rig is recycled within that drilling rig. Any wastewater/drilling products that are not recycled must be stored and removed by a suitable waste management contractor and disposed of at a licensed waste/wastewater facility. The drill fluids used within the drilling machine must be water based, such as naturally occurring bentonite clay.</p> <p>To minimise the effect of airborne sound on seals, hauled-out at Seal Sands and using habitat within Greatham Creek during HDD at the Potential Offtaker at Greatham’s site, noise abatement barriers must be installed around the Potential Offtaker at Greatham’s Site, as required by the noise assessment.</p> <p>The Indicative Lighting Strategy (Construction) (Appendix C) has been developed to minimise and control the impacts of artificial lighting on the marine environment. Construction lighting will be arranged so that glare and light spill outside the construction site is minimised to avoid impacts to sensitive ecological features – the strategy for this lighting will be included in the Final CEMP(s). Measures include using warm white, LED bulbs, using a suitable mounting height for lights to reduce light spill, and ensuring the correct angle and orientation is used to reduce the contribution of light to spill, sky glow, and glare.</p>	

**Table 7-8: Chapter 15: Traffic and Transport (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Temporarily increased traffic flows, including HGVs on the roads leading to the Main Site.</p>	<p>A Framework CWTP (EN070009/APP/5.15) and CTMP is included in the DCO Application (EN070009/APP/5.16), which sets out the key measures to be employed during the construction phase to control and minimise the impacts of construction traffic originating from the Proposed Development.</p>	<p>EPC Contractor(s)</p>
	<p>The EPC Contractor(s) will review options for the use of rail and water transport when sourcing construction materials. The EPC Contractor(s) will also review the use of rail travel for construction staff accessing the Proposed Development Site potentially using the existing Redcar British Steel railway station (currently mothballed). This will be confirmed within the Final CEMP(s).</p>	
	<p>Working with suppliers to ensure that all relevant materials (including chemicals) brought to the Proposed Development Site that are classified as hazardous are transported in compliance with applicable regulations including the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG Regs) (as amended) (HM Government, 2009), during the construction, commissioning and (operational) phases. This will include, for example, consignments being marked with the familiar “Emergency Access Codes” and including a telephone number for advice in the event of an emergency.</p>	

**Table 7-9: Chapter 16: Landscape and Visual Amenity (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Direct / physical change to the landscape.</p> <p>Indirect change to the landscape resulting from visibility of proposed structures (temporary / permanent).</p> <p>Influence on perceptual qualities of landscape features (such as tranquillity).</p>	<p>Lighting required during the construction stage of the Proposed Development will be designed, positioned, and directed to prevent or minimise light disturbance to nearby residents. Where needed and appropriate, lighting to site boundaries will be provided, and illumination will be sufficient to provide a safe route for passing public. Precautions will be taken to avoid shadows cast by the site hoarding on surrounding footpaths, roads and amenity areas. Where appropriate, lighting will be activated by motion sensors to prevent unnecessary usage. Lighting will be provided in accordance with the Indicative Lighting Strategy (Construction) (Appendix C), this will be updated to a Final Lighting Strategy (Construction) as part of the Final CEMP(s) prior to construction.</p> <p>The maximum height of the ground level (i.e. the development platform that is to be created) of the Main Site will be 8m AOD.</p>	<p>EPC Contractor(s)</p>



**Table 7-10: Chapter 17: Cultural Heritage (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Potential direct and indirect impacts on the heritage assets that extend into the Main Site.</p>	<p>Lighting required during the construction stage must be designed, positioned, and directed to prevent or minimise light spill, as presented in the Indicative Lighting Strategy (Appendix C).</p>	<p>EPC Contractor(s)</p>
<p>Potential direct and indirect impacts on the heritage assets that extend into the Natural Gas / Electrical Connection / Carbon Dioxide Corridors.</p>	<p>Where it is not practicable to avoid heritage assets, principally below-ground archaeological remains, essential mitigation must be secured through a programme of archaeological evaluation and mitigation, consisting of excavation and recording, which will be carried out prior to construction.</p>	
<p>Potential direct and indirect impacts on the heritage assets that extend into the Water and Wastewater Connection Corridor.</p>	<p>All programmes of archaeological investigation will be carried out in accordance with a Written Scheme of Investigation (WSI) that has been agreed with the relevant archaeology officer/s and approved in writing by the relevant LPAs, pursuant to a Requirement in the Draft DCO (EN070009/APP/4.1).</p>	
<p>Potential direct and indirect impacts on the heritage assets that extend into the Hydrogen Pipeline Corridor.</p>	<p>Part of the Water Connections Corridor crosses a line of anti-tank blocks (SMR4024). The pipeline will be buried but there is sufficient room within the Water Connections Corridor to ensure that the asset is avoided during construction and not impacted by excavating the open-cut trench around the blocks and the Final CEMP(s) will set out how this has been achieved.</p>	
<p>Potential direct and indirect impacts on the heritage assets that extend into the Other Gases Connection Corridor.</p>	<p>Construction works will adopt a protocol to mitigate potential impacts to previously unknown archaeological assets that may be encountered during construction in areas where no evaluation was possible, as follows:</p> <ul style="list-style-type: none"> <li>Any archaeological remains not previously identified which are revealed when carrying out the development must be retained in situ and reported to the relevant LPA, as soon as reasonably practicable from the date they are identified.</li> </ul>	
<p>Potential direct and indirect impacts on the heritage assets that extend into the Temporary construction and welfare facilities and the Access and Highway Improvements areas.</p>		

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Direct / indirect impact on previously unrecorded archaeological remains which may be present on site.</p> <p>Temporary changes to setting resulting in indirect impact on heritage assets.</p>	<ul style="list-style-type: none"> <li>• No construction operations are to take place within 10 m of the remains referred to in sub-paragraph (i) for a period of 14 days from the date of any notice served under sub-paragraph (i) unless otherwise agreed in writing by the relevant LPA in consultation with any other relevant heritage stakeholders as required.</li> <li>• If the relevant LPA determines in writing that the archaeological remains referred to in sub-paragraph (i) require further investigation or mitigation, no construction operations are to take place within 10 m of the remains until provision has been made for such mitigation or the further investigation and recording of the remains in accordance with details to be submitted in writing to, and approved in writing by, the relevant LPA in consultation with any other relevant body as required.</li> </ul> <p>Important hedgerows to be removed in order to facilitate the construction of the Proposed Development will be reinstated like-for-like once construction has concluded, in accordance with The Habitats Regulations 1997.</p>	

**Table 7-11: Chapter 18: Socio-Economics and Land Use (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Impacts on net construction employment.</p> <p>Increased demand for accommodation in the construction phase.</p> <p>Wider impacts during the construction phase, including but not limited to, land take required to construct the Proposed Development impacting upon identified receptors.</p> <p>Construction activities in proximity to private and community facilities as a result of the Proposed Development; and</p> <p>Increase in construction workers resulting in demographic effects and community disruption.</p>	<p>A Framework CTMP (EN070009/APP/5.16) and a Framework CWTP (EN070009/APP/5.15) have been prepared for the DCO Application and must be implemented to control the impact of Heavy Goods Vehicles (HGVs) on the local road network during construction, this is secured pursuant to a Requirement in the Draft DCO (EN070009/APP/4.1).</p>	<p>EPC Contractor(s)</p>
	<p>The Applicant is committed to working with the promoters of other cumulative schemes to mitigate and reduce the effect of the cumulative construction workforce as far as possible. This includes setting up a working group for the Proposed Development and other cumulative developments in order to communicate and co-ordinate construction works at the individual developments in order to reduce any issues created by the additional construction workforce in the vicinity of the respective cumulative developments.</p>	
	<p>Trenchless methods will be used for the construction of the pipeline within Cowpen Bewley Woodland Park.</p>	
	<p>For further details on mitigation / enhancement measures relevant to socio-economics please refer to:</p> <ul style="list-style-type: none"> <li>● Table 7-1: Air Quality;</li> <li>● Table 7-2: Surface Water, Flood Risk and Water Resources;</li> <li>● Table 7-4: Noise and Vibration;</li> <li>● Table 7-8: Traffic and Transport;</li> <li>● Table 7-9: Landscape and Visual Amenity;</li> <li>● Table 7-12: Climate Change; and</li> <li>● Table 7-15: Human Health.</li> </ul>	

**Table 7-12: Chapter 19: Climate Change (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Greenhouse gas emissions during construction, including embodied carbon in building materials and transport of staff and materials (including, but not limited to; waste, supply of potable water, and disposal and treatment of wastewater).</p> <p>Increase in annual temperature / increase in summer temperature which could lead to electrical equipment overheating; increased heat stress / exhaustion for workers; poorer air quality from dusts / wildfires; and commuting issues from wildfires.</p> <p>Increase in winter temperature.</p> <p>Increase in annual rainfall.</p>	<p>The Final CEMP(s) will require that the EPC Contractor(s) develop implement processes to measure, monitor and report energy and water consumption and GHG emissions during the construction of the Proposed Development. Examples include, but are not limited to:</p> <ul style="list-style-type: none"> <li>● fuel consumption on site in vehicles, equipment and plant through minimisation of idling, and switching off when not being used;</li> <li>● reduction in water consumption in the on-site amenity blocks and construction activities (including dampening down as part of dust mitigation);</li> <li>● minimisation of transportation of materials to the site, by implementing measures set out in the Framework CTMP (EN070009/APP/5.16);</li> <li>● minimisation of emissions through worker commuting by encouraging group transport by the provision of minibuses;</li> <li>● provision of facilities for cyclists;</li> <li>● provision of information on public transport links; and</li> <li>● setting minimum rates for material recycling and re-use.</li> </ul> <p>The EPC Contractor(s) must monitor weather forecasts and plan works accordingly, protecting workers and resources from any extreme weather conditions.</p> <p>Measures to mitigate the effect of increases in rainfall must include:</p> <ul style="list-style-type: none"> <li>● Storage of topsoil and other construction materials stored outside of the 1 in 100-year floodplain to protect materials from high rainfall and flooding events;</li> <li>● Suitable storage and bunding of pollutants to protect from high rainfall events. This will be further supported by the Water Management Plan and a Site Emergency Response Plan, which</li> </ul>	<p>EPC Contractor(s)</p>

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Decrease in summer rainfall.                      Increase in winter rainfall.                      Increase in heatwaves.                      Increase in severity and frequency of droughts.                      Increase in storm intensity.                      Increase in sea level rise.</p>	<p>will form part of the Final CEMP(s), secured via Requirement in the Draft DCO (EN070009/APP/4.1);</p> <ul style="list-style-type: none"> <li>• Welfare areas will be laid with permeable membranes to protect the Site from high rainfall and flooding events; and</li> <li>• The Contractor will monitor weather forecasts and receive Environment Agency flood alerts and plan works accordingly, protecting works and resources from any extreme weather conditions (storms, flooding).</li> </ul> <p>A full list of measures will be confirmed in the Final CEMP(s).</p> <hr/> <p>An Emergency Response Plan must be in place for the construction phase of the Proposed Development, included as part of the Final CEMP(s).</p> <hr/> <p>The following steps must be taken to reduce the GHG emissions of construction and thus form the GHG Reduction Strategy for the Proposed Development:</p> <ul style="list-style-type: none"> <li>• GHG emissions during construction will be managed through the Final CEMP(s), with reference to relevant regulations, good practice guidance and the specific measures described in Chapter 19: Climate Change (ES Volume I, EN070009/APP/6.2);</li> <li>• Reducing embodied carbon by recovery of waste targets (for further details please refer to the Outline SWMP in Appendix A);</li> <li>• Incentivising / encouraging electric / low emission vehicles (for further details please refer to the Framework CTMP (EN070009/APP/5.16));</li> <li>• Other sustainable transport options will be maximised where possible, such as public transport, car sharing and cycling (for further details please refer to the Framework CWTP (EN070009/APP/5.15)).</li> <li>• Information about all available forms of public transport including routes and destinations, service frequencies and locations of nearest bus stops shall be provided in an information pack</li> </ul>	

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	<p>(either a physical copy or electronically) and sent to construction workers prior to them starting work at the Site. Public transport information would also be displayed on the travel information boards. It will be the responsibility of the CWTP Co-ordinator to ensure that this information is kept up to date (please refer to the Framework CWTP for further information (EN070009/APP/5.15)).</p> <ul style="list-style-type: none"> <li>● Encouraging low carbon transport of materials (for further details please refer to the Framework CTMP (EN070009/APP/5.16));</li> <li>● Opportunities to use a modular approach to the construction of the Hydrogen Production Facility will be utilised where possible, this will reduce the number of HGVs travelling to and from the Main Site;</li> </ul>	

**Table 7-13: Chapter 20: Major Accidents and Disasters (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Impacts arising from the presence of hazardous substances on site.</p> <p>Ground Instability.</p> <p>Structural Collapse/ accidental impact.</p> <p>Utility/ pipeline/ UXO strike.</p> <p>Release of ground contamination.</p> <p>Domino effect on pipeline construction.</p> <p>Road traffic accidents / accidents involving vehicles.</p> <p>Vandalism.</p> <p>Extreme weather.</p> <p>Aircraft / drone impact.</p> <p>Spillage of fuel.</p>	<p>A GI with appropriate testing undertaken according to appropriate specifications and standards will be carried out to understand the potential risks and inform the construction methods to be used, this is secured pursuant to a Requirement in the Draft DCO (EN070009/APP/4.1). The GI will also identify the presence of areas of ground on-site with the potential to contain contaminants.</p> <p>If remedial measures are required based on the GI these may include the placement of clean cover, soil treatment, and/or removal of localised hotspots of identified contamination, to be confirmed within the Final CEMP(s) and secured pursuant to a Requirement in the Draft DCO (EN070009/APP/4.1).</p> <p>To reduce risks associated with ground instability, there will be use of industry standard construction methods / design features appropriate to the context of the Proposed Development, this will be confirmed within the Final CEMP(s).</p> <p>Hazardous waste will be removed from the Proposed Development Site in accordance with the Outline Site Waste Management Plan, included as Appendix A of this Framework CEMP.</p> <p>Thorough structural engineering design of new structures, assessments of existing structures and temporary structures such as excavations must be in accordance with industry codes and standards.</p> <p>Consultation with appropriate stakeholders such as National Grid Gas Transmission, the operator of the Central Area Transmission System (CATS) Pipeline, other asset owners and the EA must be undertaken to manage interfaces and define appropriate control measures when working close to live pipelines.</p> <p>Possible control measures could include, for example, GPR surveys and magnetometer surveys of site and positive ID of all pipelines prior to construction, in accordance with PAS 120, and will be determined by the Principal Contractor.</p>	<p>EPC Contractor(s)</p>

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	Control measures must be implemented to prevent fires and procedures will be prepared and implemented to respond to fires, in the event that they were to arise, this will be confirmed in the Final CEMP(s).	
	Protective measures related to leaks and spills are presented in Appendix B: Draft Water Management Plan and Table 7-2: Surface Water, Flood Risk and Water resources.	
	Appropriate security measures must be installed at the construction site, including site security and fencing to prevent trespassers. For further details, please refer to Section 4.4 of this Framework CEMP.	
	The Proposed Development is located in an area which does not have a high density of air traffic. Appropriate control measures including need for aviation warning lighting to be fitted to tall construction machinery. This is secured by a Requirement in the Draft DCO (EN070009/APP/4.1).	
	<p>Refuelling of construction vehicles from temporary diesel storage areas must be subject to both procedural and infrastructure measures to prevent spillages of fuel. For example:</p> <ul style="list-style-type: none"> <li>● Procedurally, vehicles will be stationary with engines switched off and keys taken out of ignition (to prevent drive away) during filling.</li> <li>● The bulk diesel storage tank will be located away from potential vehicular collisions and in an area where spills can be contained and recovered, and away from open drainage and open ground.</li> <li>● Storage will have tank bunding (whether external or integral double skinned tanks), drip trays and tank level indication; with alarms where appropriate.</li> <li>● Refuelling operations will take place over an impermeable surface, with the capability of capturing any spillages.</li> <li>● Spill kits will be available for minor spill cleanup.</li> </ul>	



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POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
	A full list of measures will be confirmed in the Final CEMP(s).	

**Table 7-14: Chapter 21: Materials and Waste Management (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Production of hazardous and non-hazardous waste and subsequent reduction of landfill capacity.</p> <p>Availability of construction materials.</p>	<p>an Outline SWMP (Appendix A) has been developed as part of the Framework CEMP which will allow for waste streams to be estimated and monitored. The Outline SWMP sets out how waste will be managed during construction, and opportunities to prevent waste, reuse materials and recycle or recover waste will be explored in accordance with the waste hierarchy. This will be followed by the Final SWMP which will be produced prior to construction as part of the Final CEMP(s).</p>	<p>EPC Contractor(s)</p>
	<p>At this stage the volume of hazardous waste requiring has been conservatively estimated. The volume estimates will be further refined following supplementary site investigation. Waste management routes will be confirmed by the EPC Contractor(s) and mitigation measures will be confirmed in the Final CEMP(s).</p>	

**Table 7-15: Chapter 22: Human Health (ES Volume I, EN070009/APP/6.2)**

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Risk taking behaviour of construction workers.</p> <p>Changes (namely reduction) to access and use of open space, leisure and play spaces including but not limited to PRoW.</p> <p>Increased demand on public services such as healthcare facilities, educational facilities and other social infrastructure.</p> <p>Increased traffic flows.</p> <p>Impact on stakeholders mental health both through real and perceived safety risks.</p> <p>Changes to community identity, culture and resilience.</p> <p>Changes to social participation, interaction and support.</p> <p>Changes to employment and income.</p>	<p>Potential electromagnetic interference effects must be identified and mitigated through the application of electromagnetic compatibility industry accepted practice. In accordance with good safety management principles from Electromagnetic Compatibility Directive (EMCD) (European Commission, n.d.), risks due to EMF from relevant sources including the substation and Electrical Connection Corridor will be reduced using the ‘as low as reasonably practicable’ (ALARP) principle.</p> <p>Measures for the protection of workers from potential EMF effects must include engineering and administrative controls, personal protection programmes, and medical surveillance in accordance with the relevant legislation and guidance. In particular, appropriate protective measures must be implemented if exposure in the workplace is predicted to result in the basic restrictions set out within ICNIRP Guidelines (ICNIRP, 1988) being exceeded.</p> <p>A public awareness / education campaign to increase knowledge of the associated safety risks and how these will be managed effectively must be conducted prior to the construction of the Proposed Development.</p> <p>Twenty-four-hour contact details will be provided on the Applicants website so that residents can get in touch to find out further information on the Proposed Development during construction. The appointed EPC Contractor(s) will delegate an individual to act as the initial point of contact for members of the community to find out further information.</p> <p>To limit the impact on PRoW users and access to Cowpen Bewley Woodland Park, the PRoW will not be closed concurrently, meaning a route into the Cowpen Bewley Woodland Park will always be available.</p> <p>For further details on mitigation / enhancement measures relevant to human health please refer to:</p> <ul style="list-style-type: none"> <li>● Table 7-1: Air Quality;</li> </ul>	<p>EPC Contractor(s)</p>

POTENTIAL IMPACT	MITIGATION/ ENHANCEMENT MEASURE	RESPONSIBILITY
<p>Increased pressure on availability of housing / accommodation.</p> <p>Changes to education and training.</p> <p>Changes to health and social care services.</p> <p>Impacts on climate change mitigation and adaptation.</p> <p>Impact from air quality effects.</p> <p>Impact of noise and vibration on people in the vicinity of the proposed development.</p> <p>Changes to the built environment in terms of placing extra demands on local social infrastructure.</p> <p>Impact of radiation and electromagnetic fields to stakeholders.</p>	<ul style="list-style-type: none"> <li>● Table 7-4: Noise and Vibration;</li> <li>● Table 7-8: Traffic and Transport;</li> <li>● Table 7-11: Socio-Economics and Land use;</li> <li>● Table 7-12: Climate Change; and</li> <li>● Table 7-13: Major Accidents and Disasters.</li> </ul>	

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## 8.0 IMPLEMENTATION AND OPERATION

8.1.1 The Final CEMP(s) will set out all roles, responsibilities and actions required in order to implement the measures described in this Framework CEMP. This will include:

- Project team roles and responsibilities (for each organisation involved in the delivery of the construction of the Proposed Development, including an organogram;
- The identification and protection of sensitive areas within, adjacent to and within close proximity of the construction of the Proposed Development;
- training requirements for relevant personnel on environmental topics;
- 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;
- measures to advise staff of changing circumstances as work progresses;
- communication methods between the Applicant and the EPC Contractor(s);
- A summary of procedures (as defined by the EPC Contractor(s) to be followed in the event of an environmental emergency or following a breach of measures defined in the Final CEMP(s); and
- A record of management actions, their implementation, and outcomes undertaken during construction.

## 9.0 CHECKING AND CORRECTIVE ACTION

### 9.1 Monitoring

9.1.1 To meet the requirement of the Final CEMP(s), environmental monitoring of the Proposed Development and its impacts will be undertaken throughout the construction phase. The monitoring detailed below will be implemented by the relevant appointed EPC Contractor(s) with the Applicant / appointee validating the process. In particular, the following requirements of the Final CEMP(s) will be monitored:

- compliance with licences, permits, and approvals;
- dust and noise monitoring;
- water pollution prevention; and
- vegetation protection.

9.1.2 Specific monitoring requirements outlined within the topic specific tables above are presented in Table 9-1 below. The Applicant and / or relevant appointed EPC Contractor(s) will ensure 100% compliance and no complaints with the requirements detailed in Table 9-1. Table 9-1 will be updated in the Final CEMP(s) once construction details and monitoring requirements have been fully defined.

**Table 9-1: Monitoring / Auditing Requirements**

CHAPTER	MONITORING / AUDITING REQUIREMENTS
Air Quality	Monitoring to ensure that sand and aggregates are stored in bunded areas and cement powder and fine materials are stored in silos, where appropriate.
	Monitoring to ensure that water suppression and regular cleaning occurs to minimise mud on roads and to control dust during earth moving activities.
	Monitoring to ensure that wheel wash systems are in use and operate correctly at all times.
	Regular auditing to ensure there are no open fires on-site.
Surface Water, Flood Risk and Water Resources	Monitoring to ensure that good practice guidance and pollution prevention guidance as outlined in Table 7-2 is carried out during construction.
	Monitoring to ensure that good practice guidance found in CIRIA and British Standards Institutes documents as outlined in Table 7-2 is carried out during construction.

CHAPTER	MONITORING / AUDITING REQUIREMENTS
	<p>The EPC Contractor(s) to continually monitor the need for measures to manage construction site run off depending on the nature of the works being undertaken, the weather conditions and the performance of the SuDS installed. Details on the measures to take can be found in Table 7-2.</p>
	<p>Monitoring of chemical spillage risk. If improvements to management of risk are identified through this monitoring, that comply with relevant requirements, then they will be implemented.</p>
	<p>Monitoring to ensure that the Pollution Prevention Plan and Emergency Response Plan are followed.</p>
	<p>Monitoring of foul waste disposal to ensure it is disposed of by a licensed contractor to a suitably permitted facility.</p>
	<p>Monitoring of water discharge rate to watercourses to ensure it complies with the appropriate permit.</p>
	<p>Monitoring of depth of trenchless technologies to ensure it is at least 10 m below the river bed<sup>5</sup>.</p>
	<p>Using appropriate downhole pressure monitoring equipment.</p>
	<p>Appropriate monitoring of drilling fluid parameters during drilling.</p>
	<p>Performing regular monitoring of the ground above the HDD alignment for drilling fluid leaks to the surface.</p>
	<p>EPC Contractor(s) responsibility to check the license of a waste management contractor and waste facility that is being used and regularly monitor this to ensure they are still in license and therefore satisfactory to work with.</p>
	<p>Continuous monitoring of the water column above the drill path to identify potential drill fluid leakage.</p>
	<p>Water quality monitoring will be undertaken prior to, during and after construction activity. Full details</p>

<sup>5</sup> However, this will be determined following the ground investigation at the detailed design phase and the outcome of a frac-out risk assessment.

CHAPTER	MONITORING / AUDITING REQUIREMENTS
	<p>are provided in the Final WMP accompanying the Final CEMP(s).</p> <p>Regular observations of the watercourses will also be required post-works during vegetation re-establishment of the banks, especially following wet weather.</p> <p>The EPC Contractor(s) will monitor weather forecasts and plan works accordingly.</p> <p>Monitoring of amount of groundwater dewatering that is required to determine if specific legislation triggers are met (i.e. the Water Resources Act 1991 (HM Government, 1991) and Environmental Permitting Regulations (HM Government, 2016)).</p>
Geology, Hydrogeology and Contaminated Land	The EPC Contractor(s) Project Manager will be responsible for ensuring the measures prescribed in the Outline SWMP are undertaken. Specific monitoring requirements will be outlined in the Final SWMP.
Noise and Vibration	<p>Monitoring of construction noise to ensure it is compliant with agreed limits.</p> <p>Noise complaints should be monitored, reported to the EPC Contractor(s) and immediately investigated. These complaints will be kept in a log book available upon request.</p>
Ecology and Nature Conservation	<p>An ECoW (contracted by the Applicant and / or relevant appointed EPC Contractor(s)) will be present during construction to monitor the works and implementation of the Final CEMP(s). The ECoW must supervise and instruct the implementation of all ecological impact avoidance commitments as detailed in the Final CEMP(s).</p> <p>If contamination of watercourses occurs, daily monitoring for the duration of the construction works at the contaminated watercourse should occur.</p>
Ornithology	N/A



CHAPTER	MONITORING / AUDITING REQUIREMENTS
Marine Ecology	Performing regular monitoring of the ground above the HDD alignment for drilling fluid leaks to the surface.
Traffic and Transport	As per any monitoring requirements detailed within the CWTP (EN070009/APP/5.15) and the CTMP (EN070009/APP/5.16).
Landscape and Visual Amenity	As per any monitoring requirements detailed within the Outline LBMP (EN070009/APP/5.9).
Cultural Heritage	N/A
Socio-economics and Land use	N/A
Climate Change	The Final CEMP(s) will require that the EPC Contractor(s) develop and implement processes to measure, monitor and report energy and water consumption and GHG emissions during the construction of the Proposed Development.
	The EPC Contractor(s) will monitor weather forecasts and Environment Agency flood alerts and plan works accordingly, protecting workers and resources from any extreme weather conditions.
Major Accidents and Disasters	N/A
Materials and Waste Management	The EPC Contractor(s) Project Manager will be responsible for ensuring the measures prescribed in the Outline SWMP are undertaken. Specific monitoring requirements will be outlined in the Final SWMP.
Human Health	N/A

9.1.3 As part of the monitoring process, the EPC Contractor(s) will allocate a designated Environmental Site Officer(s) (ESO) who will be present on site throughout the construction process and at the commencement of new construction activities. The ESO will observe activities within the Proposed Development Site and report any deviations from the Final CEMP(s) in a logbook, along with the action taken and general conditions at the time. The Applicant will be informed of such deviations as soon as possible following identification, the specific procedure to deviations, including a timeline for actions and reporting, will be detailed in the Final CEMP(s). The ESO would also act as day-to-day contact with RCBC, STBC, HBC, and other regulatory authorities such as the Environment Agency.

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- 9.1.4 An agreed monitoring programme, incorporating the measures listed in Table 9-1, as well as any other measures deemed necessary following detailed design of the Proposed Development, will be produced as part of the Final CEMP(s) with responsibilities assigned to the relevant persons.
- 9.1.5 During construction, the ESO will conduct daily walkover surveys to ensure all requirements of the Final CEMP(s) 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.
- 9.1.6 The Environmental/Project Manager will arrange regular formal inspections to ensure the requirements of the Final CEMP(s) are being met. After completion of construction activities, the ESO will conduct a final review.

## 9.2 Records

- 9.2.1 The Environmental / Project manager will retain records of environmental monitoring and implementation of the Final CEMP(s). This will allow provision of evidence that the Final CEMP(s) is being implemented effectively. These records will include:
- Environmental Action Schedule;
  - licenses, permits, and approvals;
  - results of inspections by the Environmental/Project Manager;
  - other environmental surveys and investigations;
  - monitoring records; and
  - environmental equipment test records.
- 9.2.2 The Final CEMP(s) must be updated as necessary, with a full review as required (at least quarterly) throughout the construction phase.
- ## 9.3 Management Review
- 9.3.1 The Final CEMP(s) will be signed off by the Environmental / Project Manager and the Applicant on completion of construction activities.

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