



Teesside Flexible Regas Port Limited

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# TEESSIDE FLEXIBLE REGAS PORT

Environmental Impact Assessment Scoping  
Report

Volume I – Main Text





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Environmental Impact Assessment Scoping Report

Volume I – Main Text

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## **APPENDICIES**

The following appendices are included in Volume II:

### **Chapter 1 Introduction**

- Appendix 1A Abbreviations And Glossary

### **Chapter 4 Approach to EIA**

- Appendix 4A Transboundary Screening Matrix

### **Chapter 6 Noise and Vibration**

- Appendix 6A Underwater Noise Assessment Guidance And Information Sources

### **Chapter 7 Biodiversity**

- Appendix 7A Marine Walkover Images

### **Chapter 18 Geology and Soils**

- Appendix 18A Phase 1 Preliminary Environmental Risk Assessment

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## **FIGURES**

The EIA Scoping Report chapters presented in this volume are supported by following figures included in Volume III:

### **Chapter 1 Introduction**

- Figure 1.1 Scoping Site Boundary

### **Chapter 2 Site and Proposed Scheme Description**

- Figure 2.1a Environmental Context: Flood Zones and Main Rivers
- Figure 2.1b Environmental Context: Statutory Designated Sites Within 2km
- Figure 2.1c Environmental Context: Topography, National and Marine Landscape Character Areas
- Figure 2.1d Environmental Context: Cultural Heritage and Noise Important Areas
- Figure 2.1e Environmental Context: Public Rights of Way, Recreational Routes And National Cycle Network
- Figure 2.2 Environmental Context: Indicative Site Allocation
- Figure 2.3 Locations of Existing Capital and Maintenance Disposal Sites

### **Chapter 3 Regulatory, Planning and Energy Policy**

- Figure 3.1 Local Plan Policies Relevant To The Site

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- Figure 5.1 Air Quality Monitoring





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- Figure 18.2 Superficial Deposits
- Figure 18.3 Bedrock Geology

# 1 INTRODUCTION

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## 1.1 BACKGROUND

### THE APPLICANT

- 1.1.1. Teesside Flexible Regas Port Limited (herein known as ‘the Applicant’) is developing a liquefied natural gas (LNG) import terminal to be located in Teesport near the town of Stockton-on-Tees in Northern England (herein referred to as the “Proposed Scheme”). The Proposed Scheme will provide a market-reactive access point for LNG supplies to enhance the UK’s energy security of supply.
- 1.1.2. The Applicant is supported by WaveCrest Energy LLC (WaveCrest) which is led by an experienced management team responsible for the successful execution of 16 unique LNG import terminals worldwide since 2005. This team also led efforts for the design and construction of 9 Floating Storage Regasification Units (FSRUs), creating more than 8 billion cubic feet per day (bcf/day) of regasification capacity as a result. Most recently, WaveCrest worked with the Deutsche ReGas project in Lubmin, Germany to deliver an FSRU project from the conceptual phase in September 2022 to first gas deliveries in January 2023, and is currently involved in a further expansion of the project.
- 1.1.3. The Applicant and WaveCrest are affiliated companies and are both wholly owned subsidiaries of Macquarie Capital, the corporate advisory, capital markets and principal investment arm of Macquarie Group. Macquarie Capital’s Energy Principal team provides flexible capital across the project lifecycle of energy infrastructure projects and leverages its development and project finance capabilities.

### OVERVIEW

- 1.1.4. The Applicant is planning to submit an application for a Development Consent Order (DCO) to construct, operate and subsequently decommission the Proposed Scheme on land at Seal Sands, near Stockton-on-Tees, Teesside (the ‘Site’).
- 1.1.5. The Site, in which the Proposed Scheme would be constructed, comprises five main elements and environments which are considered in this Environmental Impact Assessment (EIA) Scoping Report:
- A new jetty designed for the delivery of LNG by mooring LNG carriers of up to 305 meters in length and 50 meters in beam (referred to as the ‘Marine Jetty’) noting that:
    - The Marine Jetty will be located on an intertidal foreshore area on the River Tees estuary,
    - This intertidal foreshore also contains two disused pipes running across it to the River Tees, and
    - The intertidal foreshore will be removed as part of the implementation of the Proposed Scheme with applicable habitat compensation.
  - An area of derelict land within the Seal Sands development area within land owned by Navigator Terminals Seal Sands Limited measuring approximately 3 hectares (referred to as the ‘Regas and Storage Area’) that will contain:
    - An LNG regasification plant comprising vaporisers, pumps, and other appurtenant equipment (referred to as the ‘Regasification Plant’), and

- Onshore storage tanks of up to 13,000m<sup>3</sup> total capacity (referred to as the ‘Onshore Storage Tanks’).
  - A pipeline route which will contain a high-pressure export pipeline (referred to as the ‘Export Pipeline’) that terminates at the existing Teesside Gas Processing Plant (TGPP) following either a route to the north in an existing pipeline corridor or a route to the south along a disused railway track.
  - An electrical connection to Northern Power Grid; and
  - A connection from the Export Pipeline to TGPP and then onwards to the National Transmission System.
- 1.1.6. Currently, the route of the Export Pipeline between the Regas and Storage Area and the TGPP is still under consideration. Options being considered include the provision of a new pipeline or use of an existing pipeline which may require localised modification.
- 1.1.7. The Proposed Scheme would conclude at a connection point to the National Transmission System (NTS).
- 1.1.8. The maximum flow rate of the Regasification Plant is expected to be capable of achieving a maximum of 28.3 million cubic metres per day (m<sup>3</sup>/day) with an average continuous regas rate of 22.7 million m<sup>3</sup>/day.
- 1.1.9. The location and extent of the proposed scoping Site boundary can be seen on **Figure 1.1**. The elements of the Proposed Scheme listed above are described in detail in **Chapter 2: Site and Proposed Scheme Description**.

## **BACKGROUND TO THE PROPOSED SCHEME**

- 1.1.10. LNG refers to natural gas which has been cooled to approximately -160°C, changing its state from gas to liquid. Over the past few decades, LNG has become an increasingly important method of moving natural gas to market. The primary benefit of LNG as a method for moving natural gas is that it can be transported by ship, as the volume is around 600 times smaller than the gaseous state and provides an effective means of transportation where established pipeline infrastructure does not exist or is not viable. Once at its destination, LNG is regasified and used in the same way as natural gas which has not been liquefied.
- 1.1.11. In the UK, LNG imports have gained importance in ensuring a secure and diverse gas supply portfolio following a decline in indigenous production.
- 1.1.12. The Department for Energy Security and Net Zero (Ref. 1.1) anticipates that:  
*“While total gas demand will decrease as the UK transitions to net zero, the UK’s import dependence for both LNG and interconnector gas supply is projected to rise from a predicted 13% in 2023 to around 32% by 2030. This is forecast to peak at around 58% in 2045, falling to 50% by 2050.”*
- 1.1.13. Therefore, LNG will likely make up a significant proportion of these future gas imports over the next 20 years.

## **1.2 REQUIREMENT FOR DEVELOPMENT CONSENT**

- 1.2.1. Part 3 of the Planning Act 2008 (PA 2008) (Ref. 1.2) defines what projects constitute Nationally Significant Infrastructure Projects (NSIP). The Proposed Scheme is defined as a Nationally

Significant Infrastructure Project under Part 3, section 14(1)(d) of PA 2008: the construction or alteration of an LNG facility.

- 1.2.2. Section 18 of the PA 2008 states that the construction of an LNG facility constitutes an NSIP where the maximum flow rate of the facility is expected to be at least 4.5 million standard cubic metres per day. The Proposed Scheme will be capable of a flow rate of at least 4.5 million standard cubic metres per day and is therefore an NSIP.
- 1.2.3. Once classed as an NSIP, an application for development consent is required to be submitted to the relevant Secretary of State (SoS) under Part 4 of the PA 2008.

### 1.3 REQUIREMENT FOR EIA

- 1.3.1. The process and content of an Environmental Impact Assessment (EIA) is summarised in Regulation 5 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('the EIA Regulations') (Ref. 1.3). Central to the process is the preparation of an Environmental Statement (ES) and the carrying out of associated procedural steps, including consultation, publicity, and notification.
- 1.3.2. Regulation 4 of the EIA prohibits the grant of consent for NSIPs that falls under the definition of an "EIA development" without consideration of specific environmental information and processes set out in Regulation 5.
- 1.3.3. The Proposed Scheme involves the construction and operation of an LNG import facility for carrying gas and so is deemed to constitute EIA development and to require EIA (as per Schedule 2(3)(b)), and 2(3)(c) in part due to it including the surface storage of natural gas. As the Proposed Scheme requires development consent pursuant to the PA 2008, the processes set out, and documents stated within The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) (the 2009 Regulations) (Ref. 1.4) must be followed and prepared. This includes "*the environmental statement required ... and any scoping or screening opinions or directions*".
- 1.3.4. A Regulation 8 (of the EIA Regulations) notification has been submitted to the SoS along with this EIA Scoping Report and confirms that the Applicant intends to submit an application for development consent, which will include an ES, in summer 2024.

### 1.4 NATIONAL POLICY STATEMENTS

- 1.4.1. Under the PA 2008 regime (Ref. 1.2), the policy framework for examining and determining applications for development consent is provided by National Policy Statements (NPS). Section 5 of the PA 2008 allows the relevant SoS to designate NPSs setting out national policy in relation to the types of (NSIPs listed at Section 14 of the PA 2008. The NPSs are the primary policy used by the relevant SoS to examine and determine applications for NSIPs. The 2023 revised NPSs (EN-1 to EN-5) came into force on 17 January 2024. Further details on NPSs, particularly EN-4, the NPS for natural gas supply infrastructure and gas and oil pipelines can be found in **Chapter 3: Regulatory, Planning and Energy Policy** and in the Legislation, Policy and Guidance sections of **Chapters 5 to 20**.

## 1.5 PURPOSE OF THE EIA SCOPING REPORT

- 1.5.1. The purpose of this EIA Scoping Report is to ensure that the subsequent EIA is focused on the key impacts likely to give rise to significant effects, and to obtain agreement on the EIA approach and scope. As well as identifying elements to be considered in the EIA, this Report also identifies those elements that are not considered necessary to assess further. This approach is in line with the general aim to undertake proportionate EIA, as advocated by industry best practice and as set out in paragraph 5.10 of the Planning Inspectorate's Advice Note 7 "Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements" (Ref. 1.5).
- 1.5.2. This Scoping Report seeks to establish the overall framework for the EIA for the Proposed Scheme in relation to the environmental impacts and associated effects, with the ES to be based on this EIA Scoping Report and the Scoping Opinion received. However, the exact scope of the EIA will also be influenced by the ongoing design evolution of the Proposed Scheme, baseline data collection (e.g. field surveys) and consultation and engagement with stakeholders. Where further evidence justifies a change to the scope of the EIA, this will be explained in the ES along with confirmation of whether the change has been agreed with relevant consultees.
- 1.5.3. This EIA Scoping Report is structured as follows:
- Volume I:
    - Chapter 1: Introduction;
    - Chapter 2: Site and Proposed Scheme Description;
    - Chapter 3: Regulatory, Planning, and Energy Policy;
    - Chapter 4: Approach to EIA;
    - Chapter 5: Air Quality;
    - Chapter 6: Noise and Vibration;
    - Chapter 7: Biodiversity;
    - Chapter 8: Water Environment and Flood Risk;
    - Chapter 9: Landscape and Visual;
    - Chapter 10: Climate Resilience;
    - Chapter 11: Greenhouse Gases;
    - Chapter 12: Materials and Waste;
    - Chapter 13: Traffic and Transport;
    - Chapter 14: Major Accidents and Disasters;
    - Chapter 15: Shipping and Navigation;
    - Chapter 16: Cultural Heritage;
    - Chapter 17: Population and Human Health;
    - Chapter 18: Geology and Soils;
    - Chapter 19: Cumulative Effects; and
    - Chapter 20: Summary.
  - Volume II: Appendices; and
  - Volume III: Figures.
- 1.5.4. The EIA Regulations (Regulation 10(3)) prescribe the information that a request for an EIA Scoping Opinion must include (Ref. 1.3).

1.5.5. **Table 1-1** presents those information requirements and where each can be found in this Report.

**Table 1-1 - Information Required to Accompany a Request for a Scoping Opinion**

Information Required	Location within this Report
A plan sufficient to identify the land	Figure 1-1: Application Boundary
A description of the nature and purpose of the development, including its location and technical capacity	Chapter 1: Introduction Chapter 2: Site and Proposed Scheme Description
An explanation of the likely significant effects of the development on the environment	Chapters 5-20 of this Report

1.5.6. In addition to the above, Regulation 10(3)(d) of the EIA Regulations requires “*such other information or representation as the person making the request may wish to provide or make*”. This additional information is set out in **Table 1-2** below.

**Table 1-2 – Other Information Provided within this EIA Scoping Report**

Information Required	Location within this Report
An overview of the conditions present on site and in the surrounding area, together with a brief overview of the relevant planning policy context.	Chapter 1: Introduction Chapter 2: Site and Proposed Scheme Description
Outline of the scope and assessment methodology (including the significance criteria to be adopted) for assessing the likely significant environmental effects to be employed for each aspect to be reported in the ES.	Chapter 4: Approach to EIA
The approach to dealing with alternatives.	Chapter 4: Approach to EIA
The approach to undertaking the cumulative assessment.	Chapter 19: Cumulative Effects
The proposed approach to the EIA and an appraisal of the key environmental aspects and matters to be covered in the EIA (i.e., ‘scoped in’) and the aspects and matters not requiring further consideration (i.e., ‘scoped out’).	Chapters 4 and Chapters 5-19 of this Report
The proposed structure and format of the ES	Chapter 4: Approach to EIA

1.5.7. **Chapter 3** of this EIA Scoping Report provides a summary of the regulatory and planning and energy policy relevant to the Proposed Scheme.

1.5.8. The outputs of the EIA will be twofold:

- A Preliminary Environmental Information Report (PEIR), produced in connection with the formal statutory consultation for the Proposed Scheme. The PEIR will present the current understanding of the potential likely significant effects of the Proposed Scheme at the time of the consultation and its purpose will be to provide information that enables interested parties, including members of the public, local authorities and statutory bodies, to understand the likely environmental effects so that they can provide meaningful feedback; and
- The PEIR will be followed by the ES, which will be produced as part of the application for development consent for the Proposed Scheme. The ES will report on a detailed assessment of the likely significant effects resulting from the Proposed Scheme, the proposed mitigation measures to be implemented and the residual effects anticipated to arise following the implementation of that mitigation.

## 1.6 REFERENCES

- Ref. 1.1.** Department for Energy Security and Net Zero (2023). The role of gas storage and other forms of flexibility in security of supply. Available at: <https://assets.publishing.service.gov.uk/media/656fae319462260721c56977/gas-storage-and-flexibility-update.pdf>
- Ref. 1.2.** UK Government (2008). Planning Act 2008. Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents/made>
- Ref. 1.3.** UK Government (2017). The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 Available at: <https://www.legislation.gov.uk/uksi/2017/572/contents/made>
- Ref. 1.4.** UK Government (2009). The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009. Available at: <https://www.legislation.gov.uk/uksi/2009/2264/contents/made>
- Ref. 1.5.** National Infrastructure Planning (2020). Advice Note 7 (Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements'. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-and-environmental-statements/>

## 2 SITE AND PROPOSED SCHEME DESCRIPTION

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### 2.1 INTRODUCTION

2.1.1. This chapter provides an overview of the Site, the surrounding area and the Proposed Scheme. It sets out the main components of the Proposed Scheme as well as describing key activities that will be undertaken during construction, operation and maintenance, and decommissioning, including key parameters along with indicative timescales.

### 2.2 SITE DESCRIPTION AND SURROUNDING AREA

2.2.1. The Site (defined within the Proposed Scoping Site Boundary shown in **Figure 1.1** which includes the land required to construct, operate and maintain, and decommission the Proposed Scheme) lies fully within the administrative area of Stockton-on-Tees Borough Council.

2.2.2. The Site extends from a section within the River Tees in the east, where it includes an area of intertidal foreshore, in addition to an area of undeveloped open land adjacent to Navigator Terminals Seal Sands. Moving west, the Site diverges into two corridors (one to the north along an existing pipeline corridor and one to the south along an existing internal road around Seal Sands), before connecting into the existing Teesside Gas Processing Plant (TGPP) in the west. The Scoping Boundary encompasses an area of approximately 90.4 hectares (ha) which includes areas required to facilitate construction. The topography across the Site is approximately 5 metres (m) Above Ordnance Datum (AOD).

#### SURROUNDING AREA

##### Environmental and Social Features

2.2.3. **Figures 2.1a to 2.1e** provide details of the environmental and social constraints within and surrounding the Site.

2.2.4. The River Tees estuary flows to the east of the Site and forms the largest water body associated with the Site. The Site is partially situated within Flood Zone 3; however, most of the Site is located within Flood Zone 1 as shown on **Figure 2.1a**.

2.2.5. The Site is within, and near to, national and international ecological designated sites as shown on **Figure 2.1b**:

- To the east of the Site:
  - Teesmouth and Cleveland Coast Site of Special Scientific Interest (SSSI);
  - Teesmouth and Cleveland Coast Special Protection Area (SPA) (marine); and
  - Teesmouth and Cleveland Coast Ramsar.
- To the north of the Site:
  - Teesmouth and Cleveland Coast Ramsar; and
  - Teesmouth National Nature Reserve (NNR).

2.2.6. Further details on ecological sites and surface water bodies can be found in **Chapter 7: Biodiversity** and **Chapter 8: Water Environment and Flood Risk** of this EIA Scoping Report.



- 2.2.7. The nearest residential area to the Site is Port Clarence, located 3.3km to the southwest of the Site at its closest point, where the residential properties are concentrated within 400m of the River Tees along the A1046. Further south and west of the Site are the city of Middlesbrough and the towns of Billingham and Stockton-on-Tees. Some community facilities are present on the south bank of the River Tees approximately 3.7km south of the Site, such as the Riverside Football Stadium, Middlesbrough College, and the Middlesbrough Transporter Bridge. Further to the north of the Site (approximately 3.7km) is the town of Seaton Carew and further north Hartlepool.
- 2.2.8. The Site and surroundings are located within the Tees Lowlands National Character Area and the Tyne, Tees and Wear Estuaries and Coastal Waters Marine Character Area as shown on **Figure 2.1c**. There are no designated heritage buildings within 2km of the Site, see **Figure 2.1d**.
- 2.2.9. The road network close to the Site includes the A1185 and Seaton Carew Road/A178. These roads connect the Site to Billingham and Hartlepool respectively. Further South the A1046 connects the Site to Haverton Hill industrial area. There are no public rights of way (PRoW) within the Site or within 2km of the Site. However, there is one national trail (England Coast Path) which runs parallel to the A178, Seaton Carew Road, crossing Seal Sands Road at the A178/A1185 Seal Sands Roundabout, as shown on **Figure 2.1e**. Further details on the local road network, from which the site will be accessed, can be found in **Chapter 13: Traffic and Transport** of this EIA Scoping Report.

#### **River Tees Users**

- 2.2.10. The Site and River Tees is predominantly surrounded by several existing and operational industrial facilities. This includes:
- Navigator Terminals Seal Sands;
  - Exolum Seal Sands Terminal;
  - ConocoPhillips Teesside Terminal;
  - Teesside Biomass and Industrial Chemicals Limited; and
  - Teesside Gas Processing Plant.
- 2.2.11. The River Tees facilitates a significant volume of marine users, mostly associated with the port and logistical activities within Teesside. This includes use of the River Tees for vessel movement and ongoing management activities such as construction and operation of new port and marine facilities (such as jetties and wharves) in addition to ongoing maintenance of existing facilities and dredging to maintain navigation.
- 2.2.12. In addition, the Northern Gateway Container Terminal development is a consented large scale project (via a marine license through the Marine Management Organisation (MMO) developed by PD Ports in close proximity to the Proposed Scheme. As part of this consent, the Tees channel east of the Site would be deepened and an area of the intertidal foreshore would be removed, currently located within the Site.

## **2.3 PROPOSED SCHEME DESCRIPTION**

### **DESIGN ENVELOPE**

- 2.3.1. At this stage of the planning process the project description should be considered indicative to allow the appropriate design development to progress. In accordance with industry standard practices and Planning Inspectorate Advice Note Nine “the Rochdale Envelope” (Ref. 2.1), a parameter-based

“design envelope” approach has been adopted in respect of the Proposed Scheme. The current status of the design is described within this chapter and detailed in **Figure 2.2**.

- 2.3.2. The indicative design envelope is intended to identify key parameters that are suitable to enable initial environmental appraisals to be carried out in a robust and proportionate manner. This will also enable the subsequent EIA to be based on a description of the location, design and size of the Proposed Scheme that is suitable to allow a comprehensive assessment of its likely significant environmental effects, whilst retaining sufficient flexibility to accommodate further refinement during detailed design. Further details of this approach are provided in **Chapter 4: Approach to EIA** of this EIA Scoping Report.
- 2.3.3. At this stage, a maximum envelope has been used, with maximum parameters provided where relevant. The assessments contained within this EIA Scoping Report therefore assesses a worst-case scenario or present options, including a worst-case option. The design envelope will be refined as the Proposed Scheme continues to evolve through the key subsequent stages of the iterative design and EIA process, culminating in the preparation of an Environmental Statement (ES) that will form part of the application for development consent, alongside the associated works plans and land plans.

## OVERVIEW OF THE PROPOSED SCHEME

- 2.3.4. The Site comprises five main elements and environments;
1. A new jetty designed for the delivery of Liquefied Natural Gas (LNG) by mooring LNG carriers of up to 305 meters in length and up to 50 meters in beam (referred to hereafter within this EIA Scoping Report as the ‘Marine Jetty’) noting that:
    - The Marine Jetty will be located within the River Tees Estuary on an area which is currently a intertidal foreshore area;
    - The Marine Jetty will contain LNG offloading equipment comprising two (no.2) hydraulically powered cryogenic marine loading arms (MLAs) with integrated vapour lines; and
    - The intertidal foreshore will be removed as part of the implementation of the Proposed Scheme with habitat recreation proposals being considered. This is a similar area of the intertidal foreshore proposed to be removed as part of the consented Northern Gateway Container Terminal.
  2. An area of derelict, open land within the Seal Sands development area on land owned by Navigator Terminals Seal Sands Ltd. measuring approximately 3 hectares (7.4 acres) (referred to hereafter within this EIA Scoping Report as the ‘Regas and Storage Area’) that will contain:
    - An LNG regasification plant comprising vaporisers, pumps, and other appurtenant equipment (referred to hereafter within this EIA Scoping Report as the ‘Regasification Plant’);
    - Onshore storage tanks of up to 13,000m<sup>3</sup> total capacity (referred to hereafter within this EIA Scoping Report as the ‘Onshore Storage Tanks’); and
    - A cryogenic liquid pipeline and a vapour pipeline from the Marine Jetty to the Regasification Plant and Onshore Storage Tanks;
  3. A pipeline route which will contain a high-pressure export pipeline (referred to hereafter within this EIA Scoping Report as the ‘Export Pipeline’) that terminates at the existing Teesside Gas Processing Plant (TGPP) following either a route to the north in an existing pipeline corridor or a route to the south along an internal road within Seal Sands.

4. An electrical connection to Northern Power Grid; and
5. A connection from the Export Pipeline to TGPP and then onwards to the National Transmission System. Gas blending and nitrogen ballasting facilities (referred to hereafter within this EIA Scoping Report as the 'Gas Conditioning Facilities') with related and fiscal metering equipment will also be located at TGPP.

2.3.5. A range of other ancillary developments and facilities may also be required as part of the Proposed Scheme and within the Site including access, utility connections, boundary treatments, security infrastructure, temporary and permanent laydown areas, hard and soft landscaping, drainage, cables, pipelines, plant, and equipment. These are included within the stated design envelope and will be assessed as part of the Proposed Scheme's EIA.

2.3.6. It is understood that PD Ports continue to progress the design of the habitat restoration proposals to respond to a condition on the marine license consent for the Northern Gateway Container Terminal development. The Applicant will continue to liaise with PD Ports on these matters.

### **Layout and Orientation**

2.3.7. The Proposed Scheme will be subject to ongoing design development. An indicative Site allocation is shown in **Figure 2.2** and is subject to further design refinement as explained earlier. This includes two options for the Export Pipeline alignment from the Regas and Storage Area to Gas Conditioning Facilities.

2.3.8. Any required flexibility will be within the design envelope and assessed as required within the ES at submission of the application for development consent.

2.3.9. Potential areas for biodiversity net gain (BNG) and mitigation may be identified (if required) and the requirement for and extent will be confirmed as part of the EIA process and reported in the application for development consent.

### **Description of the Processes of the Proposed Scheme**

#### **LNG Supply**

2.3.10. LNG will be loaded onto a conventional LNG carrier at any LNG export terminal in the world. The loaded LNG carrier sails to the Site and is subsequently moored to the proposed Marine Jetty where an MLA is connected to the LNG carrier's manifold (and remains connected until the LNG carrier is ready to depart).

#### **LNG Offloading and Regasification**

2.3.11. Before LNG may be discharged, cryogenic equipment must be cooled down to its operating temperature in a controlled manner over time to avoid damaging the equipment. Assuming the MLA is not in a cold and ready to load state (referred to as "warm"), the LNG carrier will have to deliver a small amount of "cold" gas to begin the cooling down process of the MLA which takes approximately 15 to 20 minutes.

2.3.12. In most cases, equipment in the Regasification Plant will be cooled down using a small amount of LNG kept in the Onshore Storage Tanks (known as Heel). However, if the Regasification Plant needs to be cooled down as well (for instance, if there has been an extended time between LNG cargoes), this cooling down process using LNG from the LNG carrier may be extended another 12 hours.

- 2.3.13. Once the MLA and the Regasification Plant are in a “cold” state, the LNG carrier then utilises one of its LNG cargo pumps to deliver LNG ashore for regasification.
- 2.3.14. At the start of operations, LNG is delivered to the Onshore Storage Tanks and the Regasification Plant simultaneously until the Onshore Storage Tanks are full. The LNG that is utilised in the Regasification Plant can be delivered by either the vessel’s cargo pumps or pumps co-located with the Onshore Storage Tanks, then pressurised by cryogenic booster pumps before being fed into the submerged combustion vaporisers (SCVs) within the Regasification Plant.
- 2.3.15. SCVs use a heated water bath with a submerged heat exchanger to increase the temperature of the LNG to return it to a gaseous state. During operation, regasified LNG will be used as fuel source (Fuel Gas) in the SCVs to heat the water bath. After the LNG is regasified, it is delivered through the Export Pipeline to TGPP and onwards into the National Transmission System at a suitable pipeline pressure.
- 2.3.16. While an LNG carrier is delivering LNG, the Onshore Storage Tanks are primarily used as buffer storage to ensure continuous regasification operations should a short-term event occur on the LNG carrier that causes it to be unable to discharge LNG.
- 2.3.17. During periods of continuous operation, the Onshore Storage Tanks also serve to provide LNG for regasification for the time between the departure of one LNG carrier that has completed its unloading with a new LNG carrier ready to discharge.
- 2.3.18. If the Regas and Storage Area is not utilised for extended periods of time, and consequently the Regasification Plant’s equipment warms up between cargoes, the LNG stored in the Onshore Storage Tanks will be utilised to cool down the Regasification Plant to cryogenic levels prior to an LNG carrier arriving to allow for a more rapid commencement LNG discharge.

### **Gas Conditioning**

- 2.3.19. For the resultant gas from the regasification process to be suitable for delivery into the National Transmission System, two methods can be applied to ensure the proper natural gas quality specification (as generally measured by the Wobbe Index<sup>1</sup> and relative density of the gas) will be met. Specifically, the vapourised LNG will either be:
- Ballasted utilising nitrogen injection to lower its heating value and adjust the Wobbe Index; or
  - Preferentially blended into the existing natural gas stream that has been processed by TGPP such that the combined natural gas stream meets National Transmission System specifications.
- 2.3.20. This allows for the project to accept LNG from a wide variety of sources around the world.

### **Boil Off Gas Handling**

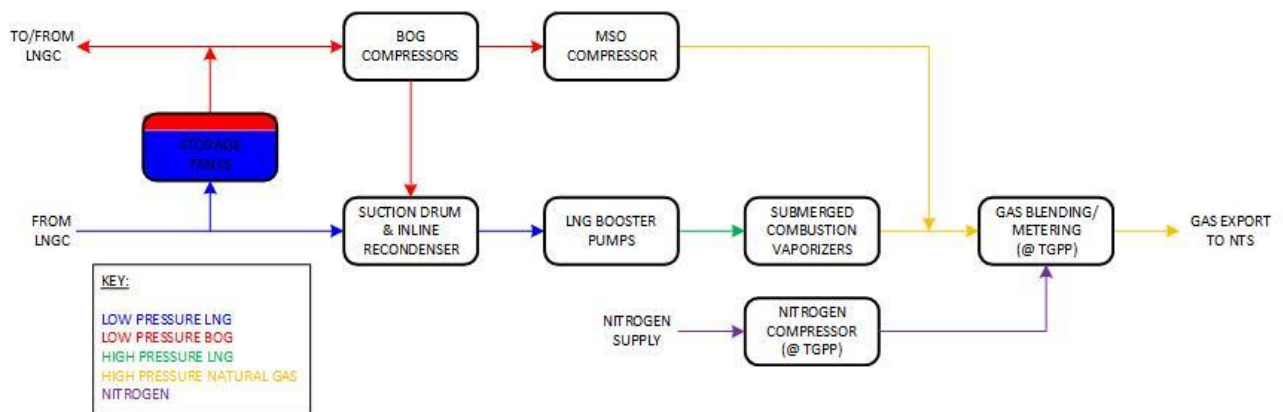
- 2.3.21. Due to natural heat ingress during operation, some LNG volumes go from liquid to vapor, known as 'Boil Off Gas (BOG)'. Boil Off Gas is generated in both the Onshore Storage Tanks, as well as in the LNG carrier’s cargo tanks. Any excess Boil Off Gas that is not burned as Fuel Gas needs to be managed.

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<sup>1</sup> The Wobbe Index is the main indicator of the interchangeability of fuel gases and is frequently defined in the specifications of gas supply. It is used to measure the combustion energy output of gas within a given volume and describes the way in which the gas burns.

- 2.3.22. While in operation, the Proposed Scheme’s primary method to handle the excess Boil Off Gas is to use a recondenser. A recondenser utilises the cold energy from the LNG flowing to the Regasification Plant to sufficiently cool any excess Boil Off Gas so it recondenses back into a liquid state. The recondensed gas (now LNG) joins the existing LNG flows into the vaporisers before being regasified and delivered into the Export Pipeline. This increases the overall efficiency of the regasification plant so there is no “wasted” gas.
- 2.3.23. The recondensing capacity will be sized for the full expected Boil Off Gas load in a worst-case scenario, which is usually considered to be when the LNG carrier is delivering LNG into the Regasification Plant. To manage Boil Off Gas from the LNG carrier, a minimum amount of LNG flow must be delivered from the LNG carrier into the Regasification Plant for the recondenser to operate effectively.
- 2.3.24. In a scenario where there is an extended time between cargoes, Heel kept in the Onshore Storage Tanks awaiting to be used for a cooldown will last for up to 90 days before heat ingress results in excess Boil Off Gas formation. At this point the Boil Off Gas is removed from the Onshore Storage Tanks and passed through a minimum sendout compressor (MSO Compressor) for delivery to the National Transmission System through the Export Pipeline.

**Graphic 2-1 - Schematic illustrating the regasification process**



\*NTS in referred to in this schematic refers to the National Transmission System.

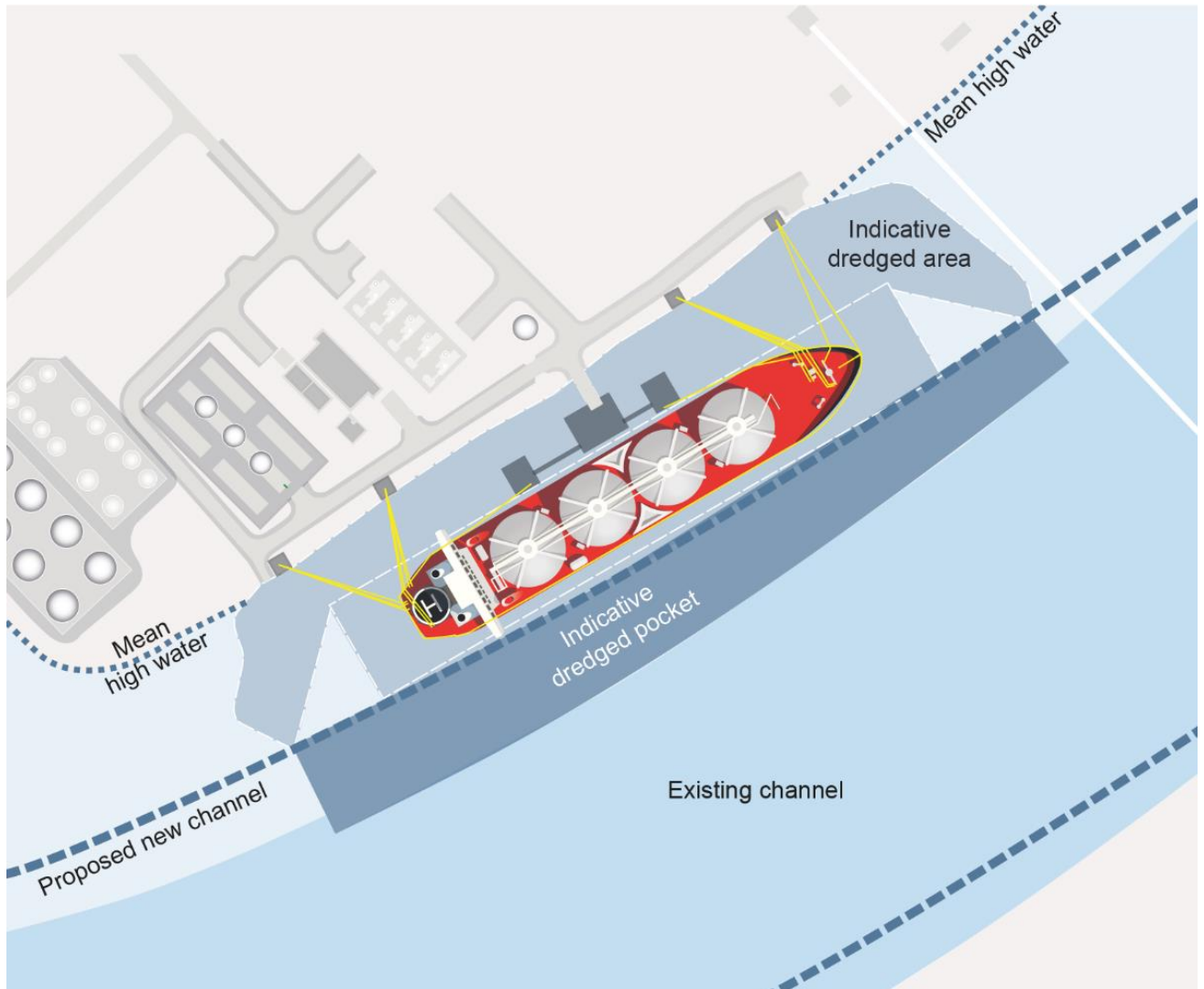
### ELEMENTS OF THE PROPOSED SCHEME

- 2.3.25. The design of the Proposed Scheme will continue to develop through consultation with interested parties and preliminary environmental assessments. In addition, several of the design aspects cannot be confirmed until detailed design or an appropriate contractor is appointed. Therefore, a design envelope will be used to define parameters for use in the EIA (as described above). This will enable the EIA to progress and a robust assessment to be undertaken based on reasonable worst-case assumptions.
- 2.3.26. The details provided below for the elements of the Proposed Scheme are based on maximum (and minimum where possible) parameters and the Applicant will seek to develop and define these further throughout the pre-application phase in consultation with interested parties as appropriate.

## Marine Jetty

- 2.3.27. The Proposed Scheme requires the construction of a new Marine Jetty within the River Tees. This Marine Jetty will be able to accommodate LNG carriers with a maximum length and beam of 305m and 50m respectively.
- 2.3.28. The Marine Jetty is likely to consist of a conventional concrete deck with concrete capped steel piles. In addition, the associated mooring platforms are of a similar construction with concrete heads on concrete piles.
- 2.3.29. The Marine Jetty is likely to have the following utilities (but not limited to):
- Pipe trestle between the jetty and the shore which also contains electrical and instrumentation cables;
  - Power supply – both low voltage (230V) and high voltage (6.6kV)
  - Pipework for LNG and vapour handling;
  - Potable water and sanitary systems;
  - MLAs for LNG delivery in addition to its associated hydraulic oil system;
  - Nitrogen supply; and
  - Safety equipment such as fire and gas detection system, fire water, dry powder, and high expansion foam.
- 2.3.30. Once operational, an exclusion and safety zone surrounding the new Marine Jetty will be required for public safety and to protect passing vessel traffic from any risk due to thermal hazards, fires, and large unignited LNG vapour releases.
- 2.3.31. The spatial envelope for the Marine Jetty recognises existing features within the marine environment such as the Northumbrian Water utilities to the north (wastewater pipeline corridor in a subterranean tunnel under the River Tees).
- 2.3.32. **Table 2-1** below outlines the indicative parameters applicable to the Marine Jetty while a vessel is alongside. This is illustrated in **Graphic 2-2**.

**Graphic 2-2 - Indicative Arrangement of the Marine Jetty**



**Table 2-1 – Marine Jetty Indicative Parameters**

<b>Component</b>	<b>Parameter</b>	
Vessels Acceptable to Berth at the Terminal	Maximum Length	Up to 305 meters
	Maximum Width	Up to 50 meters
Delivery	Maximum reception of LNG	2200m <sup>3</sup> /h
Loading Arms	Maximum height	30 meters

## Onshore Storage Tanks

- 2.3.33. Onshore Storage Tanks will be located close to the Marine Jetty and Regasification Plant.
- 2.3.34. The Onshore Storage Tanks serve two primary purposes.
- When cooldown of the regasification plant is needed, LNG Heel stored in the Onshore Storage Tanks can be sent to the Regasification Plant in small volumes to cool down key equipment.
  - If a short-term event occurs that causes the LNG carrier to be able to unload, the Onshore Storage Tanks provide buffer storage to ensure continuous regasification operations continue.
- 2.3.35. The Onshore Storage Tanks are connected to a Boil Off Gas management system. This means during normal operations, pressures in the Onshore Storage Tanks can be managed through the recondenser or through the MSO Compressor. In emergency situations, the Boil Off Gas from the Onshore Storage Tanks may require emergency venting or flaring, the details of which will be confirmed during the detailed design process.
- 2.3.36. The Onshore Storage Tanks have the potential to be orientated vertically or horizontally. Indicative parameters of the storage tanks are provided in **Table 2-2**. This will be confirmed in the ES.
- 2.3.37. Concrete bunding and drainage will surround the Onshore Storage Tank area, where appropriate testing and treatment will be applied for any surface water prior to discharge to the River Tees or offsite disposal, if required.

**Table 2-2 – Onshore Storage Tanks Indicative Parameters**

Component	Parameter
Number of tanks	Up to 13 individual tanks
Maximum height (if in vertical arrangement)	Up to 32 meters
Maximum height (if in horizontal arrangement)	Up to 15 meters
Maximum storage capacity (total)	Up to approximately 13,000m <sup>3</sup>

## Regasification Plant

- 2.3.38. The Regasification Plant will be located at the Regas and Storage Area, and will consist of the following facilities:
- A low-pressure suction drum;
  - High-pressure booster pumps;
  - Submerged combustion vaporisers (as the primary means of LNG regasification);
  - A Boil Off Gas recovery system and pipework;
  - A fire protection system;
  - A central control room;
  - Emergency Power Generation; and
  - Administrative buildings, welfare, equipment room, workshop, and security rooms.
- 2.3.39. An electrical room will be located close to the Regasification Plant for connection to the grid for the provision of power. This may include an electrical substation and switch room.



2.3.40. The emergency power generation for the Regas and Storage Area is likely to consist of either an emergency diesel generator or an uninterruptible power supply and will only be used to keep the lighting on during a power failure and safety measures active, such as a fire water pump. Emergency power generation will not be sized to operate the Regasification Plant. Indicative parameters of the Regasification Plant are provided in **Table 2-3**.

**Table 2-3 – Regasification Plant Indicative Parameters**

Component		Parameter
Regasification Plant	Maximum height	Up to 21 meters
Number of SCVs	Maximum number	5 no.
Electrical substation	Maximum height	Up to 10 meters

**Export Pipeline**

2.3.41. Two options are being considered for the Export Pipeline from the Regas and Storage Area to the Gas Conditioning Facilities at TGPP and onward connection point to the National Transmission System. These are indicated on **Figure 2.2** and as follows:

- Northern route: This would include laying a new pipe approximately 4.5km in length and will pass close to the emergency access road around the north of Seal Sands industrial area, south of the Teesmouth National Nature Reserve. There is an existing pipeline that follows the same route, however the Applicant has no control over this asset and no commercial agreements have been made. The existing pipeline is approximately 20 years old and would be subject to testing to determine if still safe to utilise. Should a new pipeline have to be constructed, this will be contained within the existing corridor.
- Southern route: This route would include laying a new pipe that is approximately 3.9km in length and would follow a disused railway. This route would be approximately 3.9km in length.

2.3.42. The new Export Pipeline will be protected by physical damage by passive protection (either by structure steel or buried at a suitable depth). It is currently anticipated that the Export Pipeline will be buried. However sections may be required to be above ground. Further details will be confirmed as the design for the Proposed Scheme evolves.

2.3.43. In addition, it will be protected from overpressure by appropriate safety instrumentation following a hazard and operability study (HAZOP).

2.3.44. For either pipeline route, the Export Pipeline will be fitted with fiscal meters to measure the total volumetric output of export gas from the Regasification Plant.

2.3.45. Indicative parameters of the Export Pipeline are provided in **Table 2-4**.

**Table 2-4 – Export Pipeline Indicative Parameters**

Component	Parameter
Pressure	High pressure pipeline between 75 – 85 bar g
Maximum diameter	Up to 600 mm (ND)

Component	Parameter
Temperature	Minimum > 5°C
Working width	Maximum of 115 m wide
Length	Northern pipeline route – approximately 4.5km Southern pipeline route – approximately 3.7km

### **TGPP Facilities and Entry to National Transmission System**

- 2.3.46. The regasified LNG will be delivered to the TGPP for gas blending and/or nitrogen ballasting to ensure it meets the required entry specification for the National Transmission System.
- 2.3.47. It is anticipated that minor modifications to the TGPP will be required to facilitate the blending and/or ballasting activities to the existing TGPP connection. It is understood that the owners/operators of TGPP would seek to undertake these modifications subject to the relevant and applicable consenting regime e.g. through their permitted development rights.
- 2.3.48. From the TGPP National Transmission System entry point, the export gas enters the National Transmission System via the existing Feeder 6 on the Teesside Terminal to Cowpen Bewley section of the pipeline.

## **2.4 ALTERNATIVES CONSIDERED**

### **ALTERNATIVE TECHNOLOGY**

- 2.4.1. The Applicant has considered potential options to allow the import of LNG at lower costs and higher speed than conventional LNG import terminals.
- 2.4.2. Traditional land-based LNG import terminals require large concrete LNG tanks which are specifically designed for a particular project and must be constructed at the project site. These schemes are usually larger in scale and require more extensive land take. As a result, construction of these large concrete LNG tanks contributes to long overall construction times of three years or more and greater construction costs.
- 2.4.3. Floating storage and regasification unit (FSRU) solutions were initially developed to address the cost and timing issues with land-based LNG terminals by providing world-scale LNG regasification on a shorter time and at a lower cost. Essentially, an FSRU is an LNG carrier that has an LNG regasification plant installed onboard. By utilising the vessel’s cargo tanks as LNG storage and installing a regasification plant onboard, FSRUs decreased the longer schedule of construction in favour of higher operational costs. However, in recent years, the major shipyards are indicating longer lead times to start construction with delivery dates that are four years or more in the future, and the cost of FSRUs has increased by almost 40% for a newbuild vessel. This is largely due to increased market interest in LNG carrier orders to accommodate new global LNG supplies. This market shift means that FSRUs are no longer the fast and low-cost solution they used to be.
- 2.4.4. The land based and FSRU solutions mentioned above are referred to as “traditional LNG terminals”.
- 2.4.5. In the Proposed Scheme, the project will operate with a lower volume of LNG storage than at a land based or FSRU terminal. This is accomplished by having the LNG carrier remain alongside the Marine Jetty while its LNG cargo is regasified. Rather than immediately discharging its full cargo as

would occur at a traditional LNG terminal, the LNG carrier will unload cargo at a lower rate to match the rate of the Regasification Plant. While this requires the LNG carrier to be at the Marine Jetty for a longer period, the reduced cost and footprint of the Proposed Scheme versus traditional LNG terminals more than offset this economic impact.

- 2.4.6. Since the project will operate with lower LNG storage, large concrete LNG tanks are not necessary to build. Instead, smaller Onshore Storage Tanks will be used to store the LNG, which will be prefabricated off site and delivered to the Site during construction. This simplifies on-site construction and transportation, subsequently lowering installation costs. Since the storage is in general much smaller than that of a traditional LNG terminal, the overall footprint of the plant is greatly reduced.
- 2.4.7. The Proposed Scheme improves construction time and reduces the environmental footprint of the project, as well as providing operational flexibility and scalability, and reduced costs.

### **ALTERNATIVE PIPELINE ROUTES**

- 2.4.8. As set out above, two routes are being considered for the Export Pipeline to the connection point to the National Transmission System. Engagement with asset and landowners is currently being undertaken to determine the preferred route.
- 2.4.9. Consideration is also being given to the feasibility of construction and easements required, and constraints from existing infrastructure, as well as potential future schemes coming forward in the area including Net Zero Teesside and H2 Teesside.

### **ALTERNATIVE REGAS AND STORAGE AREA LOCATIONS**

- 2.4.10. Multiple locations were reviewed within Teesport taking into consideration the physical requirements of the Proposed Scheme. Given the cryogenic nature of LNG, it is important that the Regas and Storage Area are close to the Marine Jetty for both operational and commercial reasons. Not only would a greater distance between the Regas and Storage Area and the Marine Jetty require greater land take, the greater the length of the cryogenic pipeline the more it will absorb heat (heat ingress) resulting in increased production Boil Off Gas that must be managed, potential resulting in a greater environmental impact to manage. In addition, cryogenic pipeline is significantly more expensive than standard gas pipeline so its length should be minimised to reduce costs. As such, the ability to co-locate the Regas and Storage Area with the Marine Jetty is a defining parameter for appropriate site selection for the Proposed Scheme.
- 2.4.11. The location selected for the Proposed Scheme accomplishes this goal and minimises the distance between the two over any other site considered, and therefore the amount of infrastructure required. Of the other locations, none provided sufficient proximity between the Marine Jetty and the Regas and Storage Area and required a significantly longer cryogenic pipeline to connect the two. As a result, other locations had significantly higher costs due to the greater length of cryogenic pipeline and would result in operational challenges due to the greater heat ingress and need to deal with increased levels of Boil Off Gas.
- 2.4.12. The location selected has the added benefit of being close to an existing pipeline corridor to minimise the infrastructure required for the Export Pipeline. As a result, the Proposed Scheme has the best combination of cryogenic pipeline and Export Pipeline length of any feasible alternative.

## **ALTERNATIVE MARINE JETTY LOCATIONS**

- 2.4.13. As LNG utilised in the regasification plant can only be delivered via an LNG carrier due to the large volumes it can regasify, the Marine Jetty is essential to the Proposed Scheme. The LNG delivered from the LNG carrier is a cryogenic liquid and it is therefore necessary for this Marine Jetty to be located as close to the Regas and Storage Area as possible to minimize heat ingress as noted above.
- 2.4.14. Alternative landside locations proximal to existing jetties were not viable given that their existing operational commitments would preclude access by LNG carriers during a significant portion the year. This undercuts the ability for the Proposed Scheme to receive LNG and function as a secure energy supply source.
- 2.4.15. As discussed above, the consented Northern Gateway Contained Terminal development is located in close proximity to the Proposed Scheme. As part of this approved development, the Tees channel east of the Site would be deepened and include the removal of the intertidal foreshore area (with or without the Proposed Scheme). By coordinating the Proposed Scheme with this consent, it avoids the need for new locations along the Tees to be impacted and minimising environmental impacts elsewhere.
- 2.4.16. Additionally, other riverside locations were considered but either lacked appropriate water depth for access or did not have adjacent land that was suitable for the Proposed Scheme. As a result, there are no other possible locations for the Marine Jetty associated with this landside location.
- 2.4.17. The design envelope recognises the surrounding marine constraints (existing utilities and marine operations), and this is currently being optimised where possible.

## **2.5 CONSTRUCTION PHASE**

### **INDICATIVE CONSTRUCTION PROGRAMME**

- 2.5.1. The construction phase for the Proposed Scheme is likely to be up to 12 months duration. Assuming consent is granted, the intention is to commence construction as quickly as possible following determination of the DCO and discharge of relevant pre-commencement requirements.
- 2.5.2. It is envisaged that within the 12-month construction period both the terrestrial and marine construction works will take between 9 to 12 months each on parallel paths.
- 2.5.3. The construction of the Marine Jetty is likely to be commenced first with the terrestrial works for the Export Pipeline and ground preparation (enabling works) at the regas terminal site, and the installation and construction works at the Regas and Storage Area will likely commence a short time later. Therefore, there will be a time when works in both the terrestrial and marine environments will overlap with the Marine Jetty works likely finishing first.
- 2.5.4. The nine- to 12-month duration for the terrestrial works also includes pre-commissioning and testing of the Regasification Plant and its associated equipment.
- 2.5.5. The above construction programme is indicative as this time and will be developed and refined as details of the Proposed Scheme are clarified and confirmed.



## TERRESTRIAL CONSTRUCTION METHODOLOGY

### Enabling Works and Ground Preparation

- 2.5.6. Initial enabling works will be undertaken to prepare the Site for the Proposed Scheme. This will include any remaining site clearance (including vegetation clearance), ground and remediation works (if required), and excavation of any voids or underground services. There are no existing above ground structures, and so no demolition is required.
- 2.5.7. Any waste material will be sorted to be reused as backfill material, should geotechnical and geo-environmental testing deem the material suitable. Compaction of excavated materials may be required onsite to enable reuse of suitable materials.
- 2.5.8. Piling will be required to create foundations for the main structures associated with the Regas and Storage Area and this is expected to be undertaken using various methods depending on the type of pile to be installed. This could include percussive, continual flight auger (CFA) and/or vibropiles.
- 2.5.9. Geotechnical investigations will confirm the requirement for stabilisation of the estuarine environment to provide a basis for the terrestrial and marine infrastructure.

### Regas and Storage Area

- 2.5.10. The Onshore Storage Tanks will be delivered by barge and installed at the Regas and Storage site. The tanks will either be bullet tank type or prefabricated modular constructed membrane tanks.
- 2.5.11. Once the groundworks have been prepared, the Regasification Plant is also likely to be constructed using modularised methods with prefabricated components delivered by road.

### Export Pipeline

- 2.5.12. Construction of the new Export Pipeline (whether this is in the northern or southern route) will incorporate an indicative working area of up to 50m wide. The exact width will be dictated by localised features such as other utilities and safety buffers. Where required, existing vegetation will be removed to facilitate construction activities.
- 2.5.13. It is anticipated that the Export Pipeline will be buried as a protection measure. However, should sections of the new Export Pipeline be required to remain overground, this will be constructed on concrete or steel foundations at regular intervals.
- 2.5.14. For sections where the Export Pipeline is buried, this is likely to be within excavated open cut trenches with the working width adapted for crossings, such as for hedgerows, roads, and other utilities. Non-open cut methods such as horizontal directional drilling (HDD) and auger boring may be required but is considered unlikely given the length of pipeline and existing corridors being available (in the north).
- 2.5.15. Where open cut methods are utilised on crossings, the Applicant will ensure that remedial measures such as plates are used to ensure movement of any traffic. Most open cut crossings can be completed within a day where necessary, with the excavation backfilled or covered at night for safety. This is also to ensure no wildlife enters the excavations.
- 2.5.16. Aerial photography and onsite walkovers have indicated that no watercourses are present on either route and therefore no adaptive crossing techniques using flumes or dams are required.

- 2.5.17. The pipeline will be delivered in sections, laid out alongside the excavated trench or foundations, and then positioned using lifting equipment. This will either involve lifting into an excavated trench or onto foundations.
- 2.5.18. The Export Pipeline will then be tested, and the trench backfilled if the pipeline is buried. Any excavated material is likely to remain within the working width (if suitable).
- 2.5.19. On the northern route, where the pipeline construction activities are closest to the designated ecological sites of Seal Sands, the Applicant will implement mitigation such as timings of works, visual screens and watching briefs if necessary.

### **Pigging Facilities**

- 2.5.20. A pipeline inspection gauge (PIG) will be required to clean and inspect the Export Pipeline following construction, whether utilising the existing northern pipeline or to inspect the new pipeline route in the north or south of the Site.
- 2.5.21. This will involve the temporary installation of a PIG launcher and receiver at either end, but these are not anticipated to be significant temporary installations.
- 2.5.22. As the export gas from the regasification plant will be non-corrosive and not contain liquids or solids, it is anticipated that “pigging” will only be required on initial commissioning as well as regular inspection (approximately 10 years).

### **Crane Arcs and High Structures**

- 2.5.23. Cranes are likely to be required temporarily to lift taller structures (such as the Onshore Storage Tanks) into position. These will be operated on the landward side within strict safety requirements noting cranes arcs and buffer distances with adjacent structures.
- 2.5.24. Any temporary structures which are of height which requires aviation protection measures will install aviation lighting as per the relevant Civil Aviation Authority Publication requirements.

## **MARINE CONSTRUCTION METHODOLOGY**

### **Removal of the Intertidal Foreshore and Dredging**

- 2.5.25. The intertidal foreshore area which is immediately within the vicinity of the proposed Marine Jetty will be removed to facilitate the construction and operation of the new Marine Jetty. The intertidal foreshore also contains two disused and decommissioned pipelines which will be removed.
- 2.5.26. At present, the Northern Gateway Container Terminal approved proposals include the removal of this intertidal foreshore (either partially or the majority of) and dredging in the area to facilitate the deeper channel. It is anticipated that the Proposed Scheme would assume the dredging works related to the intertidal foreshore and required for the safe operation of the Proposed Scheme upon transference from PD Ports.
- 2.5.27. Dredging of a berth pocket at the Marine Jetty to accommodate LNG carriers will be required in an area approximately 375m in length by 75m wide to a depth of 14.5m. This, along with other dredging needed to access the Marine Jetty from the main shipping channel, will result in an estimated volume of approximately 1,000,000m<sup>3</sup> of material being removed.
- 2.5.28. This dredged material is likely to consist of alluvium, sand, silts, and clays. The dredged material will either be taken to the existing Tees marine disposal area, as per existing dredging activities undertaken by PD Ports or utilised in the backfill behind the coffer dam if suitable. **Figure 2.3** shows

the approximate locations of Capital and Maintenance disposal sites licensed and managed by PD Ports.

- 2.5.29. The dredging is likely to be undertaken using cutter suction dredger and/or backhoe dredger with the dredged material transported by barge to the disposal area. There is also the potential for the immediate foreshore area to be excavated from the landward side by land-based machinery. No dredged material will be stored within the landward side as materials would be again deposited onto barges and then transported to the disposal area.
- 2.5.30. Following the removal and clearance dredge of the required area, the Marine Jetty will be constructed.

### **Construction of the Marine Jetty**

- 2.5.31. The proposed Marine Jetty is likely to consist of a conventional concrete deck with steel piles. The breasting and mooring dolphins will be of a similar construction with concrete heads on steel piles, which are likely to be driven pneumatically into the estuary bed. However, the exact piling method is still being determined and will be confirmed in the ES following further design development and consultee engagement.
- 2.5.32. Construction works will involve the installation of a sheet pile wall in line with the existing embankment to form a new shore edge. This sheet pile wall will be reinforced with concrete and anchor piles which are likely to run the length of the sheet wall. The depth these piles will be driven will be determined following geotechnical surveys and detailed design.
- 2.5.33. It may be possible to utilise dredged materials from the intertidal foreshore between the landside area and installed sheet pile. This will be confirmed subject to further investigation on existing borehole data.
- 2.5.34. Prior to the construction of the Marine Jetty, barged will deliver the Onshore Storage Tanks and other modular aspects for the onshore works. Temporary protection measures such as wooden fenders will be implemented along the sheet pile wall for this activity.
- 2.5.35. The Marine Jetty head/loading platform and access bridge will then be constructed using reinforced concrete and supported by steel piles.
- 2.5.36. Piling is likely to undertaken using a jack up barge or static barge vessel, but it is also possible that some piling may be undertaken from the landward side for the sheet pile wall and mooring dolphins. The piling method is yet to be confirmed but could involve both pneumatic and vibratory methods.
- 2.5.37. It is anticipated that the Marine Jetty construction will take approximately six months out of the total 12-month construction duration.

### **Navigation Protection Measures During Construction**

- 2.5.38. It is anticipated that the Teesport Harbour Master will require any construction vessels (cranes, barges, etc.) to display to display the correct lights and shapes/sounds and signals in accordance with the International Regulations for Preventing Collisions at Sea/COLREG.
- 2.5.39. The pipeline warning marker on the existing and disused pipework across the intertidal foreshore and buoys 17 and 17A will be removed and relocated for port operation by PD Ports. This will also require amendments making to the Admiralty Chart which will be the responsibility of the Port Authority.



## **Marine Logistics**

- 2.5.40. It is not anticipated that any significant construction materials or worker traffic is proposed by marine vessels except for that associated with the construction of the Marine Jetty and transport of the Onshore Storage Tanks.

## **CONSTRUCTION LOGISTICS**

### **Construction Vehicles and Machinery**

- 2.5.41. Construction vehicles are likely to include excavators, transportation vehicles such as earth moving equipment, piling rigs and cranes.
- 2.5.42. Most vehicles will be delivered to the Site at the start of the construction phase and remain for the duration of construction. Specialist equipment, such as piling rigs and cranes, will arrive at times of key activities taking place within the construction phase and only be required for much shorter periods.
- 2.5.43. A dredger will be required to remove the sandy foreshore and dredge the berth pocket.

### **Terrestrial Construction Routes**

- 2.5.44. It is anticipated that equipment and materials will be delivered directly to the Site via the A19. This includes either:
- Departing the A19 at the A689 junction and heading east through Wolviston on the A1185 past Cowpen Bewley before joining Seal Sands Road at the roundabout with RSPB Saltholme site. There are no height restrictions along this route and is suitable for all vehicles; or.
  - Departing the A19 at the Portrack Interchange, heading east along the A1046 to Port Clarence, following Seaton Carew Road and then joining Seal Sands Road at the roundabout with RSPB Saltholme site. There is a height and weight restriction along this route from a railway bridge in Haverton Hill which restricts the type of vehicles that may use this route and is also in close proximity to residential dwellings at Port Clarence.
- 2.5.45. Entrance into the portions of the Site within the boundaries of Navigator Terminals Seal Sands will be either via the Navigator T1 or T2 entrance via Seal Sands Road. The necessary security barriers and requirements will be installed.
- 2.5.46. It is not anticipated that these construction routes will require any improvements to public highways.
- 2.5.47. Construction worker traffic is likely to follow the same routes as construction traffic for materials detailed above, however this will be confirmed following discussions with surrounding operators and responses received during the consultation of this application from interested parties.
- 2.5.48. There is no rail terminal within the Site, and so it is not anticipated that this mode be utilised for construction logistics.

## **TEMPORARY CONSTRUCTION COMPOUNDS**

- 2.5.49. Construction laydown areas will be located within the Site at key locations to facilitate safe construction activities especially those on critical path schedule such as delivery of equipment.
- 2.5.50. This is likely to include a main compound close to the Marine Jetty and Regasification Plant. This will include welfare, office space and laydown.



- 2.5.51. Ancillary, smaller compounds may be required along the pipeline corridor. These will include mobile welfare facilities and laydown. The location of these will be confirmed within the works areas and assessed in the ES at submission but will be located away from the River Tees as far as practicably possible.
- 2.5.52. The Applicant is currently in discussions with local operators and landowners regarding an offsite logistics and storage area for use during the construction phase. The location of this is currently unknown but will be confirmed as part of the design development process.

### **LIGHTING**

- 2.5.53. Lighting will be required for the construction compounds. Any lighting required will be for security purposes and it is proposed to store most of the material and plant in the construction compound.
- 2.5.54. Security lighting will be required along the pipeline in the immediate area of works as construction moves along the route. Where this construction comes into close proximity to the River Tees, sensitive lighting will be used with light spill onto aquatic environments minimised;
- 2.5.55. There is no requirement for nighttime lighting during construction outside of working hours other than for security and critical path purposes.

### **CONSTRUCTION WORKER NUMBERS AND SITE**

- 2.5.56. It is anticipated that 100 to 200 temporary construction workers will be required during peak activities (such as works on the Export Pipeline in parallel to main construction works on the Regas and Storage Area and the Marine Jetty).

### **CONSTRUCTION WORKING HOURS**

- 2.5.57. The Proposed Scheme is likely to implement working hours of 0700 to 1900.
- 2.5.58. For critical path activities, working over weekends and for 24 hours (such as for concrete pours) may be required. In these cases, it is anticipated that such hours will accord with the local authority's standard weekend and bank holiday hour requirements while maintaining compliance with lighting regulations for outside work.

### **CONSTRUCTION MATERIALS**

- 2.5.59. Construction materials, such as concrete and steel are expected to be sourced within the immediate region, at least within the UK.
- 2.5.60. Prefabricated components and equipment may come from the UK but could be sourced elsewhere.

### **ENVIRONMENTAL MANAGEMENT DURING CONSTRUCTION**

#### **Code of Construction Practice**

- 2.5.61. An outline Code of Construction Practice (CoCP) will be prepared and submitted as part of the application for development consent.

#### **Construction Traffic Management Plan**

- 2.5.62. It is anticipated that an Outline Construction Traffic Management Plan (CTMP) will be submitted with the application for development consent. The Outline CTMP will provide details of procedures for construction related traffic, including, number of vehicles; routes; frequency and timing of movements; worker hours and shift patterns; laydown areas and parking.



### **Waste Materials**

- 2.5.63. Excavated materials from the ground preparation works are likely to be crushed and used as sub-base. Any unsuitable or contaminated materials and waste will be exported via the public highway network to a licensed waste transfer site or landfill.
- 2.5.64. There is no intention of disposing of terrestrial materials within the marine environment or vice versa.

### **Drainage and Water Management**

- 2.5.65. During construction, temporary drainage measures to prevent silt-laden and mud laden run off into natural watercourses will be observed.
- 2.5.66. Excavations will be kept free from water using mobile pumps with the water being disposed of in accordance with the CoCP and appropriate environmental permit. This may entail pumping water into a settling tank or lagoon to allow silt to settle out of suspension or obtaining the relevant permissions to pump to ground or nearest waterbody.
- 2.5.67. Pollution will be minimised by the use of managed “wash out areas”, “refuelling areas” and bunding of fuels, oils, greases, and other potential pollutants. Should there be a spillage of a polluting liquid, this will be managed in accordance with the CoCP and the emergency response procedures of the appointed Principal Contractor. Spill kits and pollutant control materials will be required at key locations around the construction areas.
- 2.5.68. Foul drainage during construction from the constructor’s compound will be captured into a holding tank which will be emptied by a licensed waste contractor and disposed of offsite.

### **Noise**

- 2.5.69. Noise will be emitted from a range of construction activities and will be in accordance with the requirement of BS5228: Code of practice for noise and vibration control on construction and open sites – Noise (Ref. 2.2).

## **2.6 OPERATION PHASE AND MAINTENANCE**

### **PROJECT LIFESPAN**

- 2.6.1. The design life of the Regas and Storage Area is up to 25 years. Further details on decommissioning approach is provided in **Section 2.7**.

### **VESSELS AND FREQUENCY OF USE**

- 2.6.2. LNG is transported on large ocean-going vessels called LNG carriers.
- 2.6.3. It is anticipated that there will be an average of between 1 and 2 LNG carrier arrivals per week or up to a maximum of 60 vessels a year. This will depend on the UK requirements for energy security.
- 2.6.4. Vessels are expected to be up to 180,000m<sup>3</sup> in capacity, approximately 305m long with a beam of 50m. When fully laden, it is anticipated that the summer draft will be 12.5m.

### **HOURS OF WORKING**

- 2.6.5. The Proposed Scheme will be designed to operate 24 hours a day, all year round to accommodate the delivery and regasification of LNG. However, during idle periods, only security and maintenance staff will be required on the Site.



## **MOORING AND BERTHING**

- 2.6.6. The Applicant is currently discussing the approach and berthing to the Marine Jetty with the Harbour Master, and so this is subject to further confirmation.
- 2.6.7. However, it is anticipated that the approach and berthing will be supervised by the Tees Pilot(s) with local tug assistance as dictated by the Harbour Master.
- 2.6.8. LNG carriers will manoeuvre in the outer harbour turning area adjacent to North Gare Sands, navigation buoys 11 and 12 and the entrance to Seaton Channel. Vessels will then starboard under their own propulsion with tug assistance as required to berth port side to the newly created Marine Jetty. The LNG carrier will be secured alongside the Marine Jetty by standard berthing hawsers to newly created mooring dolphins and quick release mooring hooks.
- 2.6.9. The appropriate navigation aids will be installed on to the Marine Jetty as required, in addition, for any new protection measures to existing structures. These include anti-collision lighting and navigation lighting installed on the Marine Jetty and mooring dolphins.

## **UTILITIES**

### **Power Generation**

- 2.6.10. It is anticipated that an electrical connection will be required to the local Distribution Network Operator (DNO) Northern Power Grid at either the Tees Industrial Substation or Seal Sands Substation from the substation located within the Site.
- 2.6.11. The Applicant is currently in discussions with Northern Power Grid regarding a suitable route and this will be confirmed and assessed within the application for development consent (where required).

### **Potable and Wastewater**

- 2.6.12. It is assumed potable water and wastewater connections will be available from existing mains supplies, provided by the local statutory undertaker Northumbrian Water. However, this will be a largely unmanned operational site and so the requirement for these water supplies is expected to be minimal for the workforce.
- 2.6.13. Top-up supplies may be required in small volumes for fire water and to top up the water bath in the submerged combustion vaporisers that results from natural evaporation. However, there is the opportunity to connect to existing fire water supplies via the Port Authority or nearby operators in addition to harvesting rainwater to make up for evaporative losses.

### **Diesel and Fuel**

- 2.6.14. A separate tank, protected in accordance with the relevant safety and process requirements, will provide fuel for the emergency generators if required. This is not expected to be a regular delivery or utility requirement.

### **Surface Water**

- 2.6.15. Surface water runoff will be collected within the Regas and Storage Area's drainage system and transported off site. The potential to tie the surface water drainage into the adjacent Navigator Terminals Seal Sands site is being investigated and will be confirmed as the design evolves with further detail provided in the application.



- 2.6.16. A protection system, such as interceptors and a containment system (to segregate oil and water), is likely to be implemented given the nature of the Proposed Scheme.

### **ONSHORE MAINTENANCE**

- 2.6.17. Routine maintenance will be planned and scheduled as required, but most likely on an annual basis. Maintenance activities may require additional contractors temporarily at the Site.
- 2.6.18. Routine maintenance activities will comply with regulatory regimes and any permits and consents for the Proposed Scheme. For example, the Marine Jetty layout being sufficient to allow for equipment maintenance but also emergency egress and evacuation from visiting LNG carriers.
- 2.6.19. Annual routine maintenance includes visual inspection and testing, cleaning, venting, purging, and decontaminating of equipment and facilities.
- 2.6.20. Other maintenance, undertaken every five or 10 years could include recalibration of pressure relief valves, pipeline and storage tank inspections and may extend to replacement of equipment and machinery if required.
- 2.6.21. A health and safety plan may be prepared by the operator and will cover the works and operation of the Proposed Scheme.

### **MAINTENANCE DREDGING**

- 2.6.22. It is anticipated that maintenance dredging will be required to maintain LNG carrier deliveries at the Marine Jetty, and that this will be the responsibility of PD Ports as part of their statutory duty. There is an existing marine disposal site which already receives materials from ongoing dredging activities undertaken by PD Ports. This will be confirmed as part of the application for development consent.

### **PERMANENT STAFF**

- 2.6.23. It is anticipated that the Proposed Scheme will be predominantly unmanned, unless an LNG delivery is taking place whereby two and four operators will be present.
- 2.6.24. Staff will also be required to provide 24-hour security.

### **EXTERNAL LIGHTING**

- 2.6.25. External lighting during operational activities will be required to ensure the Proposed Scheme can operate safely during hours of darkness, for example during LNG deliveries at the Marine Jetty. Lighting will be designed to meet the appropriate luminance required to provide safe working conditions and positioned to prevent or minimise light disturbance to sensitive ecological receptors where necessary.
- 2.6.26. Outside of LNG deliveries, use of sensitive lighting will be implemented with light spill onto aquatic environments minimised where possible noting the requirements for navigational safety.
- 2.6.27. The exception to this will be emergency lighting and escape route lighting which will comply with the safety and classification society requirements in the unlikely event of this being required. In addition, anti-collision and navigational lighting will be required on the Marine Jetty and on mooring dolphins.
- 2.6.28. Noting the local environment and significant night spill already present, the operational lighting strategy proposed will have due regard for users, ecology and health and safety.



## **VENTING AND FLARING**

- 2.6.29. Venting of gas is not required during normal operation. A “cold vent” or flare (to be confirmed during detailed design) will be implemented to safely dispose of hydrocarbons to the atmosphere under maintenance or emergency situations only. The location and length of the vent/flare will be governed by relevant limits/design standards applicable.
- 2.6.30. A nitrogen purge (or alternative snuffing system) may be implemented to avoid air ingress into the cold vent or flare stack. In the event a nitrogen supply is unavailable, a CO<sub>2</sub> snuffing system will be provided to extinguish the flame in the event of a gas ignition.

## **PERMITTING AND PROCESS LICENSING**

- 2.6.31. The Proposed Scheme may require an Environmental Permit. The Applicant is currently determining any activities which require compliance with relevant Environmental Permitting regulations. This will be confirmed via discussions with the Environment Agency.
- 2.6.32. The operation of the Proposed Scheme will be covered under the Major Accident Prevention Policy (MAPP) and Safety Management System (SMS) commensurate with the requirement of the Control of Major Accident Hazards Regulations 2015 (COMAH) (Ref. 2.4).
- 2.6.33. The Applicant currently understands that the Proposed Scheme is likely to require an Upper Tier COMAH rating, but this is to be confirmed subject to ongoing discussions with local operators and the relevant stakeholders.
- 2.6.34. The Proposed Scheme will be operated in accordance with appropriate standards, and the operator will implement and maintain an Environment Management System (EMS).

## **SAFETY MEASURES**

- 2.6.35. The Proposed Scheme will be designed and operated to UK regulatory requirements. Safety will be of paramount importance in the design associated with the Proposed Scheme.

## **2.7 DECOMMISSIONING**

- 2.7.1. It is the assumption for the EIA that the Proposed Scheme will be decommissioned at the end of the operational lifespan, either prior to or at 25 years.
- 2.7.2. All terrestrial ground structures will be demolished and removed at ground level or just below. Any concrete materials will be crushed, with other materials such as metal, sorted and recycled where possible. Some removal of materials off-site is likely by road and possibly via marine vessels.
- 2.7.3. Any below ground structures will be left in-situ, including piles, pipework, and cables.
- 2.7.4. The Export Pipeline will be sealed and left in situ.
- 2.7.5. It is anticipated that the Marine Jetty will remain in situ.
- 2.7.6. It is anticipated that the decommissioning phase will take approximately 12 months.
- 2.7.7. A Decommissioning Plan (including environmental management) will be prepared at the appropriate time to consider the potential risks of decommissioning the relevant elements of the Proposed Scheme. It will include details of marine infrastructure available and appropriate at the time, other routes for offsite removal of materials and likely phasing of activities.

## 2.8 REFERENCES

- Ref. 2.1.** Planning Inspectorate (2018) Advice Note 9: Rochdale Envelope. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-nine-rochdale-envelope/>
- Ref. 2.2.** IMO (1972/77). Convention on the International Regulations for Preventing Collisions at Sea 1972 (COLREGS).
- Ref. 2.3.** British Standards Institute (2014) BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise.
- Ref. 2.4.** UK Government (2015) The Control of Major Accident Hazards Regulations. Available at: <https://www.legislation.gov.uk/uksi/2015/483>

## 3 REGULATORY, PLANNING AND ENERGY POLICY

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### 3.1 INTRODUCTION

- 3.1.1. This chapter of the EIA Scoping Report provides an overview of the regulatory, planning and energy policies of relevance to the Proposed Scheme, and where those policies identify the need for the Proposed Scheme. Each technical chapter of this EIA Scoping Report details the relevant legislation and policy which will inform the aspect's assessment.
- 3.1.2. The application for development consent will include a Planning Statement which will set out in more detail the policies of relevance to the Proposed Scheme and include an assessment of how it complies with that policy.
- 3.1.3. The following regulatory, planning and energy policy is relevant to the Proposed Scheme and is considered throughout this chapter:
- Key legislation;
  - National Policy Statements for Energy;
  - Energy and climate change policy;
  - National Planning Policy Framework;
  - Local planning policy; and
  - Marine policy.

### 3.2 KEY LEGISLATION

#### THE PLANNING ACT 2008

- 3.2.1. The Planning Act 2008 (PA 2008) (Ref. 3.1) provides the legislative basis for applications for a Development Consent Order (DCO) and defines the application process under which a DCO is sought. Sections 14 - 30A of the PA 2008 specify that developments meeting certain defined criteria are automatically classified as Nationally Significant Infrastructure Projects (NSIPs).
- 3.2.2. The Proposed Scheme comprises a liquefied natural gas (LNG) facility and includes the regasification of LNG via a regasification plant (see **Chapter 2 Site and Proposed Scheme Description** of this EIA Scoping Report for further detail). Section 18 of the PA 2008 sets out the decision-making criteria for this element, whereby the threshold classifying an LNG facility as an NSIP is based on:
- “18 (1): The construction of an LNG facility is within section 14(1)(d) only if (when constructed) the facility will be in England and —*
- the storage capacity of the facility is expected to be at least 43 million standard cubic metres, or*
- (b) the maximum flow rate of the facility is expected to be at least 4.5 million standard cubic metres per day.”*
- 3.2.3. The maximum flow rate of the Proposed Scheme is expected to be capable of achieving a maximum of 28.3 million cubic metres per day (m<sup>3</sup>/day) and will exceed the Section 18 threshold of 4.5 million standard cubic metres per day, and as such the Proposed Scheme is considered to be an NSIP.

- 3.2.4. Section 31 of the PA 2008 requires that developers wishing to construct, operate and maintain NSIPs or projects subject to a direction from the Secretary of State (SoS) must obtain a DCO from the relevant SoS to authorise their project.
- 3.2.5. Under Section 104 of the Act PA 2008 regime the policy framework for examining and determining applications for development consent is provided by National Policy Statements (NPS); further detail is provided in **Section 3.3**. The NPSs are the primary policy used by the relevant SoS to examine and determine applications for NSIPs.

### **THE INFRASTRUCTURE PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2017**

- 3.2.6. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) ('the EIA Regulations') (Ref. 3.3) govern the EIA process relevant to NSIPs.
- 3.2.7. Schedule 1 of the EIA Regulations lists those projects for which an EIA is required and Schedule 2 lists projects which may be considered an EIA development, based on the selection criteria provided in Schedule 3 on characteristics of the development, its location and the types and characteristics of the potential impacts.
- 3.2.8. The Proposed Scheme involves the construction and operation of an LNG import facility for carrying gas and so is deemed to constitute EIA development and to require EIA (as per Schedule 2(3)(b)), and 2(3)(c) in part due to it including the surface storage of natural gas. As such the Applicant will be submitting an Environmental Statement (hereafter 'ES') with the application for development consent.
- 3.2.9. Regulation 5(2) states that the EIA:
- "must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development"*
- 3.2.10. It states that the EIA must undertake the above in relation to the following factors: population and human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage, and landscape.
- 3.2.11. Regulation 5(4) also requires the EIA to include, where relevant: *"the expected significant effects arising from the vulnerability of the Project to major accidents or disasters that are relevant to that development"*.

### **MARINE AND COASTAL ACCESS ACT 2009**

- 3.2.12. The planning system for the management of the marine environment was introduced by the Marine and Coastal Access Act 2009 (MCCA 2009) (Ref. 3.4). This introduced a requirement to obtain Marine Licences for any offshore construction works. For the purposes of the EIA, the marine environment is defined as any area seaward of the mean high-water springs (MHWS) mark of any tidally influenced water body.
- 3.2.13. As set out in **Chapter 2 Site and Proposed Scheme Description** of this EIA Scoping Report, the Proposed Scheme includes a new Marine Jetty and associated construction works within the River Tees. On this basis the MCCA 2009 is applicable.
- 3.2.14. The PA 2008 enables an applicant for a DCO to apply for 'Deemed Marine Licence' as part of the DCO process by virtue of Section 149A of the Act which was inserted by the MCAA 2009.



### 3.3 NATIONAL POLICY STATEMENTS FOR ENERGY

3.3.1. Section 104 of the PA 2008 states that where an NPS has effect, the SoS must determine the application in accordance with the relevant NPS and appropriate marine policy documents. The SoS should have regard to any local impact report produced by the relevant local planning authority (if any), any matters prescribed in relation to development of the description to which the application relates, and any other matters which the SoS thinks are both “important and relevant” to their decision, unless this would:

- Lead to the UK being in breach of its international obligations;
- Be in breach of any statutory duty that applies to the SoS;
- Be unlawful;
- Result in the adverse impacts of the development outweighing the benefits; or
- Be contrary to any condition prescribing how decisions regarding an NSIP application are to be taken.

3.3.2. The revised NPSs for energy infrastructure were designated on 17 January 2024. The following revised NPSs are considered relevant to the Proposed Scheme:

- Overarching National Policy Statement for Energy (EN-1) (Ref. 3.5); and
- National Policy Statement for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref. 3.6).

#### OVERARCHING NPS FOR ENERGY (EN-1)

3.3.3. Part 2 of EN-1 sets out the Government’s energy and climate change strategy, including policies for mitigating climate change and reaffirms the Government’s commitment to transition to a net zero economy by 2050.

3.3.4. Section 2.5 discusses security of energy supplies with paragraph 2.5.5 stating that *“as global energy costs rise due to demand soaring as the economy reopened after COVID-19 and the Russian invasion of Ukraine, security of supply requires a greater focus on domestic energy production.”*

3.3.5. Paragraph 2.6.2 states that *“sustainable development is relevant not just in terms of addressing climate change, but because the way energy infrastructure is deployed affects the well-being of the environment, society and the economy, for both current and future generations.”*

3.3.6. Paragraph 3.2.2 recognises that a range of different types of energy infrastructure is required to ensure energy supply remains secure, reliable, affordable and consistent with net zero aspirations. Paragraphs 3.2.6 to 3.2.8 also states that the SoS should assess all applications for development consent on the basis that the government has demonstrated that the need for those types of infrastructure as urgent. The SoS has determined that substantial weight will be given to the need of the project when considering applications under PA 2008.

3.3.7. Section 3.4 identifies the need for new nationally significant gas infrastructure, including natural gas. Paragraph 3.4.4 states that, *“we need a diverse mix of gas supply infrastructure including pipelines, storage and reception facilities in order to meet our energy objectives. Our gas infrastructure must, amongst other things, be sufficient to:*

- *Meet ‘peak’ demand for gas*
- *Allow for a sustained delivery of large volumes of gas*
- *Provide access to the most competitive gas supplies.”*

- 3.3.8. Part 4 of EN-1 sets out several ‘assessment principles’ that must be taken into account by applicants and the SoS in preparing and determining applications for nationally significant energy infrastructure. Section 4.1 covers the general policies and considerations for the submission and assessment of applications relating to energy infrastructure. Key points include (paragraph 4.1.3) the requirement for the SoS, given the level and urgency of need for the infrastructure covered by the energy NPSs, to start with a presumption in favour of granting consent for applications for energy NSIPs. This presumption applies unless any more specific and relevant policies set out in the relevant NPSs clearly indicate that consent should be refused or any of the considerations referred to in Section 104 of the PA 2008 apply.
- 3.3.9. Other assessment principles include the matters to be covered within any Environmental Statement (ES); health; marine considerations; environmental and biodiversity net gain; ‘good design’ criteria; climate change adaptation and resilience; pollution control and other environmental regulatory regimes; safety; hazardous substances; common law nuisance and statutory nuisance and security, amongst others.
- 3.3.10. Part 5 of EN-1 considers the ‘generic impacts’ that arise from the development of all types of energy infrastructure. These include impacts that occur in relation to all or most types of energy infrastructure in addition to others that may only be relevant to certain technologies. Paragraph 5.1.2 stresses that the list of impacts is not exhaustive and that applicants should identify the impacts of their projects in the ES in terms of both those covered by the NPSs and others that may be relevant. Generic impacts include air quality and emissions; biodiversity and geological conservation; dust, odour, artificial light, smoke, steam and insect infestation; flood risk; historic environment; landscape and visual; land use; noise and vibration; traffic and transport; water quality and resources, amongst others. In relation to each of the generic impacts listed within Part 5, guidance is provided on how the applicant should assess these within their application and also the considerations that the SoS should take into account in decision-making.

#### **NPS FOR NATURAL GAS SUPPLY INFRASTRUCTURE AND GAS AND OIL PIPELINES (EN-4)**

- 3.3.11. Revised EN-4 covers Natural Gas Supply Infrastructure and Gas and Oil Pipelines and includes planning guidance for developers of nationally significant natural gas supply infrastructure and gas and oil pipeline projects. This includes LNG terminals such as the Proposed Scheme.
- 3.3.12. Paragraph 1.1.1 recognises that, *“the efficient import, storage, and transmission of gas and oil products remain crucial to meeting our energy needs during the transition to a net zero economy.”*
- 3.3.13. Paragraph 1.1.5 states, *“noting the continued need for natural gas leading to 2050 (and potentially beyond), this National Policy Statement ensures that applications can continue to be made in line with current policies to enable the development of relevant natural gas supply infrastructure and oil and gas pipelines to help maintain natural gas resilience.”*
- 3.3.14. Section 1.6 covers the types of nationally significant natural gas and oil infrastructure:
- *“...LNG facilities which meet one of the two tests.*
    - *the storage or working capacity test: a project would pass this test if the storage capacity on completion of the proposal is expected to be at least 43 million standard cubic metres (Mcm) of gas or higher; or*

- *the maximum flow rate test: a project would pass this test if it has a projected maximum flow rate of at least 4.5 Mcm of gas per day (Mcm/d)...*

- 3.3.15. Section 2 of EN-4 covers the 'general assessment and technology-specific information' relating to gas supply infrastructure and oil and gas pipelines. This section considers the potential impacts that should be considered by applicants including, climate change adaptation; criteria for 'good design'; hazardous substances; control of major accident hazards; LNG Import Facilities; natural gas reception facilities; natural gas and oil pipelines, amongst others.
- 3.3.16. Sections 2.12, 2.13 and 2.14 consider LNG Import Facilities stating, *"it is important to consider environmental impacts and mitigation measures holistically across terrestrial and marine environments."*
- 3.3.17. Section 2.13.6 states that, *"for projects that are subject to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, the applicant must submit an ES including an assessment of the impact of the project."* These include noise and vibration; landscape and visual and dredging.
- 3.3.18. Sections 2.20 and 2.21 cover Natural Gas and Oil Pipelines and the potential associated impacts, mitigation measures and SoS decision making. Whilst the Export Pipeline component of the Proposed Scheme is not classified as nationally significant pipeline (as described in Section 1.6 of the same NPS), factors influencing site selection are important considerations. The impacts discussed include pipeline safety; noise and vibration; biodiversity, landscape and visual; water quality and resources and soil and geology.

### **NPS FOR PORTS**

- 3.3.19. The NPS for Ports (Ref. 3.7) was published in 2012 and provides the framework for decisions on proposals for new port development.
- 3.3.20. The Applicant considers that the proposed Marine Jetty does not meet the relevant threshold and so the National Policy Statement for Ports does not meet the criteria of section 104(2) of the Planning Act 2008 and does not 'have effect' in relation to the Proposed Scheme.
- 3.3.21. The Applicant considers that this national policy statement is, however, an important and relevant consideration in the determination of an application for development consent for the Proposed Scheme

## **3.4 ENERGY AND CLIMATE CHANGE POLICY**

- 3.4.1. As noted above, Sections 104 and 105 of the PA 2008 set out the matters that the SoS must have regard to in determining applications for development consent, which can include any other matters which the SoS thinks are *"important and relevant"* to their decision. Other matters that the SoS may consider important and relevant include recent UK energy and climate change policy.
- 3.4.2. The Proposed Scheme will support the overarching objective of the Government to continue transitioning the UK to a low carbon economy and meeting the legally binding target of net zero greenhouse gas emissions by 2050. The recent energy and climate change policy that are relevant include:
- British Energy Security Strategy (2022) (Ref. 3.8);
  - Powering Up Britain (2023) (Ref. 3.9);
  - Draft Strategy and Policy Statement for Energy Policy in Great Britain (Ref. 3.10)

- Supply of Liquefied Natural Gas in the UK (2022) (Ref. 3.11);
- The role of gas storage and other forms of flexibility in security of supply (2023) (Ref. 3.12); and
- Trends in UK imports and exports of fuels (2022) (Ref. 3.13).

### **BRITISH ENERGY SECURITY STRATEGY (2022)**

- 3.4.3. The British Energy Security Strategy was published in April 2022 (Ref. 3.8) largely in response to soaring energy prices as a result of a sudden surge in demand following the COVID-19 pandemic, compounded by the Russian invasion of Ukraine. The Strategy is intended to secure clean and affordable energy for the long term by boosting Britain's diverse sources of homegrown energy for greater energy security.
- 3.4.4. Much of the focus of the Energy Security Strategy is upon providing financial assistance to families and businesses struggling with higher energy bills, but it also looks at improved energy efficiency, reducing the amount of energy needed in the UK and addressing the underlying vulnerability to international oil and gas prices.
- 3.4.5. The Strategy states that, *“gas is currently the glue that holds our electricity system together and it will be important transition fuel.”*

### **POWERING UP BRITAIN (2023)**

- 3.4.6. The Department for Energy Security and Net Zero (DESNZ) published ‘Powering up Britain’ (Ref. 3.9) and constituent documents in March 2023 which includes ‘Powering up Britain: Energy Security Plan’ and ‘Powering Up Britain: Net Zero Growth Plan’.
- 3.4.7. “Powering up Britain” sets out the Government’s priority to be energy independent in light of the invasion in Ukraine. It highlights the Government’s mission to enhance energy security by setting the UK on a path to greater energy independence.
- 3.4.8. ‘Powering Up Britain – Energy Security Plan’ sets out the steps by which the Government will enhance the UK’s energy security following the publication of the British Energy Security Strategy (2022). The plan sets out the steps that the DESNZ is taking to ensure the UK is more energy independent and more energy secure by:
- *“Reducing energy demand and increasing the overall share of domestic energy production;*
  - *Ensuring that where the UK still needs to import energy, including through interconnectors, that those imports are built on strong relationships with trusted partners and allies and diversified sources of supply, which will also provide access to long term export markets to support our growing clean energy industries;*
  - *Building in resilience and mitigations to ensure that if there are disruptions to imports, consumers still have a reliable supply of energy.”*
- 3.4.9. The plan highlights the next steps for providing a clean, secure energy supply which includes an effective planning system that supports both large-scale nationally significant infrastructure and local decisions. The Government is committed to ensuring faster, fairer and more effective planning regimes including recent changes to the National Planning Policy Framework and National Policy Statements.

## **DRAFT STRATEGY AND POLICY STATEMENT FOR ENERGY POLICY IN GREAT BRITAIN**

- 3.4.10. DESNZ published a draft Strategy and Policy Statement for Energy Policy in Great Britain which sets out the approach Great Britain will follow to 1) enable clean energy and net zero infrastructure; 2) enabling energy security and protecting consumers; and 3) ensuring the energy system is fit for the future.
- 3.4.11. Section 2 sets out the Government's strategic priorities which includes ensuring an energy system which is secure and resilient to supply shocks and changes in the international environment.

### **SUPPLY OF LIQUEFIED NATURAL GAS IN THE UK (2022)**

- 3.4.12. DESNZ published a special article in March 2023 to comment on the key trends and supply of liquefied natural gas in the UK (Ref. 3.11).
- 3.4.13. The UK's gas supply mix is comprised of natural gas from indigenous production and imports. Some of these imports arrive as LNG. The UK began importing LNG as a trial in 1959 to Canvey Island, with commercial imports beginning in 1964. Imports initially peaked in 2011 when it accounted for just over a quarter of total gas supply. Since 2011, import volumes have been closely linked to economic factors.
- 3.4.14. However in 2022, new LNG market dynamics were established as European demand for LNG increased 71% amid high global gas prices. Europe became the premium market as countries looked to move away from Russian imports and fill historically low natural gas storage inventories.
- 3.4.15. In 2022, UK LNG imports hit a record high of 25.6 billion cubic metres (bcm), representing 45% of UK natural gas imports. The UK holds significant LNG infrastructure, which allows for increased natural gas exports to Europe through subsea gas pipelines which connect the European and UK gas network. This led to record natural gas exports to Europe at 23.5bcm.
- 3.4.16. The USA replaced Qatar at the largest import source to the UK, supplying half of the UK's LNG imports. Following Russia's invasion of Ukraine, the share of UK LNG imports from Russia fell to 1.9% in 2022, down from 21% in the previous year. Increased demand for LNG also led the UK to source more cargoes from further afield i.e. Peru.
- 3.4.17. These new market dynamics are projected to persist as European demand is predicted to reach a new high as new import infrastructure comes online.

### **THE ROLE OF GAS STORAGE AND OTHER FORMS OF FLEXIBILITY IN SECURITY OF SUPPLY (2023)**

- 3.4.18. DESNZ published the Energy Security Plan update in December 2023 (Ref. 3.12) with the aim of presenting an updated picture on gas security of supply and demand, summarising key findings, exploring the future role that flexible sources of gas supply might play in gas security over the medium to long term and the associated policy considerations.
- 3.4.19. The update states that natural gas will continue to play a role in delivering UK energy security to 2050 as part of a net zero emissions trajectory. The market has, and continues to, deliver effectively, but, as we become increasingly reliant on imports of gas to meet peaks in energy demand on those days when renewables are unavailable there may be a need for additional flexibility in the future.

The market has already begun to respond as we have seen some recent investment in gas storage facilities and increases in LNG capacity at two out of our three GB terminals.

3.4.20. The update is the first step in setting out the key considerations for government regarding policy making on the future role of flexibility in the UK gas system. Research and analysis are currently being undertaken to:

- Explore how natural gas storage as a gas flexibility source could meet any future GB flexibility needs;
- Determine the economic rationale for storage and possible impact on gas prices; and
- Examine the deliverability from LNG terminals and across the National Transmission System (NTS).

3.4.21. The update states that, *“we will need to find an optimum balance across all forms of flexibility to ensure a secure energy system, replicating the key strengths we currently have on the diverse supply sources. An overreliance on one type of system flexibility could leave the gas system exposed.”*

3.4.22. A Call for Evidence is planned to set out the findings from the current analysis and look in more detail at the three forms of flexibility to understand the potential roles and possible interventions (if needed) by Government.

### **TRENDS IN UK IMPORTS AND EXPORTS OF FUELS (2022)**

3.4.23. The Office of National Statistics published an article which examines the recent trends in UK imports and exports of fuels in June 2022 (Ref. 3.13).

3.4.24. The article states that imports of fuels from non-EU countries have seen large increases since mid-2021, driven by increasing gas imports, which is linked to rising wholesale gas prices.

3.4.25. The increase in gas prices at the end of 2021 was due to increased global gas demand following the easing of COVID-19 pandemic restrictions, lower domestic renewable energy production and higher gas demand in Asia among other factors.

3.4.26. The Russian invasion of Ukraine has destabilised existing European gas supply chains, leading to European economies seeking alternatives to Russian gas imports, which has further pushed up gas prices in 2022.

### **NATIONAL PLANNING POLICY FRAMEWORK**

3.4.27. The National Planning Policy Framework (NPPF), introduced in March 2012 (updated December 2023) (Ref. 3.14), sets out the Government’s planning policies for England. It is a material consideration in planning decisions. Although paragraph 5 of the NPPF confirms that NSIPs are to be determined in accordance with the decision-making framework of the Act and relevant NPSs, decisions on NSIPs should also take account of any other matters that are “relevant”, which may include the NPPF. The NPPF is supported by the Planning Practice Guidance (PPG), which provides more detailed guidance on various aspects of planning.

3.4.28. Section 2 ‘Achieving sustainable development’ paragraph 7 confirms that the purpose of the planning system is to contribute to the achievement of sustainable development, summarised as *“meeting the needs of the present without compromising the ability of future generations to meet their own needs”*. Paragraph 8 goes on to identify three overarching objectives to the achievement

of sustainable development, which are interdependent and need to be pursued in mutually supportive ways. These are:

- a) *“An economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;*
- b) *A social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities’ health, social and cultural well-being; and*
- c) *An environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.”*

3.4.29. The NPPF is supportive of infrastructure projects. One of the methods of fulfilling the objective of sustainable development listed at paragraph 8 is through the “provision of infrastructure”. Central to the NPPF is ‘a presumption in favour of sustainable development’, which is set out in Paragraph 11.

3.4.30. Paragraph 157 in Section 14 “Meeting the challenge of climate change, flooding and coastal change” states that:

*“The planning system should support the transition to a low carbon future in a changing climate ... it should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure”.*

3.4.31. Paragraph 163 states that when determining applications for renewable and low carbon development, there should be no requirement for applicants to demonstrate the overall need for renewable or low carbon energy and that applications for renewable or low carbon development should be approved if their impacts are (or can be made) acceptable.

3.4.32. NPPF policies of particular relevance include:

- Building a strong, competitive economy;
- Making effective use of land;
- Meeting the challenge of climate change, flooding and coastal change; and
- Conserving and enhancing the natural environment.

## **3.5 LOCAL PLANNING POLICY**

### **DEVELOPMENT PLAN DOCUMENTS**

3.5.1. The proposed site (the ‘Site’) for the Proposed Scheme is located wholly within the administrative boundary of Stockton-on-Tees Borough Council (SoTBC).

3.5.2. The relevant development plan documents (DPDs) for the Site are as follows:

- Stockton-on-Tees Borough Council Local Plan (adopted January 2019) (Ref. 3.15);

- Stockton-on-Tees Borough Council Local Plan Policies Map (adopted January 2019) (Ref. 3.16); and,
- The Tees Valley Joint Minerals and Waste DPDs (adopted September 2011) (Ref. 3.17).

3.5.3. The Tees Valley Joint Minerals and Waste DPDs comprise a Minerals and Waste Core Strategy DPD and a Minerals and Waste Policies and Sites DPD. The Joint Minerals and Waste DPDs were prepared together by Darlington, Hartlepool, Middlesbrough, Redcar and Cleveland and Stockton-on-Tees. The Joint Minerals and Waste DPDs are of limited relevance to the Proposed Scheme.

### PLANNING ALLOCATIONS/DESIGNATIONS

3.5.4. The key planning allocations/designations and related policies (based upon the relevant policies maps) that apply to the Site are listed below:

- Specialist Use Locations – Policies SD4 and EG4;
- Specialist Employment Allocations – Policies SD4 and EG4; and
- Limits to Development – Policies SD3, SD4 and SD5.

### NEIGHBOURHOOD PLANS

3.5.5. There are no adopted and emerging neighbourhood plans within SoTBC that apply to the Proposed Scheme.

### KEY POLICY SUMMARY

3.5.6. **Table 3-1** below details key below outlines the key policies from the Stockton-on-Tees Borough Council Local Plan 2019 of relevance to the Proposed Scheme.

**Table 3-1 - Stockton-on-Tees Borough Council Local Plan 2019: Key Policies Summary**

Policy	Policy Consideration
Policy ENV 1 – Energy Efficiency	<p>The Council will encourage all development to minimise the effects of climate change through meeting the highest possible environmental standards during construction and occupation. The Council will:</p> <ol style="list-style-type: none"> <li>a) Promote zero carbon development and require all development to reduce carbon dioxide emissions by following the steps in the energy hierarchy, in the following sequence:               <ol style="list-style-type: none"> <li>i. Energy reduction through ‘smart’ heating and lighting, behavioural changes, and use of passive design measures; then,</li> <li>ii. Energy efficiency through better insulation and efficient appliances; then,</li> <li>iii. Renewable energy of heat and electricity from solar, wind, biomass, hydro and geothermal sources; then</li> <li>iv. Low carbon energy including the use of heat pumps, Combined Heat and Power and Combined Cooling Heat and Power systems; then</li> <li>v. Conventional energy.</li> </ol> </li> </ol> <p>All major developments must demonstrate how they contribute to the greenhouse gas emissions reduction targets set out in Stockton-on-Tees’</p>



Policy	Policy Consideration
	Climate Change Strategy 2016; and support and encourage sensitive energy efficiency improvements to existing buildings.
Policy ENV 2 - Renewable and Low Carbon Energy Generation	Planning applications for energy generation from renewable and low carbon sources, other than wind energy generation, will be considered against the principles in Policy SD8. Proposals should be supported by a comprehensive assessment of the landscape, visual and any other impacts of the proposal. Developers should, where appropriate, provide details alongside a planning application of a satisfactory scheme to restore a site to at least its original condition when the scheme has reached the end of its operational life.
Policy ENV 3 – Decentralised Energy Generation and Supply	The Council will promote and support decentralised energy such as District Heat and Power Networks through a number of methods. The Council will require all major development to investigate the use of decentralised energy networks for heat and power as part of the feasibility assessment and energy statement.
Policy ENV4 - Reducing and Mitigating Flood Risk	<p>All new development will be directed towards areas of the lowest flood risk to minimise the risk of flooding from all sources, and will mitigate any such risk through design and implementing sustainable drainage (SuDS) principles. Development on land in Flood Zones 2 or 3 will only be permitted following:</p> <ul style="list-style-type: none"> <li>a) The successful completion of the Sequential and Exception Tests (where required); and</li> <li>b) A site-specific flood risk assessment, demonstrating development will be safe over the lifetime of the development, including access and egress, without increasing flood risk elsewhere and where possible reducing flood risk overall.</li> </ul> <p>Site specific flood risk assessments will be required in accordance with national policy.</p>
Policy ENV5 – Preserve, Protect and Enhance Ecological Networks, Biodiversity and Geodiversity	The Council will protect and enhance the biodiversity and geological resources within the Borough. Development proposals will be supported where they enhance nature conservation and management, preserve the character of the natural environment and maximise opportunities for biodiversity and geological conservation particularly in or adjacent to Biodiversity Opportunity Areas in the River Tees Corridor, Teesmouth and Central Farmland Landscape Areas. Ecological networks and wildlife corridors will be protected, enhanced and extended. A principal aim will be to link sites of biodiversity importance by avoiding or repairing the fragmentation and isolation of natural habitats. Nationally designated sites - Development that is likely to have an adverse effect on a site, including broader impacts on the national network of Sites of Special Scientific Interest (SSSI) and combined effects with other development, will not normally be allowed. Development proposals should seek to achieve net gains in biodiversity wherever possible. It will be important for biodiversity and geodiversity to be considered at an early stage in the design process so

Policy	Policy Consideration
	that harm can be avoided and wherever possible enhancement achieved (this will be of particular importance in the redevelopment of previously developed land where areas of biodiversity should be retained and recreated alongside any remediation of any identified contamination).
<p>Policy ENV6 - Green Infrastructure, Open Space, Green Wedges and Agricultural Land</p>	<p>The Council will protect and support the enhancement, creation and management of all green infrastructure to improve its quality, value, multi-functionality and accessibility in accordance with the Stockton-on-Tees Green Infrastructure Strategy and Delivery Plan. Green infrastructure should be integrated, where practicable, into new developments. This includes new hard and soft landscaping, and other types of green infrastructure. Proposals should illustrate how the Proposed Scheme will be satisfactorily integrated into the surrounding area in a manner appropriate to the surrounding townscape and landscape setting and enhances the wider green infrastructure network. The loss of open space as shown on the Policies Map, and any amenity open space, will not be supported unless:</p> <ol style="list-style-type: none"> <li>a) it has been demonstrated to be surplus to requirements; or</li> <li>b) the loss would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location; or</li> <li>c) the proposal is for another sports or recreational provision, the needs for which, clearly outweigh the loss; or</li> <li>d) the proposal is ancillary to the use of the open space; and</li> <li>e) in all cases there would be no significant harm to the character and appearance of the area or nature conservation interests.</li> </ol> <p>Development proposals will be expected to demonstrate that they avoid the 'best and most versatile' agricultural land unless the benefits of the proposal outweigh the need to protect such land for agricultural purposes. Where significant development of agricultural land is demonstrated to be necessary, proposals will be expected to demonstrate that they have sought to use areas of lower quality land in preference to that of a higher quality.</p>
<p>Policy ENV7 – Ground, Air, Water, Noise and Light Pollution</p>	<p>All development proposals that may cause groundwater, surface water, air (including odour), noise or light pollution either individually or cumulatively will be required to incorporate measures as appropriate to prevent or reduce their pollution so as not to cause unacceptable impacts. Where development has the potential to lead to significant pollution either individually or cumulatively, proposals should be accompanied by a full and detailed assessment of the likely impacts. Development will not be permitted when it is considered that unacceptable effects will be imposed on human health, or the environment, taking into account the cumulative effects of other proposed or existing sources of pollution in the vicinity. Development will only be approved where suitable mitigation can be achieved that would bring pollution within acceptable levels.</p>
<p>Policy HE1 – Conservation and Enjoyment of the</p>	<p>To ensure the conservation and enjoyment of the Borough's historic environment the Council will:</p>

Policy	Policy Consideration
Historic Environment	<ul style="list-style-type: none"> <li>a) Maintain and promote the use of Historic Environment Records;</li> <li>b) Review and regularly update the SPD4 Conservation and Historic Environment Folder or any successor. This will include review and regular update of:               <ul style="list-style-type: none"> <li>i. Conservation Area Appraisals and Management Plans;</li> <li>ii. Article 4 directions, and;</li> <li>iii. Local List.</li> </ul> </li> </ul>
Policy HE2 – Conserving and Enhancing Stockton’s Heritage Assets	<p>In order to promote and enhance local distinctiveness, the Council will support proposals which positively respond to and enhance heritage assets. Where development has the potential to affect heritage asset(s) the Council require applicants to undertake an assessment that describes the significance of the asset(s) affected, including any contribution made by their setting. Appropriate desk-based assessment and, where necessary, field evaluation will also be required where development on a site which includes or has the potential to include heritage assets with archaeological interest. Applicants are required to detail how the proposal has been informed by assessments undertaken. Development proposals should conserve and enhance heritage assets, including their setting, in a manner appropriate to their significance. Where archaeological remains survive, whether designated or not, there will be a presumption in favour of their preservation in-situ. The more significant the remains, the greater the presumption will be in favour of this.</p>
Policy HE3 – Stockton & Darlington Railway	<p>The Council will require any proposal for development on or adjacent to the line(s) to show how the proposal has regard to the preservation of any physical remains along the route(s) and their interpretation on the ground, and otherwise respects and interprets the route(s) where those remains no longer exist.</p>
Policy SD1 - Presumption in favour of Sustainable Development	<p>In accordance with the Government’s NPPF, when the Council considers development proposals it will take a positive approach that reflects the presumption in favour of sustainable development contained in the NPPF. It will always work proactively with applicants jointly to find solutions which mean that proposals for sustainable development can be approved wherever possible, and to secure development that improves the economic, social and environmental conditions in the area. Planning applications that accord with the policies in this Local Plan (and, where relevant, with policies in neighbourhood plans) will be approved without delay, unless material considerations indicate otherwise.</p>
Policy SD2 – Strategic Development Needs	<p>The following strategic growth needs have been identified for the period 2017/18 to 2031/32, which will be met through new sustainable development and infrastructure provision that integrates positively with the natural, built and historic environment of the Borough. Aside from Economic and Growth and Housing, where other needs are identified, new</p>

Policy	Policy Consideration
	developments will be encouraged to meet that need in the most sustainable locations having regard to relevant policies within the Local Plan.
Policy SD5 - Natural, Built and Historic Environment	To ensure the conservation and enhancement of the environment alongside meeting the challenge of climate change the Council will Conserve and enhance the natural, built and historic environment through a variety of methods, meet the challenge of climate change, flooding and coastal change through a variety of methods and conserve and enhance the historic environment through a variety of methods.
Policy SD6 – Transport and Infrastructure Strategy	To ensure the road network is safe and there are reliable journey times, the Council will prioritise and deliver targeted improvements at key points on the local road network and work in conjunction with Highways England to deliver improvements at priority strategic locations on the strategic road network.
Policy SD8 – Sustainable Design Principles	The Council will seek new development to be designed to the highest possible standard, taking into consideration the context of the surrounding area. All proposals will be designed with public safety and the desire to reduce crime in mind, incorporating, where appropriate, advice from the Health and Safety Executive, Secured by Design, or any other appropriate design standards.

## 3.6 MARINE POLICY

### THE MARINE POLICY STATEMENT (2011)

- 3.6.1. Section 104 of the Act requires the SoS to have regard to "...*the appropriate marine policy documents...*" relevant to the NSIP. Elements of the Proposed Scheme may involve works within the UK Marine Area.
- 3.6.2. The appropriate marine policy documents are defined at Section 59 of the MCAA 2009. These include any marine policy statement which is in effect and to the extent that a decision relates to a marine plan area, any marine plan which is in effect for that area (Section 59(3) and (5)).
- 3.6.3. The UK Marine Policy Statement (MPS), adopted in March 2011 (Ref. 3.18), provides the policy framework for preparing marine plans and taking decisions affecting the marine environment. It has been prepared and adopted for the purposes of Section 44 of the MCCA 2009 and is intended to sit alongside terrestrial consenting regimes, including the PA 2008 regime. The MPS was subject to updates in September 2020 relating to how references to EU law should be interpreted from 1 January 2021 following the UK's withdrawal from the EU.
- 3.6.4. Chapter 2 of the MPS outlines the vision for the UK Marine Area, the high-level approach to marine planning and general principles for decision making covering economic, social and environmental considerations. It also covers detailed considerations relevant to developments such as marine ecology and biodiversity; air quality; noise; water quality and resources; seascape; historic environment; climate change adaptation and mitigation; and coastal change and flooding.
- 3.6.5. Chapter 3 sets out the policy objectives for key activities that take place in the marine environment. Section 3.3 deals specifically with 'Energy production and infrastructure development'. Paragraph

3.3.1 notes that a secure, sustainable and affordable supply of energy is of central importance to the economic and social well-being of the UK. Paragraph 3.3.4 sets out issues that decision maker should take into account when examining and determining applications for energy infrastructure.

- 3.6.6. Paragraph 3.3.6 recognises that in some parts of the UK power stations may be sited in coastal locations and will have an important contribution to play in the UK's energy mix. It notes that the construction, operation or decommissioning of power stations may have impacts on the local marine environment through the construction of plants and associated development. It refers to more detail on likely impacts and specific measures and actions to avoid or minimise adverse impacts, including those on marine ecology, being contained within the NPSs.

### **GUIDANCE TO THE MARINE POLICY STATEMENT (2021)**

- 3.6.7. The guidance which was updated in September 2020 (Ref. 3.19) is jointly agreed by the policy authorities and explains how references to EU law in the UK MPS should be interpreted from 1 January 2021 following the UK's withdrawal from the EU.
- 3.6.8. The European Union (Withdrawal) Act 2018 will convert many EU measures into UK law. Former EU measures converted into UK law are referred to as 'retained EU law' with statutory instruments amending the retained EU law to ensure it is operable.
- 3.6.9. References in the MPS to EC or EU legislation, EU legislative requirements, European legislation and EU requirements are to be read as references to retained EU law from 1 January 2021.

### **NORTH EAST INSHORE AND NORTH EAST OFFSHORE MARINE PLAN (2021)**

- 3.6.10. Marine plans are intended to set out detailed policy and spatial guidance for a particular area. The UK is divided into a number of marine planning regions with associated plan authorities that are responsible for preparing marine plans. In England, the Marine Management Organisation (MMO) is the plan authority. Marine plans are a material consideration.
- 3.6.11. The Site lies within the 'North East Inshore Marine Area', which stretches from Flamborough Head in Yorkshire to the Scottish Border (Ref. 3.20). The Plan Area has three main tidal rivers, including the River Tees.
- 3.6.12. The North East Marine Plan is intended to provide a strategic approach to decision making, considering future use and providing a clear approach to managing resources, activities and interactions within the area. In referring to Teesside, Tyneside and Wearside (paragraph 14), the plan identifies that these are industrial areas with important manufacturing heritage. North Sea oil and gas reserves mean that oil and gas production and processing are important activities in the North East marine plan areas, with product being transferred to shore via pipelines, for example at Teesside.
- 3.6.13. Policy NE-INF-1 supports appropriate land-based infrastructure which facilitates marine activity and vice versa.
- 3.6.14. Policy NE-INF-2 supports the protection of landing facilities in the north east inshore marine area, and confirms these are critical for enabling industries. By protecting existing landing facilities, identifying the difference in safeguarding, NE-INF-2 mirrors similar provisions in terrestrial planning and supports the continued operation of vital existing landing facilities.
- 3.6.15. Policy NE-CO-1 supports proposals that optimise the use of space and incorporate opportunities for coexistence and cooperation with existing activities. It acknowledges that the North East Marine

Plan areas, and in particular the inshore area, are likely to be busier in the future, and use of the space may become limited. The policy ensures that new proposals will avoid creating conflicts and to minimise their footprint where possible.

- 3.6.16. NE-REN-2 protects areas identified for energy developments from other activities that could affect the site's ability to generate energy. It enables the development of safe, profitable and efficient marine businesses.
- 3.6.17. Supporting development associated with industrial clusters also aims to enhance connectivity between marine operations and land infrastructure. This policy will also benefit employment in coastal communities near industrial clusters, supporting the NE -INF1 and NE -EMP -1 policies.
- 3.6.18. It is considered that the Proposed Scheme is consistent with policy contained within the UK MPS and the North East Marine Plan.

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## 4 APPROACH TO ENVIRONMENTAL IMPACT ASSESSMENT

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### 4.1 INTRODUCTION

- 4.1.1. An Environmental Impact Assessment (EIA) comprises the process for compiling, evaluating and presenting information about the likely significant environmental effects, both adverse and beneficial, of a proposed project.
- 4.1.2. For an EIA to be an effective decision-making tool, the EIA needs to focus on the likely significant environmental effects within a range of topics. These issues are identified through a review of existing information, baseline studies and a review of the emerging proposals for the Proposed Scheme.
- 4.1.3. This chapter sets out the overall approach to the EIA which will be followed for the Proposed Scheme. A detailed overview of the methodology adopted for each environmental topic is provided within the respective chapters of this EIA Scoping Report. The approach to the assessment has been informed by current best practice guidance, as set out within the Planning Inspectorate's Advice Note 7: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (Ref. 4.1), and the assessments will follow current guidelines and relevant legislation.
- 4.1.4. The Environmental Statement (ES), which reports the outcome of the EIA, will contain the information specified in Regulation of 14(2)(a)-(f) and Schedule 4 to The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ('EIA Regulations') (Ref. 4.2).
- 4.1.5. In line with Regulation 14(4)(a) of the EIA Regulations, the EIA will be undertaken by a suitably qualified project team and the qualifications and experience of the team will be set out in the Environmental Statement (ES).
- 4.1.6. The Institute of Environmental Management and Assessment (IEMA) has awarded WSP the EIA Quality Mark (Ref. 4.3) in recognition of WSP's commitment to excellence in EIA activities. WSP has continued to maintain this following annual examination in relation to its products, staff, innovation, and promotion of EIA within the industry.

### 4.2 CONSULTATION

- 4.2.1. The process of consultation during the EIA process is key to the preparation of a balanced and comprehensive ES. The views of interested parties serve to help focus the environmental studies and identify specific issues that require further investigation. It is also an integral part of the application process for development consent.
- 4.2.2. As part of the EIA, consultation will be undertaken with a range of statutory and non-statutory consultees. It is anticipated at this stage that engagement will be undertaken with the following bodies, in addition to the statutory consultation requirements and the EIA Scoping Process:
- Stockton on Tees Borough Council (host);
  - Redcar and Cleveland Borough Council;
  - Middlesbrough Borough Council;
  - Hartlepool Borough Council;
  - Billingham Town Council;



- Tees Valley Combined Authority;
- The Cleveland Fire Authority;
- Cleveland Police;
- The Harbour Police (PD Teesport Limited);
- The Joint Nature Conservation Committee;
- The Maritime and Coastguard Agency;
- The Marine and Fisheries Agency;
- Cleveland Local Resilience Forum (CLRF);
- Health and Safety Executive;
- Natural England;
- Historic England;
- Environment Agency;
- National Highways Yorkshire and North East;
- Northumbrian Water;
- UK Health Security Agency;
- Marine Management Organisation;
- Teesport;
- Royal Society for the Protection of Birds (RSPB) – Salthome Nature Reserve; and
- Tees Valley Wildlife Trust.

4.2.3. Statutory consultation will be supported by a Preliminary Environmental Information Report (PEIR). The PEIR will provide a preliminary assessment to outline the likely significant environmental effects of the Proposed Scheme in advance of the application for development consent.

4.2.4. Technical and procedural engagement will continue throughout the EIA process. A summary of the engagement activities with relevant consultees will be included within the ES and technical consultation will be summarised within the individual technical chapters.

### **4.3 GENERAL APPROACH TO THE EIA**

4.3.1. The EIA will identify the likely direct, indirect, cumulative, short, medium and long-term, permanent, temporary, beneficial and adverse significant effects arising from the Proposed Scheme. This section describes the overall approach that will be used to assess the potential effects on natural, human and built environments as a result of the Proposed Scheme. In accordance with the EIA Regulations (Ref. 4.2), the assessments undertaken will evaluate and identify the likely significant environmental effects arising from the proposed construction, operational and maintenance, and decommissioning phases of the Proposed Scheme.

4.3.2. The Proposed Scheme will follow best practice by integrating the environmental considerations into the design process at all stages. The EIA will identify environmental effects and, if any, propose project specific mitigation measures to avoid, reduce or offset adverse environmental effects or maximise environmental benefits.

#### **ROCHDALE ENVELOPE**

4.3.3. It is common that major infrastructure projects include flexibility within the proposal to allow for detailed design or if conditions are found that would otherwise prevent or delay construction. For example to allow for detailed design of mechanical facilities by a specialist manufacturer post consent or to respond to poor ground conditions. The EIA is therefore often based on design parameters, and this approach is typically referred to as the 'Rochdale Envelope', and it allows for a

realistic worst-case assessment to be undertaken. The approach to the assessment has been informed by current best practice guidance, as set out within the Planning Inspectorate's Advice Note 9: Rochdale Envelope (Ref. 4.4).

- 4.3.4. The 'parameters' approach presents the maximum envelope within which the built development may be undertaken as assessment of the parameters ensures the comprehensive reasonable 'worst-case' assessment of the full area within which the Proposed Scheme could be brought forward. This ensures the assessment of environmental effects associated with the Proposed Scheme will be the reasonable worst case, and that the actual development to be carried out within the parameters would be no worse than the effects reported in this ES.
- 4.3.5. By developing a realistic worst-case scenario in response to critical technical and engineering parameters, as well as the emerging findings of the EIA and feedback from stakeholders, it is possible to strike a balance between the level of design information needed for the purpose of EIA and the application for consent and while still retaining the level of design flexibility needed as the Proposed Scheme moves into detailed design and construction.
- 4.3.6. As the EIA process progresses, the iterative assessments will inform the design process and support the identification of a design freeze that is flexible enough to accommodate change in future stages but not so flexible that it could overstate or unnecessarily amplify the potential environmental impacts of the Proposed Scheme.

#### **DEFINING THE STUDY AREA**

- 4.3.7. The spatial scope for each environmental topic is the area which is likely to be impacted by the Proposed Scheme. It will depend on a number of factors including:
- The physical footprint of the Proposed Scheme;
  - The baseline environment; and
  - The manner and extent to which an environmental effect may occur.
- 4.3.8. The Study Area for each environmental topic is set out within the respective chapters of this EIA Scoping Report (see **Chapters 5 to 19**), along with an explanation for why that study area has been adopted.

#### **ESTABLISHING BASELINE CONDITIONS**

- 4.3.9. Each technical chapter of the ES will define the baseline against which the likely significant environmental effects of the construction and/or operation of the Proposed Scheme will be assessed.
- 4.3.10. The baseline environment includes the existing environmental characteristics and conditions based on surveys undertaken and information available at the time of the assessment. Baseline conditions will be established by:
- Site visits and surveys;
  - Desk based studies;
  - Review of secondary information, previous environmental studies and publicly available information and databases; and
  - Modelling.

- 4.3.11. An overview of the baseline conditions for each environmental aspect, based on information obtained to date, are set out within the respective chapters of this EIA Scoping Report (see **Chapters 5 to 18**).
- 4.3.12. The baseline conditions used in the ES will vary depending on the timing of surveys or the date at which data sources have been produced and/or assessed. It is anticipated that information required to inform the baseline environment for the assessments will be based on data obtained or surveys completed by the Applicant between Q1 2024 and Q3 2024, as well as existing baseline data collected prior to this presented in previous environmental studies for the area, for example information obtained for developments in the area including approved developments such as Net Zero Teesside and Northern Gateway Container Terminal and proposed developments such as H2 Teesside, where considered to be valid and relevant.
- 4.3.13. Data obtained from third-party sources may be older, but the origin of all third-party data will be clearly outlined, alongside any limitations and assumptions.
- 4.3.14. Baseline data which is deemed to be confidential in nature, such as that relating to protected species, will be provided in separate confidential appendices to the ES, due to the sensitivity of such species records.

## **LIMITATIONS**

- 4.3.15. The period of validity for each set of baseline data collected will be set out in the ES and, where appropriate, the requirement for any repeat surveys will be specified, such as for species data.
- 4.3.16. In order to collect baseline data, it may be necessary to collect data on site. Where it is not possible to access private land, data will be collected from publicly accessible land only or obtained from other sources.

## **ESTABLISHING FUTURE BASELINE CONDITIONS**

- 4.3.17. The ES will also include the outline of the likely evolution of the existing baseline without implementation of the Proposed Scheme based on available information and knowledge. This information will be set out in the description of the Proposed Scheme (which is proposed to be Chapter 2 of the ES).
- 4.3.18. Throughout the EIA process the Applicant will consider developments to be included in the future baseline and development to be assessed as part of the cumulative effects assessment (see **Chapter 19: Cumulative Effects** of this EIA Scoping Report for further information).

## **4.4 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS**

- 4.4.1. The ES will report on the likely significant environmental effects for the construction, operation (including maintenance) and decommissioning phases of the Proposed Scheme and will report an estimate, by type and quantity, of expected residues and emissions.
- 4.4.2. The design of the Proposed Scheme will continue to be progressed during the EIA process. There will be a need to continue refining the design up to the detailed design stage, requiring a certain level of flexibility to be maintained.
- 4.4.3. The detailed design and construction methodology for the Proposed Scheme will be developed within these parameters without the need for further assessment, although design approvals from

the relevant local planning authority will be required to confirm compliance with the assessed parameters.

- 4.4.4. The following criteria will be considered when determining significance:
- Likelihood of occurrence;
  - Geographical extent;
  - Adherence of the proposals to legislation and planning policy;
  - Adherence of the proposals to international, national and local standards;
  - Sensitivity of the receiving environment or other receptor;
  - Value of the affected resource;
  - Whether the effect is temporary or permanent (to be defined within the ES);
  - Whether the effect is short, medium or long-term in duration (to be defined within the ES);
  - Whether the effect is reversible or irreversible (to be defined within the ES);
  - Inter-relationship between effects (both cumulatively and in terms of potential effect interactions); and
  - The outputs of stakeholder and public engagement.
- 4.4.5. The methodology for assessing the significance of an effect will vary between environmental factors but in principle, will be based on the environmental sensitivity (or value/importance) of a receptor and the magnitude of change from baseline conditions.
- 4.4.6. Where topic-specific guidance requires that specific criteria or scales for determining significance are to be used, this will be outlined in the relevant chapter.
- 4.4.7. In the absence of topic-specific guidance, both the magnitude of change and sensitivity (or value/importance) will be assessed on a scale of high, medium, low, and negligible. The significance of each effect will be assessed against the magnitude of change and the sensitivity (or value/importance) of the receptor or receiving environment using the matrix in **Table 4-1**.

**Table 4-1 - Matrix of Determining Significance of Effect**

	<b>Sensitivity of Receptor / Receiving Environment to Change</b>			
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Negligible</b>
<b>High</b>	Major	Major to Moderate	Moderate	Negligible
<b>Medium</b>	Major to Moderate	Moderate	Minor to Moderate	Negligible
<b>Low</b>	Moderate	Minor to Moderate	Minor	Negligible
<b>Negligible</b>	Negligible	Negligible	Negligible	Negligible

- 4.4.8. When a range (e.g. Major to Moderate) had been listed in **Table 4-1**, significance criteria will be defined in accordance with technical guidance in the respective ES chapters. Where such guidance isn't available, professional judgement will be used to define the significance.

- 4.4.9. Generally, only Moderate and Major effects are considered to be significant, whereas Negligible and Minor effects are considered to be not significant.
- 4.4.10. Within the ES, tables which summarise the likely significant effects will be provided within each technical chapter. These tables will outline sensitive receptors, mitigation measures and residual effects (i.e. once mitigation has been taken into account). Distinctions will be made between direct and indirect; short, medium, and long-term; permanent and temporary; and positive and negative effects.
- 4.4.11. Inter-project cumulative effects of other existing and approved projects and intra-project combined effects (i.e., the cumulation of multiple environmental effects arising from the Proposed Scheme) will be considered in a separate section as outlined in **Chapter 19: Cumulative Effects** of this EIA Scoping Report.

### **APPROACH TO MITIGATION**

- 4.4.12. IEMA issued 'Shaping Quality Development' in November 2015 (Ref. 4.5) and 'Delivering Quality Development' (Ref. 4.6) in July 2016. In accordance with these guidance documents, three types of mitigation will be identified and used within the ES:
- Primary mitigation – modifications to the location or design during the pre-application phase that are treated as an inherent part of the Proposed Scheme;
  - Secondary mitigation – actions that will require further activity in order to achieve the anticipated outcome. The effectiveness of such measures will be assessed within the ES and appropriate mitigation will be secured by the DCO or other suitable mechanism; and
  - Tertiary mitigation – actions that would occur with or without input from the EIA. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are standard to meet other existing legislative requirements, or actions that are standard practices used to manage commonly occurring environmental effects. These measures are treated as an inherent part of the Proposed Scheme.
- 4.4.13. The primary and tertiary mitigation will be presented in the Proposed Scheme description in the ES and within the individual ES chapter for each environmental topic. Primary and tertiary mitigation will be referred to as 'embedded mitigation'. The assessment of the likely significant environmental effects for the pre-mitigation scenario will take embedded mitigation into account in determining the magnitude of change.
- 4.4.14. Following assessment of the likely significant effects of the Proposed Scheme, any further secondary mitigation measures (referred to as 'additional mitigation') will be outlined within the individual ES chapters. These mitigation measures will further reduce a negative effect or enhance a positive one. For example, the preparation of a travel plan or landscape planting.
- 4.4.15. A summary of the embedded mitigation will be included in the Consideration of Alternatives chapter of the ES, which will accompany the application for a development consent. A Register of Commitments will also document the additional mitigation to ensure suitable identification mitigation and monitoring beyond the application for development consent. This will include mitigation presented in this EIA Scoping Report that is relied on to scope out issues from subsequent stages of the EIA. The delivery of these mitigation measures will be secured through requirements in the draft DCO and other suitable mechanisms, as appropriate.

- 4.4.16. Protective provisions are a further mechanism by which mitigation measures to protect the interests of utility owners will be secured. Relevant protective provisions will be included within the draft DCO as required.

## **MONITORING**

- 4.4.17. The EIA Regulations (Ref. 4.2) require, where appropriate, the monitoring of potential significant adverse effects. Where monitoring arrangements are proposed as part of the mitigation, this will be detailed within each of the topic chapters of the ES and within the Register of Commitments and draft DCO (as appropriate) and the results of any monitoring will be shared with relevant organisations, where applicable

## **4.5 CONSIDERATION OF ALTERNATIVES**

- 4.5.1. Regulation 14(2)(d) of the EIA Regulations (Ref. 4.2) states that an ES should include:

*“a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment.”*

- 4.5.2. As part of the iterative design process, the Proposed Scheme will continue to evolve to take account of matters such as environmental constraints and opportunities. This will be recorded within the ES as embedded mitigation.
- 4.5.3. The assessment of alternatives will include a consideration of alternative technologies, sites, infrastructure locations, the construction strategy and best available technology (BAT) (where relevant).
- 4.5.4. Alternatives considered at this stage are reported in **Chapter 2: Site and Proposed Scheme Description** of this EIA Scoping Report. The PEIR and the ES will present the consideration of alternatives for the Proposed Scheme as the design has evolved, as well as the key reasoning for selecting the chosen options (location and technology) including a comparison of environmental effects.

## **4.6 ASSESSMENT OF TRANSBOUNDARY EFFECTS**

- 4.6.1. Regulation 32 of the EIA Regulations (Ref. 4.2) sets out the procedural duties required where the Secretary of State (SoS) deems that a Nationally Significant Infrastructure Project (NSIP) is likely to have significant effects on the environment in a European Economic Area (EEA) State; or where an EEA State deems that its environment is likely to be significantly affected by an NSIP. Further guidance is provided in the Planning Inspectorate’s Advice Note 12: Transboundary Impacts and Process (Ref. 4.7). As such, a description of any transboundary impacts that will be experienced as a result of the Proposed Scheme will be provided in the ES and this assessment of transboundary effects will be of effects experienced in other EEA States as a consequence of the Proposed Scheme. An initial screening of potential transboundary effects is provided in **Appendix 4A**.

## **4.7 ASSESSMENT OF HEAT AND RADIATION**

- 4.7.1. Schedule 4 to the EIA Regulations (Ref. 4.2) requires consideration of the likely significant effects of the Proposed Scheme resulting from the emission of heat, light and radiation. However, no significant sources of such emissions are anticipated and as such it is proposed to scope this topic

out of the ES. Further information on this can be found in **Chapter 10: Landscape and Visual** and **Chapter 14: Major Accidents and Disasters** of this EIA Scoping Report.

## 4.8 STRUCTURE OF THE ES

4.8.1. At this stage it is anticipated that the ES will be structured as follows:

- Volume 1 – Main Text:
  - Chapter 1: Introduction;
  - Chapter 2: Description of the Site and Proposed Scheme;
  - Chapter 3: Regulator, Planning and Energy Policy;
  - Chapter 4: Consideration of Alternatives;
  - Chapter 5: Approach to EIA;
  - Chapter 6: Air Quality;
  - Chapter 7: Noise and Vibration;
  - Chapter 8: Terrestrial Biodiversity;
  - Chapter 9: Marine and Freshwater Biodiversity;
  - Chapter 10: Water Environment and Flood Risk;
  - Chapter 11: Climate Resilience;
  - Chapter 12: Greenhouse Gases;
  - Chapter 13: Materials and Waste;
  - Chapter 14: Traffic and Transport;
  - Chapter 15: Major Accidents and Disasters;
  - Chapter 16: Shipping and Navigation;
  - Chapter 17: Cumulative Effects; and
  - Chapter 18: Summary of Likely Significant Effect
- Volume 2 – Appendices
- Volume 3 – Figures
- Volume 4 – Non-Technical Summary

4.8.2. It is anticipated that the following topics will be scoped out of the assessment given the scale, nature and environmental context of the Proposed Scheme, as outlined in **Table 4-2**.

**Table 4-2 - Topics to be Scoped Out**

Topic	Justification
Landscape and Visual	Please see <b>Chapter 10: Landscape and Visual</b> of this EIA Scoping Report
Cultural Heritage	Please see <b>Chapter 16: Cultural Heritage</b> of this EIA Scoping Report
Population and Human Health	Please see <b>Chapter 17: Population and Human Health</b> of this EIA Scoping Report
Geology and Soils	Please see <b>Chapter 18: Geology and Soils</b> of this EIA Scoping Report and supporting <b>Appendix 18A</b> .

Topic	Justification
Aviation	There are no current civil or military aviation facilities within 15km. Teesside International Airport is the closest to the Site and located approximately 19km south west.
Emissions of Heat, Light and Radiation	No significant sources of such emissions are anticipated, further detail is provided in <b>Chapter 10 Landscape and Visual</b> and <b>Chapter 14 Major Accidents and Disasters</b> of this EIA Scoping Report.

## ADDITIONAL DOCUMENTATION

- 4.8.3. A number of supporting application documents which will not form part of the ES, but which will be relied upon and referred to within the ES, will be submitted as part of the application for development consent. Such documents will include, but not limited to, the ES Non-Technical Summary (NTS) and a Register of Commitments.

## 4.9 COORDINATION OF ASSESSMENTS

- 4.9.1. There are several other associated assessments that will be undertaken to support the application for development consent as follows:

### HABITAT REGULATIONS ASSESSMENT

- 4.9.2. The overarching aim of the Habitat Regulations Assessment (HRA) is to determine, in view of a site's conservation objectives and qualifying interests, whether a plan (either in isolation and/or in combination with other plans or projects) could lead to adverse effects on the integrity of a National Network Site (either a statutory designated Special Protection Area (SPA) or Special Area of Conservation (SAC)) (Ref. 4.8).
- 4.9.3. Given the sensitivities of certain surrounding habitats and the range of species they can support, works at the site are likely to require assessment of other important ecological features (Ref. 4.9) and an HRA will be prepared. If 'likely significant effects' (LSE) are identified, a detailed assessment will be provided to assess whether the proposals could result in adverse effects on the integrity of relevant international sites. Further information on habitats and associated species can be found in **Chapter 7: Biodiversity**.
- 4.9.1. Whilst the overarching objectives of EIA and HRA are similar, their scope, level of detail and terminology vary. As such, these processes will be undertaken separately. However, the scope presented within this EIA Scoping Report has been developed to ensure that the needs of these processes have been considered to ensure a coordinated assessment.

### WATER FRAMEWORK DIRECTIVE ASSESSMENT

- 4.9.2. The Water Framework Directive (WFD) assessment will comprise a screening assessment (stage 1), scoping assessment (stage 2), with the requirement for impact assessment (stage 3) determined at the conclusion of the scoping stage. The WFD assessment will consider the potential for both construction and operational impacts from the Proposed Scheme upon the relevant WFD quality elements, for WFD surface water and groundwater bodies likely to be impacted. This includes identifying likely risks to: biodiversity; the biological, physico-chemical and hydromorphological quality of the WFD surface water bodies and; groundwater quality of the WFD groundwater bodies;



and the likely ability of good-practice methods to manage risks associated with pollutants typically experienced during construction and during the operational phase.

## FLOOD RISK ASSESSMENT

- 4.9.3. The majority of the Proposed Scheme is located within Flood Zone 1, however as shown in **Figure 2.1a** some areas are within Flood Zone 2 and Flood Zone 3, and as such a Flood Risk Assessment (FRA) will be required (Ref. 4.10). The FRA will qualitatively assess the potential implications of the Proposed Scheme on flood risk to people and property elsewhere, as well as assessing the potential risk of flooding to the Proposed Scheme. Although considered unlikely at the stage, if required, the FRA may be supported by hydraulic modelling of the proposed works.

## NAVIGATION RISK ASSESSMENT

- 4.9.4. The overarching aim of the Navigation Risk Assessment (NRA) is to determine, in view of the Proposed Scheme's location on the River Tees, whether the Proposed Scheme's marine infrastructure could lead to adverse effects on navigation within the river. The NRA will consist of river navigation analysis, the identification of baseline risk controls, stakeholder engagement and risk assessments. The NRA will inform the proposed Shipping and Navigation chapter of the ES.

## 4.10 ASSUMPTIONS AND LIMITATIONS

- 4.10.1. At the time of preparing this Report the Proposed Scheme design continues to evolve it is recognised that:
- The land requirements of the Proposed Scheme within the Site boundary are yet to be wholly finalised;
  - Potential areas for ecological mitigation and BNG are yet to be confirmed; and
  - The structure of the ES and coordination of additional supporting assessments are based on the Proposed Scheme design and parameters found in Chapter 2: **Site and Proposed Scheme Description**.

## 4.11 REFERENCES

- Ref. 4.1 National Infrastructure Planning. (2020). 'Advice Note 7 (Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements'. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-and-environmental-statements/>
- Ref. 4.2 UK Government (2017). The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at: [The Infrastructure Planning \(Environmental Impact Assessment\) Regulations 2017 \(legislation.gov.uk\)](https://www.legislation.gov.uk/uksi/2017/1003/contents/made)
- Ref. 4.3 IEMA. 'IEMA Quality Mark'. Available at: <https://www.iema.net/corporate-programmes/eia-quality-mark>
- Ref. 4.4 National Infrastructure Planning. (2018). 'Advice Note Nine: Rochdale Envelope'. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislationand-advice/advice-notes/advice-note-nine-rochdale-envelope/>
- Ref. 4.5 IEMA. (2015) 'Environmental Impact Assessment Guide to Shaping Quality Development'. Available at: <https://www.iema.net/download-document/7014>
- Ref. 4.6 IEMA, (2016). 'Environmental Impact Assessment Guide to Delivering Quality Development' Available at: <https://www.iema.net/download-document/7014>
- Ref. 4.7 National Infrastructure Planning. (2020). 'Advice Note Twelve: Transboundary Impacts and Processes'. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and->



- Ref. 4.8** [advice/advice-notes/advice-note-twelve-transboundary-impacts-and-process](https://www.gov.uk/government/publications/changes-to-the-habitats-regulations-2017/changes-to-the-habitats-regulations-2017)  
DEFRA (2021) Policy Paper: 'Changes to the Habitats Regulations 2017'. Available at:  
<https://www.gov.uk/government/publications/changes-to-the-habitats-regulations-2017/changes-to-the-habitats-regulations-2017>
- Ref. 4.9** CIEEM (2019) 'Guidelines for Ecological Impact Assessment in the UK and Ireland'. Available at:  
<https://cieem.net/wp-content/uploads/2019/02/Combined-EcIA-guidelines-2018-compressed.pdf>
- Ref. 4.10** DEFRA (2017) Guidance: 'Flood Risk Assessment in Flood Zones 2 and 3'. Available at:  
<https://www.gov.uk/guidance/flood-risk-assessment-in-flood-zones-2-and-3>

## 5 AIR QUALITY

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### 5.1 INTRODUCTION

5.1.1. This chapter considers the air quality impacts that may arise during construction, operation and maintenance and decommissioning of the Proposed Scheme (as described in **Chapter 2 Site and Proposed Scheme Description** of this EIA Scoping Report), and any potential significant effects. It sets out the proposed methodology for the air quality assessment on sensitive receptors and identifies those impacts that can be scoped out of the assessment. Where necessary, further assessment will be presented in the Preliminary Environmental Impact Report (PEIR) and Environmental Statement (ES).

### 5.2 LEGISLATION, POLICY AND GUIDANCE

5.2.1. This section outlines the legislation, policy and guidance relevant to the air quality assessment.

#### LEGISLATION

5.2.2. The legislation relevant to the air quality assessment are:

- Environment Act 1995 (Ref. 5.1) The Environment Act 1995 makes provision about targets, plans and policies for improving the natural environment. The Environment Act 1995 requires local authorities and other public bodies to review and document local air quality within their area. Where there are areas which do not meet the UK air quality standards, the relevant area is declared an Air Quality Management Area (AQMA), and an Air Quality Action Plan (AQAP) must be drawn up to secure improvements in air quality.
- Environmental Protection Act 1990 (Ref. 5.2) Section 79 – Control of Dust and Particulates Associated with Construction gives the following definitions of statutory nuisance relevant to dust and particles:
  - “Any dust, steam, smell or other effluvia arising from industrial, trade or business premises or smoke, fumes or gases emitted from premises so as to be prejudicial to health or a nuisance”;
  - and
  - “Any accumulation or deposit which is prejudicial to health or a nuisance”.

Following this, Section 80 states that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses. There are no statutory limit values for dust deposition above which ‘nuisance’ is deemed to exist. Whether a nuisance has arisen is contextual and requires having regard to the existing conditions and the change which has occurred.

- Air Quality (England) Regulations 2000 (Ref. 5.3) Sets out the statutory objectives for air quality in England for the purpose of Local Air Quality Management (LAQM).
- Air Quality Standards Regulations 2010, as amended in 2016 (Ref. 5.4) The Air Quality Standards Regulations were derived from the European Union Ambient Air Quality Directive and set legally binding thresholds for the concentration of pollutants in air for the protection of health and ecosystems. In the Standards Regulations, the thresholds are referred to as ‘limit values’. The limit values for nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM<sub>10</sub>) are the same

concentration levels as the relevant objectives in the Air Quality Regulations 2010, and the limit value for PM<sub>2.5</sub> is an annual mean concentration of 25µg/m<sup>3</sup>.

- Environment (Miscellaneous Amendments) (EU) Regulations 2020 (Ref. 5.5) Regulation 2 of the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 updated the Air Quality Standards Regulations 2010 to include a limit value of 20µg/m<sup>3</sup> for PM<sub>2.5</sub> from 2020 which supersedes the Air Quality Standards Regulations 2016. The limit values for NO<sub>2</sub> and PM<sub>10</sub> remained the same concentration levels as the relevant Air Quality Strategy (AQS) objectives.
- Environment Act 2021 (Ref. 5.6) Creates the legislative framework by which statutory air quality targets are set by reference to plans such as the Environmental Improvement Plan 2021.
- The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (Ref. 5.7) The legislation sets out targets to reduce concentrations of PM<sub>2.5</sub> to 10µg/m<sup>3</sup> by 2040. It also states that exposure to PM<sub>2.5</sub> must be reduced by at least 35% by 2040.

## POLICY

5.2.3. National Policy Statements (NPSs) set out the primary policy against which an application for the development consent of the Proposed Scheme will be considered. The Overarching National Policy Statement for Energy (EN-1) (Ref. 5.8) and NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref. 5.9) are relevant to the Proposed Scheme.

5.2.4. Other relevant policy is outlined below:

- UK Air Quality Strategy (Ref. 5.10) The Government's policy on air quality within the UK is set out in the Air Quality Strategy for England, Scotland, Wales, and Northern Ireland. The AQS provides a framework for reducing air pollution in the UK with the aim of meeting the requirements of European Union legislation. The AQS sets out the air quality objectives to be met (as made statutory by the Air Quality (England) Regulations 2000), including:
  - NO<sub>2</sub> – 40µg/m<sup>3</sup> annual mean, 200µg/m<sup>3</sup> hourly mean not to be exceeded more than 18 times a year;
  - PM<sub>10</sub> – 40µg/m<sup>3</sup> annual mean, 50µg/m<sup>3</sup> daily mean not to be exceeded more than 35 times a year; and
  - PM<sub>2.5</sub> – As per Environmental Improvement Plan 2023 below.
- National Planning Policy Framework (NPPF) 2023 (Ref. 5.11) Sets out the Government's planning policies for England and how these are expected to be applied. Whilst NPPF does not contain specific policies for nationally significant infrastructure projects, it has the potential to be considered important and relevant to the Secretary of State (SoS) consideration of the project.
- Environmental Improvement Plan 2023 (Ref. 5.12) The Environmental Improvement Plan sets out the UK Government's vision for improving the environment in the UK. Goal 2: Clean Air specifies how the government will improve air quality in the UK by setting out targets that are presented in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (Ref. 5.6). These include an interim target for the PM<sub>2.5</sub> annual mean of 12µg/m<sup>3</sup> by January 2028, and an annual mean PM<sub>2.5</sub> concentration target of 10µg/m<sup>3</sup> by 2040.
- Clean Air Strategy 2019 (Ref. 5.13) - This sets out measures that aim to reduce emissions from all sources of air pollution, making air healthier to breathe, protecting nature and boosting the economy. The Clean Air Strategy also proposes tough new goals to cut public exposure to airborne particulate matter, as per the recommendation made by the World Health Organisation (WHO).

## GUIDANCE

5.2.5. The air quality assessment will be undertaken accordance with the following good practice guidance documents:

- National Planning Practice Guidance 2021 (Ref. 5.14) Explains the processes and tools that can be used through the planning system in England. Specific to air quality, it provides information on the types of assessment that may be required for new development as well as sources of information for planners.
- Local Air Quality Management Technical Guidance 2022 (Ref. 5.15) The Department for Environment, Food and Rural Affairs (Defra) has published technical guidance for use by local authorities in their review and assessment work.
- Guidance on the Assessment of Dust from Demolition and Construction 2024 (Ref. 5.16) Published by the Institute of Air Quality Management (IAQM) this document was produced to provide guidance on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance, PM<sub>10</sub> impacts on public exposure and impact upon sensitive ecological receptors) and to identify mitigation measures appropriate to the level of risk identified.
- Land-use Planning and Development Control: Planning for Air Quality 2017 (Ref. 5.17) Environmental Protection UK (EPUK) and the IAQM published guidance that offers comprehensive advice on:
  - When an air quality assessment may be required;
  - What should be included in an assessment; how to determine the significance of any air quality impacts associated with a development; and
  - The possible mitigation measures that may be implemented to minimise these impacts.
- Specified generators: dispersion modelling assessment 2023 (Ref. 5.18) The Environment Agency published guidance for the assessment of generators on air quality. This guidance was utilised to define the study area for the assessment of the operation phase.
- European Environment Agency Guidance (Ref. 5.19) This guidance sets out methodologies on how to model air quality impacts from marine vessels.
- Air emissions risk assessment for your environmental permit 2021 (Ref. 5.20) This Environment Agency guidance provides details on how to assess emissions for an environmental permit.

## 5.3 CONSULTATION

5.3.1. No consultation has been undertaken to date. However, it is expected that the following authorities/organisations will be consulted prior to completion of the assessment to discuss the approach to the assessment and methodology:

- Stockton-on-Tees Borough Council (SoTBC);
- Redcar and Cleveland Borough Council (RCBC);
- Hartlepool Borough Council (HBC)
- Environment Agency; and
- Natural England.

## 5.4 STUDY AREA

### CONSTRUCTION

- 5.4.1. For the assessment of dust impacts during construction, the Study Area (the Construction Dust Study Area) is limited to the zone within 250m of the Site or within approximately 50m of routes used by construction vehicles up to 250m from the Site. This conforms to the IAQM dust guidance (Ref. 5.16). However, it is also conservative; in that it assumes that construction works could occur anywhere within the Site and captures all potential vehicle routes within approximately 250m of the Site (not just the Site entrance).

### OPERATION AND MAINTENANCE

- 5.4.2. The Study Area for the operation phase for air quality extends approximately 10km in all directions from the Regasification Facility within the Site Boundary. The extent of the Study Area aligns with Environment Agency Guidance (Ref. 5.20) for emitters of less than 50MW and is depicted in **Figure 5-1** within Volume III of this EIA Scoping Report.

### DECOMMISSIONING

- 5.4.3. For the decommissioning phase, the Study Area is the same as the one outlined for the construction phase (though based on the elements of the Proposed Scheme which are being decommissioned i.e. the above ground elements of the Regas and Storage Area (rather than the Site as a whole).

## 5.5 BASELINE CONDITIONS AND FUTURE BASELINE

### DATA SOURCES

- 5.5.1. The local air quality described in this section has been informed by the following data sources:

- Stockton-on-Tees Borough Council Air Quality Reports (Ref. 5.21);
- Redcar and Cleveland Borough Council Air Quality Reports (Ref. 5.22);
- Hartlepool Borough Council Air Quality Reports (Ref. 5.23)
- Defra's Air Pollution Background Mapping (Ref. 5.24);
- Air Pollution Information System (APIS) (Ref. 5.25);
- Multi Agency Geographic Information System Mapping (MAGIC) (Ref. 5.26); and
- Google Earth (Ref. 5.27).

- 5.5.2. A summary of the baseline conditions is presented below.

### EXISTING BASELINE

#### Stockton-on-Tees Borough Council

- 5.5.3. SoTBC has no AQMAs within its administrative area and, therefore, it is not required to produce any AQAPs.

SoTBC measures annual mean concentrations of NO<sub>2</sub> within its jurisdiction using NO<sub>2</sub> diffusion tubes and automatic monitors. Monitored concentrations within 10km of the Site are shown in **Table 5-1** and **Figure 5.1**. Concentrations of NO<sub>2</sub> in 2022 are well within the annual mean objective of 40µg/m<sup>3</sup>.



**Table 5-1 - Monitored Annual Mean NO<sub>2</sub> Concentrations by Stockton-on-Tees Borough Council**

Monitoring Site	Monitor Type	X , Y (m)	Distance to the Site	Monitored NO <sub>2</sub> Concentration (µg/m <sup>3</sup> )				
				2018	2019	2020	2021	2022
UKA00153	Automatic	446928, 523597	5.2km	17.3	16.5	13.0	13.0	12.9
UKA00599	Diffusion Tube	444331, 519164	9.3km	19.0	17.8	12.1	14.7	13.4
S01	Diffusion Tube	443225, 522314	9.3km	-	-	14.8	17.6	15.0
S05	Diffusion Tube	445024, 517414	9.8km	24.1	22.1	18.0	20.1	18.8
S08	Diffusion Tube	444598, 521807	7.9km	23.0	20.6	15.1	18.0	16.4
S09	Diffusion Tube	446383, 523972	5.8km	19.2	19.0	12.1	16.5	13.4
S10	Diffusion Tube	444783, 517906	9.7km	<b>40.5</b>	34.9	25.8	35.1	28.5
S12	Diffusion Tube	446112, 518388	8.3km	36.6	34.0	27.5	29.6	30.0
S13	Diffusion Tube	444677, 518386	9.5km	29.5	28.9	22.6	25.3	22.6
S14	Diffusion Tube	446312, 520022	7.1km	29.8	27.0	22.4	23.5	22.9



### **Redcar and Cleveland Borough Council**

- 5.5.4. RCBC also has no AQMAs within its administrative area and, therefore, it is not required to produce any AQAPs.
- 5.5.5. RCBC measures annual mean concentrations of NO<sub>2</sub> within its jurisdiction using NO<sub>2</sub> diffusion tubes and automatic monitors. Details of locations and monitored concentrations within 10km of the Site are shown in **Table 5-2** below. No exceedances of the annual mean objective for NO<sub>2</sub> were monitored.





**Table 5-2 - Monitored Annual Mean NO<sub>2</sub> Concentrations by Redcar and Cleveland Borough Council**

Monitoring Site	Monitor Type	X , Y (m)	Distance to the Site	Monitored NO <sub>2</sub> Concentration (µg/m <sup>3</sup> )				
				2018	2019	2020	2021	2022
Redcar Dormanstown	Automatic	458379, 523486	4.2km	10.0	9.9	9.9	11.0	10.0
R17, R18, R19	Diffusion Tube	458379, 523486	4.2km	17.5	15.2	13.2	11.5	11.7
R27	Diffusion Tube	454712, 520678	3.9km	29.8	24.8	21.0	23.1	20.6
R51	Diffusion Tube	455379, 520543	4.1km	-	-	11.7	12.1	11.8
R52	Diffusion Tube	460292, 524876	6.0km	-	-	16.3	15.7	14.9
R54	Diffusion Tube	453831, 516212	8.3km	-	-	27.3	30.5	24.4
R58	Diffusion Tube	455518, 519353	5.3km	-	-	-	13.8	12.3
R59	Diffusion Tube	460869, 523657	6.7km	-	-	-	13.9	14.0
R60	Diffusion Tube	454864, 517813	6.7km	-	-	-	16.9	17.7
R61	Diffusion Tube	459695, 524414	5.4km	-	-	-	-	11.7
R62	Diffusion Tube	461308, 523946	7.1km	-	-	-	-	9.3



Monitoring Site	Monitor Type	X , Y (m)	Distance to the Site	Monitored NO <sub>2</sub> Concentration (µg/m <sup>3</sup> )				
				2018	2019	2020	2021	2022
R63	Diffusion Tube	453462, 516420	8.1km	-	-	-	-	10.5

## Hartlepool Borough Council

- 5.5.6. HBC has no AQMAs within its administrative area and, therefore, it is not required to produce any AQAPs.
- 5.5.7. HBC measures annual mean concentrations of NO<sub>2</sub> within its jurisdiction using NO<sub>2</sub> diffusion tubes and automatic monitors. Details of locations and monitored concentrations within 10km of the Site are shown in **Table 5-3** below. No exceedances of the annual mean objective for NO<sub>2</sub> were monitored.

**Table 5-3 - Monitored Annual Mean NO<sub>2</sub> Concentrations by Hartlepool Borough Council**

Monitoring Site	Monitor Type	X , Y (m)	Distance to the Site	Monitored NO <sub>2</sub> Concentration (µg/m <sup>3</sup> )				
				2017	2018	2019	2020	2021
A1	Automatic	450300, 529700	5.8km	18.5	17.9	13.9	7.6	12.1
A3	Automatic	451429, 532312	7.1km	-	13.0	12.3	9.9	10.3
S1	Diffusion Tube	450400, 533900	8.9km	9.5	7.5	13.4	9.7	11.6
S3	Diffusion Tube	449600, 529100	5.8km	9.0	7.8	14.2	10.7	11.9

- 5.5.8. In **Table 5-1**, **Table 5-2** and **Table 5-3** the restrictions put in place during the Covid-19 pandemic are likely to have influenced roadside pollutant concentrations measured in both 2020 and 2021. Data obtained for the year 2022 represents the first year of monitoring deemed to be substantially unaffected by Covid-19 restrictions.

### Background Air Quality Data

- 5.5.9. **Table 5-4** summarises the background pollutant concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> for 2021 to 2023 taken from Defra's Background Mapping (Ref. 5.24) (last updated August 2020). Mapped data are available of a 1km<sup>2</sup> resolution grid across the UK.

**Table 5-4 – Defra Background Mapping Concentrations in the Vicinity of the Site**

Easting (m)	Northing (m)	NO <sub>2</sub>			PM <sub>10</sub>			PM <sub>2.5</sub>		
		2021	2022	2023	2021	2022	2023	2021	2022	2023
453500	524500	20.1	19.8	19.5	10.4	10.3	10.2	7.0	6.9	6.8
454500	524500	27.1	26.9	26.7	10.1	10.0	9.9	6.9	6.8	6.7
454500	525500	27.5	27.3	27.1	10.2	10.1	10.0	7.0	6.9	6.8

- 5.5.10. The data show that background concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are well below the relevant objectives and all pollutants are showing improvements in concentrations over recent years.

### **FUTURE BASELINE**

- 5.5.11. Pollutant concentrations are expected to decrease in the future, most noticeably at the roadside, as well as at background sites. This is due to the replacement of older, more polluting vehicles with newer, cleaner vehicles as emissions technologies improve and with the introduction of electric vehicles into the fleet. The decreasing trend in baseline levels is expected to be strongest for NO<sub>2</sub> concentrations (for which road transport is the most significant local emissions source) and weakest for particulate matter. Notwithstanding this, pollutant concentrations across the Study Area are predicted to be lower in the future than current levels, with lowered risk of exceedance of the air quality objectives.

## **5.6 SENSITIVE RECEPTORS**

- 5.6.1. The identified sensitive receptors are as follows:

- Teesmouth and Cleveland Coast Ramsar, Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI);
- Teesmouth National Nature Reserve (NNR);
- Seaton Dunes and Common SSSI Local Nature Reserve (LNR);
- Workers of the various nearby industries;
- Users of the Cleveland Golf Course;
- Users of the River Tees;
- Users of various public right of ways (PRoW); and
- Residential properties in South Bank and Grangetown.

## **5.7 DESIGN, MITIGATION AND ENHANCEMENT MEASURES**

### **CONSTRUCTION**

- 5.7.1. Relevant design, mitigation and enhancement measures for construction will be identified in the ES. These are likely to include the adoption of best practicable means (BPM) and will be set out in the Code of Construction Practice (CoCP) which will be secured through a requirement of the DCO (from IAQM dust guidance (Ref. 5.16)), such as:
- Plan site layout so that machinery and dust causing activities are located away from sensitive receptors, as far as is possible;
  - Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable;
  - No bonfires or burning of materials during the construction phase; and
  - Ensure vehicles entering and leaving sites are covered to prevent the escape of waste materials during transport.
- 5.7.2. An Outline CoCP will be prepared and submitted with the application for development consent.

### **OPERATION AND MAINTENANCE**

- 5.7.3. Relevant design, mitigation and enhancement measures for operation will be identified in the ES. These are likely to include the adoption of BPM, such as minimising emissions during hotelling/unloading marine vessels. These measures will be secured as a requirement of the DCO.

## DECOMMISSIONING

- 5.7.4. Relevant design, mitigation and enhancement measures for decommissioning will be identified in the ES. These are likely to include the adoption of BPM, such as the production of a Decommissioning Plan to minimise impacts during this phase. These measures will be secured by a requirement in the DCO.

## 5.8 DESCRIPTION OF POTENTIAL LIKELY SIGNIFICANT EFFECTS

### CONSTRUCTION

- 5.8.1. The potential effects associated with the construction phase may include:
- Emissions of dust, PM<sub>10</sub> and PM<sub>2.5</sub> from construction activities (prior to mitigation).

### OPERATION AND MAINTENANCE

- 5.8.2. The potential effects associated with the operation and maintenance phase include:
- Impacts on ecological sites and human receptors from emissions to air.

### DECOMMISSIONING

- 5.8.3. It is assumed that after the lifespan of the Proposed Scheme, before or upon 25 years, a process of decommissioning will take place. This is assumed to last up to 12 months. Potential significant impacts associated with decommissioning would likely be similar to those listed for construction above. Surveys may be required to assess if there have been changes in the air quality baseline at that time, however it is likely that air quality will have improved in the future.

### SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT

- 5.8.4. A summary of the elements scoped in and out of the assessment for air quality are set out in **Table 5-5**. Each element is accompanied by a justification for its inclusion or exclusion from further assessment based on professional judgement.

**Table 5-5 - Elements Scoped In or Out of Further Assessment**

Phase	Element	Scoped In	Scoped Out	Justification
Construction	Impacts from dust, PM <sub>10</sub> and PM <sub>2.5</sub>	✓		During construction there is the potential to generate dust close to Teesmouth and Cleveland Coast SSSI and nearby places of work.
	Emissions of pollutants from road traffic and construction plant	✓		Given the scale of the Proposed Scheme, it is not expected to significantly increase levels of traffic during construction, and any impacts on local air quality will be temporary and reversible. Therefore, a qualitative assessment of emissions is proposed.

Phase	Element	Scoped In	Scoped Out	Justification
Operation and maintenance	Impacts on ecological sites and human receptors from emissions to air	✓		<p>The potential for likely significant effects from increases in pollutant concentrations during the operation of the Proposed Scheme is currently indeterminable until further investigation is undertaken. At this stage, it is scoped in to the EIA process until further assessment and information is collated. When this is available, the Applicant will liaise accordingly with the relevant stakeholders.</p> <p>The assessment would be supported by dispersion modelling for the relevant pollutants from the following sources of emissions:</p> <ul style="list-style-type: none"> <li>■ Marine vessels</li> <li>■ Submerged Combustion Vaporisers (SCVs)</li> </ul>
	Emissions of pollutants from road traffic		✓	<p>Given the largely unmanned and remotely operated nature of the Proposed Scheme, it is not anticipated to attract any significant vehicular movements (with the exception of occasional maintenance vehicles) and therefore is not expected to result in significant effects.</p>
	Emissions of pollutants during venting scenarios		✓	<p>It is envisaged that the venting of the facility will be for maintenance or emergency situations only, with the nearest location of public exposure being 2.5km away from the site. It is unlikely that gases released during venting will have an impact at this distance from the Proposed Scheme. These will also be rare in occurrence and will not lead to a significant effect.</p>
	Emissions of odours from fugitive leaks		✓	<p>The limit of hydrogen sulphide is 3ppm and the nearest location of public exposure will be 2.5km away from the Site. The amount of gas lost from fugitive leaks will be minimal and will disperse</p>

Phase	Element	Scoped In	Scoped Out	Justification
				quickly after it has escaped from the facility. Therefore, it is unlikely that odours from fugitive leaks will lead to a significant effect.
Decommissioning	Impacts from dust, PM <sub>10</sub> and PM <sub>2.5</sub>		✓	It is assumed that after the lifespan of the Proposed Scheme, before or upon 25 years, a process of decommissioning will take place. This is assumed to last up to 12 months. Potential significant impacts associated with decommissioning would likely be similar to those listed for construction above. Further surveys may be required to assess if there have been changes in the air quality baseline at that time, however it is likely that air quality will have improved in the future.[]

## 5.9 PROPOSED METHODOLOGY

- 5.9.1. As identified in **Section 5.8**, there is the potential for significant effects on air quality during construction and operation and maintenance of the Proposed Scheme. Further assessment that is proposed to be undertaken for the PEIR and ES is outlined below.

### CONSTRUCTION

- 5.9.2. The assessment of construction impacts will be undertaken in line with IAQM guidance on the assessment of dust from demolition and construction (Ref. 5.16). This guidance provides a risk-based approach to the assessment of the potential for dust effects from four types of activities taking account of the sensitivity of the environment surrounding the works: demolition; earthworks; construction; and track-out (the movement of dust/mud offsite on construction vehicles). The IAQM guidance on the assessment of dust from demolition and construction recommends that the significance of effects is only assessed after mitigation (in this case, the primary mitigation) is considered and advises that, in the majority of circumstances, no significant effects are likely. The main purpose of the assessment of dust risk is to ensure that any proposed mitigation is appropriate for the Proposed Scheme.

### OPERATION AND MAINTANENCE

- 5.9.3. At this time, it is not possible at this stage to scope out significant effects from increases to pollutant concentrations during the operation and maintenance of the Proposed Scheme. This will continue to be reviewed and discussed with relevant stakeholders.
- 5.9.4. If it is considered that there is the potential for significant effects during operation, dispersion modelling will be undertaken to assess whether there is a risk of significant effects from the operation of marine vessels and SCVs associated with the Proposed Scheme. If required, a

quantitative assessment would be undertaken utilising the Atmospheric Dispersion Modelling System (ADMS) model (v6.0) published by Cambridge Environmental Research Consultants (CERC).

- 5.9.5. The model will be set-up to replicate the movements of the various marine vessels associated with the operation of the Proposed Scheme.
- 5.9.6. The assessment of emissions would follow the methodology proposed by European Environment Agency guidance (Ref. 5.19) for calculating emissions, specifically from shipping. The guidance adopts a tiered approach, with increasing sophistication, to inventory generation, as follows:
- Tier 1: uses default emission rates based on fuel consumption;
  - Tier 2: emission rates based on fuel consumption and engine types in the fleet; and
  - Tier 3: emission rates for vessel movements stratified by engine technology either as mass/kWh or mass/hr.
- 5.9.7. It is assumed that Tier 3 would be the adopted methodology, based on the International Convention for the Prevention of Pollution from Ships (MARPOL) emission limits (Ref. 5.28) and likely marine engine sizes.
- 5.9.8. The modelling will also include emissions from the operation of the SCVs. The SCVs will be powered by regasified LNG with resulting pollutants released from multiple stacks.
- 5.9.9. The assessment would use five years of recent meteorological data obtained from Loftus meteorological station to assess the impacts from marine vessels on a worst-case basis.

## **SIGNIFICANCE OF EFFECT CRITERIA**

### **Construction**

- 5.9.10. The IAQM assessment methodology recommends that significance criteria are only assigned to the identified risk of dust impacts occurring from a construction activity with appropriate mitigation measures in place. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect will normally be negligible.
- 5.9.11. For the assessment of the impact of exhaust emissions from plant used on-site and construction vehicles accessing and leaving the Site on local concentrations of NO<sub>2</sub> and particulate matter, the significance of residual effects will be determined using professional judgement and the principles outlined in the EPUK/IAQM guidance (Ref. 5.17), which are described below.

### **Operation**

#### **Human Receptors**

- 5.9.12. For long term (annual mean) pollutant concentrations, the IAQM/EPUK guidance (Ref. 5.17) recommends that the degree of an impact is described by expressing the magnitude of incremental change in pollution concentration as a proportion of the relevant Air Quality Assessment Level (AQAL) and examining this change in the context of the new total concentration and its relationship with the assessment criterion. This is summarised in **Table 5-6**.



**Table 5-6 – Air Quality Impact Descriptors Relating to Individual Receptors (Human)**

Long term average concentration at receptors in assessment year	% Change in Concentration Relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Notes

AQAL = Air Quality Assessment Level, which for this assessment related to the UK Air Quality Strategy objectives.

Where the %change in concentrations is <0.5%, the change is described as 'Negligible' regardless of the concentration.

When defining the concentration as a percentage of the AQAL, 'without scheme' concentration should be used where there is a decrease in pollutant concentration and the 'with scheme;' concentration where there is an increase.

Where concentrations increase, the impact is described as adverse, and where it decreases as beneficial.

- 5.9.13. The IAQM/EPUK impact descriptors are used as the starting point to make a judgement on significance of effects, since other impacts/effects may be important. The IAQM/EPUK guidance (Ref. 5.17) states that the assessment of overall significance should be based on professional judgement, taking into account several factors, including the:
- Existing and future air quality in the absence of the Proposed Scheme;
  - Extent of current and future population exposure to the impacts; and
  - Influence and validity of any assumptions adopted when undertaking the prediction of impacts.
- 5.9.14. The IAQM/EPUK guidance (Ref. 5.17) states that for most transport related emissions, long-term average concentrations are the most useful for evaluating the severity of impacts. For short term (sub-hourly, hourly and daily averages) pollutant concentrations from sources such as the Proposed Scheme's LNG vessels, the IAQM/EPUK guidance (Ref. 5.17) recommends that the impact is described with reference to the magnitude of the impact from the process without consideration of the background concentrations. This assumes that the background concentrations will be smaller than the peak concentrations caused by a substantial plume. Where the impact is ≤10% of an AQAL, it is negligible; impacts in the range 11-20% are slight, 21-50% are moderate and those ≥51% are substantial.
- 5.9.15. As a precautionary approach, both long-term and short-term average concentrations will be considered with respect to judging likely significant effects as part of this assessment.

## Ecological Receptors

- 5.9.16. Following Environment Agency guidance (Ref. 5.20), impacts would be screened against the following criteria:
- The short-term Process Contribution (PC) is less than 10% of the short-term environmental standard for the ecological receptor; and
  - The long-term PC is less than 1% of the long-term environmental standard for the ecological receptor.
- 5.9.17. If the above criteria are not met, additional criteria would be applied as follows:
- If the short-term PC exceeds the above screening criteria, significant effects cannot be screened out and further assessment is needed; or
  - If the long-term PC is greater than 1% and the Predicted Environmental Concentration (PEC) is less than 70% of the long-term environmental standard, the emissions are insignificant, and no further assessment is required; or
  - If the PEC is greater than 70% of the long-term environmental standard, significant effects cannot be screened out and further assessment is needed.
- 5.9.18. Where impacts cannot be screened as insignificant (alone or cumulatively with other developments), the significance of effect will be reported in the Terrestrial Biodiversity and Marine Biodiversity chapters of the ES, based on the receptor sensitivity/importance and impact magnitude for ecology receptors are detailed in **Chapter 7: Biodiversity**.

## 5.10 ASSUMPTIONS AND LIMITATIONS

- 5.10.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- The above scope of work is subject to consultation with organisations identified in Section 5.3; and
  - The assessment will include the latest design information available at the time of the submission. Where design information is not available, reasonable worst-case assumptions will be made.

## 5.11 REFERENCES

- Ref. 5.1** UK Government. (1995). Environment Act. Available at: <https://www.legislation.gov.uk/ukpga/1995/25/contents>
- Ref. 5.2** UK Government. (1990). Environmental Protection Act. Available at: <https://www.legislation.gov.uk/ukpga/1990/43/contents>
- Ref. 5.3** UK Government. (2000). 'The Air Quality (England) Regulations'. Available at: <https://www.legislation.gov.uk/uksi/2000/928/contents/made>
- Ref. 5.4** UK Government. (2010). 'The Air Quality Standards Regulations'. Available at: <https://www.legislation.gov.uk/uksi/2010/1001/contents/made>
- Ref. 5.5** Defra. (2020). 'The Environmental (Miscellaneous Amendments) (EU Exit) Regulations'. Available at: <https://assets.publishing.service.gov.uk/media/5f6b6452d3bf7f723b6c35fb/SI-The-Environment-Miscellaneous-Amendments-EU-Exit-Regulations-2020.pdf>

- Ref. 5.6** UK Government. (2021). Environment Act. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>
- Ref. 5.7** UK Government. (2023). 'The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023'. Available at: [The Environmental Targets \(Fine Particulate Matter\) \(England\) Regulations 2023 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2023/11/contents/enacted)
- Ref. 5.8** Department of Energy Security and Net Zero. (2023). 'Overarching National Policy Statement for Energy (EN-1)'. Available at: <https://assets.publishing.service.gov.uk/media/65bbfdbc709fe1000f637052/overarching-nps-for-energy-en1.pdf>
- Ref. 5.9** Department of Energy Security and Net Zero. (2023). 'National Policy Statement for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4)'. Available at: <https://assets.publishing.service.gov.uk/media/65a789a8867cd8000d5ae9be/nps-natural-gas-supply-infrastructure-pipelines-en4.pdf>
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## 6 NOISE AND VIBRATION

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### 6.1 INTRODUCTION

- 6.1.1. This chapter considers the noise and vibration impacts that may arise during construction, operation and maintenance and decommissioning of the Proposed Scheme (as described in **Chapter 2: Site and Proposed Scheme Description** of this EIA Scoping Report), and any potential significant effects on sensitive receptors. It sets out the proposed methodology for the noise and vibration assessment and identifies those impacts that can be scoped out of the assessment. Where necessary, further assessment would be presented in the Preliminary Environmental Impact Report (PEIR) and then the Environmental Statement (ES).
- 6.1.2. This chapter should be read in conjunction with **Chapter 7 Biodiversity**.

### 6.2 LEGISLATION, POLICY AND GUIDANCE

- 6.2.1. This section outlines the relevant legislation, policy and guidance for the noise and vibration assessment associated with the Proposed Scheme.

#### LEGISLATION

- 6.2.2. The legislation relevant to the noise and vibration assessment are:
- Control of Pollution Act (1974) (Ref. 6.1) Principal legislation that seeks to control noise during demolition and construction.
  - Environmental Protection Act (1990) (Ref. 6.2) Deals with noise and vibration as a statutory nuisance but does not directly apply to construction works.

#### POLICY

- 6.2.3. National Policy Statements (NPSs) set out the primary policy against which an application for the development consent of the Proposed Scheme will be considered. The Overarching National Policy Statement for Energy (EN-1) (Ref. 6.3) and NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref. 6.4) are relevant to the Proposed Scheme.
- 6.2.4. Other relevant policy is outlined below:
- Noise Policy Statement for England (NPSE) (2010) (Ref. 6.5) Sets out the Government's long-term policy vision for noise. With respect to health and quality of life and in the context of Government policy on sustainable development, the NPSE aims to: 1) avoid significant adverse impacts; 2) mitigate and minimise adverse impacts; and 3) where possible, contribute to the improvement.
  - National Planning Policy Framework (NPPF) (2023) (Ref. 6.6) Sets out the Government's planning policies for England and how these are expected to be applied. Whilst NPPF does not contain specific policies for nationally significant infrastructure projects, it has the potential to be considered important and relevant to the Secretary of State (SoS) consideration of the project.

- National Policy Stockton-on-Tees Borough Council – Local Plan (2019) (Ref. 6.7) The Local Plan sets out the Council’s policies to guide planning decisions and establishes the framework for the sustainable economic growth and development of the Borough up to 2032. Policy ENV7 “*Ground, Air, Water, Noise and Light Pollution*” states:

*“All development proposals that may cause groundwater, surface water, air (including odour), noise or light pollution either individually or cumulatively will be required to incorporate measures as appropriate to prevent or reduce their pollution so as not to cause unacceptable impacts on the living conditions of all existing and potential future occupants of land and buildings, the character and appearance of the surrounding area and the environment.”*

## GUIDANCE

6.2.5. The noise and vibration assessment will be undertaken accordance with the following guidance documents:

- BS 5228:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites, Part 1: Noise (BS 5228-1) (2014) (Ref. 6.8);
- BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites - Part 2: Vibration (BS 5228-2) (2014) (Ref. 6.9);
- Design Manual for Roads and Bridges (DMRB) LA 111 - Noise and vibration. Revision 2 (LA 111) (2020) (Ref. 6.10);
- BS ISO 9613-2 Acoustics – Attenuation of sound during propagation outdoors – Engineering method for the prediction of sound pressure levels outdoors (2024) (Ref. 6.11);
- Planning Practice Guidance: Noise (PPGN) (2014) (Ref. 6.12); and
- National Physical Laboratory. Good Practice Guide for Underwater Noise Measurement (UNM) (2014) (Ref. 6.13).

6.2.6. BS 5228-1 (Ref. 6.8) Annex F provides guidance on estimating noise from construction sites.

6.2.7. The underwater noise assessment will rely on several documents and papers, a list of the guidance and information sources that will be used to inform the assessment is set out in **Volume II Appendix 6A: Underwater Noise Assessment Guidance and Information Sources** of this EIA Scoping Report.

## 6.3 CONSULTATION

6.3.1. At the time of writing, no consultation in relation to the noise and vibration assessment has taken place. Engagement will be undertaken with Stockton-on-Tees Borough Council (SoTBC) and Natural England to agree the approach to the baseline noise surveys and assessment of noise and vibration impacts, where required.

## 6.4 STUDY AREA

6.4.1. The following noise and vibration Study Area(s) are considered for human receptors:

- Construction noise – A Study Area of 300m from the Site boundary. LA 111 states “*A study area of 300m from the closest construction activity is normally sufficient to encompass noise sensitive receptors.*”. Furthermore, BS 5228-1 (Ref. 6.8) states “*At distances over 300 m noise predictions have to be treated with caution, especially where a soft ground correction factor has been applied, because of the increasing importance of meteorological effects.*”

- Vibration (construction and operation) – A Study Area of 100m from the Site boundary. LA 111 (Ref. 6.10) states “A study area of 100m from the closest construction activity with the potential to generate vibration is normally sufficient to encompass vibration sensitive receptors.”
- Development generated road traffic noise (construction and operation) – A Study Area of 50m from public road with the potential to experience an increase in baseline noise level of 1dB(A) or more. This aligns with the LA 111 (Ref. 6.10) construction traffic Study Area.
- Operational noise from fixed plant and equipment – A study area of 600m from the Site boundary should be sufficient to identify significant effects. This is based on experience of similar sites.

6.4.2. The Study Area(s) may be amended in the PEIR and ES based on receipt of additional information.

6.4.3. With the exception of development generated road traffic, no sensitive human receptors (these are defined in **Section 6.6**) have been identified within any of the above Study Area(s).

6.4.4. The study areas for ecology are detailed in **Chapter 7 Biodiversity** of this EIA Scoping Report.

## **6.5 BASELINE CONDITIONS AND FUTURE BASELINE**

### **DATA SOURCES**

6.5.1. The noise and vibration described in this section has been informed by the following data sources:

- Publicly accessible satellite imagery to identify sources of noise and vibration;
- Defra strategic noise mapping (Ref. 6.14); and
- Defra noise important areas (Ref. 6.15).

6.5.2. A summary of the baseline conditions is presented below.

### **EXISTING BASELINE**

6.5.3. The Proposed Scheme is in an industrialised area of Seal Sands, Stockton-on-Tees. There are several operational industrial premises surrounding the Proposed Scheme, including Navigator Terminals Seal Sands; Exolum Seal Sands Terminal; ConocoPhillips Teesside Terminal; Teesside Biomass and Industrial Chemicals Limited; and Teesside Gas Processing Plant.

6.5.4. The existing noise baseline near to the Site is anticipated to be dominated by industrial noise generated by processes and activities taking place on operational sites.

6.5.5. The existing noise baseline in Port Clarence (closest residential area to Site, 3.3km to the south-west of the Site) is anticipated to be dominated by road traffic noise from vehicles on the A1046 and A178. Secondary noise sources are expected to include local industrial and commercial activities.

6.5.6. The existing vibration baseline is assumed to be zero as no vibration generating sources have been identified in the desktop review.

6.5.7. The existing underwater noise baseline is anticipated to be dominated by ship and boat movements, and by other marine activities such as maintenance dredging in the River Tees.

6.5.8. Baseline ecology conditions are detailed in **Chapter 7 Biodiversity** of this EIA Scoping Report, this chapter includes terrestrial and marine ecology.

## FUTURE BASELINE

- 6.5.9. Future development is proposed in the vicinity of the Site which may influence baseline noise levels, however, given that existing land surrounding the Site is already heavily developed, the future baseline noise levels in the vicinity of the Site are not anticipated to substantially increase due to future development. In addition, future baseline noise levels in Port Clarence are not anticipated to substantially increase due to future development.
- 6.5.10. Similarly Future baseline vibration levels are not anticipated to change because of future development. Future baseline underwater noise levels are also not anticipated to substantially increase due to future development.
- 6.5.11. Further consideration of inter-project cumulative effects with committed development schemes in the vicinity of the Site will be considered within the PEIR and ES as part of the cumulative effects assessment.

## 6.6 SENSITIVE RECEPTORS

- 6.6.1. Human based sensitive receptors are as follows:
- Dwellings;
  - Public buildings (e.g. hospitals, schools, community facilities);
  - Public rights of way (PRoW);
  - Designated sites that are accessed by humans.
- 6.6.2. No dwellings, public buildings, PRoWs or designated sites (accessed by humans) have been identified within the noise and vibration Study Area. The closest dwellings to the Proposed Scheme are in Port Clarence.
- 6.6.3. Sensitive receptors for ecology are detailed in **Chapter 7 Biodiversity** of this EIA Scoping Report.

## 6.7 DESIGN, MITIGATION AND ENHANCEMENT MEASURES

### CONSTRUCTION

- 6.7.1. Relevant design, mitigation and enhancement measures will be identified in the ES. These will include the adoption of best practicable means (BPM) secured by inclusion in the Code of Construction Practice (CoCP), such as:
- Careful planning of construction activities and selection of appropriate plant to reduce noise emissions;
  - Selection of quiet and low vibration equipment and methods wherever possible;
  - Shutting down equipment when not in use;
  - Soft start procedures for piling to be used;
  - Plant and equipment to be maintained in good working order and operated such that noise and vibration emissions are minimised; and
  - Use of acoustic screening, where necessary.



## **OPERATION AND MAINTENANCE**

- 6.7.2. Relevant design, mitigation and enhancement measures will be identified in the ES. These may include the following:
- Careful selection of appropriate plant and working methods to reduce noise emissions;
  - Selection of quiet and low vibration equipment;
  - Setting noise limits for operational plant; and
  - Installation of noise barriers.

## **DECOMMISSIONING**

- 6.7.3. Decommissioning works include removal of onshore above ground structures in the Regas and Storage Area. The measures to control noise and vibration during the decommissioning phase will be the same as identified for the construction phase. A specific decommissioning plan will also be written.
- 6.7.4. The following structures are expected to left in situ, below ground structures, Export Pipeline and Marine Jetty.

## **6.8 DESCRIPTION OF POTENTIAL LIKELY SIGNIFICANT EFFECTS**

### **CONSTRUCTION**

- 6.8.1. The potential effects associated with the construction phase include:
- Noise impacts on terrestrial ecology receptors arising from construction activities;
  - Underwater noise impacts on marine ecology receptors arising from the construction of the Marine Jetty and any dredging activities.

### **OPERATION AND MAINTENANCE**

- 6.8.2. The potential effects associated with the operation and maintenance phase include:
- Noise impacts on terrestrial ecology receptors from the operation and maintenance of the Marine Jetty and Regas and Storage Area; and
  - Underwater noise impacts arising from the movement of marine vessels and maintenance on marine ecology receptors.

### **DECOMMISSIONING**

- 6.8.3. After the lifespan of the Proposed Scheme (the design life of the Regas and Storage Area is 25 years), decommissioning will take place (which is anticipated to take 12 months). The potential effects associated with the decommissioning phase will include noise impacts on terrestrial ecology receptors from the removal of above ground structures from the Regas and Storage Area.
- 6.8.4. There will be no underwater noise impacts on marine ecology receptors as the Marine Jetty will be retained. In addition, the Export Pipeline will also be retained.

### **SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT**

- 6.8.5. A summary of the elements scoped in and out of the assessment for noise and vibration are set out in **Table 6-1**. Each element is accompanied by a justification for its inclusion or exclusion from further assessment based on professional judgement and guidance, where relevant.

**Table 6-1 – Elements Scoped In or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
Human receptors – noise	Construction Operation and maintenance Decommissioning		✓	<p>The closest human receptors (i.e. those listed in <b>Section 6.6</b>) are more than 2km from the Site boundary. At this distance, site activity noise is expected to be insignificant.</p> <p>Proposed Scheme generated road traffic numbers, during all phases, are anticipated to be low due to the scale and requirements of the Site as set out in <b>Chapter 2 Site and Proposed Scheme Description: Site and Chapter 13: Traffic and Transport</b>. Overall, it is considered that the changes in road traffic noise are expected to be insignificant. In addition, due to weight and height restrictions on the A1046 just west of the A1046/Seaton Carew Road junction, the preferred construction route of heavy goods vehicles (HGV) would not pass through Port Clarence, thereby avoiding the main residential areas on the local road network.</p>
Human receptors – vibration	Construction Operation and maintenance Decommissioning		✓	<p>The closest human receptors (i.e. dwellings) are more than 2km from the Site boundary. At this distance, site activity noise is expected to be insignificant.</p> <p>Proposed Scheme generated road traffic numbers, during all phases, are anticipated to be low due to the scale and requirements of the Site as set out in <b>Chapter 2: Site and Proposed Scheme Description and Chapter 13: Traffic and Transport</b>. In addition, due to weight and height restrictions on the A1046 just west of the A1046/Seaton Carew Road junction, the preferred construction route of HGV would not pass through Port Clarence, thereby avoiding the main residential areas on the local road network. Changes in road traffic vibration are expected to be insignificant.</p>

Element	Phase	Scoped In	Scoped Out	Justification
<b>Terrestrial ecology – onsite generated noise</b>	Construction Operation and maintenance Decommissioning	✓		Proximity of sensitive receptors which may experience temporary noise impacts.  <b>Chapter 7: Biodiversity</b> states that there are protected/notable sites and species within and adjacent to the Site, including badger, birds (breeding and wintering), otter, water vole, reptiles, amphibians and invertebrates.
<b>Terrestrial ecology – offsite traffic noise</b>	Construction Operation and maintenance Decommissioning		✓	Proposed Scheme generated road traffic numbers, during all phases, are anticipated to be low due to materials being delivered to the Site by river. Changes in road traffic noise are expected to be insignificant.
<b>Terrestrial ecology – vibration</b>	Construction Operation and maintenance Decommissioning		✓	Proposed Scheme generated road traffic numbers, during all phases, are anticipated to be low due to the materials being delivered to the Site by river. Changes in road traffic noise are expected to be insignificant.
<b>Marine ecology receptors – underwater noise</b>	Construction	✓		Proximity of sensitive receptors which may experience underwater noise impacts. Only activities which have the potential to increase underwater noise levels will be considered, e.g. piling.  The Proposed Scheme will result in up to 2 vessel movements per week which is not considered to be a material change to the existing baseline.



Element	Phase	Scoped In	Scoped Out	Justification
<b>Marine ecology receptors – underwater noise</b>	Decommissioning		✓	There will be no underwater works during the decommissioning phase, Marine Jetty will be retained.
<b>Marine ecology receptors – airborne noise</b>	Construction Operation and maintenance Decommissioning		✓	This includes noise and vibration generating activities which take place on land. In underwater acoustic modelling the air-to-water interface is treated as a reflecting surface to airborne sound, therefore, airborne noise is not considered to transmit into the water and is scoped out of this assessment.

## 6.9 PROPOSED METHODOLOGY

- 6.9.1. As identified in **Section 6.8**, there is the potential for significant effects on noise and vibration during the construction, operation and maintenance and decommissioning phases of the Proposed Scheme on terrestrial and marine ecological receptors. Further assessment that is proposed to be undertaken for the PEIR and ES is outlined below.

### SITE SURVEY

- 6.9.2. Baseline noise surveys will be completed to establish the noise climate at locations considered representative of terrestrial ecology receptors close to the Site, to be agreed with Natural England. Consideration will be given to the use of existing industrial businesses on Site, which may restrict monitoring locations due to health and safety requirements associated with their control of major accident hazards (COMAH) status.

### CONSTRUCTION AND DECOMMISSIONING: AIRBORNE NOISE

- 6.9.3. The prediction of construction and decommissioning noise levels will be based on the method presented in BS 5228-1 (Ref. 6.8) and using available information in conjunction with professional judgement.
- 6.9.4. Noise predictions will be based on information including the following: construction/decommissioning programme, working hours, key construction activities, working areas; haul roads, plant list and percentage on times.
- 6.9.5. The noise level 'with' and 'without' construction and decommissioning activities will be assessed against criteria to be agreed in conjunction with the terrestrial ecology assessment.
- 6.9.6. Mitigation measures will be presented where appropriate, including BPM.

### CONSTRUCTION: UNDERWATER NOISE

- 6.9.7. Based on the UNM guidance document (Ref. 6.13) and in the absence of detailed environmental information of the zone of influence for the Proposed Scheme, a simple practical spreading model will be used to approximate transmission loss and subsequent impact ranges from the underwater noise sources associated with the construction and decommissioning phases.
- 6.9.8. The model is a logarithmic equation that incorporates geometric spreading and absorption loss factors that is simple and efficient to provide first order calculations of the received (unweighted) levels with distance from the source.

### OPERATION: AIRBORNE NOISE

- 6.9.9. The prediction of operational noise levels will be based on the method presented in BS ISO 9613-2 (Ref. 6.11) and using available information in conjunction with professional judgement.
- 6.9.10. Noise predictions will be based on information including the following: details of fixed plant and equipment including manufacturers' data sheets, operational hours.
- 6.9.11. The noise level 'with' and 'without' operational activities will be assessed against criteria to be agreed in conjunction with the terrestrial ecology assessment.
- 6.9.12. Mitigation measures will be presented where appropriate, including BPM.

## SIGNIFICANCE OF EFFECT CRITERIA

- 6.9.13. As there are no sensitive human receptors within the Study Area, the noise chapter will report the findings of the noise modelling work. However, the significance of effect criteria will be reported in the terrestrial biodiversity and marine biodiversity chapters of the PEIR and ES, based on the receptor sensitivity/importance and impact magnitude for ecology receptors are detailed in **Chapter 7: Biodiversity** of this EIA Scoping Report.

## 6.10 ASSUMPTIONS AND LIMITATIONS

- 6.10.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- The assessment will include the latest design information available at the time of the submission. Where design information is not available, conservative assumptions will be made.

## 6.11 REFERENCES

- Ref. 6.1** UK Government. (1974) Control of Pollution Act, 1974. Available at: <https://www.legislation.gov.uk/ukpga/1974/40>
- Ref. 6.2** UK Government. Environmental Protection Act (1990). Available at: <https://www.legislation.gov.uk/ukpga/1990/43/contents>
- Ref. 6.3** UK Government. Department of Energy Security and Net Zero. (2023). Overarching National Policy Statement for energy (EN-1), 2023. Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1>
- Ref. 6.4** UK Government. Department of Energy Security and Net Zero. (2023). National Policy Statement for natural gas supply infrastructure and gas and oil pipelines (EN-4), 2023. Available at: <https://www.gov.uk/government/publications/national-policy-statement-for-natural-gas-supply-infrastructure-and-gas-and-oil-pipelines-en-4>
- Ref. 6.5** Defra (2010). Noise Policy Statement for England (NPSE). Available at: <https://www.gov.uk/government/publications/noise-policy-statement-for-england>
- Ref. 6.6** Department for Levelling Up, Housing & Communities. (2023). National Planning Policy Framework (NPPF), 2023. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>
- Ref. 6.7** National Policy Stockton on Tees Borough Council – Local Plan – 2019. Available at: <https://www.stockton.gov.uk/local-plan>
- Ref. 6.8** BS 5228:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites, Part 1: Noise (BS 5228-1).
- Ref. 6.9** BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites - Part 2: Vibration (BS 5228-2).
- Ref. 6.10** Design Manual for Roads and Bridges (DMRB) LA 111 - Noise and vibration. Revision 2 (LA 111), 2020. Available at: <https://www.standardsforhighways.co.uk/search/cc8cfcf7-c235-4052-8d32-d5398796b364>

- Ref. 6.11** BS ISO 9613-2 Acoustics – Attenuation of sound during propagation outdoors – Engineering method for the prediction of sound pressure levels outdoors (2024).
- Ref. 6.12** Department for Levelling Up, Housing & Communities. Planning Practice Guidance: Noise (PPGN), 2014. Available at: <https://www.gov.uk/guidance/noise--2>
- Ref. 6.13** National Physical Laboratory. Good Practice Guide for Underwater Noise Measurement (UNM), 2014. Available at: <https://www.npl.co.uk/special-pages/guides/gpg133underwater>
- Ref. 6.14** Defra. (2017). Strategic noise mapping Available at: <https://www.gov.uk/government/publications/strategic-noise-mapping-2019>
- Ref. 6.15** Defra (2024). Noise Action Planning Important Areas Round 3 England Available at: <https://www.data.gov.uk/dataset/948d6c4c-772e-4f55-9f39-97508e1cc701/noise-action-planning-important-areas-round-3-england>

## 7 BIODIVERSITY

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### 7.1 INTRODUCTION

- 7.1.1. This chapter considers the impacts of the Teesside Flexible Regas Port (the Proposed Scheme) on biodiversity (including terrestrial ecology, ornithology and marine ecology) that may arise during construction, operation (including maintenance) and decommissioning of the Proposed Scheme (as described in **Chapter 2: Site and Proposed Scheme Description** of this Environmental Impact Assessment Scoping Report), and potential significant effects. It sets out the proposed methodology for baseline data gathering and for the biodiversity assessment and identifies those impacts that can be scoped out of the assessment. Where necessary, further assessment would be presented in the Environmental Statement (ES).
- 7.1.2. Biodiversity interfaces with many other topics and as such, this chapter should be considered alongside the following chapters:
- **Chapter 5: Air Quality;**
  - **Chapter 6: Noise and vibration;**
  - **Chapter 8: Water Environment and Flood Risk;**
  - **Chapter 9: Landscape and Visual;**
  - **Chapter 10: Climate Resilience;**
  - **Chapter 13: Traffic and Transport;** and
  - **Chapter 15: Shipping and Navigation.**
- 7.1.3. This chapter is supported by the following figures:
- **Figure 7.1 – Site and other planning application site boundaries;**
  - **Figure 7.2 – Statutory designated sites;**
  - **Figure 7.3 – Non statutory designated sites;**
  - **Figure 7.4 – Habitats of Principal Importance;**
  - **Figure 7.5 – Waterbodies;**
  - **Figure 7.6 – BTO WeBS – Tees Estuary Low Tide Count Sectors;**
  - **Figure 7.7 – BTO WeBS – Tees Estuary High Tide Count Sectors;** and
  - **Figure 7.8 – Marine Zone of Influence and Study Area.**

### 7.2 LEGISLATION, POLICY AND GUIDANCE

- 7.2.1. This section outlines the relevant legislation, policy and guidance to the biodiversity assessment for the Proposed Scheme.

#### LEGISLATION

- 7.2.2. The relevant legislation for the assessment of biodiversity comprises:
- The Environment Act 2021 (Ref. 7.1) The Environment Act 2021 translates aspects of the government's "A Green Future: Our 25 Year Plan to Improve the Environment" into legislation. The Environment Act makes it mandatory, once the relevant secondary legislation is passed pursuant to the Act, for the vast majority of development projects to deliver a 10% Biodiversity Net Gain (BNG). Nationally Significant Infrastructure Projects (NSIPs) consented under the Planning Act 2008 (as amended) will also need to deliver a biodiversity net gain commitment,



although the percentage increase set will be controlled by the relevant Secretary of State either through individual National Policy Statements or by separately published statements. The statutory requirement for NSIPs to deliver BNG is expected to commence in November 2025.

- Convention on Wetlands of International Importance 1972 (Ref. 7.2) The UK Government is a signatory to the Convention on Wetlands of International Importance 1972 (the Ramsar Convention). The Ramsar Convention provides for the listing of wetlands of international importance. UK Government policy is to give sites listed under this convention (Ramsar Sites) the same protection as European sites and the new national site network.
- The Convention on the Conservation of European Wildlife and Natural Habitats 1979 (the 'Bern Convention') (Ref. 7.3) The principal aims of the Bern Convention are the conservation and protection of the wild plant and animal species (and the natural habitats thereof) listed in Appendices I and II of the Convention. It also seeks to increase cooperation between governments and to regulate the exploitation of species listed in Appendix III, which includes migratory fish species, cetaceans and grey seal (*Halichoerus grypus*).
- The Oslo and Paris Convention for the Protection of the Marine Environment in the North-East Atlantic 1992 (the OSPAR Convention) (Ref. 7.4) The OSPAR Convention provides a comprehensive approach to addressing sources of maritime pollution and other matters affecting the marine environment. Annex V of the Convention provides a framework for governments to develop their own conservation measures. The Convention includes a list of threatened and/or declining species and habitats which provides an overview of the biodiversity in need of protection in the north-east Atlantic and is used by the OSPAR Commission to guide the setting of priorities for further work. The area is broken up into five regions, with the Tees Estuary (and therefore Proposed Scheme) located in Region II: The Greater North Sea.
- The Agreement on the Conservation of Small Cetaceans in the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS) 1991 (Ref. 7.5) The aim of the agreement is to promote close cooperation amongst parties with a view of achieving and maintaining a favourable conservation status for small cetaceans. ASCOBANS is applied in all UK waters in accordance with existing statutory protection. A conservation and management plan forming an annex of the agreement obliges parties to engage in habitat conservation and management, surveys and research, pollution mitigation and public information.
- The Convention on Migratory Species of Wild Animals (The Bonn Convention) 1979 (Ref. 7.6) Provides protection for endangered migratory species (listed in Appendix I) and their habitats. Appendix II species are those that have an unfavourable conservation status that require international agreements for their conservation and management. The legal requirement for the strict protection of Appendix I and Appendix II species is provided by the Wildlife & Countryside Act (1981 as amended) (Ref. 7.7).
- The Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitat Regulations) (Ref. 7.8) transpose Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive) and elements of Directive 2009/147/EC on the conservation of wild birds (the Birds Directive) in England. These aim to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. These regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites. The regulations are amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Ref. 7.9) following the UK's withdrawal from the EU. These changes allow for new administrative and regulatory arrangements and the

creation of a national site network comprising the protected sites already designated under the Nature Directives, and any further sites designated under these regulations.

- Natural Environment and Rural Communities (NERC) Act 2006 (as amended) (Ref. 7.10) The NERC Act places a duty on the Secretary of State to maintain lists of species and habitats which are regarded as being of principal importance for the conservation and enhancement of biodiversity in England. These habitats of principal importance (HPI) and species of principal importance (SPI) are used to guide decision makers in implementing their duties to have regard to the conservation of biodiversity in England when carrying out their normal functions.
- Wildlife and Countryside Act (WCA) 1981 (as amended) (Ref. 7.7) The WCA 1981 (as amended) is the principal mechanism for the legislative protection of wildlife in England. This legislation is how the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) and the European Union Directives on the Conservation of Wild Birds (2009/147/EC) (the Birds Directive) and Natural Habitats and Wild Fauna and Flora (92/43/EEFC) (the Habitats Directive) are implemented in England.
- Badger Act 1992 (Ref. 7.11) Provides legal protection for badgers (*Meles meles*) by making it illegal to kill or injure a badger, disturb a badger while occupying a sett, or to damage or obstruct a badger sett.
- Countryside and Rights of Way Act 2000 (the CRoW Act) (Ref. 7.12) Details further measures for the management and protection of Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation.
- The Hedgerow Regulations 1997 (Ref. 7.13) Legislation that protects ‘important’ hedgerows from damage or destruction.
- The European Union (EU) Water Framework Directive (2000/60/EC) (WFD) as enacted into domestic law by the Water Environment WFD (England and Wales) (Amendment) Regulations 2017 (Ref. 7.14) The WFD originates from the EU but has been retained in UK law following its withdrawal from the EU. A fundamental requirement of the WFD is to attain ‘*Good Ecological Status*’, or ‘*Good Ecological Potential*’ within each defined water body by December 2027 at the latest and to ensure that any deterioration in status is prevented.
- Salmon and Freshwater Fisheries Act 1975 (SAFFA) (Ref. 7.15) SAFFA covers regulation of fisheries in England and Wales and includes legislation that restricts the introduction of polluting effluents, the obstruction of fish passage (screens, dams, weirs, culverts etc.), illegal means of fishing, permitted times of legal fishing and fishing licencing (which covers electric fishing).
- The Eel (England and Wales) Regulations 2009 (Ref. 7.16) Includes legal provisions to avoid actions that impede/obstruct eel migration/passage.
- Conservation of Seals Act 1970 (Ref. 7.17) The Act, under Section 1, protects all seals out to 12 nautical miles and prohibits the killing/taking of seals by the use of any poisonous substance or use of any firearm other than a rifle with specified ammunition without a licence.
- The Environmental Targets (Biodiversity) (England) Regulations 2023 (Ref. 7.18) Sets out legally binding targets to protect the environment, improve air and river quality, and boost nature. With reference to freshwater and marine biodiversity, Atlantic salmon (*Salmo salar*), brown trout (*Salmo trutta*), European eel, and white-clawed crayfish (*Austropotamobius pallipes*) are listed as priority species in the framework.
- Marine and Coastal Access Act 2009 (MCAA) (Ref. 7.19) Introduced a revised system of marine management, which enabled the UK Government to take a strategic approach to managing the marine environment. The MCAA established a new planning system for the marine environment, improved and simplified arrangements for managing marine development, created Marine

Conservation Zones (MCZ), introduced inshore fisheries reform, and aimed to provide greater recreational access to the coast.

## POLICY

- 7.2.3. National Policy Statements (NPS) set out the primary policy against which an application for the development consent of the Proposed Scheme will be considered. The Overarching National Policy Statement for Energy (EN-1) (Ref. 7.20) and NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref. 7.21) are relevant to the Proposed Scheme.
- 7.2.4. Within EN-1:
- Paragraphs 4.2.8, 4.2.9 and 4.2.18 discuss Habitat Regulations Assessment (HRA), Marine Conservation Zone (MCZ) assessments, and non-HRA/non-MCZ residual impacts with regards to the critical national priority (CNP) policy and how they are considered in the planning balance. HRA or MCZ residual impacts will be considered under the framework set out in the Habitats Regulations (Ref. 7.8) and the Marine and Coastal Access Act 2009 (Ref. 7.19) respectively.
  - Paragraph 4.3.20: States the Secretary of State have regard to the ambitions, goals and targets set out in the Government's Environmental Improvement Plan 2023 for improving the natural environment, including the achievement of 13 legally binding targets for England set under the Environment Act (e.g. biodiversity, tree and woodland cover, and Marine Protected Areas (MPA)).
  - Section 4.6: Discusses Environmental and BNG. Paragraph 4.6.2 states "Projects in England should consider and seek to incorporate improvements in natural capital, ecosystem services and the benefits they deliver when planning how to deliver biodiversity net gain". Paragraph 4.6.3 states "Currently biodiversity net gain policy in England only applies to terrestrial and intertidal components of projects. Principles for Marine Net Gain are currently being rolled out by the Government, who will provide guidance in due course. There are provisions in the environment Act 2021 to allow Marine Net Gain to be made mandatory for NSIPs in the future." Paragraph 4.6.1 notes "Although achieving biodiversity net gain is not currently an obligation on applicants, Schedule 15 of the Environment Act 2021 contains provisions which, when commenced, mean the Secretary of State may not grant an application for a Development Consent Order unless satisfied that a biodiversity gain objective is met in relation to the onshore<sup>2</sup> development in England to which the application relates."
  - Section 5.4: Discusses the generic biodiversity conservation effects, mitigation, and need to protect the most important biodiversity conservation interests have in relation to Secretary of State decision making associated with energy infrastructure. The ES should set out any effects on internationally, nationally and locally designated sites of ecological importance, on protected species and on habitats and other species (including mobile/migratory species) identified as being of principal importance for the conservation of biodiversity, including irreplaceable habitats. This section also describes the following:
    - Habitat regulations: The highest level of biodiversity protection is afforded to sites identified through international conventions. HRA is required to assess impacts of a project on Special Areas of Conservation (SAC) and Special Protection Areas (SPA). Listed Ramsar Sites, potential SPAs and possible SACs should also receive the same protection.

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<sup>2</sup> "The Environment Act 2021 also allows for an extension to offshore development in the future."

- SSSIs: For development considered likely to have an adverse effect on a SSSI, consent should not normally be granted, unless the benefits clearly outweigh the impact.
- MCZ: An MCZ Assessment should be undertaken as per the requirements under section 126 of the Marine and Coastal Access Act 2009 where significant impacts are expected.
- MPA: Guidance on managing environmental impacts of infrastructure in marine protected areas should be followed. Equal consideration of the effect of proposals should be given to all MPAs regardless of the legislation they were designated under.
- Regional and Local sites: National planning policy expects plans to identify and map these sites, and for policies to secure their protection from harm or loss and to help enhance them and their connection to wider ecological networks. Given the need for new nationally significant infrastructure, these should not be used in themselves to refuse consent.
- Ancient woodland, ancient trees, veteran trees and other irreplaceable habitats: Government policy commits to maintain and enhance the existing area of ancient woodland and known ancient and veteran trees, and to increase the percentage of ancient woodland in active management. Other types of irreplaceable habitats include blanket bog, limestone pavement, coastal sand dunes, spartina salt marsh swards, mediterranean saltmarsh scrub, and lowland fen. Consent should not be granted that results in loss or deterioration of irreplaceable habitats, ancient woodland, ancient trees or veteran trees unless outweighed by the benefits and a suitable compensation strategy exists.
- Protection and enhancement of habitats and species: important for the conservation of biodiversity in England, as well as for their benefit for climate change and adaptation, thereby requiring conservation action and are protected from adverse effects. Consent should not be granted that results in harm to a protected species or habitat unless there is an overriding public interest and other relevant legal tests are met. Proposals should consider restoration, creation and enhancement opportunities for wider biodiversity and ecosystem services and natural capital benefits.

#### 7.2.5. Within EN-4:

- Paragraph 2.10.11 states an impact assessment within the marine environment must be produced including appropriate mitigation measures to protect marine biodiversity where a development discharges brine to the sea. Paragraphs 2.13.25 and 2.13.16 state dredging and associated construction can have impacts on local marine, coastal and estuarine environments, and marine biodiversity, which can be of fundamental importance to bird and fish life. Paragraph 2.15.3 goes on to say that the Secretary of State must ensure the Marine Management Organisation (MMO) have been consulted and appropriate weight is attached to designate protected marine and coastal habitats, protected species, biodiversity, and the water environment.
- Paragraphs 2.21.23 to 2.21.33 also discusses considerations and effects a pipeline construction could have on biodiversity e.g. on grasslands, field boundaries (e.g. hedgerows), trees, woodlands, and watercourses. The ES must assess the biodiversity effects of the proposed route and of the main alternative routes considered. A marine licence should also be considered for developments within coastal and marine zones. Paragraphs 2.22.6 to 2.22.8 go on to discuss mitigation measures of a pipeline, such as reducing the working width, using horizontal directional drilling (HDD) under ancient woodland, or thrust bore under protected trees/hedgerows.

#### 7.2.6. Other relevant planning policy includes:

- National Planning Policy Framework (NPPF) 2023 (Ref. 7.22)
- Stockton-on-Tees Borough Council Local Plan 2019 (Ref. 7.23) The Local Plan sets out the Council's policies and proposals to guide planning decisions and establishes the framework for the sustainable economic growth and development of the Borough up to 2032. Relevant policies include Policy ENV5 'Preserve, Protect and Enhance Ecological Networks, Biodiversity and Geodiversity' and Policy EG4 'Seal Sands, North Tees and Billingham', which requires development proposals in the North Tees and Seal Sands to recognise the cumulative importance for bird species associated with the Teesmouth and Cleveland Coast SPA and Ramsar site:  
*"Appropriate development proposals will be encouraged at locations within the limits to development where: a. If necessary, land has been identified to provide appropriate strategic mitigation; or b. The applicant can demonstrate that the proposed development, in-combination with other proposals, will not adversely impact the Teesmouth & Cleveland Coast SPA and Ramsar site."*
- Tees Valley Local Biodiversity Action Plan (LBAP) (updated 2012) (Ref. 7.24) identifies local priorities for biodiversity and work to deliver agreed actions and targets for priority habitats and species, as well as locally important wildlife and nature sites. The current Tees Valley Biodiversity Action Plan covers a number of local authority areas, including Stockton-on-Tees. The cornerstone of the plan is habitat and species action plans for locally identified priority habitats and species. As of 2012, the number of priority species has increased significantly to 51.

## GUIDANCE

- 7.2.7. The biodiversity assessment will be undertaken accordance with the following good practice guidance documents. Technical guidance for features<sup>3</sup> or groups of features that will be used during the survey work to inform the assessment is noted in **Table 7-3** and **Table 7-19**.
- The Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. Second Edition v1.1 (Ref. 7.25) Provides guidance that is relevant to the assessment of potentially significant effects on ecology.
  - CIEEM (2017) Guidelines for Preliminary Ecological Appraisal: Second Edition (Ref. 7.26) Provides guidance that is relevant to the assessment of potentially significant effects on ecology.
  - BS 42020: 2013 Biodiversity: Code of Practice for Planning and Development (Ref. 7.27) Provides guidance that is relevant to the assessment of potentially significant effects on ecology.
  - BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations (Ref. 7.28) Gives recommendations and guidance on the relationship between trees and the design, demolition and construction process. It sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.
  - Natural England Standing Advice (2023). Protected species and development: advice for local planning authorities. How to assess a planning application when there are protected species on or near a proposed development site. (Ref. 7.29) Natural England's standing advice provides guidance on how protected species should be dealt with in the planning system.

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<sup>3</sup> Ecological feature is the term used in this chapter to describe terrestrial ecology and nature conservation receptors. This is to maintain consistency of terms between this assessment and the EclA guidance provided by CIEEM (CIEEM, 2018, updated 2019).

- Natural England/Forestry Commission (2022). Ancient woodland, ancient trees and veteran trees: advice for making planning decisions How to assess a planning application when there are ancient woodland, ancient trees or veteran trees on or near a proposed development site. (Ref. 7.30) This standing advice provides principles to adopt with specific reference to protection measures for ancient/veteran trees.
- The Planning Inspectorate (2022) Advice Note 10 (Ref. 7.31) Provides information regarding the HRA process for NSIP applications.
- The Planning Inspectorate (2017) Advice Note 11, Annex C (Ref. 7.32) Provides information regarding licensing of protected species for NSIP applications.
- Guidance for Pollution Prevention 2023 (Ref. 7.33) Provides environmental good practice guidance for the prevention of pollution, including within water environments. This is applicable to the entire UK.
- CIRIA 532 Control of Water Pollution from Construction Sites 2001 (Ref. 7.34) This document provides guidance for the control of water pollution arising from construction activities. It focuses on the potential sources of pollution from within sites and the effective methods of prevention.
- Clearing the Waters for All 2017 (Ref. 7.35) Guidance relating to assessment of impact of activity on coastal and estuarine waters, relating to the WFD (Ref. 7.14). Key stages to be considered are screening and scoping, to identify potential at risk receptors.
- North Atlantic Conservation Organisation (NASCO) Implementation plan for the period 2019-2024 (Ref. 7.36)

## 7.3 CONSULTATION

- 7.3.1. In respect of biodiversity, key consultees have been identified and focussed engagement (through both informal and statutory consultation) will be undertaken and recorded throughout the pre-application process. Key consultees identified to date include:
- Natural England;
  - Marine Management Organisation;
  - Environment Agency;
  - County Ecologist for Stockton-on-Tees Borough Council (SoTBC); and
  - Royal Society for the Protection of Birds (RSPB)
- 7.3.2. The aim of consultation will be to seek agreement on the proposed Study Area, ecological features to be included in the assessment, proposed survey extent and methodology and the requirement and scope for habitat regulations assessment (HRA), in addition to seeking local knowledge to complement information and species/habitat records obtained during the desk study. Any variations to the agreed survey scope will be discussed with the key consultees (for example, if and when important ecological features are identified during the initial UKHab survey, and/or any other surveys).
- 7.3.3. Local or specialist groups will be contacted should the assessment process identify a need to engage further detailed local knowledge, or if requested during the consultation process.

## 7.4 STUDY AREA

- 7.4.1. The Site is approximately 90.4 hectares (ha) in area in total, which includes the main construction areas required to facilitate construction of the Proposed Scheme, as well as the options for the Export Pipeline, Regas and Storage Area and Marine Jetty. Further detail is included in **Chapter 2:**

**Site and Proposed Scheme Description** of this EIA Scoping Report. The Site can be seen on **Figure 7.1**.

- 7.4.2. The Study Area, with regard to biodiversity, is defined as the area in which impacts arising from construction and/or operation could lead to significant effects for ecological features. For the purpose of this assessment, it is necessary to apply several Study Areas of varying sizes depending on the ecological feature under assessment and, in most cases, these will extend beyond the Site itself. These will hereafter be referred to as ‘Zones of Influence’ (Zol) for each feature.
- 7.4.3. Zol are summarised in **Table 7-1** and have been defined based on current best practice guidelines and current project information. In some cases, the Zol have been defined on a precautionary basis using professional judgement alongside this information. This approach is to ensure a sufficient geographical area has been considered and assessed to allow all reasonably foreseeable impacts to be taken into account. As the biodiversity assessment progresses and further information becomes available, both in terms of survey results, project details and design, and where appropriate in response to feedback from consultation, it is considered that one or more of the Zol may be subject to refinement later in the project lifecycle.

**Table 7-1 - Biodiversity Zones of Influence**

<b>Feature</b>	<b>Zone of Influence (inclusive of the Site)</b>
<b>Statutory designated sites of international importance<sup>4</sup></b>	Within 20 km of the Site
<b>Statutory designated sites of international importance for marine and freshwater species.</b>	Within 10 km of the Site
<b>Statutory designated sites of national and local importance<sup>5</sup></b>	Within 2 km of the Site
<b>Statutory designated sites of national and local importance for marine species</b>	Within 5 km of the Site
<b>Statutory designated sites of national and local importance where bats are an interest feature</b>	Within 5 km of the Site <sup>6</sup>
<b>Statutory designated sites of national and local importance where birds are an interest feature</b>	Within 10 km of the Site

<sup>4</sup> SAC, SPA and Ramsar sites.

<sup>5</sup> SSSI, LNR and National Nature Reserve (NNR).

<sup>6</sup> The area of search reflects the potential for effects on bats which are a mobile species. The area of search is based on the Core Sustenance Zones of bat species present in the local area in line with guidance from the Bat Conservation Trust (Collins, J. (ed.) (2023).

Feature	Zone of Influence (inclusive of the Site)
Non-statutory designated sites <sup>7</sup>	Within 2 km of the Site
Habitats of Principal Importance and woodland/trees listed on the Ancient Woodland Inventory (AWI <sup>8</sup> ) and Ancient Tree Inventory (ATI <sup>9</sup> )	Within 1 km of the Site
Historic European Protected Species (EPS) licences granted	Within 2 km of the Site
Mapped waterbodies and watercourses	Within 250 m of the Site
Habitats (Subtidal and Intertidal)	Within 250 m of the Site
Habitats (others)	Within 50 m of the Site
Protected and notable species	Various (detailed in <b>Table 7-3</b> and <b>Table 7-19</b> )

## DATA GATHERING METHODOLOGY

### Desk Study Data

- 7.4.4. To inform this scoping process, a desk study has been undertaken for the Site and wider ZoI (see **Table 7-1**) following best practice guidelines (Ref. 7.25 to Ref. 7.36) in January 2024. **Table 7-2** details the data gathered and the sources of desk study information.

<sup>7</sup> Local Wildlife Sites (LWS).

<sup>8</sup> The ancient woodland inventory in England lists areas over two hectares in size which have been continuously wooded since at least 1600.

<sup>9</sup> The ATI is a database of ancient and veteran trees administered by the Woodland Trust and is not a definitive database for these features. (online) available at <https://ati.woodlandtrust.org.uk/>



**Table 7-2 - Desk study data and sources of information**

Feature	Data	Source of data/information
<b>Statutory designated sites of international, national, and local importance</b>	<ul style="list-style-type: none"> <li>■ Boundary data</li> <li>■ Citations</li> <li>■ Other site information (e.g. conservation objectives; site improvement plans; condition assessments; views about management; etc.)</li> </ul>	<ul style="list-style-type: none"> <li>■ The Government’s Multi Agency Geographic Information for the Countryside (MAGIC) website (Ref. 7.37)</li> <li>■ Joint Nature Conservation Committee (JNCC): Information on UK Protected Areas (Ref. 7.38)</li> <li>■ Natural England (NE): Information on protected areas and designated sites</li> </ul>
<b>Non-statutory designated sites</b>	<ul style="list-style-type: none"> <li>■ Boundary data</li> <li>■ Citations</li> </ul>	<ul style="list-style-type: none"> <li>■ Local Biodiversity Records Centre:</li> <li>■ Environmental Records Information Centre North East (ERIC)</li> <li>■ Citations provided by Acting Hartlepool Council Ecologist</li> </ul>
<b>Habitats of Principal Importance and other conservation-notable habitats including ancient woodland/trees</b>	<ul style="list-style-type: none"> <li>■ Boundary data</li> </ul>	<ul style="list-style-type: none"> <li>■ MAGIC including the Priority Habitats Inventory (England)<sup>10</sup>, Ancient Woodland Inventory (AWI<sup>11</sup>), and</li> <li>■ Ancient Tree Inventory (ATI<sup>12</sup>)</li> </ul>
<b>Historic European Protected Species (EPS) licences granted and great crested newt (GCN) (<i>Triturus cristatus</i>) survey licence returns</b>	<ul style="list-style-type: none"> <li>■ Location data</li> </ul>	<ul style="list-style-type: none"> <li>■ MAGIC</li> </ul>

<sup>10</sup> A spatial dataset that describes the geographic extent and location of Natural Environment and Rural Communities Act (2006) Section 41 habitats of principal importance.

<sup>11</sup> The ancient woodland inventory in England lists areas over two hectares in size which have been continuously wooded since at least 1600.

<sup>12</sup> The ATI is a database of ancient and veteran trees administered by the Woodland Trust and is not a definitive database for these receptors. (online) available at <https://ati.woodlandtrust.org.uk/>

Feature	Data	Source of data/information
<b>Legally protected species, SPIs or other conservation-notable species, including invasive non-native species (INNS)</b>	<ul style="list-style-type: none"> <li>■ Location data</li> </ul>	<ul style="list-style-type: none"> <li>■ ERIC: key species records that are returned from ERIC and dated within the last ten years<sup>13</sup> within 2km of the Site, principally:               <ul style="list-style-type: none"> <li>■ Protected species;</li> <li>■ SPIs;</li> <li>■ Nationally rare or UK red-list species; and</li> <li>■ Other records notable in a local context (e.g. local biodiversity action plan (LBAP) species; species other than those above, which are identified by the data provider as being locally significant; records suggesting potentially significant local populations).</li> </ul> </li> <li>■ The Bird Atlas 2007-11: the breeding and wintering birds of Britain and Ireland (Ref. 7.39)</li> <li>■ Wetland Bird Survey (WeBS) data provided by the British Trust for Ornithology (BTO)</li> <li>■ Schedule 1 species nest data provided by the RSPB</li> <li>■ International Union for Conservation of Nature (IUCN) Red List (Ref. 7.40)</li> </ul>
<b>Mapped waterbodies and watercourses</b>	<ul style="list-style-type: none"> <li>■ Boundary data</li> <li>■ Ecological and chemical classification</li> </ul>	<ul style="list-style-type: none"> <li>■ MAGIC</li> <li>■ A review of aerial imagery using Google Earth (Ref. 7.41)</li> <li>■ a review of Ordnance Survey mapping (Ref. 7.42)</li> <li>■ Environment Agency (EA) Catchment Data Explorer (Ref. 7.43)</li> </ul>
<b>Water quality</b>	<ul style="list-style-type: none"> <li>■ Water quality data</li> </ul>	<ul style="list-style-type: none"> <li>■ The Rivers Trust River Obstacles map application (Ref. 7.44)</li> <li>■ Environment Agency Water Quality Archives (Ref. 7.45)</li> </ul>

<sup>13</sup> i.e. since 2013; this focuses on those records most likely to be relevant to the Proposed Scheme and the current land-use baseline.



Feature	Data	Source of data/information
<b>Freshwater and coastal species</b>	<ul style="list-style-type: none"><li>Species records</li></ul>	<ul style="list-style-type: none"><li>Environment Agency Ecology and Fish Data Explorer (Ref. 7.46)</li></ul>

7.4.5. A review of the following ecological reports produced for previous or current planning applications either on, adjacent to, or within the vicinity of the Site was also undertaken where relevant. The review of planning applications and associated ecological reports included the following (with relevant planning/marine licence/DCP application references provided in brackets), with the relevant site boundaries shown on **Figure 7.1**:

- Northern Gateway (MLA/2020/00079);
- Riverside Ro-Ro (MLA/2021/00405);
- Tees GasPort (MLA/2019/00469);
- Seal Sands LPG Container (22/0339/FUL), including preliminary ecological appraisal (undertaken by INCA in 2021) (Ref. 7.47);
- Land at Seal Sands Engyo (23/1019/EIS), including an ecological impact assessment (prepared by the Applicant Enzygo, 2023) (Ref. 7.48);
- South Bank Quay (MLA/2020/00506 & MLA/2020/00507);
- Tees and Hartlepool Maintenance Dredge Disposal (L/2015/00427)
- Navigator Terminals Seal Sands (23/1156/FUL)
- Teesside Gas Processing Plant (23/0997/FUL)
- Greenery Biofuels Teesside (23/2106/SCO)
- Net Zero Teesside (EN010103), including:
  - Preliminary Ecological Appraisal Report (prepared by AECOM in 2021 ) (Ref. 7.49)
  - Aquatic Ecology Supplementary Desk Study and Field Survey Report (prepared by AECOM in 2021) (Ref. 7.50)
  - GCN Survey report (prepared by AECOM in 2021) (Ref. 7.51)
  - Intertidal Benthic Ecology Survey Report (prepared by AECOM in 2021) (Ref. 7.52)
- H2 Teesside (EN070009), including:
  - Phase 1 Habitat Map (Draft) (Ref. 7.53)
  - Preliminary Environmental Information Report (Ref. 7.54)
- Epax Pharma UK (20/0867/FUL), including a preliminary ecological appraisal (prepared by ECOSURV in 2020) (Ref. 7.55)
- The Lianhetech development in land on Seal Sands(19/2161/Ful), including a preliminary ecological appraisal and ecological watching brief report (prepared by Naturally Wild in 2019) (Ref. 7.56)
- Land at Seal Sands Billingham Energy Recovery Facility (12/2766/EIS), including an ecological impact assessment (prepared by Ecological Services Limited in 2022) (Ref. 7.57).
- Teesside GasPort 07/2118/OUT
- Dogger Bank Teesside A and B (EN010051)
- Teesside Offshore Wind Farm (Ref. 7.91)

## FIELD SURVEY

7.4.6. Field surveys have commenced to gather data which will inform the biodiversity assessment. Surveys are being, and will continue to be, completed in line with relevant current good practice guidelines. Where there are deviations from best practice, approaches to survey effort will be discussed with relevant consultees and survey methods and/or limitations detailed within the ES.



7.4.7. **Table 7-3** details relevant survey buffers from the Site for specific biodiversity features (habitats, species and species groups) that are currently being subject to surveys. **Table 7-16** identifies ecological features which have been scoped out of baseline surveys and/or assessment. The survey buffers are defined around the ZoI of the Site in conjunction with relevant current good practice survey guidelines.

**Table 7-3 - Feature, survey buffer and reference to best practice guidelines**

Feature	Survey buffer distance (metres)	Relevant good practice survey guidelines	Survey scope (more details provided in Table 7-19)
<b>Habitats</b>	50m	UK Habitat Classification (UKHab) (2023) (Ref. 7.58) UKHab Working Group (2020b) (Ref. 7.59) UKHab Working Group (2020c) (Ref. 7.60) Rodwell (2006) (Ref. 7.61) Hedgerows Regulations (1997) (Ref. 7.13)	Initial UKHab surveys have commenced and will inform the requirement for detailed botanical surveys.
<b>Badger</b>	30m	Harris et al. (1989) (Ref. 7.62) Roper (2010) (Ref. 7.63) ■ Andrews (2013) (Ref. 7.64)	Badger surveys have commenced and will inform the requirement for any potential monitoring of setts/potential setts.
<b>Bats</b>	50m	Reason and Wray (2023) (Ref. 7.65) Collins (2023) (Ref. 7.66)	A daytime walkover during the UKHab survey will assess the quality of habitats for commuting, foraging, and roosting bats, and will inform if further surveys are required.

Feature	Survey buffer distance (metres)	Relevant good practice survey guidelines	Survey scope (more details provided in Table 7-19)
		Institution of Lighting Professionals and Bat Conservation Trust (2018) (Ref. 7.67)	
<b>Birds – wintering</b>	500m	Bird Survey & Assessment Steering Group (2023) guidance (Ref. 7.68) Goodship and Furness (2023) (Ref. 7.69)	Non-breeding waterbird surveys focusing on monitoring the distribution of qualifying and assemblage species of the Teesmouth and Cleveland Coast Special Protection Area (SPA) commenced on 19 January 2024. These surveys comprise twice-monthly visits over the non-breeding season to targeted areas of waterbird habitat within 500m of the Project. Each survey visit involves a six-hour watch from four observation points covering high to low tide or low to high tide in order to determine species usage of the area over the tidal cycle. Once-monthly visits are also proposed between April and August 2024 (in order to cover the breeding season and early passage period).
<b>Birds – breeding</b>	~100m (up to 500m for WCA Schedule 1 listed species)	Bird Survey & Assessment Steering Group (2023) guidance (Ref. 7.68) Goodship and Furness (2023) (Ref. 7.69)	A six-visit breeding bird survey is proposed covering the entire Site and 100m buffer (500m for Schedule 1 species) between April and July 2024, using an adapted version of the Common Bird Census (CBC) methodology, as detailed in Gilbert <i>et al</i> (1998) (Ref. 7.77). For the Proposed Scheme, a six-visit approach is considered sufficient to characterise the breeding bird assemblage (see Bird Survey & Assessment Steering Group (2023) guidance) (Ref. 7.68).
<b>Otter (<i>Lutra lutra</i>)</b>	250m	Chanin (2003) (Ref. 7.70)	Otter surveys have commenced and will inform the requirement for monitoring of resting sites/potential resting sites

Feature	Survey buffer distance (metres)	Relevant good practice survey guidelines	Survey scope (more details provided in Table 7-19)
<b>GCN habitat suitability index (HSI) assessment</b>	250m	<p>Oldham et al. (2000) (Ref. 7.71)</p> <p>English Nature (2001) (Ref. 7.72)</p> <p>Gent and Gibson (2003) (Ref. 7.73)</p> <p>Amphibian and Reptile Groups of the United Kingdom (ARG UK) (2010) (Ref. 7.74)</p>	<p>A preliminary walkover survey during the UKHab survey will assess the quality of terrestrial and aquatic habitats for GCN and will inform if further surveys are required.</p> <p>A GCN Habitat Suitability Index (HSI) assessment has been undertaken for accessible waterbodies within 250m of the Site. Access is pending for the remaining waterbodies. The results of the HSI assessment will be used to inform the requirement for additional GCN surveys (e.g., presence/likely absence or population size class assessment surveys) and assessment, and alternatively the use of District Level Licensing (DLL)<sup>14</sup> may be explored with Natural England if necessary.</p>
<b>Intertidal habitat</b>	Within Site boundary	<p>Wyn et al. (2006) (Ref. 7.75)</p> <p>Davies et al. (2001) (Ref. 7.76)</p>	<p>A marine walkover was carried out on 26 January 2024. The walkover was undertaken on safely accessible areas of the supralittoral and intertidal zone on the foreshore where the jetty is proposed and along the road next to Seal Sands. The survey was conducted at low tide to ensure that the majority of the intertidal zone could be observed and accessed. This methodology was based on the Handbook for Marine Intertidal Phase 1 mapping surveys (Ref. 7.75) and the Marine Monitoring Handbook (Ref. 7.76). As surveyors proceeded across the Site, each general biotope and macrofauna encountered was recorded. Photographs were taken of the</p>

<sup>14</sup> District level licensing (DLL) is a type of strategic mitigation licence for GCN granted in certain areas at a local authority or wider scale. Where a DLL scheme for GCN is in place at the location of a development site, developers can make a financial contribution to strategic, off-site habitat compensation instead of applying for a separate licence or carrying out individual detailed surveys. By demonstrating that DLL will be used, impacts on GCN can be scoped out of detailed assessment in an ES.





Feature	Survey buffer distance (metres)	Relevant good practice survey guidelines	Survey scope (more details provided in Table 7-19)
			species present (see <b>Appendix 7A</b> ) and all species names were taken from the Marine Life Information Network (Ref. 7.78).

- 7.4.8. Once completed, the surveys detailed in **Table 7-3** will define the requirements for any further surveys (discussed further in **Table 7-19**) and assessment which may necessitate a revision of the survey buffers. These may also be subject to change as a result of refinement of the design of the Proposed Scheme, or through consultation with statutory bodies, and are therefore not necessarily fixed.
- 7.4.9. As a result of the findings of these surveys, the scope of the Ecological Impact Assessment (EclA) will be reviewed and refined where necessary, and liaison with the relevant stakeholders and consultees will be undertaken as required.

## **7.5 BASELINE CONDITIONS AND FUTURE BASELINE**

### **EXISTING BASELINE**

#### **Designated Sites**

- 7.5.1. The designated sites described within this section are shown on **Figure 7.2** and **Figure 7.3**.
- 7.5.2. Internationally designated sites within 20 km of the Site are detailed in **Table 7-4** and are shown on **Figure 7.2**.

**Table 7-4 - Internationally designated sites within 20 km of the Site**

Site name	Designated feature summary	Position relating to the Site
<b>Teesmouth and Cleveland Coast Ramsar Site<sup>15</sup></b>	<p>Criterion 5: Winter waterfowl assemblage of international importance.</p> <p>Criterion 6: Peak counts of: Common redshank (<i>Tringa totanus</i>) (spring/autumn); and red knot (<i>Calidris canutus</i>) (present during winter).</p> <p>No aquatic features are listed as reasons for designation, however aquatic habitats, such as intertidal sand and mudflats, saltmarsh, freshwater marsh, and saline lagoons are of importance to a diverse assemblage of the above designated bird species.</p>	<p>Partially within the Site along the northern Site boundary</p>
<b>Teesmouth and Cleveland Coast proposed Ramsar Site</b>	<p>Criterion 5: “A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds”.</p> <p>Criterion 6: “A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird”.</p>	<p>Partially within the Site along the eastern boundary where it extends into the intertidal foreshore and River Tees</p>

<sup>15</sup> MAGIC shows Teesmouth and Cleveland Coast Proposed Ramsar Site to be separate from the Teesmouth and Cleveland Coast Ramsar site. However, the Teesmouth and Cleveland Coast Ramsar site extensions were classified on the 16 January 2020 - <https://consult.defra.gov.uk/natural-england-marine/teesmouth-and-cleveland-coast-potential-sp/>. Therefore, for the purpose of this Scoping Chapter, the proposed Ramsar site is now considered part of the Ramsar site.

Site name	Designated feature summary	Position relating to the Site
<b>Teesmouth and Cleveland Coast SPA</b>	<p>Breeding: Pied avocet (<i>Recurvirostra avosetta</i>), common tern (<i>Sterna hirundo</i>), and little tern (<i>Sternula albifrons</i>).</p> <p>Non-breeding: Red knot, ruff (<i>Philomachus pugnax</i>), common redshank, and sandwich tern (<i>Sterna sandvicensis</i>).</p> <p>Waterbird assemblage.</p>	Partially within the Site where it extends into the intertidal foreshore and River Tees
<b>North York Moors SPA</b>	<p>Breeding: Merlin (<i>Falco columbarius</i>) and European golden plover (<i>Pluvialis apricaria</i>).</p>	~11.94km south
<b>North York Moors SAC</b>	<p>Annex I habitats that are a primary reason for selection of this site:</p> <p>Northern Atlantic wet heaths with <i>Erica tetralix</i>; and European dry heaths.</p> <p>Blanket bogs are present as a qualifying feature, but not a primary reason for selection of this site.</p>	~11.94km south
<b>Durham Coast SAC</b>	<p>Annex I habitats that are a primary reason for selection of this site:</p> <p>Vegetated sea cliffs of the Atlantic and Baltic Coasts.</p>	~12.49km north
<b>Northumbria Coast Ramsar Site</b>	<p>Criterion 6: Little tern regularly supported during the breeding season and peak winter counts of:</p>	~12.51km north



Site name	Designated feature summary	Position relating to the Site
	Purple sandpiper ( <i>Calidris maritima</i> ); and ruddy turnstone ( <i>Arenaria interpres</i> ).	
<b>Northumbria Coast SPA</b>	Non-breeding: Little tern ( <i>Sternula albifrons</i> ). Breeding: Turnstone ( <i>Arenaria interpres</i> ) and purple sandpiper ( <i>Calidris maritima</i> ).	~12.51km north
<b>Castle Eden Dene SAC</b>	Annex I habitats that are a primary reason for selection of this site: Yew ( <i>Taxus baccata</i> ) woods of the British Isles.	~15.84km north-west

7.5.3. Nationally designated sites within 2km of the Site are detailed in **Table 7-5**, extended to 5km for sites with bat interest, to 10 km for sites with ornithological interest and to 5km for sites with marine and freshwater interest. These are shown on **Figure 7.2**.

**Table 7-5 - Nationally designated sites within 2km of the Site, extended to 5km of the Site where designated site has bat interest, and to 10km of the Site where the designated site has ornithological interest**

Site name	Designated feature summary	Position relating to the Site
<b>Teesmouth and Cleveland Coast SSSI</b>	<p>Reasons for notification include:</p> <p>Breeding harbour seals (<i>Phoca vitulina</i>);</p> <p>Nationally important for breeding avocet (<i>Recurvirostra avosetta</i>), little tern and common tern;</p> <p>Assemblage of waterbirds during the non-breeding season - shelduck (<i>Tadorna tadorna</i>), shoveler (<i>Spatula clypeata</i>), gadwall (<i>Mareca strepera</i>), ringed plover (<i>Charadrius hiaticula</i>), red knot, ruff, sanderling (<i>Calidris alba</i>), purple sandpiper, redshank and sandwich tern; and</p> <p>Diverse assemblage of invertebrates associated with sand dunes.</p> <p>Sand dune and saltmarsh habitat.</p>	<p>Partially within the Site along the northern section and western boundary.</p>
<b>Teesmouth National Nature Reserve (NNR)</b>	<p>This site supports a range of coastal habitats including sand dunes, grazing marsh, intertidal sand and mudflats.</p> <p>Harbour seals (<i>Halichoerus grypus</i>) and grey seals bask beside the tidal channels. The harbour seals haul out on the sand banks at low tide, and pups are born at the site each summer. This makes Seal Sands the only regular breeding colony of this species on the north-east coast.</p> <p>There are six species of orchid found within the site, including four species of marsh orchid (<i>Dactylorhiza</i> spp.).</p> <p>A diverse assemblage of migratory waterbirds is supported by the mudflats. Lapwing (<i>Vanellus vanellus</i>) and curlew (<i>Numenius arquata</i>) are found within area of dunes and grazing marsh, short-eared owls (<i>Asio flammeus</i>) hunt within the dune grasslands. The intertidal mudflats support waders including redshank and dunlin (<i>Calidris alpina</i>).</p>	<p>Partially within the Site along the northern boundary</p>

7.5.4. Local statutory designated sites within 2km of the Site are detailed in **Table 7-6**, extended to 5km for sites with bat interest, and to 10km for sites with ornithological interest. These are shown on **Figure 7.2**.

**Table 7-6 - Local statutory designated sites within 2km of the Site, extended to 5km of the Site where designated site has bat interest, and to 10km of the Site where the designated site has ornithological interest.**

<b>Site name</b>	<b>Designated feature summary</b>	<b>Position relating to the Site</b>
<b>Seaton Dunes and Common (Part of the SSSI) Local Nature Reserve (LNR)</b>	This site has ornithological interest and it is noted to support migrant and over-wintering wildfowl.	~2.37km north
<b>Cowpen Bewley Woodland Country Park LNR</b>	This site has ornithological interest and it is noted to support warblers, finches, various species of owl, sparrowhawk ( <i>Accipiter nisus</i> ), kestrel ( <i>Falco tinnunculus</i> ), buzzard ( <i>Buteo buteo</i> ), coot ( <i>Fulica atra</i> ), pochard ( <i>Aythya ferina</i> ), swan ( <i>Cygnus sp.</i> ), grebe, tufted duck ( <i>Aythya fuligula</i> ) and kingfisher ( <i>Alcedo atthis</i> ).	~3.64km west
<b>Greatham Beck LNR</b>	This site has ornithological interest and it is noted to support great spotted woodpecker ( <i>Dendrocopos major</i> ), kingfisher and tawny owls ( <i>Strix aluco</i> ).	~4.25km north-west
<b>Berwick Hills LNR</b>	This site has ornithological interest and it is noted to support breeding birds including sedge warbler ( <i>Acrocephalus schoenobaenus</i> ) and grasshopper warbler ( <i>Locustella naevia</i> ).	~4.48km south
<b>Linthorpe Cemetery LNR</b>	This site has ornithological interest and it is noted to support nuthatch ( <i>Sitta europaea</i> ), greenfinch ( <i>Chloris chloris</i> ), dunnoek ( <i>Prunella modularis</i> ), siskin ( <i>Spinus spinus</i> ), tawny owl and great spotted woodpecker.	~5.67km south-west
<b>Billingham Beck Valley LNR</b>	This site has ornithological interest and it is noted to support snipe ( <i>Gallinago gallinago</i> ), sedge warbler, reed bunting ( <i>Emberiza schoeniclus</i> ) and kingfisher.	~6.22km west
<b>Flatts Lane Woodland Country Park LNR</b>	This site has ornithological interest and it is noted to be rich in bird life, with Grey heron ( <i>Ardea cinerea</i> ) present within the ponds.	~7.14km south

Site name	Designated feature summary	Position relating to the Site
<b>Spion Kop Cemetery LNR</b>	This site has ornithological interest and it is noted to support skylark ( <i>Alauda arvensis</i> ) and meadow pipit ( <i>Anthus pratensis</i> ).	~9.38km north
<b>Black Bobbies Field Thornaby LNR</b>	This site has ornithological interest and it is noted to support skylark, lapwing and geese.	~9.65km south-west

7.5.5. Local non-statutory designated sites within 2km of the Site are detailed below in **Table 7-7** and are shown on **Figure 7.3**.

**Table 7-7 - Local non-statutory designated sites within 2km of the Site**

Site name	Designated feature summary	Position relating to the Site
<b>Greatham Creek North Bank Saltmarsh Local Wildlife Site (LWS)</b>	The LWS was last assessed in 2012 and notes that the LWS comprises a small area of saltmarsh vegetation, dominated by saltmarsh grass ( <i>Puccinellia maritima</i> ) with a narrow fringe of glasswort ( <i>Salicornia</i> sp). Some ornithological interest (mudflats are used by SPA birds) but not sufficient to merit LWS status on its own.	~215m north-west
<b>Greenabella Marsh LWS</b>	Rough grassland with wetland areas. The LWS was last assessed in 2009 and notes the presence of water vole ( <i>Arvicola amphibius</i> ), high numbers of amphibians, significant bird populations including some SPA birds, dingy skipper ( <i>Erynnis tages</i> ) and grayling ( <i>Hipparchia semele</i> ). butterfly. Common Lizard ( <i>Zootoca vivipara</i> ) were recorded just outside the boundary of the LWS.	~370m north-west
<b>Saltern Saltmarsh LWS</b>	The LWS was last assessed in 2009 and notes that the LWS was originally designated on account of remnants of saltmarsh vegetation. The LWS is of significant ornithological interest, though this was not high enough to merit LWS status in its own right.  In 2014 the sea wall was breached and RSPB Saltholme took on the management of the LWS.	~950m north-west



Site name	Designated feature summary	Position relating to the Site
<b>Philips Tank Farm Grassland LWS</b>	The LWS was last assessed in 2013 and notes that the LWS supports open mosaic habitat and some pools, a substantial population of dingy skipper and a large population of great crested newts.	~1.1km north-west
<b>Zinc Works Bird Field LWS</b>	The LWS was last assessed in 2009. It comprises an area of reclaimed land, comprising closely grazed grassland, which is immediately adjacent to the Teesmouth and Cleveland Coast SPA and to Seaton Channel and is on the coastal flyway for migratory species. On occasion supports >2% of the total of wintering waterbird population of the SPA but is particularly important for migratory passerines and its size, location and management make it unique in the Tees Valley in this respect.  The LWS has also, on occasion, held >0.5% of the national population of ring ouzel ( <i>Turdus torquatus</i> ).	~1.3km north
<b>Power Station Grassland and Wetland LWS</b>	The LWS was last assessed in 2012 and notes that the LWS supports common lizard as well as an exceptional population of common toad ( <i>Bufo bufo</i> ). The LWS mainly comprises rank grassland with large areas of scrub. Anecdotal evidence <sup>16</sup> was provided of white-letter hairstreak ( <i>Satyrrium w-album</i> ) upon elms ( <i>Ulmus</i> sp.) within the site in the last 10 years.	~1.8km north
<b>Seaton Common LWS</b>	The LWS was last assessed in 2012 and notes that the LWS supports a breeding population of common toad (approximately 3500 individuals).	~1.9km north

7.5.6. Saltholme RSPB reserve is also located approximately 300m south-west of the Site. It comprises of a series of waterbodies and surrounding wetland habitat. It is designated due to its use by significant numbers of birds during both the breeding, passage and overwintering periods. Saltholme RSPB reserve and other areas surrounding the Site have several overlapping statutory designations (discussed in more detail below) and are known to be of national and international importance for bird populations. The habitats present also offer suitability for other wildlife, including otter, water vole, badger, reptiles and potentially amphibians. Saltholme RSPB reserve is also shown on **Figure 7-3**.

<sup>16</sup> Email correspondence with Acting Hartlepool Council Ecologist

## Habitats of Principal Importance and Ancient Woodland

7.5.7. The desk study identified several HPIs within 1km of the Site as shown in **Table 7-8**. These are shown on Figure 7.4.

**Table 7-8 - HPI within the Study Area**

HPI	Within Site? (Y/N)	Position of closest area if outside Site
Coastal saltmarsh	Y	
Coastal and floodplain grazing marsh	N	~235m northwest
Deciduous woodland <sup>17</sup>	Y	
Lowland fens	N	~840m south-west
Mudflats <sup>18</sup>	Y	
Open mosaic habitats	Y	
Reedbeds	Y	
Saline lagoons	N	~405m west

7.5.8. No parcels of ancient woodland, or individual ancient/veteran trees have been identified within the Site and the 1km Study Area.

### Waterbodies and Watercourses

7.5.9. The desk study identified 29 potential ponds (including man-made ponds) and nine potential ditches within 250m of the Site. These are shown on **Figure 7.5**. The River Tees bounds the Site to the north and east.

7.5.10. The current Water Framework Directive (WFD) status for the Study Area was obtained from the Environment Agency's Catchment Data Explorer website. There are two WFD-designated water

<sup>17</sup> The desk study identified that woodland within the northern pipeline route is recorded on the Priority Habitat Inventory (PHI) as being "deciduous woodland" priority habitat. PHI is a spatial dataset which describes the geographic extent and location of Natural Environment and Rural Communities Act 2006 Section 41 habitats of principal importance in England. Lowland mixed deciduous woodland is the Section 41 habitat type likely to best describe the woodland habitat with the Study Area. However, the Section 41 habitat definition for lowland mixed deciduous woodland focuses predominantly on semi-natural woodlands. Consequently, until a field survey ground truth the woodland parcels it is unknown whether those habitats recorded within the Study Area are considered to qualify as either Section 41 or LBAP habitat.

<sup>18</sup> The sandy foreshore where the Marine Jetty is proposed, is formerly known as the 'Vopak Foreshore' by Royal HaskoningDHV in various previous application reports. This area is now leased to Navigator Terminals and hereafter referred to as the "intertidal foreshore". It is noted that sandy foreshore was identified on MAGIC as HPI Mudflat habitat.

bodies located within the Study Area; the River Tees Water Body (GB510302509900) and Tees Coastal Water Body (GB650301500005) (Ref. 7.43). The River Tees is tidally influenced, flows into the North Sea approximately 4km downstream of the Proposed Scheme and borders the Site to the East.

- 7.5.11. The 2022 WFD ecological status of the River Tees water body was classified as being of Moderate Ecological Status overall. Poor nutrient management, pollution including sewage and heavy metals, and channel modifications are some of many stressors and reasons for the River Tees water body failing to achieve Good overall status. The following biological quality elements are monitored in the River Tees water body: fish (moderate); invertebrates (good); saltmarsh (moderate); phytoplankton (good); and macroalgae (good). The Tees Coastal Water Body is 3.8km downstream of the Site. The 2022 WFD ecological status of this water body was classified as Moderate Ecological Status overall. Physical channel modifications are a stressor and reason for the Tees Coastal water body failing to achieve Good overall status. The following biological quality elements are monitored in the Tees Coastal water body: invertebrates (high); imposex (high); and phytoplankton (high).
- 7.5.12. Further details are provided in **Chapter 8 Water Environment and Flood Risk** of this EIA Scoping Report.

### Habitats

- 7.5.13. Review of existing schemes; locations of the developments reviewed are shown on **Figure 7.1**
- 7.5.14. The ecology reports submitted with the application for development at the Land at Seal Sands, prepared by Enzygo (2023) (Ref. 7.48), recorded the following habitats:
- Species-rich neutral grassland (UKHab classification: other neutral grassland (g3c) including areas with calcicoles) adjacent to the Seal Sands access road;
  - Further open unmanaged neutral grassland habitat (other neutral grassland (g3c)) with sparse scattered scrub was also recorded adjacent to the Seal Sands access road, although this grassland was not considered to be as diverse or species rich and does not support the same extent of indicators of coastal and calcareous conditions;
  - Small parcels of young other woodland-broadleaved (w1g) to the north of the Seal Sands access road;
  - Mixed scrub (h3h) and bramble scrub (h3d) scattered along Seal Sands access road;
  - None of these habitats were considered to represent any specific priority habitat;
  - A localised area of reedbed (f2e) habitat was recorded along Seal Sands access road, and is considered to represent UK BAP priority habitat; and
  - Areas of developed land, sealed surface (u1b), artificial unvegetated unsealed surface (u1c) and fence (u1e 69) were also recorded.
- 7.5.15. The ecology reports submitted with the application for the Seal Sands LPG Container development (Ref. 7.47) recorded the following habitats:
- A mix of sparse grassland habitat mixed (H1 - sparsely vegetated land – ruderal/ephemeral) with bramble scrub (H2 heathland and shrub – bramble scrub) in the east of the Site. These habitats transition to an area of Open Mosaic Habitat closer to the bund and foreshore, on a looser substrate.
- 7.5.16. The ecology reports submitted with the application for the Epax Pharma UK development, ECOSURV (2020) (Ref. 7.55) recorded the following habitats:

- Cable, pipelines, semi-improved grassland and reedbed to be present along Seal Sands access road; and
- Hardstanding with some colonistic species immediately to the north of the Seal Sands access road.

7.5.17. The ecology reports submitted with the DCO application for the Net Zero Teesside development, AECOM (2021) (Ref. 7.49) recorded the following habitats:

- Neutral semi-improved grassland along the Seal Sands access road as well as the eastern area of the Site adjacent to the River Tees. The grasslands are considered likely to be of secondary origin over previously developed land;
- Intertidal mud/sand was present where the River Tees bounds the land;
- Poor semi-improved grassland to the south/east of the Teesside Gas Processing Plant (TGPP) along Seal Sands access road; and
- Coastal grassland to the north of the TGPP.

7.5.18. The ecology reports submitted with the preliminary environmental information report (PEIR) for the H2 Teesside development, AECOM (2023)/BP (2023) (Ref. 7.53 and Ref. 7.54) recorded the following habitats:

- Predominately neutral semi-improved grassland. These could be flower-rich secondary grasslands developed on previously developed and made ground with potential calcareous influence;
- Scattered scrub within the grassland to the west of the Site north of TGPP;
- Coastal grassland immediately to the west of the Site; and
- Intertidal mud/sand where the River Tees/estuary meets the land boundary to the north and east of the Site.

7.5.19. The remaining other developments reviewed either did not submit any ecology reports, or they were not considered relevant to the Site.

#### **Freshwater Habitat: Ponds**

7.5.20. AECOM (2021) (Ref. 7.50) carried out pond surveys in July 2020 in respect of the Net Zero Teesside development to assess the biological quality of three ponds located approximately 2.5km east from the Site. All three ponds were assessed as being of 'Moderate' quality, with no ponds classified as HPI. Despite all three ponds having diverse aquatic macroinvertebrate communities, no legally protected aquatic macroinvertebrate species were recorded in these surveys. Additionally, the three surveyed ponds supported communities of both submerged and emergent macrophyte species. Across two of the surveyed ponds, a total of five plant species, namely, sneezewort (*Achillea ptarmica*), yellow iris (*Iris pseudocarus*), greater bird's-foot-trefoil (*Lotus pedunculatus*), marsh pennywort (*Hydrocotyle vulgaris*) and ragged robin (*Lychnis flos-cuculi*), listed on the wetland species used for the selection of LWS in the Tees Valley were identified. Additionally, ragged robin is also listed as 'Near Threatened' in England based on International Union for Conservation of Nature (IUCN) categories (Ref. 7.79).

#### **Marine Habitats:**

##### Abiotic Conditions

7.5.21. The Site borders the Tees estuary, a transitional environment comprising brackish water. Data acquired from Environment Agency WIMS database, River Tees at Dabholme Gut Confluence

monitoring station (400m East of the Study Area (Ref. 7.80) showed the temperature in this section of the River Tees ranges from 6.1 – 16.8°C, with a salinity regime that ranges from 27.92 – 32.59 parts per thousand (ppt).).

*Benthic Habitats and Associated Communities*

- 7.5.22. The intertidal substrate within the Tees Estuary, is predominantly comprised of mud and sand, with patches of gravel also present. Additionally, there are areas of intertidal substrate which are ‘man made’, indicative that artificial substrate is present. Multiple anthropogenic features constrain the High Water Mark (i.e. flood defences), with permanent inundation of most intertidal areas along the estuary. This has made the remaining intertidal zone very narrow and steep in profile (Ref. 7.81).
- 7.5.23. Two priority intertidal habitats are present within the Study Area; intertidal mudflats and Coastal Saltmarsh. Intertidal mudflats are a UK Biodiversity Action Plan (UKBAP) priority habitat, legally protected as a Habitat of Principal Importance (HPI) under Section 41 of the NERC Act. This habitat type is also listed in the OSPAR Convention as a threatened and/or declining habitat in Region II (the Great North Sea). Three patches of mudflat habitat are present within the Study Area, equating to a total area of approximately 6.71ha. These areas of mudflat habitat are also classified as a WFD Lower Sensitivity Habitat.
- 7.5.24. Coastal saltmarsh is located north and west next to the Site boundary, thirteen patches are present equating a total of approximately 4.41ha. Coastal saltmarsh is a UKBAP Priority Habitat and HPI, WFD Higher Sensitivity Habitat, and listed as a threatened and/or declining habitat under the OSPAR Convention (Region II). Saltmarsh is also a ‘Reason for Notification’ for the Teesmouth and Cleveland Coast SSSI as a nationally important feature.
- 7.5.25. The subtidal substrate present within the Study Area entirely consists of sand, mud and gravel. This is not classified as an HPI; however, it is a WFD Lower Sensitivity Habitat.
- 7.5.26. Contaminant analysis was undertaken on sediment samples collected as part of The Net Zero Teesside project (Ref. 7.52). The samples were collected approximately 2km to 4km from the Proposed Scheme, in Bran Sands, South Gare and Coatham Sands. The findings from these samples indicated that despite the industrialised nature of the surrounding area, there is no evidence of contaminant levels which would be expected to cause harm to benthic habitats and species.
- 7.5.27. The benthic invertebrate community was recorded at an Environment Agency Transitional Coastal (TraC) monitoring location (NZ 54446 26476), approximately 1.5km downstream from the Study Area. Grab samples were collected from multiple depths (5m to 15m), with the most recent sample collected in 2016 (Ref. 7.43).
- 7.5.28. The assemblage was dominated by polychaetes, notably *Ophryotrocha sp.*, *Euchone sp.*, and *Manayunkia aestuarina*, which is typical of brackish waters. The marine mudsnail (*Peringia ulvae*) and sludgeworms (*Tubificoides benedii*) were also present in high abundance. Species of roundworms (*Nematodes*), crustaceans, echinoderms, flatworms (*Turbellaria*), ribbon worms (*Nemertea*), cnidarians, mites (*Acari*), springtails (*Collembola*), horseshoe worms (*Phoronida*) and tunicates were also recorded.
- 7.5.29. No protected or notable species were recorded within the samples. One INNS was observed in 2016, a bivalve known as the false angelwing (*Petricolaria pholadiformis*). Whilst not recorded in 2016, the gammarid (*Monocorophium acherusicum*) was detected at the site in 2013. The INNS

soft-shell clam (*Mya arenaria*) has also been recorded in the Tees Estuary in 2010 (NZ 48419 22082 (Ref. 7.43)); this species is believed to be non-native, however is now widespread and considered naturalised within the UK.

- 7.5.30. Intertidal and subtidal benthic samples were collected as part of the Net Zero Teesside project (Ref. 7.52) during 2019 and 2021. The closest subtidal benthic samples to the Site were taken 400 m north east in the south bank of the River Tees within the mouth of the estuary. Three samples were collected, with one of them having the highest diversity of species. The three samples were classified as the UNIS habitat type A5.331 '*Nephtys hombergii* and *Macoma balthica* in infralittoral sandy mud', as is expected with reduced salinity estuarine conditions. Species recorded were the polychaete genus *Nephtys* sp., specifically *Nephtys hombergii* in high abundances and the bivalve *Abra alba* in lower abundances. No priority species or INNS were recorded during these surveys.

### Field survey

- 7.5.31. An initial UKHab walkover survey undertaken on 22 and 26 January 2024 of the eastern and northern area of the Site. The following habitats were recorded:
- Grassland was recorded to be the dominant habitat. While the composition of the grasslands in the areas differ slightly, they appear to mostly constitute other neutral grassland;
  - Areas of calcareous grassland and reedbeds along the emergency access road to the north of the Site;
  - Bramble (*Rubus fruticosus* agg.) and dog rose (*Rosa canina*) scrub throughout the grassland;
  - A stand of dense sea buckthorn (*Hippophae rhamnoides*) on the eastern embankment adjacent the River Tees;
  - Areas of bare ground/mud and gravel with a sparse layer of mosses and frequent common whitlow grass (*Erophila verna*) are present in the south eastern area of the Site;
  - Some the grassland along the emergency access road to the north of the Site route is heavily grazed by rabbits (*Oryctolagus cuniculus*). An approximate 10m swathe of grassland is kept to a short length along the southern side of the emergency access road to the north of the Site, which is likely a 'neutral zone' to the infrastructure to the south; and
  - Rocks and boulders line the edge of the land where the Tees Estuary is present to the north of the Site.
- 7.5.32. The marine walkover was carried out along the northern coastal boundary of the Site and on the intertidal foreshore in the eastern area of the Site. Along the northern Site boundary, there is nothing further to add beyond what is presented above. Along the intertidal foreshore to the east of the Site, different habitats were observed; the upper shore consisted of cobbles and small boulders, the middle shore of sandy sediment with mud, but stable, and the lower shore was more mud than sand. The walkover concluded much of the sedimented area showed characteristics of Priority Habitat mudflat, however further evidence (such as benthic community composition) is required to confirm this.

### Protected/Notable Species

#### Badger

##### Desk Study

- 7.5.33. The desk study did not return any records of badger within 2km of the Site.

7.5.34. Review of existing schemes; locations of the developments reviewed are shown on **Figure 7.1** No evidence of badger was recorded at or adjacent within the ecology reports of the following development applications:

- Land at Seal Sands Engyo (Enzygo, 2023) (Ref. 7.48);
- Epax Pharma UK (ECOSURV, 2020) (Ref. 7.55); and
- Lianhetech (Natural Wild, 2019) (Ref. 7.56).

7.5.35. They assessed the habitats to provide favourable habitat for badger, but badger access would be restricted due to the fencing and industrial development.

Field Survey

7.5.36. A badger survey was undertaken concurrently with the initial UKHab surveys. No evidence of badger was recorded. Evidence of rabbit warrens and fox (*Vulpes vulpes*) however was found.

**Bats**

Desk study

7.5.37. The desk study returned one record of common pipistrelle (*Pipistrellus pipistrellus*), two records of noctule (*Nyctalus noctula*), and one record of soprano pipistrelle (*Pipistrellus pygmaeus*) within 2km of the Site. The closest geographically accurate record is located approximately 1.62km south-west of the Site.

7.5.38. Review of existing schemes; locations of the developments reviewed are shown on **Figure 7.1** The ecology reports submitted with the application for development of land at Seal Sands, prepared by Enzygo (2023) (Ref. 7.48) recorded:

- No buildings, structures or trees contained potential roost features (PRF), with all trees being too young to have developed PRF;
- Habitats provide limited potential foraging and commuting habitat given they are surrounded by industrial development, high levels of artificial lighting and lack of any connected favourable habitat being enclosed by the shoreline at Teesmouth; and
- Correspondence between Enzygo and INCA revealed that few bat surveys have been carried out of North Tees, and where they have, they recorded low single figures of common pipistrelle and noctule. Surveys at RSPB Saltholme and surrounding areas also recorded very low numbers of bats despite the appearance of good bat foraging habitat.

7.5.39. The ecology reports submitted with the application for the Land at Seal Sands Billingham Energy Recovery Facility, ESL (2022) (Ref. 7.57) recorded low levels of common pipistrelle and noctule bats during bat static surveys immediately to the north of the Seal Sands access road.

Field survey

7.5.40. The initial UKHab walkover survey undertaken in January 2024 recorded:

- No suitable trees for roosting bats within a 50m buffer of the eastern area of the Site as well as the areas surveyed along the northern part of the Site access;
- One relatively modern office building located approximately 15m associated with Exolum Seal Sands Terminal which could have bat roost suitability as it appeared to have timber soffits/fascia's (inspected from distance through a security fence).

- Additional infrastructure within the 50m buffer to the east of the Site appeared to be unsuitable to support roosting bats, and this area would be subject to constant disturbance being an active industrial site;
- Buildings at the TGPP site were mostly pre-fabricated, consisting largely of corrugated metal. The majority of these appeared to be in good condition, however there were occasions where a PRF may be present and could be used opportunistically for a night due to one of the corrugated metal sheets being a bit loose/lifted. Given the TGPP site lacks significant areas of natural habitats or cover, and consists predominantly of hardstanding and built structures, the habitat is considered largely unsuitable for bats. Further to this, the TGPP site is subject to persistent noise disturbance from the on-site infrastructure, site security lighting is present throughout, and a weekly test of the emergency alarm system is sounded throughout the TGPP site. It is therefore considered highly unlikely any roosting bats would be present, and even if they are, they would be subject to a high level of noise and disturbance; and
- The open grassland and scattered scrub habitats to the east of the Site and along the northern part of the Site provide some suitable habitat for commuting and foraging bats, although a lack of diverse habitat structure and a coastal setting limits suitability.

## GCN

### Desk study

- 7.5.41. The desk study identified one European Protected Species Licence (EPSL) and one GCN class survey licence return approximately ~1.79km northwest of the Site. The desk study also returned one record of GCN within 2km of the Site. These records are located on the opposite side of Greatham Creek to the Site, with only several hardstanding road/track bridges connecting to habitat on the side of the watercourse as the site; meaning there is a lack of suitable connective habitat.
- 7.5.42. Review of existing schemes; locations of the developments reviewed are shown on **Figure 7.1**. The ecology reports submitted with the application for development at the Land at Seal Sands (by Enzygo) noted:
- Correspondence between Enzygo and Inca (Ref. 7.48) revealed eDNA surveys for GCN at RSPB Saltholme in 2017 returned negative results, and that many of the waterbodies around Seal Sands industrial estate may be unsuitable for most amphibian species (except common toad) as their salinity levels tend to be slightly elevated.
- 7.5.43. In addition, ECOSURV (Ref. 7.55):
- Assessed off-site habitats to be good value for GCN in their terrestrial phase; and
  - Assessed several waterbodies within 500m of their site were overgrown with willow or common reed, including P24 (shown of **Figure 7.5**). P24 is located approximately 185m to the north of the Seal Sands access road.
- 7.5.44. The ecology reports submitted with the application for the Lianhetech development, Naturally Wild (2019) (Ref. 7.56):
- Assessed P24 to be succeeded by reeds during a survey;
  - Assessed two ponds to be suitable to support GCN during HSI assessments, but these lie outside the 250m buffer of the Site; and
  - No GCN were recorded during site clearance works on the Lianhetech development.



7.5.45. The ecology reports submitted with the application for the Land at Seal Sands Billingham Energy Recovery Facility development, ESL (2022) (Ref. 7.57) recorded:

- Negative results for GCN presence at P24 and P25 (shown of **Figure 7.5**) during traditional presence likely absence surveys in 2012. Low numbers of smooth newt, common frog and common toad were found; and
- Negative results for GCN presence at P24 and P25 during eDNA surveys in 2022.

7.5.46. The ecology reports submitted with the application for the Net Zero Teesside development, AECOM (2021) (Ref. 7.51):

- Recorded an indeterminate result<sup>19</sup> during eDNA surveys at two waterbodies located to the west of the TGPP, including P17. P17 is located approximately 240m from the Site; and
- The following waterbodies identified within 250m buffer of the Net Zero Teesside development site boundary but were either scoped out for further survey (or were not included in their desk study): P7, P9, P11-P16, P18-P21, P24, P26, and D6-D9.

#### Field survey

7.5.47. During the initial UKHab survey the following was recorded:

- The grassland and scattered scrub habitats, as well as rabbit warrens, are suitable for GCN foraging, commuting, and refuge during their terrestrial phase in the east of the Site and along the emergency access road to the north of the Site;
- No waterbodies were identified within the Site or to a 50m buffer where accessed.
- The eastern area of the Site is bound by the River Tees to the east, industry infrastructure to the north and south, and there are several minor roads to the west, providing minor impediments to movement from the habitats to the west of this area. Thus, connectivity to the eastern area of the Site is limited; and
- The northern part of the Site is bound by the Tees estuary to the north, and infrastructure to the east and large areas to the south limiting connectivity. However, habitat within the western part of the Site is well connected to habitat to the west.

#### **Otter**

#### Desk study

7.5.48. The desk study identified one European Protected Species Licence approximately ~1.78km west of the Site. The desk study returned two records of otter within 2km of the Site; the closest record is located approximately 680m north-west of the Site.

7.5.49. Review of existing development schemes; locations of the developments reviewed are shown on **Figure 7.1**. The ecology reports submitted with the application for the Land at Seal Sands Enzygo development, Enzygo (2023) (Ref. 7.48) recorded:

- The grassland, woodland, scrub, localised reedbed, and a dry ditch at the north of their main site do not provide suitable habitat for otter and water vole; and
- Correspondence between Enzygo and INCA revealed that otter have been reported around North Tees and have been seen on most suitable watercourses and waterbodies in the area, including

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<sup>19</sup> An indeterminate result means it was not possible to determine a conclusive result, usually due to degradation or contamination of the sample material.

on the coast. Mother and cubs have been reported on several occasions. Regular sightings of otter have been recorded at Dorman's Pool (approximately 350m southwest of the Site).

#### Field survey

7.5.50. During the initial UKHab surveys the following was recorded:

- The bankside of the Site along the River Tees, is considered to be suitable to support otter resting sites;
- The bank comprises rocks, boulders and inert fill material that was used to reclaim the land from the River Tees and provide tidal defence. There are regular cavities within these materials, and there are numerous rabbit warrens/fox dens along the top of the bank in the adjoining grassland. A detailed otter survey is yet to be completed here; and
- Potential otter resting sites within the rocks and an enlarged rabbit burrow, where suitable sized cavities existed, but no other evidence of otter (such as spraint or footprints) was recorded.

7.5.51. During the detailed otter surveys along the northern boundary of the Site:

- Similar habitat was present along the northern boundary of the Site; and
- Two potential otter resting sites were found within the boulders. However, it is likely these potential resting sites are flooded at high tide which would limit their suitability as resting sites, as they would only be able to be used by otter for a short duration while the tide is out. No other evidence of otter (such as spraint or footprints) was recorded.

### Reptiles

#### Desk study

7.5.52. The desk study did not return any records of reptiles within 2km of the Site.

7.5.53. Review of existing schemes; locations of the developments reviewed are shown on **Figure 7.1**. The ecology reports submitted with the application for the Land at Seal Sands Enzygo development, Enzygo (2023) (Ref. 7.48) recorded:

- Habitats to provide suitable conditions for common lizard and slow worm (*Anguis fragilis*); and
- Correspondence between Enzygo and INCA revealed that there are two unconfirmed records from an industrial site on the adjacent industrial site near TGPP, on the other side of the road. Reptile surveys by INCA in 2006 at this location did not record any reptiles. No reptiles have been recorded in this area during butterfly surveys undertaken each year by INCA. No reptiles have been recorded during several reptile surveys undertaken by INCA on industrial land at North Tees over a decade or more. INCA conclude that reptiles are unlikely to inhabit the areas surrounding North Tees, and that any records are likely to have been introductions.

7.5.54. The ecology report submitted with the application for the Epax Pharma UK development, ECOSURV (2020) (Ref. 7.55) assessed habitats off-site were good habitat for reptiles.

7.5.55. The ecology report submitted with the application for the Lianhetech development, Natural Wild (2019) (Ref. 7.56) assessed habitats off-site were good habitat for reptiles, but did not record any reptiles during site clearance:

7.5.56. The ecology reports submitted with the application for the Land at Seal Sands Billingham Energy Recovery Facility development, ESL (2022) (Ref. 7.57) carried out presence/likely absence surveys in 2012 but did not record any reptiles.

### Field survey

7.5.57. During the initial UKHab surveys undertaken in January 2024 it was identified:

- The grassland and scattered scrub habitats, as well as rabbit warrens, are suitable for foraging, commuting, and refuging reptiles in the east of the Site and along the northern part of the Site;
- The eastern area of the Site is bound by the River Tees to the east, industry infrastructure to the north and south, and there are several minor roads to the west, providing minor impediments to movement from the habitats to the west of this area. Thus, connectivity to the eastern area of the Site is limited; and
- The northern part of the Site is bound by the Tees estuary to the north, and infrastructure to the east and large areas to the south limiting connectivity. However, habitat within the western part of the Site is well connected to habitat to the west..

### **Water vole**

#### Desk study

7.5.58. The desk study returned eight records of water vole within 2km of the Site. The closest record is approximately 540m north-west of the Site.

7.5.59. Review of existing development schemes; locations of the developments reviewed are shown on **Figure 7.1**. The ecology reports submitted with the application for the Land at Seal Sands Engyo development, correspondence between Enzygo and INCA (Ref. 7.48) reveal that INCA state water vole records have been limited to Saltholme, with a single record from Cowpen Marsh, approximately 2km west of the Land at Seal Sands Engyo development.

7.5.60. The ecology reports submitted with the application for the Land at Seal Sands Billingham Energy Recovery Facility development, no evidence of water vole was recorded during the traditional GCN surveys of waterbodies in 2012 (ESL, 2022) (Ref. 7.57).

#### Field survey

7.5.61. No suitable habitat for water vole has been identified during the initial UKHab surveys that have covered the eastern area of the Site, and northern Part of the Site.

### **White-clawed crayfish (*Austropotamobius pallipes*)**

#### Desk study

7.5.62. The desk study did not return any records of white-clawed crayfish within 2km of the Site.

7.5.63. Review of existing schemes; locations of the developments reviewed are shown on **Figure 7.1**. The ecology reports submitted with the application for the Land at Seal Sands Engyo development, Enzygo (2023) (Ref. 7.48) did not identify any suitable habitats for white-clawed crayfish.

#### Field survey

7.5.64. No suitable habitat for white-clawed crayfish has been identified during the initial UKHab surveys that have covered the eastern area of the Site, and the eastern half along the northern boundary.

### **Plants (protected)**

#### Desk study

7.5.65. The desk study did not return any records of any protected plant species.

### Field survey

- 7.5.66. No protected plant species have been recorded during the initial UKHab surveys to date. However, given the grassland and ephemeral habitats identified during the UKHab surveys, and location of the Site (i.e. near the coast), there is potential for protected plant species to be present.

### **SPI and other conservation-notable species (terrestrial vertebrates and plants)**

#### Desk study

- 7.5.67. The desk study returned 12 records of brown hare (*Lepus europaeus*), three records of water shrew (*Neomys fodiens*), five records of harvest mouse (*Micromys minutus*), six records of hedgehog (*Erinaceus europaeus*), and eight records of common toad. It also returned seven records of notable plant species: Carlina thistle (*Carlina vulgaris*) (red list<sup>20</sup>), common sea-lavender (*Limonium vulgare*) (red list), cornflower (*Centaurea cyanus*) (SPI and red list), field scabious (*Knautia arvensis*) (red list), ragged-robin (*Lychnis flos-cuculi*) (red list), sainfoin (*Onobrychis viciifolia*) (red list), and slender-tare (*Vicia parviflora*) (red list).
- 7.5.68. Review of existing schemes; locations of the developments reviewed are shown on **Figure 7.1**. The ecology reports submitted with the application for the Land at Seal Sands Enzygo development, Enzygo (2023) (Ref. 7.48) assessed the habitats to be suitable for hedgehog, harvest mouse and brown hare.
- 7.5.69. The ecology reports submitted with the application for the Lianhetech development, Naturally Wild whom prepared the preliminary ecological appraisal and ecological watching brief report in 2019 (Ref. 7.56) encountered a number of common toads during site clearance.

### Field survey

- 7.5.70. Due to the habitats recorded in the east of the Site and along the northern part of the Site during the initial UKHab surveys to date, there is potential for SPI and other conservation-notable plant species to be present, as well as other SPI and other conservation-notable terrestrial vertebrate species such as brown hare and hedgehog.

### **SPI and other conservation-notable species (terrestrial invertebrates)**

#### Desk study

- 7.5.71. The desk study returned 36 records of invertebrates within 2km of the Site, comprising one true fly, one dragonfly, four butterflies, 28 moths, and two molluscs.
- 7.5.72. Review of existing schemes; locations of the developments reviewed are shown on **Figure 7.1**. The ecology reports submitted with the application for the Land at Seal Sands Engyo development, (Ref. 7.48):
- Assessed the habitats to be suitable for a range of invertebrates including dingy skipper and grayling; and
  - Correspondence between Enzygo and INCA revealed that dingy skipper and grayling are regularly encountered in significant numbers and small blue has been introduced in the immediate locale. INCA have recorded the following significant moth species and associated foodplants: Blackneck (*Lygephila pastinum*) - tufted vetch (*Vicia cracca*), bordered willow (*Pyrrhia*

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<sup>20</sup> Red list plant species in England based on Stroh, et al. (2014) (Ref. 7.79)

*umbra*) - common restharrow (*Ononis repens*), *Eucosma hohenwartiana* - black knapweed (*Centaurea nigra*), small elephant-hawk moth (*Deilephila porcellus*) - lady's bedstraw (*Galium verum*), *Pyrausta despicata* - ribwort plantain (*Plantago lanceolata*), *Coleophora trifolii* – melilots (*Melilotus* spp.), *Depressaria badiella* - common cat's-ear (*Hypochaeris radicata*), *Neocochyliis dubitana* – hawkweeds (*Hieracium* sp.), *Agriphila geniculea* - fine grasses such as fescue (*Festuca* sp.), *Chionodes distinctella* - common bird's-foot trefoil (*Lotus corniculatus*), *Oxypteryx wilkella* - specialised mosses, and white colon (*Sideridis turbida*) - restharrow. Several, scarce, dune grassland species were also represented at this location, including Archer's dart (*Agrotis vestigialis*) – bedstraws, and saltern ear (*Amphipoea fucosa*) - coastal and saltmarsh grass species.

7.5.73. The ecology reports submitted with the application for the Seal Sands LPG Container development in the east of the Site, INCA (Ref. 7.47) recorded:

- Birds-foot trefoil (*Lotus corniculatus*) in discrete areas on their site, assessing that dingy skipper could possibly be present in small numbers; and
- The habitat in this area is also suitable for grayling, although the limited open mosaic habitat and bare earth/loose substrate would limit the expected numbers.

#### Field survey

7.5.74. During the initial UKHab surveys, it has been recorded:

- Limited birds-foot trefoil, the host plant of the dingy skipper, within the grassland to the east of the Site. However, given the survey was carried out in January, there is potential that the extent of birds-foot trefoil has been under-represented. Despite this, given it is known that dingy skipper are present within the wider area in significant numbers, it is considered there is potential for dingy skipper to be present on this area of the Site;
- No birds-foot trefoil has been recorded along the northern part of the Site to date.
- *Festuca* sp. the grayling butterfly main hostplants (sheep's and red fescue) (*Festuca ovina* and *rubra*) within the grassland. Grayling require plenty of bare ground habitat. Whilst some bare ground was noted during the survey, this was localised and occurred infrequently and the vegetation is not particularly sparse, which therefore limits the suitability of this area to support this species;
- Occasional vetch sp. (*Vicia* sp.) within the grasslands to the east of the Site. Kidney vetch (*Anthyllis vulneraria*) is the sole foodplant for small blue (*Cupido minimus*). Small blue habitat comprises sheltered, warm grassland habitats, including chalk and limestone grassland, coastal grasslands and dunes and man-made habitats such as: quarries, gravel pits, road embankments and disused railways<sup>21</sup>. If kidney vetch is present on Site, the habitats may be potentially suitable to support this species; and
- Of the moth species identified by INCA (listed above), the host plants of the following species were recorded/potentially recorded on or adjacent the Site: Blackneck - tufted vetch, small elephant-hawk moth - lady's bedstraw, *Pyrausta despicata* - ribwort plantain, *Coleophora trifolii* – melilots, *Agriphila geniculea* - fine grasses such as *Festuca*, *Chionodes distinctella* - common bird's-foot trefoil, *Oxypteryx wilkella* - specialised mosses, and Archer's dart– bedstraws. The habitats on Site are therefore potentially suitable to support some of these species.

<sup>21</sup> <https://butterfly-conservation.org/butterflies/small-blue>

## INNS

### Desk study

- 7.5.75. The desk study returned one record of grey squirrel (*Sciurus carolinensis*) and one record of Japanese rose (*Rosa rugosa*) within 2km of the Site.
- 7.5.76. Review of existing schemes; locations of the developments reviewed are shown on **Figure 7.1**. The ecology reports submitted with the application for the Land at Seal Sands Enzygo development, Enzygo (2023) (Ref. 7.48) recorded:
- Wall cotoneaster (*Cotoneaster horizontalis*) or similar cotoneaster species to be scattered across their site; and
  - Correspondence between Enzygo and INCA reveal that *Cotoneaster horizontalis*, *Cotoneaster microphylla* and *Cotoneaster simonsii* are present in the locale, with Japanese rose also present on the Seal Sands industrial estate, though it is rare.

### Field survey

- 7.5.77. During the initial UKHab surveys to date, it has been recorded:
- No INNS species in the eastern part of the Site; and
  - *Cotoneaster* sp. at the TGPP and along the northern boundary of the Site.

## Birds

### Desk study

- 7.5.78. The data search with ERIC undertaken within the desk study returned records for 38 Schedule 1 bird species, and a further 95 SPI/notable species. Additionally, data from the BTO WeBS was obtained, covering all high and low tide surveys within 500m of the Site (as outlined on **Figures 7.6 and 7.7**).
- 7.5.79. A data request to the RSPB will be undertaken, as will a review of data collected in relation to the other developments illustrated within **Figure 7.1**, with data summarised from four key developments herein.
- 7.5.80. H2 Teesside PEIR (2023) refers to a study undertaken by Natural England (Percival, 2015) in winter 2014/15 to inform a review of all of England's protected sites. The areas reviewed by Natural England included 'intertidal foreshore (in the eastern area of the Site) as well as Long Drag and Seal Sands Foreshore (part along the northern part of the Site). Intertidal Foreshore was used by small numbers of feeding birds and as an occasional roost by cormorant (*Phalacrocorax carbo*). Long Drag and Seal Sands brownfield was identified as important for feeding and roosting redshank within the pools at the western end of the area (along the northern part of the Site), and for roosting curlew which were recorded at several locations adjacent to the Emergency Access Road and within the grasslands immediately south of it (parts of this area fall within the northern part of the Site). Surveys for H2 Teesside covered Seal Sands and the terrestrial habitats to the south and highlighted that Seal Sands Bay was occupied by large numbers of feeding waders at low tide and at high tide some wader species such as curlew, oystercatcher (*Haematopus ostralegus*), turnstone and redshank, utilised the terrestrial habitats for roosting and occasionally for feeding.
- 7.5.81. INCA (Ref. 7.47) undertook surveys of the intertidal foreshore (referred to as the "Vopak Foreshore") for a proposed LPG container development (shown on **Figure 7.1**) between 2020/21 and recorded

four species in greater than single figures (peak counts of 51 cormorant, 76 herring gull (*Larus argentatus*), 70 great black-backed gull (*Larus marinus*) and 415 lapwing). Usage of the foreshore was concentrated on the mid- and lower shore areas at low tide and the birds did not elicit significant responses to the regular vessel traffic along the river, with the main site screened from the river by a bund. Skylark and meadow pipit were recorded during the breeding season surveys.

- 7.5.82. AECOM (2021) (Ref. 7.49) also surveyed areas of the Site for the Net Zero Teesside project, with the following key areas of ornithological interest identified:
- The brownfield habitats, including semi-improved neutral grassland, ephemeral/short perennial and bare ground intersected by small standing and flowing freshwaters (ponds, streams, ditches and rivers/streams) and ditches, supported a locally important breeding bird assemblage and small numbers of breeding and roosting species that are of no greater than local importance;
  - The north Tees Marshes including Seal Sands Bay were identified as important for breeding and wintering birds, with particular interest for marsh harrier, avocet, wintering ruff and roosting waders and shelduck; and
  - Other habitats identified within the industrial areas within Teesside included those that were important for breeding little ringed plover (*Charadrius dubius*) and roosting lapwing but have since been subjected to intensive earthworks and are no longer suitable.

- 7.5.83. The habitats along the emergency access road to the north of the Site were surveyed for a renewable fuels project (Enzgyo, 2023) (Ref. 7.48) in 2022/23. No Schedule 1 species were recorded breeding within the Site or its surrounds and the scrubby habitats did not offer foraging or roosting opportunities to significant numbers of waterbirds associated with the designated sites in the vicinity (there was a peak count of ten curlew recorded close to the emergency access road along the northern boundary of the Site and five curlew close to the emergency access road to the north of the Site). The breeding bird assemblage was considered to be of local importance, with SPIs breeding within the Survey Area limited to skylark and linnet (*Linaria cannabina*).

Field survey

- 7.5.84. A site appraisal of the Site boundary was undertaken on 22 and 26 January 2024. The Site and habitats adjacent to it provide roosting and feeding habitat for SPA/Ramsar Site qualifying and assemblage species. The terrestrial habitats within the Site boundary are likely to support a limited breeding bird assemblage including SPIs such as song thrush (*Turdus philomelos*), skylark, meadow pipit, grasshopper warbler, linnet and potentially other notable species such as Schedule 1 listed little ringed plover, avocet, peregrine falcon (*Falco peregrinus*), Cetti's warbler (*Cettia cetti*) and black redstart (*Phoenicurus ochruros*).
- 7.5.85. Field surveys within the Site boundary commenced in January 2024 and have focused on recording the distribution and abundance of qualifying (and assemblage) species of the Teesmouth and Cleveland Coast SPA/Ramsar Site. A twice-monthly survey is scheduled for each part of the survey area during the non-breeding season. Each survey visit involves a six-hour watch from four observation points covering high to low tide or low to high tide in order to determine species usage of the area over the tidal cycle. Additionally a once-monthly tidal cycle survey between April and August, following the same method as during the non-breeding season will be carried out.
- 7.5.86. Non-breeding waterbird surveys have recorded the following Teesmouth and Cleveland Coast SPA/Ramsar Site qualifying species within the Study Area: knot and redshank. Over 25 assemblage species have also been recorded including shelduck, oystercatcher, curlew, grey plover (*Pluvialis*

*squatorola*), turnstone and dunlin. The peak counts of 14 species have exceeded 10% of the latest BTO WeBS Tees Estuary peak counts to date, all of which were recorded on Seal Sands (including shelduck, oystercatcher, grey plover, curlew, bar-tailed godwit (*Limosa lapponica*), turnstone, knot, dunlin, redshank and common gull (*Larus canus*)).

- 7.5.87. Breeding bird surveys will be undertaken between late March and July. A six-visit approach is proposed covering the Site and 100m buffer (500m for Schedule 1 species) between April and July 2024, using an adapted version of the Common Bird Census (CBC) methodology, as detailed in Gilbert et al (1998) (Ref. 7.77). For proposed development sites, a six-visit approach is considered to be sufficient to characterise the breeding bird assemblage (see Bird Survey & Assessment Steering Group (2023) guidance).

## Freshwater and Marine

### Desk study

#### Macrophytes

- 7.5.88. Macrophyte surveys have been undertaken by the Environment Agency between 2013 and 2016 at Greatham Beck (NZ4894427840), Claxton Burn (NZ4720027800), North Burn (NZ4810027200) and Cowbridge Beck (NZ4830025700). All survey locations are located approximately 7km upstream from the Site. No protected or notable species were recorded. An invasive Himalayan balsam (*Impatiens glandulifera*) (terrestrial species) was recorded at Greatham Beck.

#### Aquatic macroinvertebrates

- 7.5.89. Aquatic macroinvertebrate surveys have been undertaken by the Environment Agency between 2015 and 2019 as part of their environmental monitoring programme (Ref. 7.43), approximately 7km upstream, north west of the Site. The samples were obtained using kick sampling methods and analysed in the laboratory.
- 7.5.90. At Greatham Beck (NZ4894427840) approximately 7km north west of the Site, two surveys in 2015 and 2019 returned no protected or notable species. Two records in 2015 and one record in 2019 of an INNS mollusc, the New Zealand mud snail (*Potamopyrgus antipodarum*). However, it must be noted that this species is widespread throughout the UK and is considered naturalised.
- 7.5.91. At Claxton Burn (NZ46885 27771) approximately 9.5km from the Site, a nationally scarce insect of the family Capniidae *Capnia atra* was recorded in 2019. This stonefly insect is restricted to high altitudes. The New Zealand mud snail was recorded two times during 2015 and 2019.
- 7.5.92. Sampling at Dabholm Gut (NZ5657023772) approximately 2km from the Site in 2016 returned a poor assemblage of aquatic macroinvertebrates featuring crustaceans: isopod *Asellus aquaticus* and freshwater shrimps (*Gammarus zaddachi*) and *Gammarus pulex/fossarum agg.*; True fly larvae Chironomidae, the riffle beetle (*Elmis aenea*) and worms Oligochaeta. One INNS mollusc, the New Zealand mud snail was also recorded during 2016 and 2019.
- 7.5.93. Survey at Cowbridge Beck (NZ4790125744) in 2018 approximately 7km to the north west of Site returned no protected or notable species. The INNS mollusc New Zealand mud snail was again recorded.
- 7.5.94. An aquatic macroinvertebrate survey at Billingham Beck (NZ4370723478) in 2019 approximately 16km upstream of the Site, to the west, recorded three INNS species: the signal crayfish (*Pacifastacus leniusculus*); New Zealand mud snail; and an amphipod *Crangonyx*



*pseudogracilis/floridanus*. However, it must be noted that the latter is widespread throughout the UK and considered naturalised.

- 7.5.95. Aquatic macroinvertebrates surveys have been undertaken by AECOM for the Net Zero Teesside project during 2020 as part of the Environmental Statement, approximately 400m east of the Jetty in three watercourses: the Mill Race (NZ 57823 23277); Dabholm Gut (NZ 56480 23826); and the Fleet (NZ 56959 24105). The samples were obtained by sweep sampling, due to the soft silt substrate and watercourse depth and analysed in the laboratory. The three watercourses were characterised by species tolerant of heavily sedimented conditions and indicative of poor to moderate biological water quality. No protected or notable species were recorded.

#### Freshwater Fish

- 7.5.96. Fish surveys have been undertaken by the Environment Agency during 2015 as part of their environmental monitoring programme (Ref. 7.46) (approximately 6.5km upstream, south west of the Site at Ormsby Beck - North Ormsby (NZ5080119588) and Ormsby Beck - Berwick Hills (NZ5091418296). The only species recorded were stone loach (*Barbatula barbatula*), three-spined stickleback (*Gasterosteus aculeatus*) and European eel elvers (*Anguilla anguilla*).
- 7.5.97. Other records from the Environment Agency during 2015, were approximately 9km upstream, south west of the Site at Marton West Beck - Arlington Road (NZ4949817681), Marton West Beck - Golf Course (NZ4951816841) and Marton West Beck - Fairy Dell (NZ5129014744). The only species recorded were three-spined stickleback, stone loach and European eel elvers.
- 7.5.98. Within years 2016 to 2019, monitoring at Warm up pool (NZ4617719106), approximately 12km upstream from Site to the west, the following species were found: European eel elvers, roach (*Rutilus rutilus*), pike (*Esox Lucius*), gudgeon (*Gobio gobio*), chub (*Leuciscus cephalus*), dace (*Leuciscus leuciscus*), perch (*Perca fluviatilis*), flounder (*Platichthys flesus*), roach x common bream hybrid (*Rutilus rutilus x Abramis brama*) and brown/sea trout. In the vicinity of the Tees barrage at Canoe slalom (NZ4637719170), fish count surveys in 2016 and 2017 returned the following fish species: dace, roach, Atlantic salmon and brown/sea trout.
- 7.5.99. Fish surveys have been undertaken by AECOM for the Net Zero Teesside project (Ref. 7.50) during 2020 as part of the Environmental Statement, approximately 400m east of the Jetty in two watercourses: the Mill Race (NZ 57823 23277) and Dabholm Gut (NZ 56480 23826). The samples were obtained by semi-quantitative and quantitative electric fishing. At Mill Race, three-spined stickleback was the only fish species captured in low densities. At Dabholm Gut, two species were captured: three-spined stickleback (the dominant species in the catch); and a low number of European eel.

#### Migratory Fish

- 7.5.100. Migratory fish species, such as Atlantic salmon, brown/sea trout, European eel, and river lamprey, are present in the Tees Estuary (as highlighted in the marine baseline). These diadromous species, all of which are protected under the NERC Act as Species of Principal Importance (SPI), migrate from marine waters through the Tees Estuary to freshwater spawning/nursery sites. Therefore, these species are assumed to be present in freshwater environments within the Site if suitable habitat is available.

#### Phytoplankton

- 7.5.101. Phytoplankton is regularly monitored in the Tees Estuary by the Environment Agency, with three monitoring sites located within the Study Area (NZ5450025700, NZ5482224858 and NZ5440023700). The Environment Agency collects monthly samples from these locations.
- 7.5.102. The most abundant taxa were diatoms followed by euglenophytes. Greatest abundance typically occurs between May and August, peaking in June, with lower abundance observed in winter months (November to January).
- 7.5.103. No protected or invasive taxa were identified during Environment Agency surveys (2015-2023), however, taxa known to cause harmful algal blooms in the UK coastal waters were present. This includes: *Alexandrium spp.*, *Dinophysis acuminata*, *Dinophysis acuta*, and *Pseudo-nitzschia spp.* Additionally, several taxa known to cause fish mortality were also recorded; these include *Gymnodinium spp.*, *Dictyocha speculum*, and *Chaetoceros spp.* (Ref. 7.82 and Ref. 7.83).

#### Marine Plants and Macroalgae

- 7.5.104. Data regarding marine plants and macroalgae in the Study Area is limited. However, following intertidal and subtidal surveys conducted as part of The Net Zero Teesside Project, the surveyed section of the Tees Estuary was determined to have low abundance and diversity of macroalgae (Ref. 7.50). In these surveys, sea lettuce (*Ulva sp.*), purple laver (*Porphyra umbilicalis*), and fucoids serrated wrack (*Fucus serratus*), horned wrack (*Fucus ceranoides*) and, bladderwrack (*Fucus vesiculosus*) were observed. Additionally, one invasive species of intertidal kelp, wakame (*Undaria pinnatifida*), was also recorded.
- 7.5.105. Native seagrass, which is predominantly comprised of common eelgrass (*Zostera marina*), is also present in the Tees Estuary. Whilst a large amount of this habitat has been lost, restoration projects are being undertaken, including in North Gare, approximately 3km downstream of the Proposed Scheme (Ref. 7.84).

#### Fish

- 7.5.106. The Study Area falls within the Marine Management Organisation (MMO) North-East inshore Marine Plan area and the International Council for the Exploration of Sea (ICES) rectangle 38E8. The management plan in relation to fish includes long term strategic plans for the fishing industry in the area; the support for sustainable fishing activities; the protection of fisheries habitats; the encouragement of biodiversity gain for essential fish habitats; and the avoidance or management of impacts on essential fish habitats.
- 7.5.107. The River Tees and estuary is an important water body for diadromous fish species that make seasonal migrations between freshwater and marine environments. Atlantic salmon, sea trout, European eel, river lamprey (*Lampetra fluviatilis*) and sea lamprey (*Petromyzon marinus*) are known to be present and identified as Local Priority Species within the Tees Valley BAP (Ref. 7.24). These species are afforded further protection, as detailed in **Table 7-12**.
- 7.5.108. The River Tees is designated as one of the 64 'principal salmon rivers' in England and Wales (Ref. 7.85). There is currently a Salmon Action Plan that aims to manage the performance of salmon stocks within the River Tees against Conservation Limits (CL). The CL is a standard defining whether the stocks in a river are doing well or badly. Currently, the River Tees is not achieving its CL, and is projected to remain 'at risk' of not complying with the salmon management objectives (Ref. 7.86). Within an 'at risk' river such as the River Tees it is stipulated that urgent steps must be taken to reduce exploitation by all fisheries to zero.

The estuarine and marine fish assemblage within the Tees estuary consist of demersal and pelagic species typical of the North Sea (Ref. 7.87 and Ref. 7.88). Data from an Environment Agency monitoring site located approximately 2km downstream from the Proposed Scheme (NZ 53946 26617) is presented in **Table 7-9**. Only the most recent data (2015 to 2018) was considered, as this is the most temporally relevant.

**Table 7-9 - Environment Agency fish data (number of individuals), North Gare Sands, Tees Estuary.**

Common Name	Latin Name	2015	2016	2017	2018
Herring*†	<i>Clupea harengus</i>	174	29	10	564
Plaice*†	<i>Pleuronectes platessa</i>	20	16	12	9
Lesser sandeel	<i>Ammodytes tobianus</i>	206	1	373	17
Flounder†	<i>Platichthys flesus</i>	21	2	21	-
Sprat†	<i>Sprattus sprattus</i>	2	276	7	-
Sand goby	<i>Pomatoschistus minutus</i>	10	3	1	-
Dab	<i>Limanda limanda</i>	1	1	1	-
Three-spined stickleback	<i>Gasterosteus aculeatus</i>	1	-	-	-
Five-bearded rockling	<i>Ciliata mustela</i>	1	-	-	-

\*Protected species  
†Commercially targeted species

7.5.109. Data from an Environment Agency monitoring site located approximately 5km downstream from the Site (NZ5417929684) is presented in **Table 7-10**. Only the most recent data (2015 to 2019) was considered, as this is the most temporally relevant.

**Table 7-10 - Environment Agency fish data (number of individuals), Seaton Sands, Tees Bay.**

Common Name	Latin Name	2015	2016	2017	2018	2019
Herring*†	<i>Clupea harengus</i>	-	-	-	2	-
Plaice*†	<i>Pleuronectes platessa</i>	86	230	91	22	85
Lesser sandeel	<i>Ammodytes tobianus</i>	-	-	-	2	-
Flounder†	<i>Platichthys flesus</i>	1	3	-	-	-
Sprat†	<i>Sprattus sprattus</i>	-	-	-	51	4

Common Name	Latin Name	2015	2016	2017	2018	2019
Sand goby	<i>Pomatoschistus minutus</i>	11	42	53	-	-
Dab	<i>Limanda limanda</i>	96	188	167	-	269
Lesser weever	<i>Echiichthys vipera</i>	4	2	-	-	1
Hooknose/Pogge	<i>Agonus cataphractus</i>	10	5	16	-	3
Whiting*†	<i>Merlangius merlangus</i>	16	8	18	14	24
Lesser (Nillsons) pipefish	<i>Syngnathus rostellatus</i>	1	2	-	-	-
Long-spined sea scorpion	<i>Taurulus bubalis</i>	-	2	-	-	-
Dover sole*†	<i>Solea solea</i>	-	1	-	-	5
Cod*†	<i>Gadus morhua</i>	-	32	20	-	28
Greater pipefish	<i>Syngnathus acus</i>	-	-	1	2	-
Snake pipefish	<i>Entelurus aequoreus</i>	-	-	1	-	-
Turbot†	<i>Psetta maxima</i>	-	-	1	-	-
Thornback ray/Roker†	<i>Raja clavata</i>	-	-	1	-	-
5-bearded rockling	<i>Ciliata mustela</i>	-	-	-	-	1
Grey gurnard	<i>Eutrigla gurnardus</i>	-	-	-	-	1

\*Protected species  
†Commercially targeted species

7.5.110. The Environment Agency also undertakes fish surveys at the Tees Barrage (NZ 46789 19328), located approximately 12km upstream of the Site. The assemblage was similar to that at North Gare Sand (**Table 7-11**). However, the barrage is where the River Tees transitions into a freshwater environment, and therefore the fish assemblage will likely become increasingly dominated by freshwater species at sites upstream of the barrage.

**Table 7-11 - Environment Agency fish data (number of individuals), Tees Barrage, 2015**

Common Name	Latin Name	Sample A (NZ 46789 19328)	Sample B (NZ 46789 19328)
Plaice*†	<i>Leuronectes platessa</i>	3	157
Sprat†	<i>Sprattus sprattus</i>	2	3

Common Name	Latin Name	Sample A (NZ 46789 19328)	Sample B (NZ 46789 19328)
Dab	<i>Limanda limanda</i>	3	2
Dover sole*†	<i>Solea solea</i>	1	-
Sand goby	<i>Pomatoschistus minutus</i>	3	5
Whiting*†	<i>Merlangius merlangus</i>	-	1
Flounder†	<i>Platichthys flesus</i>	78	29
Common goby	<i>Pomatoschistus microps</i>	37	8
Brown/sea trout*	<i>Salmo trutta</i>	1	-
Herring*†	<i>Clupea harengus</i>	258	27
*Protected species †Commercially targeted species			

7.5.111. Fisheries sensitivity maps (Ref. 7.89) indicate the Tees Estuary provides nursing grounds for several marine species. This includes herring, plaice, whiting (high intensity); and cod, dover sole, anglerfish and spiny dogfish (low intensity). Therefore, juveniles of these species could potentially be present within the vicinity of the Tees estuary that is immediately adjacent to the Proposed Scheme. The protection afforded these species is detailed in **Table 7-12**.

7.5.112. Common shellfish species are present within the inshore waters. Shellfish surveys conducted on inshore waters as part of the Dogger Bank Teesside Project and Teesside Offshore Wind Project (approximately 6km from the Site) recorded edible crab (*Cancer pagurus*), harbour crab (*Liocarcinus depurator*), European lobster (*Homarus Gammarus*) and velvet swimming crab (*Necora puber*) surveys in high abundance (Ref. 7.90 and Ref. 7.91). However, there are no designated shellfish waters within the vicinity of the Site.

**Table 7-12 - Summary of fish species protected by national or international legislation/policy.**

<b>Common Name</b>	<b>Latin Name</b>	<b>Habitats Directive (Annex)</b>	<b>OSPAR threatened and/or declining species*</b>	<b>Bern Convention (Appendix)</b>	<b>Bonn Convention (Appendix)</b>	<b>NERC 2006 Species of Principal Importance</b>	<b>IUCN Red List**</b>
Herring	<i>Clupea harengus</i>					yes	LC (↑)
Plaice	<i>Pleuronectes platessa</i>					yes	LC (↑)
Cod	<i>Gadus morhua</i>		II, III			yes	VU
Whiting	<i>Merlangius merlangus</i>					yes	LC (?)
Dover sole	<i>Solea solea</i>					yes	DD
Anglerfish	<i>Lophius piscatorius</i>					yes	LC (?)
Spurdog/ Spiny dogfish	<i>Squalus acanthias</i>				II	yes	VU (↓)
Atlantic salmon	<i>Salmo salar</i>	II, V	I, II, III, IV, V			yes	NT (↓)
Sea trout	<i>Salmo trutta</i>					yes	LC (?)



European eel	<i>Anguilla anguilla</i>		I, II, III, IV			yes	CR (↓)
Sea lamprey	<i>Petromyzon marinus</i>	II	I, II, III, IV	III		yes	LC
River lamprey	<i>Lampetra fluviatilis</i>	II, V		III		yes	LC (?)

\*OSPAR Regions where under threat and/or in decline.

\*\* IUCN Red List of Threatened Species. European classification: DD= Data Deficient, LC = Least Concern, NT= Near Threatened, VU=Vulnerable, EN = Endangered, CR = Critically Endangered. Population trend: ↑ = increasing, ↓ = decreasing, ? = Unknown.

## Marine mammals

- 7.5.113. The abundance and density of marine mammals within the Tees Estuary/River Tees (and therefore immediate vicinity of the Proposed Scheme) is anticipated to be low, however due to the highly mobile and transient nature of marine mammals it is possible that they could be present within the Study Area.
- 7.5.114. Within the Greater North Sea Ecoregion, four species of cetaceans occur commonly or are resident: harbour porpoise (*Phocoena Phocoena*), minke whale (*Baleanoptera acutorostrata*), bottlenose dolphin (*Tursiops truncates*) and white-beaked dolphin (*Lagenorhynchus albirostri*). Five more species occur less commonly: Atlantic white-sided dolphin (*Lagenorhynchus acutus*), orca (*Orcinus orca*) (killer whale), long-finned pilot whale (*Globicephala melas*), Risso's dolphin (*Grampus griseus*) and short-beaked common dolphin (*Delphinus delphis*) (Ref. 7.92).
- 7.5.115. Apart from the harbour porpoise, it is unlikely that any of these species will be present within the vicinity of the Site. The protective status of the harbour porpoise is detailed in **Table 7-13**.
- 7.5.116. There are two pinniped species within the Tees Estuary, the grey seal (*Halchoerus grypus*) and harbour seal (*Phoco vitulina*).
- 7.5.117. A small population of resident harbour seals are present within the River Tees, and haul out at Seal Sands and Greatham Creek, approximately 1km from the Study Area. Harbour seals also use the Tees Estuary as a breeding site, with breeding harbour seals listed as a Reason for Notification for The Teesmouth and Cleveland Coast SSSI.
- 7.5.118. There are no reported breeding sites for grey seals in the Tees Estuary; however, this species also hauls out at Seal Sands (Ref. 7.93).
- 7.5.119. Both species are protected under the Conservation of Seals Act 1970. Further protective status of the two seal species is detailed in **Table 7-13**.

**Table 7-13 – Summary of marine mammal species protected by national or international legislation/policy.**

<b>Common Name</b>	<b>Latin Name</b>	<b>WCA(Schedule)</b>	<b>EC Habitats Directive (Annex)</b>	<b>Bern Convention (Appendix)</b>	<b>Bonn Convention (Appendix)</b>	<b>OSPAR threatened and/or declining</b>	<b>ASCOBANS</b>
Harbour porpoise	<i>Phocena phocena</i>	V	II, IV	II	II	V	Yes
Harbour seal	<i>Phoco vitulina</i>	V	II, V	III			
Grey seal	<i>Halichoerus grypus</i>	V	II, V	III			



### Field study

- 7.5.120. The marine walkover revealed different marine species along the northern boundary of the Site and the intertidal foreshore in the east of the Site. Along the northern boundary, the upper shore was the only part observed, as there was no safe access to the banks. Knotted wrack (*Ascophyllum nodosum*) was the only species observed.
- 7.5.121. Along the mudflat, the upper shore consisted of barnacles and common periwinkle (*Littorina littorea*). Water was retained within the boulders, but the resulting pools were low in diversity. The middle shore was dominated by common cockles (*Cerastoderma edule*) and casts from lugworm (*Arenicola marina*). Some disused pipe and wooden stakes across the foreshore dominated by barnacles, spiral wrack (*Fucus spiralis*), common periwinkle and common limpet (*Patella 50ulgate*). Lower shore was dominated by common cockles. Small numbers of blue mussel (*Mytilus edulis*) were observed along the foreshore.
- 7.5.122. A seal was observed during the field surveys off the southeast corner of the navigator land.

## **FUTURE BASELINE**

- 7.5.123. It is not known at this stage whether a different future baseline (in the absence of the Proposed Scheme) is more likely to occur than that currently present. The distribution of habitats and species present on Site and on surrounding land is strongly influenced by the current industrial land use and there is no current reason to believe that this will change. As noted above, there are a number of applications that are present within the ZoI, notably the Net Zero Teesside development which was recently granted consent by the SoS and Northern Gateway expansion, as well as H2 Teesside. These developments have the potential to impact the future baseline, and would be considered as part of any cumulative effects assessment.
- 7.5.124. Due to climate change it is possible that in the medium to long term the range and distribution of some species may be altered. Any potentially relevant future changes to the baseline would be reviewed during the EIA process and, should any likely instances be identified, the implications will be considered on a case-by-case basis within the EIA. A description of the potential future baseline will also be provided in the EIA.

## **7.6 SENSITIVE FEATURES**

- 7.6.1. A summary of key sensitive features that are reasonably foreseeable at this stage is provided in **Table 7-14** and have been used to inform embedded mitigation (See **Section 7.7**).

**Table 7-14 – Summary of sensitive features**

<b>Feature type</b>	<b>Specific feature</b>	<b>Location relative to the Proposed Scheme</b>
<b>Internationally designated site</b>	Teesmouth and Cleveland Coast SPA	Within Site
	Teesmouth and Cleveland Coast Ramsar Site	Within Site
	Teesmouth and Cleveland Coast proposed Ramsar Site	Within Site
<b>Nationally designated site</b>	Teesmouth and Cleveland Coast SSSI	Within Site
	Teesmouth NNR	Within Site
<b>HPI</b>	Coastal saltmarsh	Within Site
	Deciduous woodland	Within Site
	Mudflats	Within Site
	Open mosaic habitat	Within Site
	Reedbeds	Within Site
<b>Protected/notable species</b>	A range of species including badger, birds (breeding and wintering), otter, water vole, reptiles, amphibians, invertebrates, fish species (Atlantic salmon, sea trout, European eel and lamprey species) and marine mammals (Harbour porpoise, harbour seal, and grey seal).	Within and adjacent
<b>WFD Designated River Tees</b>	River Tees and its tributaries	Adjacent
<b>WFD Designated Tees Coastal</b>	Coastal water	3.8km downstream from the Site

- 7.6.2. Whilst the information presented in this section so far has been as detailed as reasonably practicable, it should be noted that the biodiversity assessment is an iterative process. Therefore, as noted above, subject to the results of surveys to be completed, the quantity and extent of sensitive features may be subject to change.

## 7.7 DESIGN, MITIGATION AND ENHANCEMENT MEASURES

### CONSTRUCTION AND OPERATION

- 7.7.1. Avoidance and mitigation measures will be developed in line with the mitigation hierarchy<sup>22</sup> throughout the design process of the Proposed Scheme. It is envisaged that, the Site boundary will be refined as the design of the Proposed Scheme evolves, and where possible, habitats of biodiversity value will be retained as part of the Proposed Scheme, with enhancement measures provided alongside these where considered appropriate. Where this is not possible, compensation measures will be explored with relevant statutory stakeholders.
- 7.7.2. Based on the results of surveys and assessments to be completed, mitigation measures leading to the avoidance, reduction or compensation of significant effects will be identified prior to an evaluation of the effects of impacts. This will constitute 'embedded' mitigation within the Proposed Scheme design. Such mitigation measures will be included as part of the ES.
- 7.7.3. As part of the Proposed Scheme design process, a number of embedded environmental measures are proposed to reduce the potential for impacts on biodiversity (see **Table 7-15**). These will evolve over the development process as the EIA progresses and in response to consultation, and they will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.
- 7.7.4. As there is a commitment to implementing these embedded environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Proposed Scheme and have, therefore, been considered in the scoping assessment (and are noted in **Table 7-15**).
- 7.7.5. Thereafter, any residual impacts identified following the implementation of embedded mitigation measures will be identified. Monitoring requirements will also be explored, and requirements determined once full survey results have been interpreted and full Proposed Scheme details are known. Any such requirements for mitigation and/or monitoring will be captured within a Code of Construction Practice (CoCP), bespoke to the Proposed Scheme. An Outline CoCP will be submitted with the application for development consent.

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<sup>22</sup> See Paragraph 1.19 of CIEEM (2018, updated 2019) (Ref. 7.25)

**Table 7-15 - Relevant biodiversity embedded environmental measures**

Embedded environmental measure proposed
<p>1. Pre-construction update surveys: Pre-construction update surveys would be undertaken for protected species where relevant and necessary<sup>23</sup>.</p>
<p>2. Standard best practice: The Proposed Scheme would be subject to standard best practice mitigation measures employed to avoid and minimise potential effects to habitats and species under the supervision of an Ecological Clerk of Works (ECoW)<sup>24</sup>. These would include (but not be exclusive to) the establishment of buffer zones to key habitats and species, seasonally sensitive construction, minimising the removal of vegetation, covering excavations over night or providing a means of escape, and considered location of works. Construction activity that may cause direct disturbance to the marine environment (such as piling) should also not commence unless an ECoW is present and include the preparation of a watching brief for seals and other marine mammals. This is to ensure sensitive species, notably marine mammals, are absent from the area and to prevent damage to any important habitats.</p>
<p>3. Minimise land use and micro-site: Detailed design would aim to minimise the land use for works and locate (through micro-siting within working areas inside the Site) those works away from the more important habitat and species features, particularly woodland, boundaries including ditches and hedgerows, as well as ponds and other wetland features, which would consequently limit effects on associated species interest.</p> <p>Where practical, sensitive sites including SPAs, Ramsar, SSSIs, NNRs, Ancient Woodland (and other irreplaceable habitats), RSPB reserves, and HPI would be avoided when micro-siting the likely working areas.</p>
<p>4. Dust management: In line with good practice, the CoCP would ensure that any risk of material effects on ecological features from dust emission is negligible by detailing methods for the employment of standard dust suppression (see <b>Chapter 5: Air Quality</b> for further details).</p>
<p>5. Sensitive vegetation removal: Vegetation would be retained where possible. To avoid destruction of active nests, where practicable, in any areas where vegetation clearance is required, such works would be undertaken outside the breeding bird season (outside March-August). Where works are unavoidable during the breeding bird season, appropriate control measures would be followed including pre-works surveys for nests. If a nest is found, measures would be implemented appropriate to the species and associated level of protection and may include a protective buffer (where works may be limited or postponed until the nesting attempt is no longer active), a behavioural method statement with ecological monitoring, and if necessary, suitable screening around working areas to avoid significant human disturbance. Suitable methods would also be used to ensure vegetation with potential</p>

<sup>23</sup> For example, to maintain up-to-date baseline data for known ecological features to inform mitigation requirements and European Protected Species licensing, or to identify potential additional ecological features which may become established within the Study Area (i.e. mobile species).

<sup>24</sup> The role and responsibilities of the ECoW (and Principal Contractor's ecologists) will be defined in the Biodiversity Mitigation Strategy (BMS).

**Embedded environmental measure proposed**

to support other legally protected species (e.g. GCN) is removed sensitively and in compliance with legal requirements.

6. **Maintaining habitat connectivity:** Habitat connectivity would be retained wherever possible by maintaining links within and to green corridors such as hedgerows and watercourses. Where effects on connectivity are unavoidable, the affected habitat would be artificially supplemented by, for instance the creation of temporary brash hedges as appropriate.
7. **Sensitive tree management:** Where tree loss is required, pollarding or coppicing (where regrowth would occur within a season) would be used to avoid total loss of habitat where possible. A suitable root protection zone (with reference to BS 5837 (Ref. 7.28)) would protect trees adjacent to working areas.
8. **Protection of retained habitats:** Appropriate delineation would be installed around those retained habitat features within the construction area, to protect them from direct effects during the works. Such delineation would be designed to avoid isolation/obstruction of protected species as necessary.
9. **Management of INNS:** The use of tried and tested invasive species control and biosecurity measures to avoid the spread of INNS and infested materials would be applied.
10. **Habitat reinstatement:** Areas of temporary habitat loss would be reinstated, wherever practicable, following the completion of construction in each area. Wherever possible, reinstatement would be back to the type of habitat affected.
11. **Sensitive access and enabling works:** It may be necessary to deploy aggregates, trackway or geotextiles in places to create a stable surface for construction traffic and minimise habitat damage, erosion and sediment mobilisation. The route and approach to deployment (and decommissioning) will be agreed with the project ecologist to limit effects on sensitive ecological features.
12. **Protection of aquatic features:** Onshore, a minimum stand-off from all watercourses, ditches and ponds would be adopted where practicable on a location-specific basis. This would be in line with regional Environment Agency and Lead Local Flood Authority (LLFA) requirements, excluding required access crossing points. In line with good practice, pollution prevention plans would be drawn up to detail how ground and surface waters would be protected during construction and operation. These would include information on the storage of any fuels, oils and other chemicals and pollution incidence response planning.
13. **Sensitive lighting design:** A lighting design of all temporary and permanent lighting would be developed prior to commencement and informed by the joint guidance provided by the Bat Conservation Trust and Institution of Lighting Professionals (Ref. 7.67). The lighting design will account for the potential effects on terrestrial ecology by taking measures to minimise lighting usage, minimise light spill, use most appropriate wave lengths of light and locate lighting in the

### Embedded environmental measure proposed

most appropriate locations – this is to decrease the potential displacement effects on light sensitive fauna such as bats. See **Chapter 2: Site and Proposed Scheme Description**.

14. Construction traffic speed limits: Speed limits would be imposed on all construction haul roads and access tracks (as opposed to public/private roads with existing speed limits in place) to minimise the risk of road traffic collisions with fauna such as badgers, otters, bats and birds. This will also be considered in relation to the Marine Jetty to reduce potential for vessel strike with marine mammals and potential damage to intertidal habitats from wave wash.

15. Protected species licences: A DLL licence with respect to great crested newts may be obtained from Natural England prior to commencement of works if baseline surveys indicate it is required. Should pre-construction surveys indicate likely impacts on protected species (bats, otter or badger) including habitat loss/disturbance/replacement, a licence from Natural England would be sought prior to commencement of works in order to avoid contravening legislation<sup>25</sup>.

16. Biodiversity Mitigation Strategy (BMS): The BMS will collate together the design, mitigation, compensation, and enhancement measures identified and developed during the impact assessment process relating to the construction phase and is expected to represent an appendix to the CoCP.

17. Landscape Ecological Management Plan (LEMP): The LEMP would detail the management of habitats to be reinstated, created and/or enhanced within the Site, and would cover an aftercare period of a specified number of years.

18. Timing of works: Consideration will be given to undertaking construction activities such as piling outside of sensitive periods of protected and notable fish species within River Tees and any waterbodies within the Site. This includes migration and spawning periods.

19. Noise reduction measures: Employment of noise reduction measures on operational plant machinery and equipment.

20. Sensitive piling methods: Where practicable, the use of appropriate piling methods such as soft start to allow noise sensitive species to move away from the construction area.

## 7.8 DESCRIPTION OF POTENTIAL SIGNIFICANT EFFECTS

- 7.8.1. At the time of writing, it is not possible to accurately determine potential significant effects to the various features that may be impacted. As such, and on a precautionary basis, features have been scoped into the assessment unless there is sufficient desk study and/or field survey information to

<sup>25</sup> With the exception of great crested newt DLL, no other protected species licences are required based on current survey results.

suggest that they are highly unlikely to be affected by the Proposed Scheme and/or appropriate mitigation measures can be confidently determined at this early stage.

## CONSTRUCTION

7.8.2. The potential effects associated with the construction phase include:

- The construction phase will include site clearance and groundworks (enabling works), followed by construction activities themselves. These works have the potential for both short-term and permanent impacts, both direct and indirect, to habitats and species within the Site and on surrounding areas.
  - General construction activities for the proposed Marine Jetty and along the northern Export Pipeline option could result in potential damage, degradation or loss of habitats within designated conservation sites;
  - Noise, vibration, visual disturbance, physical activities, air pollution (such as pollution from traffic movements) and water pollution (such as from run-off of chemicals) leading to disturbance of Schedule 1 breeding birds, SPA/Ramar qualifying features and SSSI designated species using designated sites and/or functionally linked land;
  - Noise, vibration, visual disturbance, physical activities, air pollution (such as pollution from traffic movements) and water pollution (such as from run-off of chemicals) leading to disturbance of protected and/or notable species;
  - Disturbance, direct killing or reduced chance of survival of individual animals and local species populations through terrestrial and aquatic habitat loss/damage; including protected and notable plant and animal species and/or species listed on designated site citations;
  - Habitat fragmentation through working areas creating barriers to species dispersal, including protected and/or notable species, and species listed on designated site citations;
  - Land take involving the removal/degradation of irreplaceable, protected or notable habitats;
  - Damage or destruction of bird nests, and loss of roosting, breeding, foraging, hibernating or resting habitat of protected and/or notable species during construction activities such as vegetation clearance;
  - Light pollution through security lighting used at working areas spilling onto surrounding habitats; and
  - Potential spread of INNS (if present) during construction activities, for example during vehicle/person movements and vegetation clearance.
  - Potential damage, degradation or loss of habitats within designated conservation sites, or disturbance of aquatic species listed as designated features from activities such as wave wash (from increased navigation) and piling.;
  - Changes to water quality within the River Tees and potential disturbance of bed materials from piling and increased wave wash (from increased navigation);
  - Changes in the behaviour due to disturbance (e.g. avoidance) and/or physical damage to fish and marine mammals present within the River Tees due to changes in the underwater soundscape during works at the Marine Jetty and increased navigation.;
  - Disturbance/avoidance behaviours in pinnipeds due to changes in the airborne soundscape during construction works. Notably, avoidance/disturbance to haul out or breeding locations; and

- Disturbance to fish and marine mammals present within the River Tees due to changes in visual stimuli (notably artificial light spill) during the construction of the Marine Jetty.

7.8.3. Where appropriate, impacts will be assessed in detail across other chapters of the ES (such as **Chapter 5: Air Quality**, **Chapter 6: Noise and vibration**, and **Chapter 9: Water Environment and Flood Risk**) and cross-referenced appropriately within terrestrial ecology and marine and freshwater ecology chapters. Impacts will be assessed both in consideration of the Proposed Scheme alone and in combination with any other surrounding developments.

## **OPERATION AND MAINTENANCE**

7.8.4. Operational impacts for the Proposed Scheme have not yet been fully defined, however due to the nature of the operational phase of the Proposed Scheme (e.g. delivery of 1 to 2 LNG vessels approximately once a week for 25 years, annual maintenance, the Proposed Scheme being designed to operate 24 hours a day), direct and indirect impacts to ecological features are considered likely:

- Operational impacts associated with ship and vehicle/machinery movement, lighting, noise, vibration and visual disturbance, may negatively impact upon habitats and species (including SPA/Ramar qualifying features and SSSI designated species using designated sites and/or functionally linked land); and
- In addition, air and water emissions resulting from the operation may result in habitat degradation in surrounding areas, including nearby designated sites. However, measures intended to avoid or reduce these impacts are expected to be embedded into the design of the Proposed Scheme. For example, a protection system such as interceptors and a containment system (to segregate oil and water) is likely to be implemented.

## **DECOMMISSIONING**

7.8.5. The potential effects associated with the decommissioning phase include (i.e. decommissioning of the above ground elements of the Regas and Storage Area only):

- Noise, vibration, and visual disturbance as a result of decommissioning activities leading to disturbance, may negatively impact upon habitats and species (including SPA/Ramar qualifying features and SSSI designated species using designated sites and/or functionally linked land); and
- Damage or destruction of nests as a result of decommissioning activities.

## **SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT**

7.8.6. Based on the preliminary baseline information available at this stage (see **Section 7.4.9**) and Proposed Scheme design (see **Chapter 2: Site and Proposed Scheme Description**) and consideration of the embedded environmental measures (see **Table 7-15**), a scoping exercise has been undertaken to identify those ecological features which are potentially present within the Zol and sensitive to the potential effects of the Proposed Scheme. A summary of the elements scoped in and out of the assessment for biodiversity at this stage are set out in **Table 7-16**. Each element is accompanied by a justification for its inclusion or exclusion from further assessment based on professional judgement and reference to specific guidance criteria. Scoping is an iterative process, and this preliminary scoping will be refined in the ES where relevant and necessary based on further baseline data gathering, refinement of the scheme design, the Scoping Opinion and other ongoing consultation with relevant technical bodies.



**Table 7-16 - Elements Scoped In or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
<b>Statutory designated sites – International</b>				
<b>Teesmouth and Cleveland Coast Ramsar Site</b> <b>Teesmouth and Cleveland Coast SPA</b>	Construction, operation and maintenance, and decommissioning	✓		<p>Construction/decommissioning and operation activities could cause the loss, degradation or disturbance of terrestrial and aquatic habitats within The Teesmouth and Cleveland Coast Ramsar Site/SPA that are of importance to qualifying species.</p> <p>In addition, the qualifying bird species may be disturbed via noise, vibration, lighting and/or visual disturbance during construction, operation and decommissioning, and potentially be displaced from suitable habitat.</p> <p>Activities are not anticipated to impact haul out or breeding locations of the harbour seal (designated feature); however, some activities may cause visual and acoustic disturbance to those moving or foraging in the Tees estuary adjacent to the Proposed Scheme.</p> <p>Part of the intertidal foreshore within the proposed Ramsar site Teesmouth and Cleveland Coast, is expected to be lost due to the construction of the Marine Jetty.</p>
<b>North York Moors SPA</b>	Construction, operation and maintenance, and decommissioning		✓	<p>Scoped out on the basis that the foraging ranges of the SPA qualifying species (breeding European golden plover and merlin) are less than the distance from the SPA to the Site (NatureScot, 2016) (Ref. 7.94). Merlin forage within 5km of the nest site during the breeding season, and golden plover forage within a core range of 3km (and maximum range of 11km). Therefore, there are no pathways for affecting the interest features, and these sites are therefore scoped out from further ecology assessment.</p>

Element	Phase	Scoped In	Scoped Out	Justification
<b>North York Moors SAC</b> <b>Durham Coast SAC</b>	Construction, operation and maintenance, and decommissioning		✓	There are no potential impact pathways based on the cited features, nature of the works, and distance to the Site.
<b>Northumbria Coast Ramsar Site</b> <b>Northumbria Coast SPA</b>	Construction, operation and maintenance, and decommissioning		✓	Both of these sites are scoped out on the basis that these sites' qualifying features are unlikely to forage within the Site or 500m buffer, given the distance. There is no hydrological connectivity between the Proposed Scheme and the sites. Therefore, there are no pathways for affecting the interest features, and these sites are therefore scoped out from further ecology assessment.
<b>Castle Eden Dene SAC</b>	Construction, operation and maintenance, and decommissioning		✓	There are no potential impact pathways based on the cited features, nature of the works, and distance to the Site.
<b>Statutory designated sites – national</b>				
<b>Teesmouth and Cleveland Coast SSSI</b> <b>Teesmouth NNR</b>	Construction, operation and maintenance, and decommissioning	✓		Construction/decommissioning and operation activities have the potential to negatively impact terrestrial and aquatic features of The Teesmouth and Cleveland SSSI and Teesmouth NNR through habitat loss or degradation, visual disturbance and decreased air and water quality.

Element	Phase	Scoped In	Scoped Out	Justification
				<p>In addition, notable species of wildlife associated with these designations may be disturbed via noise, vibration, lighting and/or visual disturbance during construction, operation and decommissioning.</p> <p>Operation activities are not anticipated to be a potential impact on haul out or breeding locations of the harbour seal (designated feature); however, some activities may cause visual and acoustic disturbance to those moving or foraging in the Tees estuary adjacent to the Proposed Scheme.</p> <p>The other aquatic designated features, saltmarsh and invertebrates inhabiting sand dune habitats, are not anticipated to be impacted due to the distance from the Proposed Scheme.</p>
<b>Statutory designated sites – local</b>				
<b>Seaton Dunes and Common (Part of the SSSI) LNR</b>	Construction, operation and maintenance, and decommissioning	✓		<p>The ornithological features of the Seaton Dunes and Common (part of the SSSI) LNR form part of those within the SSSI and SPA and therefore have the connectivity potential with the Site.</p> <p>Construction/decommissioning and operation activities have the potential to negatively impact these features using suitable habitat in proximity to the Site, through disturbance via noise, vibration, lighting and/or visual disturbance during construction/decommissioning and operation.</p>
<b>Black Bobbies Field Thornaby LNR</b>	Construction, operation and maintenance, and decommissioning	✓		<p>Some of the ornithological features of Black Bobbies Field Thornaby LNR have the connectivity potential with the Site (i.e. geese).</p> <p>Construction/decommissioning and operation activities have the potential to negatively impact these features using suitable habitat in proximity to</p>



Element	Phase	Scoped In	Scoped Out	Justification
				the Site, through disturbance via noise, vibration, lighting and/or visual disturbance during construction and operation.
<b>Cowpen Bewley Woodland Country Park LNR</b> <b>Greatham Beck LNR</b> <b>Berwick Hills LNR</b> <b>Linthorpe Cemetery LNR</b> <b>Billingham Beck Valley LNR</b> <b>Flatts Lane Woodland Country Park LNR</b> <b>Spion Kop Cemetery LNR</b>	Construction, operation and maintenance, and decommissioning		✓	These sites are scoped out on the basis that these sites' ornithological features are unlikely to forage within the Site or 500m buffer, given the distance from these sites. Therefore, there are no pathways for affecting the interest features, and these sites are therefore scoped out from further ecology assessment.
<b>Other elements</b>				

Element	Phase	Scoped In	Scoped Out	Justification
<b>Non-statutory designated sites</b>	Construction, operation and maintenance, and decommissioning	✓		<p>Construction, operation and decommissioning activities have the potential to negatively impact terrestrial and aquatic features of all of the LWS listed in <b>Table 7-7</b> through habitat loss or degradation, visual disturbance and decreased air and water quality.</p> <p>Construction and operation activities have the potential to negatively impact these features using suitable habitat in proximity to the Site, through disturbance via noise, vibration, lighting and/or visual disturbance during construction and operation.</p>
<b>HPI</b>	Construction, operation and maintenance, and decommissioning	✓		<p>Much of the Site and adjacent land is identified to support open mosaic habitat on previously developed land. The results of the habitat survey carried out as part of the assessment will be used to determine the presence or absence of this habitat, with likely significant effects then determined. If open mosaic habitat on previously developed land habitat is present, site clearance and construction/decommissioning activities associated with the Proposed Scheme will result in either the temporary or permanent loss of this habitat. In addition, activities during the operation of the Proposed Scheme may lead to the degradation of any adjacent open mosaic habitat on previously developed land present as a result of pollution events.</p> <p>As above, other HPI present within the Site may incur some habitat loss resulting from site clearance activities during the construction phase, depending on the extent of clearance required. In addition, HPI adjacent to the Site may incur negative effects during construction, operation and decommissioning via pollution events.</p>
<b>Badger</b>	Construction, operation and	✓		<p>There are habitats within and adjacent to the Site that are suitable to support badger. The potential therefore exists for direct physical impacts</p>

Element	Phase	Scoped In	Scoped Out	Justification
	maintenance, and decommissioning			<p>to badger (e.g. loss of badger setts) as well as indirect impacts (e.g. vibration or noise disturbance) to resident badger during construction, operation and decommissioning activities.</p> <p>Potential indirect effects (e.g. light spill, noise and disturbance) may have an impact upon badger during operation of the Proposed Scheme.</p>
<b>Bats (roosting)</b>	Construction, operation and maintenance, and decommissioning	✓		<p>Based on aerial imagery and the UKHab surveys to date of the eastern area of the Site and part of the northern Export Pipeline option, buildings present within and adjacent to the Proposed Scheme predominantly comprise industrial buildings. These are likely to already be regularly disturbed, be in active use, and it is also expected that the majority of buildings currently present within the ZOI will be retained or remain unaffected as part of the Proposed Scheme.</p> <p>The daytime bat walkover to date has identified a small number of buildings within the 50m buffer that may have suitability for roosting bats. If these buildings, or any other buildings or trees that are subsequently identified to support PRFs, and bats are found to be roosting within buildings adjacent to construction or decommissioning activities, they could be subject to disturbance levels above those that they are habituated to. This will be reviewed as further baseline information and details of the design become available.</p>
<b>Bats (foraging and commuting)</b>	Construction, operation and maintenance, and decommissioning		✓	<p>Habitat within and adjacent the Site may offer commuting and foraging habitat for bats. It is likely that higher quality habitat along the Export Pipeline options would only be temporarily lost with plentiful habitat within the wider locale remaining. While the habitat at the proposed Regas and Storage Area is expected to be permanently lost, it is considered to be of limited value for bats, with a lack of cover and poor</p>

Element	Phase	Scoped In	Scoped Out	Justification
				<p>connectivity, set within a predominately industrial landscape. A review of ecological reports for planning applications in the locale suggest that the area is only used by low numbers of common pipistrelle (<i>Pipistrellus pipistrellus</i>) and noctule (<i>Nyctalus 64octule</i>).</p> <p>Based on the above, standard mitigation measures (e.g. <b>embedded environmental measures 13 and 16</b>) can be incorporated into Proposed Scheme in relation to potential indirect disturbance impacts (such as light spill) to minimise impacts to foraging and commuting. It is therefore considered that foraging and commuting bats can be scoped out of the assessment at this stage.</p>
<p><b>Amphibians (GCN and common toad)</b></p>	<p>Construction, operation and maintenance, and decommissioning</p>	<p>✓</p>		<p>Grassland and scrub habitats, as well as rabbit warrens and bunds within the Site offer suitable shelter and foraging habitat for amphibian species, including GCN and common toad. In addition, there are a number of waterbodies in the areas surrounding the Site. Some of these waterbodies may offer suitable breeding habitat for amphibians. However, due the location of the Site, the waterbodies may have a higher salinity level than GCN can tolerate, while a review of ecological reports for planning applications in the locale suggest that GCN may be absent from the wider locale.</p> <p>If present, clearance of suitable habitat required during the construction phase may result in habitat loss and direct killing or injury of amphibians (including GCN if present). In addition, indirect impacts may be incurred during construction, operation and decommissioning activities via pollution events, resulting in habitat degradation. On a precautionary basis, at present this feature is scoped in.</p> <p>This will be reviewed as further baseline information and details of the design become available.</p>

Element	Phase	Scoped In	Scoped Out	Justification
Otter	Construction, operation and maintenance, and decommissioning	✓		<p>There are a number of watercourses and waterbodies located adjacent to the Site that could support otter. The potential therefore exists for direct physical impacts to otter (e.g. loss of otter rest sites) as well as indirect impacts (e.g. vibration, lighting or noise disturbance) to resident otter during construction, operation and decommissioning activities.</p> <p>Potential indirect effects (e.g. light spill, noise and disturbance) may have an impact upon otter during construction, operation and decommissioning activities of the Proposed Scheme.</p>
Reptiles	Construction		✓	<p>The grassland and scrub present within the east and north Site offer suitable shelter and foraging habitat for reptiles. Any clearance of these habitats during the construction phase may result in the direct killing or injury of reptiles.</p> <p>However, a review of ecological reports for planning applications in the local area suggest that reptiles are likely to be absent from the Site and the wider area. The area in the east of the Site where permanent habitat loss is expected has limited connectivity to the wider local area being set in a predominately industrial area. It is therefore considered unlikely that reptiles are present in this area of the Site. Habitat loss along the proposed Export Pipeline is expected to be temporary, and even if reptiles are present in these areas of the Site, they would likely be in small numbers and would have opportunity to move into the unaffected adjacent habitats temporarily while the construction works are on-going.</p> <p>It is considered that reptiles are unlikely to be present on the Site and adjacent habitats, and based on the above, the <b>embedded environmental measures 1, 2, 3, 5, 6, 8, 10, 11 and 12</b> will minimise any risk to reptiles in the unlikely event that they are present.</p>



Element	Phase	Scoped In	Scoped Out	Justification
				It is therefore considered that reptiles can be scoped out of the assessment at this stage.
<b>Water vole</b>	Construction, operation and maintenance, and decommissioning	✓		<p>Based on aerial imagery, there are a number of waterbodies and ditches within the vicinity of the Site. UKHab surveys to date of the eastern area of the Site and part of the northern Export Pipeline option route have not recorded any suitable water vole habitats within 10m of the Site. If the remaining UKHab surveys record suitable water vole habitat within 10m of the Site, activities during the construction phase may result in adverse effects to suitable water vole habitat and disturbance to water vole themselves via pollution events, noise, vibration and lighting disturbance. While lighting and visual disturbance may negatively affect water vole during operation of the Proposed Scheme.</p> <p>If the UKHab survey identifies suitable water vole habitat within 10m of the Site, detailed presence/likely absence surveys would be undertaken. However, if the UKHab survey does not record any suitable water vole habitat within 10m of the Site, water vole will be scoped out for further consideration.</p> <p>Therefore, water voles are currently scoped in on a precautionary basis until the UKHab surveys have been completed.</p>
<b>White-clawed crayfish</b>	Construction, operation and maintenance, and decommissioning		✓	The desk study did not return any records of white-clawed crayfish within 2km of the Site. No watercourses are present within the Site based on available aerial imagery, the extent of survey effort completed to date, and a review of ecological reports for planning applications in the locale.

Element	Phase	Scoped In	Scoped Out	Justification
				<p>On the basis of the above, white-clawed crayfish are considered to be outside of the Zol and are therefore scoped out of the assessment. This will be kept under review as the initial UKHab surveys progress.</p>
<p><b>Plants (protected)</b></p>	<p>Construction and decommissioning</p>	<p>✓</p>		<p>Given the location of the Site near the coast, the grassland, ephemeral and scrub habitats within the Site have the potential to support protected plant species.</p> <p>Any clearance of suitable habitat required during the construction phase may result in habitat loss and direct killing of protected plant species. In addition, indirect impacts may be incurred during both construction and operation via pollution events, resulting in habitat degradation.</p>
<p><b>SPI and other conservation-notable species (terrestrial invertebrates)</b></p>	<p>Construction and decommissioning</p>	<p>✓</p>		<p>Based on available aerial imagery and the extent of survey effort completed to date, habitats within the eastern area and wider area of the Site are considered potentially suitable to support notable invertebrate species.</p> <p>The Teesmouth and Cleveland Coast SSSI is partly designated as such for the presence of a notable invertebrate assemblage utilising the various habitats present, of which the northern Export Pipeline option goes partly through. Any suitable habitat that is revealed to be present during further survey effort to be completed could potentially be suitable to support these species.</p> <p>Any clearance of suitable habitat required during the construction phase may result in habitat loss and direct killing or injury of terrestrial invertebrates. In addition, indirect impacts may be incurred during b construction, operation and decommissioning activities via pollution events, and light pollution.</p>

Element	Phase	Scoped In	Scoped Out	Justification
				On the basis of the above, terrestrial invertebrates are scoped into the assessment. Depending on the Proposed Scheme design and results of the UKHab survey, terrestrial invertebrate surveys may be required (see <b>Table 7-19</b> )
<b>SPI and other conservation-notable species (vertebrates and plants)</b>	Construction and decommissioning	✓		Grassland and scrub habitats within and adjacent the Site offer suitable shelter and foraging habitat for a range of SPI species such as plants, hedgehog, brown hare, of which records were returned from the desk study.  Any clearance of suitable habitat required during the construction phase may result in habitat loss and direct killing or injury of SPI species. In addition, indirect impacts may be incurred during construction, operation and decommissioning activities via pollution events, resulting in habitat degradation.
<b>Breeding and non-breeding birds (including Schedule 1 species)</b>	Construction, operation and maintenance, and decommissioning	✓		Construction and decommissioning and operation activities could cause the loss, degradation or disturbance of terrestrial and aquatic habitats for birds (including internationally designated sites qualifying features and breeding Schedule 1 species).  In addition, bird species may be disturbed via noise, vibration, lighting and/or visual disturbance during construction, operation and decommissioning, and potentially be displaced from suitable habitat. A programme of bird surveys has commenced, with further details provided in <b>Table 7-19</b> ).
<b>Freshwater</b>				

Element	Phase	Scoped In	Scoped Out	Justification
<b>Fish</b>	Construction, operation and maintenance, and decommissioning	✓		<p>Protected fish species are present within the Site, and migratory diadromous species have been recorded in the River Tees.</p> <p>Water quality impacts (pollutants and suspended sediments), alterations to visual stimuli (artificial light spill) and alterations to underwater soundscape (notably piling) during construction and operation could result in direct harm, and also incur disturbance or avoidance behaviours.</p>
<b>Invertebrates</b>	Construction, operation and maintenance, and decommissioning		✓	<p>Construction and operation activities could have impacts on surface water quality by introducing pollutants and suspending sediments, which may negatively impact invertebrate communities. However, with the exception of freshwater environments connected to the Tees, there are no freshwater receptors onsite or hydrologically connected to the site. Two ponds are in close proximity to the northern Export Pipeline option route, but are at such a distance that impacts are unlikely from the proposed activities.</p> <p>Additionally, standard mitigation measures can be incorporated into the Proposed Scheme to reduce potential water quality impacts. Therefore, invertebrates are scoped out for further assessment.</p>
<b>Macrophytes</b>	Construction, operation and maintenance, and decommissioning		✓	<p>Construction and operation activities could have impacts on surface water quality by introducing pollutants and suspending sediments, which may negatively impact macrophyte assemblages. However, with the exception of freshwater environments connected to the Tees, there are no freshwater receptors onsite or hydrologically connected to the site. Two ponds are in close proximity to the northern Export Pipeline option</p>

Element	Phase	Scoped In	Scoped Out	Justification
				<p>route, but are at such a distance that impacts are unlikely from the proposed activities.</p> <p>Additionally, standard mitigation measures can be incorporated into the Proposed Scheme to reduce potential water quality impacts. Therefore, macrophytes are scoped out for further assessment.</p>
<b>INNS</b>	Construction.	✓		Site clearance during construction activities could facilitate the spread of INNS in freshwater environments.
<b>Marine</b>				
<b>Benthic Habitats and associated benthic communities</b>	Construction and operation and maintenance	✓		<p>Construction and operation activities will result in the direct loss of benthic habitats.</p> <p>This includes the intertidal foreshore (currently defined as Priority Habitat mudflats). Part of this habitat will be lost due to the construction of the Marine Jetty.</p> <p>Operational maintenance activities such as dredging and vessel movements could also result in water quality impacts from vessel wave wash and direct loss/degradation of habitat. However it is noted that these activities are already present within the Tees Esturay.</p>
<b>Phytoplankton</b>	Construction and operation and maintenance		✓	Construction and operation activities could have water quality impacts by introducing pollutants and increasing levels of suspended sediments. Whilst this has the potential to impact phytoplankton communities, standard mitigation measures can be incorporated into the Proposed Scheme in relation to water quality to minimise impact to phytoplankton.

Element	Phase	Scoped In	Scoped Out	Justification
<b>Marine Plants and Macroalgae</b>	Construction and operation and maintenance		✓	Construction and operation activities could have water quality impacts by pollutants and increasing levels of suspended sediments. Whilst this has the potential to impact marine plants and macroalgae communities (which are of low value), standard mitigation measures can be incorporated into the Proposed Scheme in relation to water quality to minimise impact to macroalgae.
<b>Fish</b>	Construction and operation and maintenance	✓		Protected fish species, including migratory species, are known to be present in the Tees Estuary. Water quality impacts (pollutants and suspended sediments), and alterations to visual stimuli (artificial light spill) and the underwater soundscape during construction could result in direct harm and also cause disturbance/avoidance behaviours. Water quality impacts during operation could also impact fish species.
<b>Marine mammals (seals and porpoise)</b>	Construction and operation and maintenance	✓		Harbour seals, grey seals and harbour porpoises are present within the Tees Estuary. Alterations to visual stimuli (increased lighting), and the airborne and underwater soundscape from construction activities (notably piling) could incur physical harm, and avoidance/disturbance. Navigation during construction and operation could also result in vessel strikes.
<b>Other marine mammals</b>	Construction and operation and maintenance		✓	The remaining marine mammals recorded as present in the Greater North Sea Ecoregion (minke whale, bottlenose dolphin, white-beaked dolphin, orca, Atlantic white-sided dolphin, long-finned pilot whale, Risso's dolphin and short-beaked common dolphin) have been scoped



Element	Phase	Scoped In	Scoped Out	Justification
				out due to their unlikely presence in the Tees estuary and consequently vicinity of the Proposed Scheme.
<b>INNS</b>	Construction and operation and maintenance	✓		Vessel movements have the potential to provide a vector for the spread of INNS during construction and operation phase.

## 7.9 PROPOSED ASSESSMENT METHODOLOGY

- 7.9.1. The proposed generic project-wide approach to the assessment methodology is set out in **Chapter 4: The EIA Process** of this EIA Scoping Report. However, whilst this informs the approach that will be used, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the biodiversity assessment in the ES. Cumulative effects resulting from the Proposed Scheme and other developments will also be assessed.
- 7.9.2. The assessment methodology will be undertaken in accordance with the CIEEM EcIA guidelines (Ref. 7.25). These guidelines represent the current best practice for assessing the ecological impact of development projects. Other industry best practice guidance that will be followed when undertaking the assessment is referenced in **Section 7.2** and **Section 7.4**.
- 7.9.3. Consideration will also be given to standard EIA terminology, where the significance level attributed to each effect has been assessed based on the sensitivity of the affected Important Ecological Features (IEFs) and the magnitude of change arising from the Proposed Scheme. The sensitivity of the affected feature is assessed on a scale of very high, high, medium, low, and negligible (as summarised in **Table 7-17**), and the magnitude of change is assessed on a scale of large, medium, small, negligible and no change.
- 7.9.4. The assessment of likely significant environmental effects as a result of the Proposed Scheme will consider both the construction, operational (including maintenance) and decommissioning phases. The impact process involves:
- Identifying and characterising impacts and their effects;
  - Incorporating measures to avoid and mitigate adverse effects;
  - Assessing the significance of any residual effects after embedded mitigation;
  - Identifying appropriate additional mitigation measures and any compensation measures to offset significant residual effects; and
  - Identifying opportunities for ecological enhancement.
- 7.9.5. This assessment will be presented in the form of the ES chapter and adjacent assessments, including an HRA.
- 7.9.6. The assessment includes potential impacts on each feature identified as an IEF (discussed further under **Section: Determining Importance**, below), identifying potential impacts and effects during the construction, operational and decommissioning phases of the project, with impacts and effects characterised in accordance with the following criteria:
- Positive or negative: whether the impact/effect will improve or reduce the quality of the baseline habitat present;
  - Extent: the spatial or geographical area over which the impact/effect may occur,
  - Magnitude: the size, amount, intensity or volume of the impact/effect, defined on a quantifiable basis, such as an area or percentage of habitat to be lost;
  - Duration: the length of time an impact/effect is expected to last, relative to the particular timeframe for the species or habitat being considered and defined in **Chapter 4: Approach to EIA** as short-, medium- or long-term and permanent or temporary. Short-term is considered to be up to one year; medium-term is considered to be between one and 10 years and long-term is considered to be greater than 10 years;



- Frequency and timing: the frequency of a particular activity may change its impact/effect, e.g., one-off or infrequent disturbance is less likely significantly affect a particular species present within a habitat, whereas regular disturbance is more likely to have a significant effect. Similarly, the impact/effect of a particular activity may change significantly depending on its timing, e.g., tree felling outside of bird nesting season is highly unlikely to directly impact nesting birds, whereas carrying out the same work within nesting season is more likely to have impacts; and
- Reversibility: an irreversible (permanent) effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible (temporary) effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation.

## DETERMINING IMPORTANCE

- 7.9.7. A number of characteristics contribute to the importance of ecological features. These include, for example (but not exclusively):
- The rarity of a species or habitat;
  - Legal protection or conservation status;
  - Ability to resist or recover from environmental change;
  - Whether the species population size is notable in a wider context;
  - The richness of assemblages of plants and animals; and
  - The presence of species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change.
- 7.9.8. The CIEEM guidelines (Ref. 7.25) state that ecological features should be considered within a 'defined geographical context' (i.e. spatial scale), with international importance being the highest level, followed by international and European; national; regional; metropolitan, county, vice-county or other local authority-wide areas; river basin district; estuarine system/coastal cell; and local importance representing the lowest level.
- 7.9.9. Assigning importance to ecological features is based on professional judgement informed by available guidance and information and expert advice.

**Table 7-17** gives an example classification and sensitivity of ecological features. The level of sensitivity assigned to an IEF is related to its level of importance and the characteristics of the IEF.

**Table 7-17 - Example Classification of Important Ecological Features**

Scale at which a Feature is Important	Sensitivity	Criteria Examples
<b>International</b>	Very High	<ul style="list-style-type: none"> <li>▪ An internationally designated site (e.g., SAC, SPA), or site meeting criteria for international designation.</li> <li>▪ Species present in internationally important numbers (&gt;1% of biogeographic population)</li> </ul>
<b>National (England/UK)</b>	High	<ul style="list-style-type: none"> <li>▪ A nationally designated site (SSSI or National Nature Reserve), or sites meeting the criteria for national designation</li> </ul>

Scale at which a Feature is Important	Sensitivity	Criteria Examples
		<ul style="list-style-type: none"> <li>Species present in nationally important numbers (&gt;1 % of UK population)</li> <li>Viable areas of priority habitat listed on Annex I of the Habitats Directive and smaller areas of such habitat that is essential to maintain the viability of that ecological resource</li> </ul>
Regional (north-east)	Medium	<ul style="list-style-type: none"> <li>Regionally significant and viable areas of key habitat identified as being of regional value</li> <li>Species present in regionally important numbers (e.g., &gt;1 % of the UK population), and regionally important populations of a species</li> </ul>
County/Borough (Stockton-on-Tees)	Medium	<ul style="list-style-type: none"> <li>Local Nature Reserves</li> <li>Habitat areas identified as being important at the county scale (for example those identified by the Tees Valley Nature Partnership (related to previous Local Biodiversity Action Plan Habitats)</li> <li>Species present in populations considered to be important at the county scale (for example those identified by the Tees Valley Nature Partnership (related to previous Local Biodiversity Action Plan Habitats)</li> </ul>
District	Low	<ul style="list-style-type: none"> <li>Non-statutory designated sites, e.g., Wildlife Sites (LWS) (depending on circumstances)</li> <li>Habitats considered to be important at the district level, and populations of a species considered to be important at the district level</li> </ul>
Local (surrounding areas)	Low	<ul style="list-style-type: none"> <li>Non-statutory designated sites, e.g., Wildlife Sites (LWS) (depending on circumstances)</li> <li>Areas of ancient semi-natural woodland less than 0.25ha in size</li> <li>Areas of habitat or species considered to appreciably enrich the ecological resource within a local context, e.g., species-rich flushes or hedgerows</li> </ul>
Site	Negligible	<ul style="list-style-type: none"> <li>Usually widespread and common habitats and species</li> </ul>

## SIGNIFICANCE OF EFFECT CRITERIA

- 7.9.10. The CIEEM guidelines define a significant effect in the context of an ecological impact assessment as *“an effect that either supports or undermines biodiversity conservation objectives for important ecological features or for biodiversity in general”*. Significant effects, as defined by the CIEEM guidelines, are determined by assessing any deviation in the baseline conditions of a feature of ecological importance that may occur as a result of individual and cumulative impacts during the

construction, operational and decommissioning phases of the Proposed Scheme. These effects will be expressed in terms of geographical scale (as outlined in **Table 7-18**); however, the geographical scale at which an effect is significant can vary from the geographical importance of the ecological feature being assessed. In accordance with the CIEEM guidelines, this will be a function of the assessment.

- 7.9.11. Effects will be defined as either ‘significant’ or ‘not significant’. The terrestrial ecology assessment will use the CIEEM methodology to describe all significant effects on features of ecological importance.
- 7.9.12. Significant effects will be determined through professional judgement and significance will be concluded as either ‘Negligible’, ‘Minor’, ‘Moderate’ or ‘Major’, as outlined in **Table 7-18**. For each IEF, the significance would also be determined as either ‘beneficial’ or ‘adverse’.

**Table 7-18 - Scale and Significance of Residual Effects**

<b>Geographic scale of significance in line with the CIEEM guidelines</b>	<b>Category of significant effect</b>
<b>International, National (England/UK) or Regional (North East)</b>	Major: where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the feature has limited adaptability, tolerance or recoverability or is of the highest sensitivity.
<b>Regional (North East), County/Borough, District</b>	Moderate: where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a feature which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a feature that has limited adaptability, tolerance or recoverability.
<b>Local (surrounding areas)</b>	Minor: where the Proposed Scheme is likely to cause a small but noticeable change from the baseline conditions on a feature which has limited adaptability, tolerance or recoverability, or is of the highest sensitivity or a considerable change from the baseline conditions at a feature which can adapt, is tolerant of the change or/and can recover from the change.
<b>Effects on features of Site-scale importance or limited effects on features of greater importance. No significant effects on key nature conservation features</b>	Neutral/Negligible: no perceptible change.

- 7.9.13. As set out in **Chapter 4: Approach to EIA**, effects that are classified as **Moderate** or **Major** are considered significant for the purpose of the Environmental Statement. Effects classified as below **Minor** or **Neutral/Negligible** are considered not significant.

## **OTHER ASSESSMENTS**

### **Habitat Regulations**

- 7.9.14. In line with the Planning Inspectorate's Advice Note 10 (Ref. 7.31), the relevant Secretary of State is the competent authority for the purposes of the Habitats Directive and the Habitats Regulations in relation to applications NSIPs. The Habitats Regulations require competent authorities, before granting consent for a plan or project, to carry out an Appropriate Assessment (AA) in circumstances where the plan or project is likely to have a significant effect on a European site (either alone or in combination with other plans or projects).
- 7.9.15. An HRA Screening Report will be prepared in accordance with the Planning Inspectorate's Advice Note 10 (Ref. 7.31) to determine whether the Proposed Scheme will have Likely Significant Effects (LSEs) on any European sites. If likely significant effects are identified, an Appropriate Assessment will be carried out to examine these effects in more detail and determine appropriate mitigation measures in order to avoid any adverse effects on site integrity resulting from the Proposed Scheme. The Screening and Appropriate Assessments may be combined into one report given the compressed timescale of the Proposed Scheme.
- 7.9.16. The HRA will include the Teesmouth and Cleveland Coast SPA and Ramsar Site (designated for waterbirds) which is located within the Site. Sufficient information will be provided to allow the relevant competent authority to determine whether there will be a resulting adverse effect on the integrity of European sites. Natural England and the MMO will be consulted on the draft HRA prior to the submission of the DCO application.

### **Biodiversity Net Gain**

- 7.9.17. Biodiversity net gain is the end result of a process applied to development so that, overall, there is a positive outcome for biodiversity. The process follows the mitigation hierarchy, which sets out that everything possible must be done to firstly avoid, secondly minimise and thirdly restore/rehabilitate losses of biodiversity on a site. Once onsite habitat creation/enhancement opportunities are exhausted, offsite locations will be considered to achieve the BNG targets. Only as a last resort, if BNG targets cannot be met, will the purchase of statutory credits be considered.
- 7.9.18. The provision of BNG is not currently mandatory (it is expected to be mandatory from November 2025) under the Environment Act 2021 (Ref. 7.1) in respect of Nationally Significant Infrastructure Projects (NSIPs). However, the approach to BNG is being considered by the Applicant, given the scale and features of the Proposed Scheme, and future development planned in the area. This will be the key focus of discussions with the relevant stakeholder during the pre-application process.

## **7.10 FURTHER SURVEYS**

### **BASELINE**

- 7.10.1. As mentioned previously above, the Study Area for the biodiversity assessment and the features present have been identified as far as reasonably foreseeable at this stage, based on available information. However, as initial survey work (**Table 7-3**) is completed and the assessment progresses, the findings may reveal the need for further surveys to determine potential likely



significant effects to ecological features more accurately. Any further survey requirements would be clearly identified following the completion of initial survey work. Based on the desk study and field surveys to date, further survey works that are considered to be potentially required are included in **Table 7-19**. Where relevant, the Applicant would seek to discuss and agree the scope and methodology of any further survey work with Natural England and other relevant statutory consultees.

- 7.10.2. This programme will be regularly reviewed in the light of the results of the surveys, ongoing consultation and the evolution of the design of the Proposed Scheme.
- 7.10.3. The surveys set out in **Table 7-19** below will commence in 2024 to inform the scope and assessment of potentially significant effects on ecological features. The proposed field survey programme is based on the results of the desk study and good practice survey guidance.

**Table 7-19 - Field survey programme**

Survey	Summary	Coverage of Study Area
<b><u>Terrestrial Ecology</u></b>		
<b>Surveys currently planned/being undertaken</b>		
<b>UKHab survey</b>	<p>A UKHab survey following best practice guidance (Ref. 7.58 Ref. 7.59 Ref. 7.60) is being undertaken during 2024 to provide general information on the type and distribution of habitats present, to establish baseline conditions. Distinct habitat types and parcels will be identified and mapped.</p> <p>A habitat condition assessments (HCA) will be undertaken for each distinct habitat type/parcel in accordance with the condition criteria provided in the technical guidance that accompanies the Biodiversity Metric v4.0 (Ref. 7.95).</p> <p>As the standard UKHab survey methodology is, in the main, concerned only with identifying habitat types, the survey will be extended to allow for the provision of information on other ecological features, particularly to identify the presence/potential presence of legally protected species or habitat with suitability for them.</p> <p>An initial UKHab survey commenced in January 2024 to inform this scoping report and the requirement for additional feature-specific surveys. The optimal season for UKHab surveys is April to October (weather depending) (i.e., when plants are more</p>	<p>Surveys will focus on the Site and a surrounding 50m buffer. HCA will only be undertaken within the Site boundary.</p> <p>Where necessary/appropriate, the UKHab survey may be extended locally to include an additional feature-specific buffer (e.g. to map habitat connectivity between the Site and an off-site feature such as pond which is potentially suitable for GCN).</p>

Survey	Summary	Coverage of Study Area
	<p>readily identifiable during the growing season). Therefore, a subsequent in-season update survey will be undertaken to provide robust baseline data to support the biodiversity assessment in the ES. The optimal time for undertaking HCA is during the core growing season from May to September, therefore HCA will be undertaken (or updated) during this period.</p>	
<p><b>GCN surveys</b></p>	<p>As outlined in <b>Section 7.4.9</b>, the desk study identified potentially suitable waterbodies for GCN. Those waterbodies which are within the Zol and have connectivity to the Proposed Scheme are being subject to HSI assessment (Ref. 7.71) (see <b>Section 7.4</b>) to determine their level of suitability for GCN. Once the suitability of ponds has been determined, a cost-benefit analysis would be undertaken to determine whether DLL or conventional surveys/assessment/mitigation would be most appropriate for the Proposed Scheme.</p> <p>Where required, GCN surveys will follow best practice (Ref. 7.72 Ref. 7.96 Ref. 7.97 Ref. 7.98).</p>	<p>Suitable water bodies up to 250m surrounding the Site (reflecting the distance within which the majority of adult GCN ordinarily remain around breeding ponds (Ref. 7.99), and where waterbodies are not separated from work areas by barriers to GCN dispersal.</p>
<p><b>Bat surveys</b></p>	<p>In accordance with best practice (Ref. 7.65 Ref. 7.66 Ref. 7.68), any trees or structures likely to be affected will be assessed from ground level to determine whether they have features which are suitable for roosting bats – potential roost features (PRFs). The results of these surveys will enable the scoping of any subsequent bat roost (presence/likely absence) surveys that may be required with a view to identifying potential or confirmed bat roosts. If required, bat roost surveys would consist of emergence</p>	<p>Surveys will be targeted within a 50m buffer surrounding the Site (reflecting potential for indirect effects).</p>

Survey	Summary	Coverage of Study Area
	<p>surveys and/or climbing inspection surveys in line with best practice guidance.</p> <p>As noted in <b>Table 7-16</b>, foraging and commuting bats are scoped out. Thus, no bat activity surveys would be undertaken.</p>	
<b>Otter surveys</b>	<p>Aerial imagery shows the presence of waterbodies and watercourses within 250m of the Site. Otter surveys will be undertaken in line with best practice guidance (Ref. 7.70) at those waterbodies, ditches and watercourses within the 250m buffer identified as providing potentially suitable habitat for this species, where there is potential for significant effects.</p>	<p>Surveys will focus on suitable waterbodies, watercourses, and ditches within 250m buffer surrounding the Site.</p>
<b>Badger surveys</b>	<p>A badger survey will be undertaken to record evidence of badger including setts, foraging pits, footprints, dung pits/latrines and mammal paths. Where setts are encountered, the sett type (main, annexe, outlier, subsidiary) and status (well used, partially used, disuse) will be determined if possible. These surveys will be completed in line with best practice guidance (Ref. 7.62 Ref. 7.63 Ref. 7.64 Ref. 7.100).</p>	<p>Surveys will focus on suitable habitat and boundary features within a 50m buffer surrounding the Site in conjunction with the UKHab survey.</p>
<b>Further surveys considered potentially required</b>		
<b>Water vole surveys</b>	<p>Aerial imagery shows the presence of one potential ditch within the Site. The desk study did not identify any other waterbody or watercourse within 10m of the Site. Should the UKHab survey identify the ditch, or any other habitats within 10m of the Site with</p>	<p>If required, surveys will focus on suitable watercourses and waterbodies within 10m of the Site.</p>



Survey	Summary	Coverage of Study Area
	<p>suitability to support water vole, these areas would be surveyed further in line with best practice guidance (Ref. 7.101). This will involve two survey visits (one during spring and one during summer) unless a single visit survey can be justified in line with best practice guidance.</p>	
<p><b>Invertebrate surveys</b></p>	<p>Should the UKHab survey identify habitats with the potential to support important species or assemblages of SPI invertebrate species in areas likely to be subject to significant effects, these areas would be surveyed further. Invertebrate survey scope and methods vary between species. In determining site-specific survey details, account will be taken of known records, habitat mix, landscape features and potentially significant effects. Survey methods will reflect standard guidance and could include, for example, direct observation, sweep netting, hand searching, aquatic netting, beating and pitfall traps.</p>	<p>If required, targeted areas, identified during the UKHab survey with sufficient potential to support notable or diverse invertebrates, within a 50m buffer surrounding the Site.</p>
<p><b>National Vegetation Classification (NVC) surveys</b></p>	<p>The results of the desk study and aerial imagery suggest that there could be open mosaic habitat within the Site, with other HPI such as reedbeds and coastal saltmarsh also present within the Site. This will be confirmed during the UKHab survey in 2024. Should any habitats be identified, that may qualify as HPIs or support plant species which are SPI or otherwise notable, and which could be subject to loss or degradation due to the Proposed Scheme, detailed botanical surveys may be undertaken in line with the NVC Users' Handbook (Ref. 7.61).</p>	<p>If required, surveys will focus on targeted areas where direct land take and indirect effects may occur (this will be dependent on the habitat type potentially affected).</p>
<p><b><u>Ornithology</u></b></p>		

Survey	Summary	Coverage of Study Area
<b>Non-breeding Season surveys</b>	<p>Non-breeding waterbird surveys focusing on monitoring the distribution of qualifying and assemblage species of the Teesmouth and Cleveland Coast SPA/Ramsar Site will comprise twice-monthly visits over the non-breeding season to targeted areas of waterbird habitat within 500m of the Proposed Scheme. Each survey visit will involve a six-hour watch from four observation points covering high to low tide or low to high tide in order to determine species usage of the area over the tidal cycle.</p>	<p>Intertidal bird surveys will be undertaken in two areas: the proposed Marine Jetty location and Regas and Storage Area plus 500m buffer; and where the proposed northern Export Pipeline option runs within the SPA/Ramsar Site or within targeted areas of waterbird habitat within 500m of the Proposed Scheme (the operational port to the northeast of the Proposed Scheme is not proposed to be surveyed nor are the Brinefields to the west).</p>
<b>Breeding Season surveys</b>	<p>A six-visit breeding bird survey of the Site and 100m buffer will be carried out between late March and July. The surveys will follow an adapted version of the CBC method (see Gilbert <i>et al</i> 1998) (Ref. 7.77). Once-monthly tidal cycle count visits are also proposed between April and August 2024.</p>	<p>Surveys will focus on the red line boundary and 100m buffer (extending up to 500m for certain Schedule 1 species, e.g. peregrine falcon).</p>
<b><u>Marine</u></b>		
<b>Benthic Communities</b>	<p>Core sampling may be required to collect macrofaunal and Particle Size Analysis (PSA) samples at set locations on the intertidal foreshore. These benthic invertebrate samples will be analysed by an accredited laboratory and identified to species level (where practicable) and enumerated. This dataset will help inform the description of the habitats and communities present on the intertidal foreshore. Should third party data be identified that is suitable to inform the baseline for fish, these surveys may not be required.</p>	<p>If required, sampling will target the Tees intertidal area on the intertidal foreshore.</p>



Survey	Summary	Coverage of Study Area
<b>Fish</b>	Dependent on further data becoming available from third party sources regarding fish communities within the Tees, a multimethod approach to describe the fish communities within the Tees in proximity to the scheme may be required, as per UKTAG Transitional Water Fish Fauna guidance (Ref. 7.102 to provide a suitable baseline dataset. Should third party data be identified that is suitable to inform the baseline for fish, these surveys may not be required.	If required, surveys will target accessible locations along the intertidal foreshore within the eastern area of the Site and suitable trawl locations on the Tees in proximity to the Proposed Scheme.

## LICENSING

- 7.10.4. The findings of the surveys being completed as part of the biodiversity assessment may determine that there are likely significant effects to certain species or species groups that will result from the Proposed Scheme. In some instances (such as in relation to badger, otter, or GCN), potential impacts to these species may not be legally permissible without first obtaining a licence from Natural England. Any requirements for licensing would be clearly set out in the various survey reports to be produced, and licences would be applied for and obtained prior to any works being undertaken that would affect the relevant species. The requirements for any protected species licensing would also be captured within the ES and discussed with Natural England and other relevant consultees where necessary.

## 7.11 ASSUMPTIONS AND LIMITATIONS

- 7.11.1. This EIA Scoping Report is based on information available at the time of writing. Information on the Site and wider Zol, as well as the design of the Proposed Scheme, is therefore subject to change.
- 7.11.2. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- Where access restrictions within the Study Area prevent a full ecological baseline assessment, a precautionary principle will be applied to the assessment (as has been applied to the scoping assessment) of any important ecological and ornithology features. The precautionary principle will assume a 'reasonable worst-case' scenario informed by professional experience and knowledge, desk-based information and field-based evidence (where available) for any feature unable to be accessed or fully surveyed. This approach will ensure that appropriate recommendations and/or mitigation are provided even though these may not later be required. Any recommendations and mitigations can thereafter be amended accordingly once access and surveys have been possible;
  - A detailed scope for the assessment has been provided as far as feasible at this stage. However, as mentioned above, the scope may be subject to change as a result of the ongoing data collection, consultation, assessment and/or any forthcoming details relating to the Proposed Scheme. This may require additional survey effort and/or assessments to be completed in order to accurately determine likely significant effects resulting from the Proposed Scheme.
  - Records held by local biological record centres and local recording groups are generally collected on a voluntary basis; therefore, the absence of records does not demonstrate the absence of species, it may simply indicate a gap in recording coverage; and
  - Ecological survey data is typically valid for two years unless otherwise specified, for example if conditions are likely to change more quickly due to ecological processes or anticipated changes in management (Ref. 7.102).

## 7.12 REFERENCES

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## 8 WATER ENVIRONMENT AND FLOOD RISK

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### 8.1 INTRODUCTION

- 8.1.1. This chapter considers the impacts on water environment and flood risk that may arise during construction, operation and maintenance, and decommissioning of the Proposed Scheme (as described in **Chapter 2 Site and Proposed Scheme Description** of this EIA Scoping Report), and any potential significant effects. It sets out the proposed methodology for the water environment and flood risk assessment and identifies those impacts that can be scoped out of the assessment. Where necessary, further assessment would be presented in the Preliminary Environmental Information Report (PEIR) to be published at the time of statutory consultation and then in the Environmental Statement (ES) which will be submitted with the application for development consent.
- 8.1.2. During the preparation of this chapter, consideration has been given to all possible receptors within the Study Area including main rivers, ordinary watercourses, other surface water bodies such as lakes, groundwater waterbodies, groundwater Source Protection Zones (SPZ), groundwater and surface water abstractions and discharges, surface water and groundwater quality, the floodplain and risk of flooding (surface and groundwater) now and/or in the future.
- 8.1.3. This chapter should be read in conjunction with the wider EIA Scoping Report with particular reference to:
- **Chapter 7: Biodiversity; and**
  - **Chapter 18: Geology and Soils.**
- 8.1.4. This chapter is supported by the following figures:
- **Figure 8.1: Flood Zones and Rivers;**
  - **Figure 8.2: Risk of Flooding From Surface Water;**
  - **Figure 8.3: Risk of Flooding From Reservoirs;**
  - **Figure 8.4: Groundwater bodies;**
  - **Figure 8.5: Designated Sites Within 5km;**
  - **Figure 8.6: Surface Water Features; and**
  - **Figure 8.7: Surface and Groundwater Abstractions and Discharge Consents.**

### 8.2 LEGISLATION, POLICY AND GUIDANCE

- 8.2.1. This section outlines the relevant legislation, policy and guidance of relevance to the water environment and flood risk assessment.

#### LEGISLATION

- 8.2.2. The legislation relevant to the water environment and flood risk assessment:
- Environmental Permitting (England and Wales) Regulations 2016 (Ref. 8.1) Makes it an offence to knowingly permit a water discharge activity unless complying with an exemption or environmental permit. Sets out a process to manage works that have the potential to affect a watercourse under the Environment Agency's jurisdiction.
  - Flood and Water Management Act 2010 (Ref. 8.2) Created the role of Lead Local Flood Authority (LLFA) to coordinate local flood risk management, including review and approval of surface water management systems. Schedule 3 of the Flood and Water Management Act introduces National

Standards for Sustainable Drainage Systems (SuDS) against which proposed drainage systems should comply.

- Land Drainage Act 1991 (Ref. 8.3) Sets out the powers and duties held by Local Authorities associated with flood risk, as well as the responsibilities for maintenance to reduce flood risk. Consent must be obtained for any works which may affect flow within an ordinary watercourse.
- The Water Resources Act 1991 (Ref. 8.4) The Water Resources Act regulates water resources, water quality and pollution, and flood defence. Part II of the Act provides the general structure for the management of water resources. The Water Resources Act was revised by the Water Act 2003
- The Environment Act 2021 (Ref. 8.6) Part of a recent legal framework for environmental protection, specifically targeting water quality and biodiversity enhancement.
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref. 8.7) The Water Framework Directive (WFD) Regulations provide a framework for managing the water environment in England through environmental objectives and a summary of the programmes of measures required to achieve those objectives.<sup>26</sup>
- The Groundwater Regulations (England and Wales) 2009 (Ref. 8.8) Introduces legislation on groundwater in England and Wales and provides rules on the granting of permits by the Environment Agency. Additionally, creates an offence for the discharge of hazardous substances or non-hazardous pollution without a permit.
- Flood Risk Regulations 2009 (Ref. 8.9) Legislation for managing flood risk including the requirement to map flood risk zones, identify high-risk areas and produce Preliminary Flood Risk Assessments and Flood Risk Management Plans.
- Water Act 2014 (Ref. 8.10) Legislative framework regarding water supply and sewerage licenses and undertakers, water industry regulation, water resources, environmental regulation and flood insurance.
- Water Industry Act 1991 (Ref. 8.11) Outlines requirements for the appointment and regulation of undertakers and water supply and sewerage licenses, insolvency enforcement and protection of customers, duties of water undertakers with regards to water supply and legislation for trade effluent discharge and other water industry disciplines.
- Groundwater (Water Framework Directive) (England) Direction 2016 (Ref. 8.12) Sets out instructions to the Environment Agency on obligations to protect groundwater.

## POLICY

- 8.2.3. National Policy Statements (NPS) set out the primary policy against which an application for the development consent of the Proposed Scheme will be considered. The Overarching NPS for Energy (EN-1) (Ref. 8.13), NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref. 8.14) and National Planning Policy Framework (NPPF) are relevant to the Proposed Scheme.
- 8.2.4. The Overarching NPS for Energy (EN-1) (Designated 2024) (Ref. 8.13) Sets out the Government's policy for delivery of major energy infrastructure and will be the primary basis for decision making. It states that *“these effects could lead to adverse impacts on health or on protected species and*

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<sup>26</sup> The fundamental requirements of the EU Water Framework Directive and associated directives were enacted into domestic law by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Under Section 2 of the European Union (Withdrawal) Act 2018, these continue to have effect in domestic law following the UK's withdrawal from the European Union

*habitats and could, in particular, result in surface waters, groundwaters or protected areas failing to meet environmental objectives established under the Water Framework Directive.”*

8.2.5. The NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Designated 2024) (Ref. 8.14) Sets out the Government’s policy for delivery of natural gas supply infrastructure and gas and oil pipelines. EN-4 makes reference to EN-1 regarding consideration of flood risk, coastal change and climate change. It also sets out requirements relating to the import of Liquefied Natural Gas (LNG) including dredging within the marine environment. This includes obtaining the relevant marine license granted by the Marine Management Organisation (MMO), and assessment of impacts to water quality and resources associated with the construction and ongoing operational/maintenance requirements of the import facility.

8.2.6. The following policy is also of relevance to the Proposed Scheme:

- National Planning Policy Framework (NPPF) (2023) (Ref. 8.15) Sets out the Government’s planning policies for England and how these are expected to be applied. Whilst NPPF does not contain specific policies for nationally significant infrastructure projects, it has the potential to be considered important and relevant to the Secretary of State (SoS) consideration of the Proposed Scheme.
- Stockton-on-Tees Borough Council Local Plan (2019) (Ref. 8.16) In effect till 2032, the local plan brings in guides to planning with an effective framework for sustainable development. Sets out policies to ensure that all new development is energy and resource efficient.
- Stockton-on-Tees Borough Council Local Flood Risk Management Strategy (2016) (Ref. 8.17) Aims to reduce the risk of flooding to residents and businesses and ensure that flood risk is managed in the most effective and sustainable way.

## **GUIDANCE**

8.2.7. The water environment and flood risk assessment will be undertaken accordance with the following guidance documents:

- Planning Practice Guidance (Ref. 8.18) Planning Practice Guidance (PPG) has been published online alongside the NPPF since 2014 to set out how certain policies should be implemented. The PPG for Flood Risk and Coastal Change (updated 2022) (Ref. 8.19) identifies how new developments must take flood risks into account and steer development to those areas at lowest risk. The PPG for Climate Change (updated 2019) (Ref. 8.20) sets out how climate change should be considered, including recommend increases in sea level rise, peak river flows and peak rainfall intensities.
- Environment Agency’s Approach to Groundwater Protection (2018) (Ref. 8.21) This document contains position statements providing information about the Environment Agency’s approach to managing and protecting groundwater.
- Tees Abstraction Licence Strategy (2019) (Ref. 8.22) This strategy sets out the Environment Agency’s approach to managing new and existing abstraction and impoundment within the Tees catchment in the Northumbria River basin district.
- Guidance for Pollution Prevention (GPP) (Ref. 8.23) These documents replace the old series of guidance documents (Pollution Prevention Guidance) and provide environmental regulatory guidance directly to Northern Ireland, Scotland and Wales only. Whilst they are not endorsed by the Environment Agency for use as regulatory guidance in England, they still provide environmental good practice guidance for the whole UK.

- Planning Inspectorate Guidance Note Eighteen: Water Framework Directive (2017) (Ref. 8.24) This advice note supports the preparation and submission of separate WFD assessment reports by Applicants, to clearly explain how the requirements of WFD have been met. The WFD reports should be prepared in consultation with the Environment Agency.
- Clearing the Waters for All (Environment Agency, 2016) (Ref. 8.25) Guidance relating to assessment of impact of activity on coastal and estuarine waters, relating to the WFD. Key stages to be considered screening and scoping to identify potential at risk receptors.
- Stockton-On-Tees Borough Council Strategic Flood Risk Assessment Level 1 and 2 (2018) (Ref. 8.26) To form guidance through understanding flood risk sources and to investigate and identify the extent and severity of flood risk throughout the area.
- Tees Valley Authorities' Sustainable Drainage Systems Guidance (2019) (Ref. 8.27) Provides an overview into SuDS techniques and policy requirements whilst also highlighting specific local standards to be met to meet national standards.
- Stockton-on-Tees Borough Council Preliminary Flood Risk Assessment (2011) (Ref. 8.28) Aimed at providing a high-level assessment of flood risk from local sources.
- Non-Statutory Technical Standards for Sustainable Drainage Systems (2015) (Ref. 8.29) Sets out the core technical standards for SuDS proposed within England, including guidance on controlling flood risk.
- Design Manual for Road and Bridges (DMRB) LA 113 Road Drainage and the Water Environment (2020) (Ref. 8.30) Provides guidance on the assessment and management of impacts that road projects may have on the water environment.
- CIRIA 697 The SuDS Manual (2007) (Ref. 8.31) This guidance covers the planning, design, construction, and maintenance of SuDS.
- CIRIA 532 Control of Water Pollution from Construction Sites (2001) (Ref. 5.28) This document provides guidance for the control of water pollution arising from construction activities. It focuses on the potential sources of pollution from within sites and the effective methods of prevention.
- Natural England Water Quality and Nutrient Neutrality Advice (NE785) (2022) (Ref. 8.33) This sets out Natural England's advice for development proposals that have the potential to affect water quality in such a way that adverse impacts on designated habitats sites cannot be ruled out. This applies to the Proposed Scheme as discharges of nitrogen containing effluent to the Tees catchment could adversely impact the Teesmouth and Cleveland Coast Special Protection Area (SPA) and Ramsar<sup>27</sup> site.

## 8.3 CONSULTATION

- 8.3.1. At the time of writing no consultation has taken place. However it is anticipated that consultation and engagement will be undertaken with Stockton-on-Tees, the Environment Agency, the MMO and Natural England during the pre-application process.
- 8.3.2. In addition, a number of data requests have been made to relevant bodies. **Table 8-1** provides a summary of data requests submitted to date and status.

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<sup>27</sup> Ramsar Sites are wetlands of international importance designated under the Ramsar Convention.

**Table 8-1 - Summary of Consultation to Date**

<b>Body/Organisation</b>	<b>Date of Consultation</b>	<b>Data request</b>
<b>Environment Agency</b>	January 2024	<p>Request for the following information in the Site area:</p> <ul style="list-style-type: none"> <li>■ Flood mapping, hydraulic modelling, historic flood event information and flood defence data (obtained via 'Product 4, 6 and 8' data requests);</li> <li>■ Surface water and groundwater abstractions within 1km buffer of the Site boundary;</li> <li>■ Surface water and groundwater discharge consents within 1km of the Site boundary;</li> <li>■ Historic flood information</li> </ul> <p>No response was received in time to be included in this Scoping Report but will be included in the PEIR and ES as the assessment progresses.</p>
<b>Middlesbrough Council (MC);</b> <b>Stockton-on-Tees Borough Council LLFA;</b> <b>Stockton-on-Tees Borough Council;</b> <b>Natural England</b>	January 2024	<p>Request for data and relevant information pertinent to the Proposed Scheme that will enable an assessment of flood risk and the water environment to be undertaken.</p> <p>No response was received in time to be included in this EIA Scoping Report but will be included in the PEIR and ES as the assessment progresses.</p>

## 8.4 STUDY AREA

### SURFACE WATER AND FLOOD RISK

- 8.4.1. The surface water Study Area is defined as the Site of the Proposed Scheme with an additional buffer of 1km from the Site boundary for the consideration of effects on surface water features and flood risk receptors, based on an understanding of the Site and professional judgement. The Study Area is shown on the water constraints maps in **Figure 8.1** to **Figure 8.3** and **Figure 8.5** to **Figure 8.7**. The Study Area will also consider surface water features, flood risk receptors, and water dependent conservation sites (surface water) that may be directly connected hydrologically and hydrogeologically to the Study Area. This is in line with DMRB Guidance LA 113 Road Drainage and Water Environment (Ref. 8.30). Although this guidance is applicable to road schemes, it is frequently used on non-road schemes as well as it is considered to provide a robust framework for the assessment of risks to the water environment.
- 8.4.2. The Study Area is unlikely to change significantly as the Proposed Scheme develops. If the footprint of the Site changes, any newly identified and affected receptors will be included in the buffers specified for surface water and flood risk.

## WFD DESIGNATED WATER BODIES

- 8.4.3. The Study Area for the WFD Screening and Scoping assessment will consist of the following:
- Tees Water Body (surface water body ID GB510302509900);
  - Tees Coastal Water Body (surface water body ID GB650301500005);
  - Tees from Skerne to Tidal Limit Water Body (surface water body ID GB103025072595);
  - Tees Sherwood Sandstone (groundwater water body ID GB40301G702000);
  - Tees Mercia Mudstone & Redscar Mudstone (groundwater water body ID GB40302G701300);  
and
  - Skerne Magnesian Limestone (groundwater water body ID GB40301G704000).

## GROUNDWATER

- 8.4.4. The groundwater Study Area will encompass groundwater receptors including groundwater waterbodies or water dependent conservation sites (Groundwater Dependent Terrestrial Ecosystems) located within 1km (and up to 5km if sensitive receptors such as major public water supplies are identified) of the Site of the Proposed Scheme. Receptors outside of the 5km Study Area will be considered if they are deemed to be hydrologically/hydrogeologically linked. This is in line with DMRB LA 113 and is considered appropriate for the assessment of direct and indirect effects on groundwater receptors potentially at risk from contamination and/or changes to groundwater quantity and quality from the Proposed Scheme based on the Site location.
- 8.4.5. The groundwater Study Area will not extend beyond the eastern bank of the River Tees as the waterbody would act as a barrier to groundwater impacts being conveyed downgradient of the east bank.
- 8.4.6. The groundwater Study Area is shown on the Water Constraints maps in **Figure 8.4** and **Figure 8.7**.
- 8.4.7. The groundwater Study Area is unlikely to change significantly as the Proposed Scheme develops. If the footprint of the Site changes, any newly identified and affected receptors will be included in the buffers specified for groundwater.

## 8.5 BASELINE CONDITIONS AND FUTURE BASELINE

### DATA SOURCES

- 8.5.1. The water environment and flood risk assessment described in this section has been informed by the following data sources:
- Environment Agency's online Flood Map for Planning (Ref. 8.34);
  - Environment Agency's online Flood Risk from Surface Water map (Ref. 8.35);
  - Environment Agency's online Flood Risk from Reservoirs map (Ref. 8.35);
  - Environment Agency's Recorded Flood Outlines map (Ref. 8.36);
  - Environment Agency's online Catchment Data Explorer (Ref. 8.37);
  - Ordnance Survey Mapping;
  - Environment Agency's LiDAR Digital Terrain Model (Ref. 8.38);
  - DEFRA 'Magic Map' online GIS portal (Ref. 8.39);
  - British Geological (BGS) Geology of Britain Viewer (Ref. 8.40);
  - BGS GeoIndex online database (Ref. 8.41);
  - Flood Estimation Handbook Web Service (Ref. 8.42); and
  - Groundsure Enviro+Geo Insight report (included in **Appendix 18A** of this EIA Scoping Report).



8.5.2. This baseline section should be read in conjunction with **Figure 8.1** to **Figure 8.7**.

8.5.3. A summary of the baseline conditions is presented below.

## **EXISTING BASELINE**

### **Surface Water Features**

- 8.5.4. A review of Ordnance Survey (OS) mapping indicates no known surface water features within the Site boundary (with the exception of the River Tees located in the east of the Site).
- 8.5.5. Several surface water features are however indicated to be located within the Study Area. A complex network of ordinary watercourses, ditches and ponds is located to the west of the Site within the Teesmouth and Cleveland Coast Site of Special Scientific Interest (SSSI) and Ramsar site.
- 8.5.6. The Site itself extends into the River Tees borders. Teesport is located along the south bank of the River Tees, opposite the Site, and is the fifth largest port in the UK, serving imports and exports of cargo (Ref. 8.46). Multiple smaller ports, wharfs and jetties are located along the banks of the Tees, within the Study Area, as well as further downstream of the Study Area. These primarily serve the manufacturing and export/import industries located within the region. There is an existing requirement for maintenance dredging of the approach channel and various berthing pockets in the lower Tees estuary. The existing maintenance dredging regime is well-established, and the locations, volumes and frequency of dredging are well recorded as part of the marine license conditions.
- 8.5.7. The Seaton on Tees Channel and associated mudflats border the north of the site. Greatham Creek flows to the north west (upstream) of the Site and discharges into the Seaton on Tees Channel.
- 8.5.8. The network of ditches and small watercourses are typical of low-lying topography in tidal areas such as the Study Area. These are classified as ordinary watercourses under the jurisdiction of Stockton-on-Tees Borough Council (SoTBC) as the relevant LLFA.
- 8.5.9. The River Tees, Seaton on Tees Channel and Greatham Creek are designated main rivers under the jurisdiction of the Environment Agency. At the location of the Site, the watercourses are all tidally dominated. The Seaton on Tees Channel discharges to the Tees immediately north of the Site and the River Tees in turn flows into the North Sea approximately 2km north and downstream of the Site. The River Tees is designated as a SSSI and SPA.
- 8.5.10. The River Tees, Seaton on Tees Channel and Greatham Creek are classified as WFD waterbodies and are monitored against the objectives of the WFD as Transitional and Coastal Waters (TraC). The downstream extents of the River Tees as it flows through the Study Area is referenced as the Tees Transitional Water Body (GB 510302509900) and this also encompasses the Seaton on Tees Channel and Greatham Creek. The section of coastline at the outfall of the River Tees to the North Sea is also monitored against the objectives of the WFD as a TraC and is referenced as The Tees Coastal Water Body (GB 650301500005). The waterbodies are both are described as heavily modified. Cycle 3 (2019) monitoring awards ecological status as Moderate and chemical status as Fail. Multiple reasons are listed for not achieving Good status:
- Diffuse source pollution in relation to poor nutrient management and contaminated water body bed sediments (agricultural and industry related) – Tees Transitional Water Body;

- Point Source pollution in relation to continuous sewage discharge and trade/industry discharge (industry and water industry related) – Tees Transitional Water Body;
- Contaminated water body bed sediments – Tees Transitional Water Body;
- Physical modification associated with ports and harbours, coastal squeeze and recreation – Tees Transitional Water Body and The Tees Coastal Water Body; and
- Elevated levels of Polybrominated diphenyl ethers (PBDE) and Mercury and its compounds – Tees Transitional Water Body and The Tees Coastal Water Body.

### Designated Sites

8.5.11. The following designated areas related to surface water environment were identified within the Study Area:

- Teesmouth National Nature Reserve (NNR) that borders the north of the Site and encompasses the mudflats on the Seaton on Tees Channel (also known as Seal Sands), in addition to containing/being adjacent to multiple Priority Habitat Inventory areas.
- Teesmouth and Cleveland Coast Ramsar site that encompasses the Teesmouth National Nature Reserve, mudflats at the mouth of the Tees downstream of the Site, and Greatham Creek upstream of the Site.
- Teesmouth and Cleveland Coast proposed Ramsar site that includes the foreshore within the Site.
- Teesmouth and Cleveland Coast SSSI and SPA that encompasses the River Tees, Teesmouth National Nature Reserve, mudflats at the mouth of the Tees downstream of the Site, and Greatham Creek upstream of the Site.

8.5.12. In addition, Seaton Dunes and Common SSSI and Local Nature Reserve (LNR) was identified outside of the surface water Study Area, approximately 2km downstream of the Site, however it is considered to be hydrological connected to the Site.

8.5.13. The designated sites related to the Water Environment and located in the Study Area are shown in **Figure 8.5**. A detailed description of the ecological value of these sites is included within **Chapter 7: Biodiversity** of this EIA Scoping Report.

### Existing Drainage

8.5.14. Information on the existing drainage serving the area of the Site is limited. A review of the LandIS Soils mapping (Ref. 8.44) shows that the entire Site is underlain by loamy and clayey soils of coastal flats with naturally high groundwater. This information suggests that infiltration techniques are unlikely to be feasible in the Site area. Considering this information, it is therefore assumed that the existing surface water drainage system serving the Site eventually discharges to nearby watercourses and the River Tees.

### Existing Surface Water Discharge and Abstraction Consents

8.5.15. Findings presented in the Groundsure report (provided within **Chapter 18 Geology and Soils, Appendix 18A**) suggest that there are no active surface water abstraction licenses located within 2km of the Site boundary and no active surface water discharge licenses within 500m of the Site boundary.

Information on the existing licensed and private surface water discharge and abstraction consents within 1km of the Site boundary have been requested from the Environment Agency and SoTBC. The information was not received at the time of writing this Scoping Report.

## Groundwater

- 8.5.16. The main characteristics of the geology (superficial and bedrock) that underlies the Site are described in **Chapter 18 Geology and Soils** and considers published information from freely available sources (Ref. 8.45).
- 8.5.17. The Site is underlain by tidal flat deposits (superficial geology) comprising a mixture of sand, silt and clay. The tidal flat deposits are low productivity aquifers of limited or local potential, where borehole yields are expected to be small. The Environment Agency designate these as Secondary (undifferentiated) aquifers assigned in cases where it is not possible to attribute either a category A or category B aquifer designation to the rock type.
- 8.5.18. The bedrock geology comprises the Mercia Mudstone Group, predominantly mudstone and subordinate silts. Permeable sandstone bands (known as skerries) of limited thickness may also be present. The Environment Agency designates the Mercia Mudstone Group as a Secondary B aquifer which are predominantly low permeability layers which may store or yield limited amount of groundwater due to localised features such as fissures, thin permeable horizons, and weathering. They are generally the water-bearing parts of the former non-aquifers.
- 8.5.19. The Sherwood Sandstone Group directly underlies the Mercia Mudstone Group to the north-west of the Site and consists of sandstone and conglomerate in the lower part. The Sherwood Sandstone Group is designated a Principal aquifer, deemed capable of supporting water supplies at a regional scale meaning they usually provide a high level of water storage. They may support water supply and/or river baseflow on a strategic scale.
- 8.5.20. Local British Geological Survey (BGS) boreholes (Ref. 8.45) provide indicative records for ground conditions (including depth to superficial/bedrock geology and groundwater level) for the Site. BGS borehole NZ52NW290 (NGR 453254 525294), which is located south of the emergency access road along the north of the Site, records a total thickness of 5.5m artificial ground (Made Ground) and 24.9m for superficial deposits. Bedrock geology was not intercepted in this borehole. Groundwater was intercepted at multiple depths, 3.4 meters below ground level (bgl) (3.15m Ordnance Datum (OD)) and 2.05m bgl (4.5mOD) within the superficial deposit aquifer.
- 8.5.21. Regional groundwater flow is likely to occur in the deep bedrock aquifer (Sherwood Sandstone Group). Groundwater flow in the deep bedrock aquifer is not generally in continuity with shallow groundwater. Locally, groundwater flow will likely be in a south-easterly direction towards the River Tees, which is likely hydraulically connected to shallow groundwater within the superficial deposits.
- 8.5.22. The groundwater vulnerability map (Ref. 8.35) shows the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a single square kilometre. The tidal flat deposits are designated Medium to High groundwater vulnerability which means that these units can transmit pollution to groundwater easily.
- 8.5.23. The groundwater Study Area does not fall with a SPZ. SPZs are defined around large public potable groundwater abstraction sites. The purpose of SPZs is to provide additional protection to safeguard drinking water quality and forms part of an initial screening process in assessing impacts to groundwater resources. The closest SPZ is approximately 8.5km north west of the Site at Hartlepool. Based on the geology of the area, the abstraction is inferred to target the Sherwood Sandstone Group and/or Roker Formation (Zechstein Group).

- 8.5.24. The Tees area is divided into groundwater management units (GWMU) which are sub-divisions of the groundwater bodies. The Environment Agency uses the information and assessment of GWMU to determine water availability and licence restrictions. There are four groundwater bodies within the Tees Catchment; Skerne Magnesian Limestone (GB40301G70400), Tees Sherwood Sandstone (GB40301G702000), Tees Carboniferous Limestone and Millstone Grit (GB40302G700300) and Tees Mercia Mudstone and Redcar Mudstone (GB40302G701300).
- 8.5.25. Under the WFD, the Environment Agency has determined the Site lies within the Tees Sherwood Sandstone groundwater body (GB 40301G702000) classified as holding Good status for both qualitative and chemical classification on the 2019 dataset. The groundwater body is protected under the Drinking Waters Directive (Ref. 8.37). A 5km buffer zone is in place along the coast and new license applications should locate outside of this zone or demonstrate that new abstractions will not result in saline intrusion.

### Existing Groundwater Abstraction Licenses

- 8.5.26. A summary of active groundwater abstraction licenses as reported in the Groundsure report (provided within **Appendix 18A**) are presented in **Table 8-2** below.

**Table 8-2 – Summary of active groundwater abstraction licenses for the Site**

Licence No. & Owner	Status	Annual Volume (m3)	Max Daily Volume (m3)	Target Aquifer	Distance from Site
1/25/04/134 SABIC UK PETROCHEMICALS*	Active	1800000	6478	Sherwood Sandstone Group	488m west
1/25/04/134 SABIC UK PETROCHEMICALS*	Active	1800000	6478	Sherwood Sandstone Group	538m west
1/25/04/164 North Tees Ltd	Active	450000	1500	Mercia Mudstone	548m southwest
1/25/04/134 SABIC UK PETROCHEMICALS*	Active	1800000	6478	Sherwood Sandstone	592m west
1/25/04/134 SABIC UK PETROCHEMICALS*	Active	1800000	6478	Sherwood Sandstone	600m west
1/25/04/134 SABIC UK PETROCHEMICALS*	Active	1800000	6478	Sherwood Sandstone	692m southwest

1/25/04/134 SABIC UK PETROCHEMICALS*	Active	1800000	6478	Sherwood Sandstone	851m southwest
1/25/04/134 SABIC UK PETROCHEMICALS*	Active	1800000	6478	Sherwood Sandstone	1222m southwest

**Table notes**

\* three abstractions under the same licence no. and owner targeting the Principal Sherwood Sandstone Group aquifer. Annual and maximum daily volumes (m3) are the same for all abstractions under specified licence

8.5.27. Additional data regarding groundwater abstractions (public and private), groundwater level and quality requested through engagement was not received in time for the completion of this EIA Scoping Report. Additional data received through ongoing engagement will be provided to inform the PEIR and ES.

**FLOOD RISK**

**Risk of Flooding from Fluvial and Tidal Sources**

8.5.28. A review of the Environment Agency’s Flood Map for Planning (Ref. 8.34) shows that most of the Site is located in the low-risk Flood Zone 1. However, areas along the northern boundary may encroach within the mapped extent of Flood Zones 2 and 3 associated with the River Tees (including Seaton on Tees Channel). Within the eastern area of the Site, where the Site extends into River Tees, that is identified as Flood Zone 3. Land to the west of the Site (outside of the Site boundary) is in Flood Zone 2 and 3.

8.5.29. The definition of the Flood Zones is as follows:

- Flood Zone 1 is described as land with less than a 1 in 1000 annual probability of fluvial or tidal flooding;
- Flood Zone 2 is described as land having between a 1 in 100 and 1 in 1000 annual probability of fluvial flooding, or between a 1 in 200 and 1 in 1000 annual probability of tidal flooding; and
- Flood Zone 3 is described as land having a 1 in 100 or greater annual probability of fluvial flooding, or a 1 in 200 or greater annual probability of tidal flooding.

8.5.30. Flood risk in the Study Area is deemed to be tidally dominated given the Site’s proximity to the River Tees and the North Sea.

8.5.31. The extent of the flood zones in the Site is shown on **Figure 8.1**.

8.5.32. The Port Clarence 2020 FM-TUFLOW has been requested from the Environment Agency and will be used to inform the PEIR, ES and supporting Flood Risk Assessment (FRA).

**Risk of Flooding from Surface Water**

8.5.33. A review of the Environment Agency’s Flood Risk from Surface Water mapping (Ref. 8.35). shows small, isolated areas within the Site which are indicated to be at low to high susceptibility to flooding

from surface water. These areas are likely to be associated with the locally low ground where water would pond after intense or prolonged rainfall events.

8.5.34. The areas susceptible to flooding from surface water are shown on **Figure 8.2**.

#### **Risk of Flooding from Reservoirs**

8.5.35. A review of the Environment Agency's Flood Risk from Reservoirs mapping (Ref. 8.35) shows that most of the Site is not at risk of flooding from reservoirs, including should a failure such as breach of reservoir occur when there is also flooding from rivers. A small area of land onshore within the eastern area of the Site is indicated to be at risk from reservoir flooding, likely indicating a very localised drop in topography in this area.

8.5.36. The mapping indicates that the flood extents following a reservoir failure would be similar to those predicted for fluvial and tidal sources as discussed above. The source of reservoir flooding is uncertain and will be investigated further to inform the assessments presented within the PEIR, ES and supporting FRA.

8.5.0. The extent of the area indicated to be at risk of flooding from reservoirs is shown in on **Figure 8.3**.

#### **Risk of Flooding from Groundwater**

8.5.1. Data regarding groundwater flood risk was not received from the LLFA in time for the completion of this EIA Scoping Report. Data received will be provided to inform the assessments presented within the PEIR and ES.

### **FUTURE BASELINE**

#### **Surface Water Features and WFD**

8.5.2. The main aim of the WFD is for designated waterbodies to achieve Good overall status. The surface water bodies identified within the Study Area are currently not achieving this objective. Review of the Environment Agency's Catchment Data Explorer (Ref. 8.37) indicates that this may not be achievable for the Tees transitional waterbody due to disproportionate costs and unfavourable balance of costs and benefits. However improvement to achieve Good status for certain quality elements such as Fish, Invertebrates and Chemical status is proposed.

#### **Groundwater**

8.5.3. Based on the current available information for the Site, no changes are expected in the baseline conditions for groundwater. However, due to climate change a marginal increase (due to increased rainfall/stormfall events) in groundwater resource (aquifers and groundwater bodies) is expected but occasionally increased stresses (i.e. supply/demand for water supply) on groundwater resources due to drought severity being exacerbated by climate change and corresponding demands in water resources increasing at times of drought will be expected.

8.5.4. Data regarding groundwater abstractions was not received in time for the completion of this EIA Scoping Report. The future baseline cannot be established in detail at this stage, however further detail will be provided within the assessments presented within the PEIR and ES.

#### **Flood Risk**

8.5.0. The Site is located within areas identified to be at tidal flood risk. The most significant change in the future baseline condition is therefore likely to be associated with an increase in sea level associated with the potential effects of climate change. In addition, increased rainfall associated with climate

change could increase surface water runoff that could result in increased risk of flooding in the future.

- 8.5.1. The impacts of climate change on the risk of flooding will be assessed as part of the PEIR, ES and supporting FRA. This will be informed by the Port Clarence 2020 FM-TUFLOW model requested from the Environment Agency.

**Other Schemes**

- 8.5.2. The Northern Gateway Container Terminal scheme was issued a Marine Licence (L/2021/00354/1) in March 2022 to allow the capital dredging of the approach channel to the project as well as creation of a new berth pocket (equating to dredging of up to 4.8 million m<sup>3</sup> of material) and realignment of the existing approach channel in the vicinity of the proposed terminal and deepening of the two existing turning circles (Tees Dock turning circle and Seaton Channel turning circle) in the Tees Estuary. PD Teesport’s intention is to construct the scheme prior to the expiry date of the Harbour Revision Order which is noted as 7th May 2028. Both the dredging and other construction are predicted to be undertaken in a phased manner prior to this date. The assessment of the Proposed Scheme and development of mitigation will take this proposed development into account.

**8.6 SENSITIVE RECEPTORS**

- 8.6.1. The sensitive receptors relevant to the water environment (surface water, flood risk and groundwater) identified for this assessment are presented in Table 8-3 along with their indicative importance classification. The importance of the receptors was determined based on the methodology provided in DMRB Volume 11 Section 3 Part 10 (LA 113) (Ref. 8.30). Although this guidance is applicable to road schemes it is considered to provide a robust framework for the assessment of risks to the water environment. The importance classification criteria are set out in **Table 8-5** of this chapter. Assessment of importance of a sensitive receptor is essential as it influences the assessment of the significance of effects on a receptor.
- 8.6.2. The importance indicated below may change during preparation of the PEIR following future data collection and consultation with the relevant authorities. Any changes to sensitive receptors and/or their importance will be reported in the PEIR and the ES.

**Table 8-3 - Summary of identified sensitive receptors**

Potential Receptor	Importance	Justification
River Tees, Seaton on Tees Channel and Greatham Creek	Very High	Designated main rivers. WFD monitored water body. Designated SSSI, Ramsar and SPA (marine components). River Tees and Seaton on Tees Channel flow along the Site boundary.
North Sea / Tees Coastal Water Body	High	WFD monitored water body. North Sea and Tees Coastal Water Body is adjacent to the Site and is in hydraulic connectivity with the Site.
Ordinary watercourses and drains	Low to High	Ordinary watercourses located within the Site Boundary and in the Surface Water Study

Potential Receptor	Importance	Justification
		Area. Ecological value currently uncertain. Flow through adjacent Nature Reserves and areas designated as SSSI and Ramsar.
<b>Teemouth National Nature Reserve</b>	Very High	Located adjacent to the north of the Site. Also designated as SSSI, SPA and Ramsar.
<b>Proposed Scheme</b>	Low to Very High	In accordance with Annex 3 of the NPPF, facilities such as the Proposed Scheme would likely be classified as Less Vulnerable, Essential Infrastructure or Water Compatible development that have different sensitivity classifications as awarded in LA 113. Vulnerability classification to be agreed with the Local Authority during the preparation of the PEIR..
<b>People, property and infrastructure in the surrounding area</b>	Low to Very High	Flood risk receptors within the Study Area include industrial premises, roads likely to be required for mass evacuation, and marine docks infrastructure. In accordance with Annex 3 of the NPPF, these would likely be classified as Less Vulnerable, Essential Infrastructure or Water Compatible development respectively that have different sensitivity classifications as awarded in LA 113.
<b>Sherwood Sandstone Group (Principal bedrock aquifer)</b>	Very High	Forms part of the regional aquifer system designated under the WFD as being Good status (2019). Supports major public water supply abstraction licences in the area (approx. 8.5km north-west of the Proposed Scheme). May provide baseflow (groundwater flow) to the River Tees.
<b>Mercia Mudstone Group (Secondary B bedrock aquifer)</b>	Medium	Forms minor aquifer discontinuous to underlying bedrock system. Where permeable sandy strata exist (skerries) limited quantities of groundwater suitable for domestic or small-scale agricultural use are obtainable.
<b>Tidal Flat Deposits (Secondary Undifferentiated)</b>	Medium	Superficial deposit aquifer not considered a target for local water supply but considered to be in hydraulic connectivity with the River Tees



Potential Receptor	Importance	Justification
superficial deposit aquifer)		and may provide base flow to designated sites within Study Area.
Non-Potable Water Supply Abstraction(s)	High	Non-potable water supply abstractions are identified within 500m of the Site ( <b>Table 8-2</b> ) targeting the Principal Sherwood Sandstone Group aquifer for supply. Three non-potable water supply abstractions are identified as active abstractions.
Private (unlicenced) groundwater abstractions	High	It is unclear from available information at this stage if private (unlicenced) groundwater abstractions exist within the groundwater Study Area. Considering the geology (superficial and bedrock) these receptors cannot be discounted.
Groundwater Dependent Terrestrial Ecosystems (GWDTE)	High	SSSI/Ramsar designation located within the groundwater Study Area. It is unclear from available information at this stage if these sites are hydraulically connected to groundwater and thus designated a GWDTE.

## 8.7 DESIGN, MITIGATION AND ENHANCEMENT MEASURES

### DESIGN MEASURES

- 8.7.1. A robust surface water drainage system, including appropriate pollution prevention measures, will be implemented during the operational phase to mitigate potential impacts to the water quality of surface water and groundwater receptors and to flood risk associated with discharge from the Proposed Scheme.
- 8.7.2. The Proposed Scheme will also incorporate appropriate flood resilience and management measures to ensure that the operation and maintenance of the Proposed Scheme and safety of Site users during a flood event is integral to the design development of the Proposed Scheme. Flood evacuation plans available for existing sites in the vicinity of the Proposed Scheme will also be considered as part of the design.
- 8.7.0. Mitigation measures required for any potential detailed WFD assessment cannot be anticipated at this stage as they depend on the outcome of the WFD screening and scoping assessment. However, if mitigation measures are required, these will be discussed in a detailed WFD assessment at the later stage of the Proposed Scheme.

## MITIGATION

### Construction Phase

- 8.7.1. An Outline Code of Construction Practice (CoCP) will be prepared for the works and submitted with the application for development consent. The Outline CoCP will summarise the key principles to manage construction risks to the water environment and flood risk receptors. It will form the basis of the detailed CoCP which will be prepared by appointed contractor prior to works commencing.
- 8.7.2. The CoCP will outline how construction activities will be undertaken and include method statements for the proposed works, a Construction Phase drainage strategy, and details of materials to be used. The instructions and construction method statements contained within the CoCP will inform onsite staff of how they carry out works in a way that reduces the risk of contaminating the surrounding environment. This includes working in adverse weather conditions and managing complaints and environmental incidents.
- 8.7.3. The Outline CoCP will reference industry standard best practice and guidance including, but not limited to, the following:
- CIRIA C532: Control of Water Pollution from Construction Sites;
  - CIRIA C741: Environmental Good Practice on Site Guide;
- 8.7.4. Guidance for Pollution Prevention (GPP) are currently being developed and published to provide environmental good practice for the whole of the UK. GPP will replace the Pollution Prevention Guidelines published by the Environment Agency which have been withdrawn. The GPPs of particular relevance are:
- GPP1: Understanding your environmental responsibilities – Good environmental practices;
  - GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer;
  - GPP 5: Works and maintenance in or near water;
  - GPP 6: Working on construction and demolition sites;
  - GPP 20: Dewatering underground ducts and chambers;
  - GPP 21: Pollution incident response planning; and
  - GPP 22: Dealing with spills.
- 8.7.5. Examples of mitigation measures which will be implemented include, but are not limited to, the following:
- Appropriate pollution prevention measures will be applied during all construction activities;
  - Construction time will be minimised as far as practical; and
  - Appropriate construction techniques (including dredging techniques, if required) will be used to minimise potential impact on the surface water and groundwater resources.
- 8.7.6. The assessment of potential impacts to the water environment may identify the need for a Flood Risk Activities Permit (FRAP) from the Environment Agency prior to construction works commencing in areas at flood risk, or a Marine Licence from the MMO prior to construction works commencing below the mean high water spring tide level or for the disposal of dredged material at sea.
- 8.7.7. Other permits may also be required during construction, including but not limited to an Environmental Permit for the discharge of effluent/water to surface waters or to ground (potentially including dewatering of excavations). It is not proposed to submit a permit application as part of the

application as there is unlikely to be sufficient construction information available at the time of the application submission. However, obtaining the relevant permits will be considered as an embedded mitigation measure and, if required, these would be secured prior to works commencing and secured as part of the requirements to the DCO.

- 8.7.8. Special focus will be given to determining potential/plausible risks from the Proposed Scheme, on public and private (non-licensed) groundwater abstractions, Principal aquifers, Secondary B aquifers, Secondary (undifferentiated) aquifers and GWDTE that may be directly or indirectly impacted by the Proposed Scheme, and then quantifying these risks. If necessary, as the design evolves, additional measures may be incorporated into the Proposed Scheme to mitigate any unacceptable risks identified to the groundwater resources.
- 8.7.9. Surface water runoff generated around the Proposed Scheme is likely to contain high levels of sediment, hydrocarbons and (potentially) other harmful chemicals that can pollute surface water and groundwater features through direct migration or via the surface water drainage system. The contractor will be required to implement an appropriate construction phase surface water management strategy to meet the requirements of the LLFA and Environment Agency. Appropriate pollution prevention measures will be incorporated in the proposed surface water management strategy to minimise the risk of pollution to both surface water and groundwater resources.
- 8.7.0. Further consideration of design and management measures will be reviewed as the Proposed Scheme and assessment evolves.

#### **Operational Phase**

- 8.7.0. Operational phase mitigation measures will be incorporated into the design of the Proposed Scheme as discussed in the Design Measures section above.
- 8.7.1. Other measures including those required to maintain import operations at the proposed Marine Jetty (including maintenance dredging) will be developed once further details of the Proposed Scheme are known and reported within the PEIR and ES. If maintenance dredging is deemed to be required specific to this project, above and beyond the existing maintenance dredging, this will be undertaken by agreement with PD Ports in accordance with relevant Marine Licence requirements and secured by provisions within the DCO.

#### **Decommissioning Phase**

- 8.7.2. There are no mitigation measures currently designed for the decommissioning phase of the Proposed Scheme. Potential mitigation measures will be reviewed in the PEIR and ES once further details in relation to decommissioning of the Proposed Scheme are available. It is intended that the proposed Marine Jetty and buried infrastructure (such as the Export Pipeline) will remain in situ following decommissioning of the Proposed Scheme.

## **8.8 DESCRIPTION OF POTENTIAL LIKELY SIGNIFICANT EFFECTS**

### **CONSTRUCTION**

- 8.8.1. The potential effects associated with the construction phase could include:
  - Pollution risk to the River Tees from disturbance of bed materials and potentially contaminated sediment;
  - Direct impact to the River Tees associated with temporary physical modifications;

- Pollution risks from spillage of fuels or other harmful substances that may spill directly into or migrate to the River Tees and other surface water receptors (including licenced activities and private water supplies);
- Pollution risk to the River Tees and other surface water receptors from sedimentation caused by surface water runoff from areas of bare earth, construction materials such as aggregate, stockpiles of topsoil or discharge of groundwater dewatering;
- Potential for increased flood risk associated with temporary works in areas identified to be at risk of flooding;
- Potential impact to groundwater quality and quantity (level and flow) of Principal and Secondary aquifers and at groundwater abstractions;
- Potential temporary loss of water from storage and/or reduction in water level (locally) within Principal and Secondary aquifers and at groundwater abstractions due to construction activities and groundwater control measures;
- Loss or changes to GWDTEs (if identified to be present and hydraulically connected to the Site) either within the footprint of the Proposed Scheme as a result of severance of habitat or as a result of changes to groundwater flows and levels associated with dewatering activities;
- Potential for increased groundwater flood risk due to presence of groundwater flow barriers from intrusive earthworks that extend below the groundwater table forming groundwater flow barriers; and
- Potential impact to WFD Designated Waterbodies, including biological, hydromorphological, physico-chemical and chemical quality elements of the WFD designated waterbodies including the Tees transitional waterbody and Tees coastal waterbody and Tees Sherwood Sandstone groundwater body.

## OPERATION AND MAINTENANCE

8.8.2. The potential effects associated with the operation and maintenance phase could include:

- Polluted surface water runoff and spillage risks containing silts, hydrocarbons or other harmful chemicals that may migrate or be discharged to the River Tees and other surface water features wither directly or via the proposed drainage system;
- Direct impact to the River Tees associated with permanent physical modifications;
- Increased rates and volumes of surface water runoff from an increase in impermeable area leading to a potential increase in flood risk;
- Flood risk to the Proposed Scheme from location of the Proposed Scheme in areas identified to be at risk of flooding;
- Increased flood risk to people, property and infrastructure located in the Site and the surface water Study Area from changes to flood flow conveyance and storage;
- Potential for increased groundwater flood risk due to presence of groundwater flow barriers from intrusive earthworks that extend below the groundwater table forming groundwater flow barriers;
- Impacts to groundwater flows and levels of Principal and Secondary aquifers and at groundwater abstractions;
- Polluted surface water runoff and spillage risks containing hydrocarbons or other harmful chemicals that may migrate or be discharged to ground, potential affecting groundwater quality of the superficial and bedrock aquifers; and
- Potential impact to WFD designated waterbodies, including biological, hydromorphological, physico-chemical and chemical quality elements of the WFD designated waterbodies including



the Tees transitional waterbody and Tees coastal waterbody and Tees Sherwood Sandstone groundwater body.

### **DECOMMISSIONING**

- 8.8.3. Potential significant impacts to surface water quality, groundwater quality and quantity, and flood risk associated with decommissioning are considered to be similar to those identified for construction above. There would however unlikely be significant impact to the River Tees and connected water bodies associated with disturbance of bed materials, potentially contaminated sediment or physical modification as it is intended that the proposed Marine Jetty will remain in-situ.
- 8.8.4. Further surveys may be required to assess if there have been changes in the water environment and flood risk baseline at that time.

### **SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT**

- 8.8.5. A summary of the elements scoped in and out of the assessment for the water environment and flood risk are set out in **Table 8-4** below. Each element is accompanied by a justification for its inclusion or exclusion from further assessment based on professional judgement.

**Table 8-4 - Elements Scoped In or Out of Further Assessment**

<b>Element</b>	<b>Phase</b>	<b>Scoped In</b>	<b>Scoped Out</b>	<b>Justification</b>
<b>Quality of surface water resources</b>	Construction, operation and maintenance, and decommissioning	✓		Construction and decommissioning works have the potential to impact the quality of surface water resources from increased pollution risk (including increased sedimentation and contaminated sediment risks) and potential physical works to surface water features. Operation and maintenance of the Proposed Scheme has the potential to pose risk to the quality of surface water resources from routine runoff, spillage, physical amendment and maintenance dredging.
<b>Flood risk to adjacent receptors and Proposed Scheme</b>	Construction, operation and maintenance, and decommissioning	✓		Construction and decommissioning of the Proposed Scheme may temporarily impact existing flood flows.  Operation of the Proposed Scheme may permanently reduce the capacity of floodplain storage (taking climate change into account) and/or impact existing flood flows.
<b>Flood risk to adjacent receptors and Proposed Scheme</b>	Operation and maintenance	✓		Operation of the Proposed Scheme has the potential to increase the amount of impermeable area resulting in an increased rate and volume of surface water runoff generated in the Site that may increase the risk of flooding in the surface water Study Area or elsewhere.

Element	Phase	Scoped In	Scoped Out	Justification
<b>Groundwater Flood Risk</b>	Construction, operation and maintenance, and decommissioning	✓		There is the potential for increased groundwater flooding susceptibility e.g. from intrusive works and/or construction of groundwater flow barriers (piling works) at specific locations for the Proposed Scheme at construction, operation and decommissioning phases.
<b>Groundwater Abstractions (private and licenced) including non-potable water supply abstractions</b>	Construction and decommissioning	✓		There is the potential for direct physical impacts based on Proposed Scheme. Groundwater abstractions may be impacted during construction and decommissioning (groundwater quality and flow).
<b>Groundwater Levels and Flows</b>	Construction, operation and maintenance, and decommissioning	✓		There is the potential for direct physical impacts to Secondary A aquifer (Tidal Flat Deposits) based on available information for the Proposed Scheme.
<b>GWDTE</b>	Construction, operation and maintenance, and decommissioning	✓		There is the potential for indirect impacts to designated sites (SSSI and Ramsar) based on available information for the scheme.
<b>WFD Water Bodies</b>	Construction, operation and maintenance, and decommissioning	✓		There is the potential for direct and indirect impacts on WFD waterbodies (e.g. The Tees Transitional waterbody) based on available information for the Proposed Scheme and the proximity of identified WFD waterbodies.

## 8.9 PROPOSED METHODOLOGY

- 8.9.1. As identified in **Section 5.8**, there is the potential for significant effects on the water environment and flood risk during the construction, operation and decommissioning phases of the Proposed Scheme. Further assessment that is proposed to be undertaken for the PEIR and the ES is outlined below:
- Ongoing engagement with the Environment Agency and MMO to establish the principal water environment issues associated with the Proposed Scheme;
  - Site walkover to ascertain the baseline conditions on Site and in the Study Area;
  - Assessment of the potential impacts related to the construction, operation and decommissioning phases of the Proposed Scheme; and
  - Identification of measures to avoid, minimise or mitigate predicted impacts.
- 8.9.2. The assessment will focus upon defining the characteristics and subsequent potential impacts upon surface water, flood risk and groundwater receptors, including the wider hydrological catchments as categorised by the Environment Agency under the WFD. This catchment-based approach enables due consideration to be given to both individual locations where interactions occur and any cumulative impacts within additional water body areas.

### NITROGEN NEUTRALITY

- 8.9.3. The Teesmouth and Cleveland Coast SPA and Ramsar site triggers the requirement for nutrient neutrality. The Proposed Scheme will not generate process effluent and is therefore not predicted to increase the nitrogen load discharged from the Site or adjacent wastewater treatment works into the River Tees and Cleveland Coast SPA and Ramsar site. It is therefore not proposed to undertake a nutrient neutrality assessment or mitigation strategy for the Proposed Scheme.

### SURFACE WATER AND GROUNDWATER RESOURCES

- 8.9.4. At this stage, the assessment of potential impacts that may arise during construction, operation and decommissioning of the Proposed Scheme is expected to be a qualitative assessment that considers risks to the quality of surface water receptors associated from pollutants and physical modifications that may arise during construction, operation and decommissioning phases. The potential impacts of the Proposed Scheme on groundwater receptors will also be a qualitative assessment undertaken with respect to identified groundwater abstractions and other groundwater dependent receptors.
- 8.9.5. The assessment will broadly follow the simple assessment criteria provided in DMRB Volume 11 Section 3 Part 10 (LA 113) (Ref. 8.30).
- 8.9.6. No water quality sampling, sediment sampling or qualitative analysis is currently proposed as a significant volume of data is available that was submitted to support the PD Teesport Marine License and application for the Northern Gateway Container Terminal which has been consented as well as data pertaining to existing maintenance dredging operations in the vicinity of the Proposed Scheme. These data sources will be reviewed to further inform understanding of the baseline environment and impact assessment of the Proposed Scheme.
- 8.9.7. As further details of the construction and operation of the proposed Marine Jetty are developed, the proposed assessment methodology for assessing potential risks to the River Tees will be reviewed to determine the most appropriate assessment to inform the PEIR and ES. This may include



sediment sampling, coastal processes modelling and sediment dispersion analysis, whilst also taking into account existing and proposed shipping and dredging activities in the River Tees. It is intended that the proposed methodology for assessing risks associated with the proposed Marine Jetty will be agreed with the Environment Agency and MMO during the preparation of the PEIR and ES.

## **WATER FRAMEWORK DIRECTIVE**

- 8.9.8. Potential impacts of the construction, operation and decommissioning phases on the WFD status of the relevant water bodies will be assessed in a standalone WFD assessment. The findings of this assessment will be cross-referenced in the water environment chapter of the PEIR and ES.
- 8.9.9. The WFD assessment will follow guidance set out in Planning Inspectorate Guidance Note 18: Water Framework Directive (2017) (Ref. 8.24) and Clearing the Waters for All (2016) (Ref. 8.25). These documents promote a staged approach to undertaking a WFD assessment comprising Screening, Scoping and Impact Assessment. This approach will be adopted for the assessment of the Proposed Scheme, with the findings of the Screening and Scoping stages discussed with the Environment Agency prior to undertaking the Impact Assessment stage.
- 8.9.10. The primary focus of the WFD assessment is likely to be the potential impacts of the proposed Marine Jetty on identified WFD waterbodies. At this stage, the WFD assessment will comprise a qualitative assessment supported by site walkover. No survey or qualitative analysis is proposed at this time, however as discussed above, existing water quality, sediment quality and survey data available to support other schemes and activities within the vicinity of the Proposed Scheme will be reviewed to inform the WFD assessment. This may identify the need for additional survey and quantitative analysis. It is intended that the proposed methodology for assessing risks associated with the proposed Marine Jetty will be agreed with the Environment Agency and MMO during the preparation of the WFD assessment.

## **FLOOD RISK**

- 8.9.11. Potential impacts of the construction, operation and decommissioning phases on flood risk will be assessed in a standalone FRA, which will be submitted as part of the ES. The findings of this assessment will be cross-referenced in the ES.
- 8.9.12. The assessment will be undertaken in accordance with the NPPF (Ref. 8.15) and its supporting PPG (Ref. 8.19). The assessment will comprise a qualitative assessment informed by review of readily available data held by the Environment Agency, the Local Authority (SoTBC) and the Lead Local Flood Authority (SoTBC). It is not proposed to undertake quantitative analysis to assess temporary flood risk impacts during construction; at this stage it is expected that a qualitative assessment will be appropriate although if significant impact is predicted then the need for quantitative analysis informed by modelling will be considered. Flood risk resulting from temporary construction works would be considered in the detailed CoCP. The need to undertake quantitative analysis to assess potential impacts during operation will be discussed and agreed with the Environment Agency.
- 8.9.13. The assessment of flood risk during operation will take the potential effects of climate change into account, namely recommended increases in peak river flow, sea level rise and rainfall intensity. Data will be extracted from the existing Port Clarence 2020 FM-TUFLOW model held by the Environment Agency. It is not proposed to manipulate or make any amendments to this model, although the need for any updates will be discussed with the Environment Agency.

- 8.9.14. Construction works are currently envisaged to be carried out over a period of up to 12 months. As such, considering the relatively short period of time for construction, it is not proposed to consider the effects of climate change for construction related impacts.
- 8.9.15. The FRA will be supported by a standalone drainage strategy report that sets out how surface water runoff will be managed during operation of the Proposed Scheme. The management of surface water flood risk during construction of the Proposed Scheme is not proposed to be discussed in the FRA or drainage strategy report, and instead will form part of the outline CoCP.

### **SIGNIFICANCE OF EFFECT CRITERIA**

- 8.9.16. The assessment of the significance of effect on the water environment and flood risk will be undertaken following the principles of EIA as set out within DMRB Volume 11, Section 3, Part 10 (LA 113) (Ref. 8.30). The DMRB promotes the following approach:
- Estimation of the importance of the feature (**Table 8-5**). The importance of the feature or resource is based on the value and sensitivity of the feature or resource;
  - Estimation of the magnitude of the impact (**Table 8-6**). The magnitude of an impact is estimated based on the potential size or scale of change compared to the baseline and is independent to the importance of the attribute; and
  - Assessment of the significance of the effect (**Table 8-7**). The overall significance of the effect is based on the importance of the attribute (**Table 8-5**) and the magnitude of the impact (**Table 8-6**).

**Table 8-5 - Criteria for Estimation of the Sensitivity of Water Environment Receptors**

Importance	Criteria	Example	
Very High	Nationally significant attribute of high importance	Surface water	Watercourse having a WFD classification shown in a River Basin Management Plan (RBMP) and $Q95 \geq 1.0 \text{ m}^3/\text{s}$ .  Site protected/designated under European Commission (EC) or UK legislation (SAC, SPA, SSSI, Ramsar site, salmonid water)/Species protected by EC legislation.
		Groundwater	Principal aquifer providing a regionally important resource and/or supporting a site protected under EC law, which has been retained post-Brexit, and UK Legislation.  Groundwater locally supports GWDTE.  SPZ 1.
		Flood risk	Essential infrastructure or highly vulnerable development.
High	Locally significant attribute of high importance	Surface water	Watercourse having a WFD classification shown in a RBMP and $Q95 < 1.0 \text{ m}^3/\text{s}$ .  Species protected under EC or UK legislation.
		Groundwater	Principal aquifer providing locally important resource or supporting a river ecosystem.  Groundwater supports GWDTE.  SPZ 2.
		Flood risk	More vulnerable development.

Importance	Criteria	Example	
Medium	Of moderate quality and rarity	Surface water	Watercourses not having a WFD classification shown in a RBMP and Q95 >0.001m <sup>3</sup> /s.
		Groundwater	Aquifer providing water for agricultural or industrial use with limited connection to surface water.  SPZ 3.
		Flood risk	Less vulnerable development.
Low	Lower quality	Surface water	Watercourses not having a WFD classification shown in a RBMP and Q95 ≤0.001m <sup>3</sup> /s.
		Groundwater	Unproductive strata.
		Flood risk	Water compatible development.

**Table 8-6 - Criteria for Assessing the Potential Magnitude of Impacts to Water Environment Receptors**

Magnitude	Criteria	Example	
Major Adverse		Surface water	Loss or extensive change to a fishery. Loss of regionally important public water supply.

Magnitude	Criteria	Example	
	Results in loss of attribute and / or quality and integrity of the attribute		<p>Loss or extensive change to a designated nature conservation site.</p> <p>Reduction in water body WFD classification.</p>
		Groundwater	<p>Loss of, or extensive change to, an aquifer.</p> <p>Loss of regionally important water supply.</p> <p>Potential high risk of pollution to groundwater from routine runoff.</p> <p>Loss of, or extensive change to GWDTE or baseflow contribution to protected surface water bodies.</p> <p>Reduction in water body WFD classification.</p> <p>Loss or significant damage to major structures through subsidence or similar effects.</p>
		Flood risk	<p>Increase in peak flood level (&gt; 100mm).</p>
<b>Moderate Adverse</b>	Affects integrity of attribute, or loss of part of attribute	Surface water	<p>Partial loss in productivity of a fishery.</p> <p>Degradation of regionally important public water supply or loss of major commercial/industrial/agricultural supplies. Contribution to reduction in water body WFD classification.</p>
		Groundwater	<p>Partial loss or change to an aquifer.</p> <p>Degradation of regionally important public water supply or loss of significant commercial/industrial/agricultural supplies. Potential medium risk of pollution to groundwater from routine runoff.</p>

Magnitude	Criteria	Example	
			Partial loss of the integrity of GWDTE. Contribution to reduction in water body WFD classification.  Damage to major structures through subsidence or similar effects or loss of minor structures.
		Flood risk	Increase in peak flood level (>50mm).
<b>Minor Adverse</b>	Results in some measurable change in attribute's quality or vulnerability	Surface water	Minor effects on water supplies.
		Groundwater	Potential low risk of pollution to groundwater from routine runoff. Minor effects on an aquifer, GWDTEs, abstractions and structures.
		Flood risk	Increase in peak flood level (>10mm).
<b>Negligible</b>	Results in effect on attribute, but of insufficient magnitude to affect the use of integrity	Surface water	No risk identified to water supplies.
		Groundwater	No measurable impact upon an aquifer and/or groundwater.
		Flood risk	Negligible change to peak flood level ( $\leq$ +/- 10mm).



Magnitude	Criteria	Example	
No Change	Results in no change to the receptor		No predicted adverse or beneficial impact to the receptor.

8.9.17. The terminology related to the significance of effects set up in DMRB Volume 11, Section 3, Part 10 (LA 113) (Ref. 8.30) has been followed and used to define the significance of the effects identified:

- Major effect: where the Proposed Scheme could be expected to have a very significant effect (either positive or negative) on receptors.
- Moderate effect: where the Proposed Scheme could be expected to have a noticeable effect (either positive or negative) on receptors.
- Minor effect: where the Proposed Scheme could be expected to result in a small, barely noticeable effect (either positive or negative) on receptors.
- Negligible: where no discernible effect is expected because of the Proposed Scheme on receptors.

8.9.18. The significance of potential impacts is classified by considering both the sensitivity of the receptor (**Table 8-5**) and the magnitude of impact (**Table 8-6**), using the matrix shown in **Table 8-7**, adapted from Table 3.8.1 of DMRB LA104 (Ref. 8.30). Noting that where the significance of the effect is described as between two levels, professional judgement is used to identify a level of significance. Only Moderate, Large and Very Large effects are considered to be significant.



**Table 8-7 - Criteria for Assessing the Significance of Effects**

		Magnitude of Impact			
		Negligible	Minor	Moderate	Major
Importance of Receptor	Very High	Slight	Moderate or Large	Large or Very Large	Very Large
	High	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
	Medium	Neutral or Slight	Slight	Moderate	Moderate or Large
	Low	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
	Negligible	Neutral	Neutral or Slight	Neutral or Slight	Slight

## 8.10 ASSUMPTIONS AND LIMITATIONS

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

- The relevance and importance of data pertaining to other schemes within the vicinity of the Proposed Scheme is also still also being reviewed. The description of baseline conditions and impact assessment of the proposed Marine Jetty will be updated in the PEIR and ES as more information becomes known and the proposed design of the Marine Jetty progresses;
- Existing ground conditions is based on freely available data sources such as the BGS. These sources provide indicative records of ground conditions in the absence of site-specific information/data;
- At this stage, the need for only a qualitative assessment is assumed to be sufficient.
- The assessment presented in the PEIR and ES will include the latest design information available at the time of the submission. Where design information is not available, reasonable worst-case assumptions will be made.

## 8.11 REFERENCES

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## 9 LANDSCAPE AND VISUAL AMENITY

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### 9.1 INTRODUCTION

- 9.1.1. This chapter considers the impacts on landscape and visual amenity that may arise during construction, operation and maintenance, and decommissioning of the Proposed Scheme (as described in **Chapter 2: Site and Proposed Scheme Description** of this EIA Scoping Report), and any potential significant effects.
- 9.1.2. This chapter should be read in conjunction with the following chapters included in this EIA Scoping Report:
- **Chapter 7: Biodiversity,**
  - **Chapter 10: Climate Resilience;** and
  - **Chapter 17: Cultural Heritage.**
- 9.1.3. This chapter is also supported by **Figure 9.1 - Site Constraints Plan within 2km** included in Volume III of this EIA Scoping Report,

### 9.2 LEGISLATION, POLICY AND GUIDANCE

- 9.2.1. This section outlines the relevant legislation, policy and guidance to landscape and visual amenity.

#### LEGISLATION

- European Landscape Convention (ELC) (Ref. 9.1) This is an international treaty which recognises the importance of all types of landscape. Its purpose is to promote landscape protection, management and planning in relation to all landscapes regardless of whether their quality and condition is considered outstanding, ordinary or degraded.

#### POLICY

- 9.2.2. The National Planning Statements (NPSs) set out the primary policy against which an application for the development consent of the Proposed Scheme should be considered. The Overarching NPS for Energy (EN-1) (Designated 2024) (Ref. 9.2) and NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Designated 2024) (Ref. 9.3) are relevant to the Proposed Scheme.
- Within EN-1, Section 4.7 outlines the criteria for good design and how this relates to landscape and its siting, whereas Section 5 of EN-1 describes some of the generic impacts commonly associated with energy-related projects, including the effect of associated lighting.
  - Section 5.10 of EN-1 outlines the approach to be taken and aspects to consider as part of undertaking assessments of the effects on landscape and visual amenity in relation to energy-related projects. The assumption is made that for energy-related projects a landscape and visual impact assessment is required however given the baseline conditions and likely effects arising as a result of the Proposed Scheme this scoping report concludes that the effects are unlikely to be significant. Within EN-4, section 2.15.2, mentions the need for The Secretary of State to also follow these principles.
  - Sections 2.12, 2.13 and 2.14 of the EN-4, outlines considerations needed for impacts and mitigation measures of the scheme within terrestrial and marine environments. However given the baseline conditions and likely effects arising as a result of the Proposed Scheme, it is anticipated that there will not be any significant effects. Suggested mitigation in the need to

reduce scale, squat tanks or need for partially buried tanks, will not be an issue as the Proposed Scheme is situated within surrounding similar existing port and jetty facilities.

9.2.3. Other relevant policy includes:

- National Planning Policy Framework (NPPF) (2023) (Ref. 9.4) Sets out the Government's planning policies for England and how these are expected to be applied. Whilst the NPPF does not contain specific policies for nationally significant infrastructure projects, it has the potential to be considered important and relevant to the Secretary of State's (SoS) consideration of the project. Of particular relevance to the nature of development proposed on the application site are policies in the following sections of the first part of this document:
  - NPPF Section 2 – Achieving sustainable development;
  - NPPF Section 6 – Building a strong, competitive economy;
  - NPPF Section 11 – Making effective use of land;
  - NPPF Section 12 – Achieving well-designed places; and
  - NPPF Section 15 - Conserving and enhancing the natural environment.
- Stockton-on-Tees Borough Council (SoTBC) Local Plan (2019) (Ref. 9.5) The local plan under Policy SD2 – Strategic Development Needs has highlighted the need for land for 'specialist use' including chemical and process industry, energy generation, waste processing, port-related uses and other uses, which demonstrate operational benefits to the North and South Tees Cluster. Additionally in Policy SD5 – outlines the need for development proposals to be responsive to the landscape, mitigating their visual impact where necessary. Developments will not be permitted where they would lead to unacceptable impacts on the character and distinctiveness of the Borough's landscape unless the benefits of the development outweigh any harm.

## GUIDANCE

9.2.4. The following good practice guidance documents are relevant to landscape and visual amenity:

- Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3) (Swanwick, 2013) (Ref. 9.6);
- An Approach to Landscape Character Assessment (Tudor, 2014) (Ref. 9.7);
- Technical Guidance Note 06/19 – Visual Representation of Development Proposals (Landscape Institute, 2019) (Ref. 9.8); and
- Institution of Lighting Professionals' Guidance Note 01/21 (Ref. 9.9).

## 9.3 CONSULTATION

9.3.1. At the time of writing, consultation with Stockton-on-Tees Borough Council (SoTBC) has not yet been undertaken in relation to the EIA but will commence shortly. The assumptions related to this landscape and visual amenity chapter of the EIA will be discussed further and agreed with SoTBC.

## 9.4 STUDY AREA

9.4.1. Landscape and visual amenity assessments typically consider the likely landscape and visual impacts on people and evaluate the resulting effects of a development.

9.4.2. A 2km study area has been set, based on preliminary desk studies and professional experience, beyond which the Proposed Scheme is unlikely to give rise to a significant effect.

9.4.3. Location of the Proposed Scheme, study area and surrounding constraints are shown in **Figure 2.2 – Indicative Site Allocation** and **Figure 9.1 – Site Constraints Plan within 2km** included in Volume III of this EIA Scoping Report.

## 9.5 BASELINE CONDITIONS AND FUTURE BASELINE

### DATA SOURCES

9.5.1. The landscape and visual amenity described in this section has been informed by the following data sources:

- Natural England’s National Character Area (NCA) profiles (Ref. 9.10);
  - NCA 23: Tees Lowlands (NE439).
- Seascape Character Assessment for the North East Inshore and Offshore marine plan areas (SCA) (Ref. 9.11);
  - Marine Character Area (MCA) 22: Tyne, Tees and Wear Estuaries and Coastal Waters
- SoTBC Landscape Character Assessment (LUC,2011) (Ref. 9.12);
  - East Billingham to Teesmouth, Regional Character Area (Ref. 9.12).
- SoTBC Landscape Capacity (LUC,2011) (Ref. 9.13);
- SoTBC Local Plan (2019) (Ref. 9.5);
- Council for the Protection of Rural England Tranquillity mapping (Ref. 9.15);
- Defra’s Magic Database (Ref. 9.16); and
- Google street view/publicly available aerial photography.

9.5.2. A summary of the baseline conditions is presented below.

### EXISTING BASELINE

#### The Site

9.5.3. The Site is located within Seal Sands industrial estate with the River Tees along its eastern boundary and areas of brownfield land. Existing infrastructure and services within the Site include an existing access road which the Site broadly follows and a disused rail link along the southern corridor.

9.5.4. Pockets of vegetation include areas of rough grassland and a small number of scattered trees; see **Chapter 7: Biodiversity** of this EIA Scoping Report for further detail.

#### Landscape context

9.5.5. The Site lies within National Character Area (NCA) 23 Tees Lowlands. The landscape is dominated by industrial built form and proximal to heavy industry, much on reclaimed land, which has developed due to the estuary’s strategic location and port infrastructure expansion. The industrial built form forms a dramatic skyline and dominates when viewed from surrounding high points such as those experienced from Eston Moor to the south-east. Early successional grasslands and scrub have also emerged on previously developed land; these brownfield sites have notable biodiversity value. The estuary is influenced by tidal and sediment movement and protection of mudflat priority habitats remains a key challenge to development. Protection and expansion of intertidal areas can help to reduce flood risk in urban areas.

- 9.5.6. The Borough's (Stockton-on-Tees) traditional economic base was predominantly heavy industry, including chemical processing, steel production and engineering.
- 9.5.7. The Site extends into the Marine Character Area known as MCA 22: Tyne, Tees and Wear Estuaries and Coastal Waters seascape on the River Tees. The Tees lowlands, encompassing Hartlepool and Redcar, is an extensively developed coast. Teesport which is situated on the opposite side of the River Tees to the Site is a major port and accommodates a variety of vessels. These shipping hubs generate large volumes of sea traffic and busy waters. Significant cultural and industrial heritage is associated with these ports and harbours represented in built character. The southern part of the MCA is intensely lit at night by the extensive industrial facilities at Middlesbrough.
- 9.5.8. This area is designated with a historical landscape characteristic of Industry. However, there are no National Parks or Areas of Outstanding Natural Beauty (AONBs) within the Site or Study Area. The nearest protected landscape is the North York Moors National Park which is over 10km to the south-east of the Site. There are also no conservation areas or listed buildings or structures within the Study Area. The closest conservation area is C03: Cowpen Bewley with a number of listed buildings, 3.6km northeast of the scheme and the Haverton Hill and Port Clarence War Memorial a listed building 3.2km south of the site, both lie outside the study area, and therefore are not considered likely to be affected by the Proposed Scheme.
- 9.5.9. The Site lies within the Local Character Area East Billingham to Teesmouth. The landscape is dominated by industrial structures and hardstanding along the River Tees integrated with wetlands and reclaimed semi improved pasture, rough grazing towards the industrial landscape fringe of Billingham. Seal Sands is an extensive area of mud and sand flats of notable importance both locally and nationally, with particularly ecological importance towards the mouth of the river.
- 9.5.10. Designations indicative of ecological value within the study area include: the Teesmouth and Cleveland Coast Special Protection Area (SPA) Ramsar Site, Teesmouth National Nature Reserve, Teesmouth and Cleveland Coast Site of Special Scientific Area (SSSI), Local Nature Reserves and Local Wildlife Sites. See **Chapter 7 Biodiversity** of this EIA Scoping Report for further information.

### **Visual amenity**

- 9.5.11. The existing visual context is influenced by a combination of built form, low-lying vegetation, coastal areas, topography and is outlined below.
- 9.5.12. The Site is surrounded predominantly by industrial built form, viewed mostly by receptors viewing from Seaton Carew Road, by road users connecting Billingham to communities and landscape features in the north, walkers along the England Coast Path and workers accessing surrounding industries and ports. Views to the Proposed Scheme from this road and coastal path are obscured by existing Teesside Gas Processing Plant with above ground pipework and facilities. Users of the Seal Sands access road have views of existing oil and energy storage facilities, stacks and above ground pipelines, features which are currently much larger than the Proposed Scheme.
- 9.5.13. Views from the River Tees comprise from, either recreational boat users, who pass towards the coast and Teesmouth National Nature Reserve or heading towards Middlesbrough and are generally considered to be of medium to high sensitivity. Views are also considered from freight boat users who are accessing the estuary to access ports and industry and are generally considered to be of low sensitivity.



- 9.5.14. To the east, views from recreational visitors to South Gare Lighthouse and South Gare Breakwater and recreational boat users accessing Paddy's Hole boat storage facility, can look south and west towards the Site, however, the view will be slightly obstructed by the existing large-scale developments of Redcar Bulk Terminal and tall storage stakes within the Exolum Seal Sands Terminal.
- 9.5.15. There are no residential receptors within the Study Area. The nearest residents to the Site are located in Port Clarence, more than 2.5km to the south-west. Intervisibility to the scheme from Port Clarence is constrained by intervening vegetation and the built form - particularly the Teesside Gas Processing plant.
- 9.5.16. No designated Public Right of Ways (PRoW) are located within the Study Area so any access routes passing through the Study Area are assumed to be for access to private facilities only. It is noted that the England Coast Path runs parallel to the A178, Seaton Carew Road, crossing Seal Sands Road at the A178/A1185 Seal Sands Roundabout. However, the England Coast Path along Seaton Carew Road has been identified by DEFRA (Ref. 9.16) as being 'not an existing walked route' and as such is not likely to be in frequent use by recreational users. There is no pedestrian access along the road to seal sands, therefore it is assumed to be used for access to private facilities only.

## **FUTURE BASELINE**

- 9.5.17. The Local Plan under Policy SD2 has highlighted the Study Area within its 'specialist employment allocation' and 'specialist use' sites, earmarking this area for employment expansion, development and operation in the chemical industry; ports and airports; and marine and offshore sectors. Therefore, it is expected that future industry and port development will continue and expand. In the absence of any future development, where management of landscape lapses over time, natural succession of habitats from grassland to scrub may occur. Although species abundance and distribution within the Study Area may fluctuate, it is assumed there would be no substantial changes to species or vegetation cover within the Study Area that would change the landscape and visual baseline aside from natural succession of habitats and natural increases and decreases in species populations and geographic extent.

## **9.6 SENSITIVE RECEPTORS**

- 9.6.1. The identified sensitive landscape receptors are as follows:
- Local landscape character areas East Billingham to Teesmouth, Regional Character Area – Great Ouse as identified Stockton-on-Tees Borough Council Landscape Character Assessment (Ref. 9.12);
  - Within Site boundary, the existing landscape features consist of vacant lots of degraded grassland void of tall vegetation, surrounded by industry-built form with pipework, steel support structures and storage units dominating. The most sensitive landscape features are mudflats and River Tees.
- 9.6.2. Visual effects will arise from changes in the view resulting from the construction and operation of the Proposed Scheme. Potential sensitivity of visual receptors have been assessed below by considering the existing value of their views and their susceptibility to a change to their views and visual amenity arising from the Proposed Scheme.

- 9.6.3. In accordance with paragraph 6.3.2 of GLVIA 3<sup>28</sup>, the evaluation of susceptibility is a function of the occupation or activity of the receptor experiencing the view, the extent to which their attention or interest is focused on the view and the visual amenity they experience at locations.
- 9.6.4. The following receptors are potentially the most susceptible to change as their activity involves looking out and appreciating the value of the surrounding landscape, therefore these are considered receptors of high sensitivity:
- Visitors to South Gare Breakwater and coastal landscapes north-west of Redcar;
  - Recreational boat users; and
  - Recreational walkers along the England and Coast Path (section along Seaton Carew Road).
- 9.6.5. The following receptors are potentially the least susceptible to change as their activity involves focusing on the task at hand and have low appreciation for the landscape, therefore receptors of low sensitivity include:
- Road users;
  - Surrounding port and industrial facilities workers, where their attention is focused on their work rather than the view; and
  - Freight boat users.

## 9.7 DESIGN, MITIGATION AND ENHANCEMENT MEASURES

### CONSTRUCTION AND OPERATION AND MAINTENANCE PHASE

- 9.7.1. Relevant design, mitigation and enhancement measures will be developed as the design of the Proposed Scheme evolves and will be recorded within the outline and final Code of Construction Practice (CoCP) and any other relevant plans to be submitted with the application and to be approved pursuant to a DCO Requirement. These are likely to include the adoption of best practicable means, such as:
- Minimise the number of construction areas and material storage compounds where reasonably practicable; and
  - Careful consideration of the design of the Proposed Scheme so as to be sympathetic to the surrounding landscape. It is expected that built form associated with the Proposed Scheme will be in keeping with surrounding existing industrial buildings, in relation to form, colour and materials.

## 9.8 DESCRIPTION OF POTENTIAL LIKELY SIGNIFICANT EFFECTS

### CONSTRUCTION

- 9.8.1. The potential landscape and visual impacts associated with the construction phase include:
- Minor earthworks during construction of the Export Pipeline as defined within **Figure 2.2 Proposed Site Layout** included in Volume III of this EIA Scoping Report;
  - Additional construction material on the river edge during construction of the Marine Jetty;
  - Plant and lifting equipment associated with the installation of storage tanks and sections of pipeline;
  - Temporary site cabins, car parking and storage materials;

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<sup>28</sup> Available at: [landscape-character-assessment.pdf \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/100000/landscape-character-assessment.pdf)

- Temporary lighting around the scheme associated with safety critical activities, such as around the Marine Jetty and Storage Area;
- Increased traffic on the roads and the waterway when bringing construction material to Site.

9.8.2. However, the Proposed Scheme is an extension to the existing regional and local landscape character, adding to the existing and dominant industrial built form. There will not be any loss of significant landscape features as the Proposed Scheme will be constructed on existing vacant, brownfield land.

## **OPERATION AND MAINTENANCE**

9.8.3. The potential landscape and visual effects associated with the operation and maintenance phase include:

- There will be an increase of movement and shipping traffic on waterways due to the new use of the Marine Jetty in respect of the Proposed Scheme, and some minor effects on recreational boat users, as the Proposed Scheme expands an already heavily developed coastline with high waterway traffic. The change in traffic will be negligible as the movements required by the Proposed Scheme are comparatively small compared to surrounding industry;
- Lighting associated with navigation and safety for critical activity, such as around the Marine Jetty and storage area; and
- During very occasional emergency events, the safe operation of the Proposed Scheme may require venting or flaring (to be confirmed during design development) from within the Regas and Storage Area.

9.8.4. Receptors to South Gare breakwater will be minimally affected by the Proposed Scheme, as development will be an expansion of existing built form with low level tanks and small built form footprint surrounded by larger industrial facilities. From a distance, the Proposed Scheme will make it hard for users to perceive noticeable change. It is also assumed that the majority of users will be looking out towards the sea and coastal landscape, away from the Site.

9.8.5. Similarly, views from road users of the Regas and Storage Area and Marine Jetty will be minimally impacted as views are enclosed and buffered by existing industrial built form, comprising security fencing, car parking, and storage tanks in the immediate surroundings. In addition, it is assumed the Export Pipeline would either be underground or next to existing above-ground pipe infrastructure, therefore being minimal to no visual effect for road users.

9.8.6. The England Coast Path route has been identified by DEFRA as being 'not an existing walked route' and as such is not likely to be in frequent use by recreational users or limited accessibility. Sections of the Proposed Scheme closest to the path (within a 2km offset), will have little visibility, as proposed pipes will be buried underground and connect to existing infrastructure, which already dominates the view. Therefore, its susceptibility to change is reduced, with minimal to no significant effects for recreational users.

## **DECOMMISSIONING**

9.8.7. It is assumed that at the end of the operational lifespan of the Proposed Scheme, before or upon 25 years, a process of decommissioning will take place. This is assumed to last up to 12 months. Potential significant impacts associated with decommissioning would be no worse to those listed for construction above, with the Marine Jetty and any below ground elements of the Export Pipeline expected to remain in place.

## SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT

- 9.8.8. A summary of the elements scoped in and out of the assessment for landscape and visual amenity are set out in **Table 9-1**. Each element is accompanied by a justification for its inclusion or exclusion from further assessment based on professional judgement/refer to specific guidance criteria.
- 9.8.9. The relevant national policy guidelines (EN-1 and EN-4) outline the potential requirement for an LVIA in all LNG-related developments, however, due to the nature of the baseline outlined and the lack of potentially significant effects during construction and operation and maintenance, it has been concluded that an LVIA will not be required in this instance.

**Table 9-1 - Elements Scoped In or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
<b>Landscape Character</b>	Construction, operation and maintenance, and decommissioning		✓	The Proposed Scheme is an extension to the existing regional and local landscape character, adding to the existing and dominant industrial built form. There will not be any loss of significant landscape features as the Proposed Scheme will be constructed on existing vacant land.
<b>Visual Amenity</b>	Construction, operation and maintenance, and decommissioning		✓	<p>Preliminary information indicates that views of the Proposed Scheme will be surrounded by similar and larger scale built form or partly obstructed by existing industrial facilities, including for those more sensitive receptors.</p> <p>During construction, operation and maintenance, and decommissioning the Site will be predominately viewed by workers, using roads or waterways, as there is no PRow access or key connections which recreational user would likely use. Views experienced by recreational boat users are likely to be substantially unchanged as a result of existing built form in the immediate surroundings. Night-time effects would be perceived within the context of an already heavily lit area associated with the adjacent industrial landscape. Therefore, it is expected there that there will be no significant adverse effects to receptors with views of the site.</p>

Element	Phase	Scoped In	Scoped Out	Justification
Viewpoints consultation	Pre-construction		✓	Preliminary information highlights that there are likely little significant adverse effects to receptors surrounding this scheme, therefore viewpoints have been scoped out of this report.

## 9.9 PROPOSED METHODOLOGY

9.9.1. As indicated in **Section 9.8** both the landscape and visual amenity assessment is scoped out of the EIA.

## 9.10 REFERENCES

- Ref. 9.1** Council of Europe (2004). Council of Europe Landscape Convention. Available at [Full list - Treaty Office \(coe.int\)](#)
- Ref. 9.2** Department of Energy Security and Net Zero. (2023). 'Overarching National Policy Statement for Energy (EN-1)'. Available at: <https://assets.publishing.service.gov.uk/media/65bbfbd709fe1000f637052/overarching-nps-for-energy-en1.pdf>
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- Ref. 9.4** Department for Levelling Up, Housing & Communities. (2023). National Planning Policy Framework. Available at: [https://assets.publishing.service.gov.uk/media/65a11af7e8f5ec000f1f8c46/NPPF\\_December\\_2023.pdf](https://assets.publishing.service.gov.uk/media/65a11af7e8f5ec000f1f8c46/NPPF_December_2023.pdf)
- Ref. 9.5** Stockton-on-Tees Borough Council. (2019) 'Local Plan'. Available at: [https://www.stockton.gov.uk/media/2518/Local-Plan-2019/pdf/Local\\_Plan\\_2019.pdf?m=637810468860870000](https://www.stockton.gov.uk/media/2518/Local-Plan-2019/pdf/Local_Plan_2019.pdf?m=637810468860870000)
- Ref. 9.6** Landscape Institute and the Institute of Environmental Management and Assessment (2013) The Guidelines for Landscape and Visual Assessment (GLVIA).
- Ref. 9.7** An Approach to Landscape Character Assessment (Oct, 2014) Christine Tudor, Natural England, Available at : [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/691184/landscape-character-assessment.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/691184/landscape-character-assessment.pdf)
- Ref. 9.8** Visual Representation of Development Proposals, Technical Guidance Note 06/19 (Jan 2019), Landscape Institute, Available at : [https://www.landscapeinstitute.org/wp-content/uploads/2019/09/LI\\_TGN-06-19\\_Visual\\_Representation-1.pdf](https://www.landscapeinstitute.org/wp-content/uploads/2019/09/LI_TGN-06-19_Visual_Representation-1.pdf)

- Ref. 9.9** Guidance Note 1 for the reduction of obtrusive light (2021), Institution of Lighting Professionals, Available at <https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2021/>
- Ref. 9.10** National Character Area Profiles, Natural England, Available at : <https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles>
- Ref. 9.11** Seascape Character Assessment for the North East Inshore and Offshore marine plan areas (Sep 2018), Land Use Consultants (LUC) & Marine Management Organisation, Available at : [https://assets.publishing.service.gov.uk/media/5bcdac56ed915d4334b5e1f5/North\\_East\\_-\\_Seascape\\_character\\_assessment\\_report.pdf](https://assets.publishing.service.gov.uk/media/5bcdac56ed915d4334b5e1f5/North_East_-_Seascape_character_assessment_report.pdf)
- Ref. 9.12** Stockton on Tees Borough Council Stockton on Tees Landscape Character Assessment (Sep 2011), WYG Environmental & Stockton on Tees Borough Council, Available at : [https://www.stockton.gov.uk/media/3151/Landscape-Character-Assessment-Report-with-appendices/pdf/Landscape\\_Character\\_Assessment\\_Report\\_with\\_appendices.pdf?m=1653399655987](https://www.stockton.gov.uk/media/3151/Landscape-Character-Assessment-Report-with-appendices/pdf/Landscape_Character_Assessment_Report_with_appendices.pdf?m=1653399655987)
- Ref. 9.13** Stockton on Tees Borough Council Stockton on Tees Landscape Capacity Study (Sep 2011), WYG Environmental & Stockton on Tees Borough Council, Available at : [https://www.stockton.gov.uk/media/3153/Stockton-Landscape-Capacity-Study/pdf/Stockton\\_Landscape\\_Capacity\\_Study.pdf?m=1649148547823](https://www.stockton.gov.uk/media/3153/Stockton-Landscape-Capacity-Study/pdf/Stockton_Landscape_Capacity_Study.pdf?m=1649148547823)
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- Ref. 9.15** The Countryside Charity, Tranquillity Map: England. [Tranquillity Map: England - CPRE](#)
- Ref. 9.16** Defra. Magic Map application. [MAGIC \(defra.gov.uk\)](#)

## 10 CLIMATE CHANGE RESILIENCE

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### 10.1 INTRODUCTION

- 10.1.1. This chapter considers the potential impacts of climate change on the Proposed Scheme (as described in **Chapter 2 Site and Proposed Scheme Description** of this EIA Scoping Report), during construction, operation and maintenance, and decommissioning.
- 10.1.2. The chapter sets out the proposed methodology for the Environmental Impact Assessment (EIA) and identifies those impacts that can be scoped out of the assessment.
- 10.1.3. This chapter should be read in conjunction with **Chapter 9: Water Environment and Flood Risk**.

### 10.2 LEGISLATION, POLICY, AND GUIDANCE

- 10.2.1. This section outlines the relevant legislation, policy and guidance that is relevant to the assessment of the Proposed Scheme's resilience to climate change.

#### LEGISLATION

- 10.2.2. The following legislation is relevant to the assessment of climate change resilience:
  - Climate Change Act (2008) (Ref. 10.1) sets targets for reducing the UK's impacts on climate change and the need to prepare for managing such impacts and "make provision about adaptation to climate change". The Act requires a climate change risk assessment to be used to assess the risks from the impact of climate change to the UK. The first UK Climate Change Risk Assessment (CCRA) was presented to Parliament in an Evidence Report in 2012, with the second presented in 2017 and the third (CCAR3) published in 2022 (Ref. 10.2). The overall aim of the Evidence Report is to assess the urgency of further action to tackle current and future risks, and realise opportunities, arising for the UK from climate change. The Act also requires the production of a National Adaptation Plan for the UK Government to be ready for the challenges of climate change.

#### POLICY

- 10.2.3. National Policy Statements (NPSs) set out the primary policy against which applications for the development consent in respect of Nationally Significant Infrastructure Projects (NSIP) are considered. The Overarching National Policy Statement for Energy (Designated 2024) (EN-1) (Ref. 10.3) sets out the Government's policy for delivery of major energy infrastructure and will be the primary basis for decision making. Section 4.10 highlights that applicants and the Secretary of State (SoS) should take the effects of climate change into account when developing and consenting infrastructure. Paragraph 4.10.8 states that:

*"New energy infrastructure will typically be a long-term investment and will need to remain operational over many decades, in the face of a changing climate. Consequently, applicants must consider the direct (e.g., site flooding, limited water availability, storms, heatwave and wildfire threats to infrastructure and operations) and indirect (e.g., access roads or other critical dependencies impacted by flooding, storms, heatwaves or wildfires) impacts of climate change when planning the location, design, build, operation and, where appropriate, decommissioning of new energy infrastructure."*

10.2.4. Paragraph 4.10.12 states that:

*“Where energy infrastructure has safety critical elements (for example parts of new gas-fired power stations or some electricity sub-stations), the applicant should apply a credible maximum climate change scenario. It is appropriate to take a risk-averse approach with elements of infrastructure which are critical to the safety of its operation.”*

10.2.5. Paragraph 4.9.13 states that:

*“The Secretary of State should be satisfied that applicants for new energy infrastructure have taken into account the potential impacts of climate change using the latest UK Climate Projections and associated research and expert guidance (such as the EA’s [Environment Agency] Climate Change Allowances for Flood Risk Assessments) available at the time the ES was prepared to ensure they have identified appropriate mitigation or adaptation measures. This should cover the estimated lifetime of the new infrastructure, including any decommissioning period.”*

10.2.6. The NPS for natural gas supply infrastructure and gas and oil pipelines (EN-4) (Ref. 10.4) came into force in January 2024. Taken together with the ‘Overarching National Policy Statement for Energy’ (EN-1) EN-4 provides planning guidance for developers of nationally significant natural gas supply infrastructure and oil and gas pipeline projects.

10.2.7. Paragraph 2.3.4 states that:

*As climate change is likely to increase risks to some of this infrastructure, from flooding or rising sea levels for example, applicants should in particular set out how the proposal would be resilient to: • increased risk of flooding; • effects of rising sea levels and increased risk of storm surge; • higher temperatures; • increased risk of earth movement, coastal erosion, or subsidence from increased risk of flooding and drought; and • any other increased risks identified in the applicant’s assessment.*

10.2.8. Paragraph 2.3.5 states that:

*“The resilience of the project to climate change should be assessed in the Environmental Statement (ES) accompanying an application. For example, future increased risk of flooding should be covered in the flood risk assessment.”*

10.2.9. Other relevant policy includes:

- Climate Change Adaptation: Policy Information (2021) (Ref. 10.5) This policy paper states that “Preparing for a changing climate, or climate adaptation, will help the UK to reduce negative consequences of climate change and take advantage of new opportunities. Building the UK’s preparedness and resilience to climate change impacts is a cost-effective and essential way to protect our people, economy, and environment.” In addition, Section 2 provides an overview of how the UK is preparing for climate change. These include commitments to understanding the risks through the UK Climate Change risk assessment, preparing for climate change through the National Adaptation Programme (NAP), and adapting services and infrastructure under the Adaptation Reporting Power (ARP). In Section 4, the policy paper refers to the climate evidence, tools and research including the UK Climate Projections 2018 and the UK Climate Resilience Programme
- National Planning Policy Framework (NPPF) (2023) (Ref. 10.6) Whilst the NPPF does not contain specific policies for nationally significant infrastructure projects, it has the potential to be



considered important and relevant to the SoS' consideration of the project. The NPPF presents the Government's planning policies for England and how these are to be applied. Guidance relating to ways to minimise vulnerability and improve resilience to climate change impacts is mainly set out in Section 14: Meeting the Challenge of Climate Change, Flooding and Coastal Change.

- The National Adaptation Programme (NAP) (2023) (Ref. 10.7) The NAP sets the actions that government and others will take to adapt to the challenges of climate change in the UK. It sets out key actions for a five-year period. Section 4.2 addresses the importance of the NPPF in supporting climate change adaptation for development.
- Stockton-on-Tees Borough Council Local Plan (2019) (Ref. 10.8) Under Policy SD5 - Natural, Built and Historic Environment (Part 2, bullet e) the Local Plan seeks to ensure the conservation and enhancement of the environment alongside meeting the challenge of climate change, flooding and coastal change by "Ensuring development takes into account the risks and opportunities associated with future changes to the climate and are adaptable to changing social, technological and economic conditions such as incorporating suitable and effective climate change adaptation principles."
- Climate Change: Strategy for Stockton-on-Tees (2016-2021) (Ref. 10.9) The Stockton-on-Tees Climate Change Strategy and Action Plan is one of three underpinning strategies to support the Green Vision: "to achieve a healthy, vibrant and successful low carbon community, resilient to the challenges of climate change and resource pressures, as the overarching vision for environment, sustainability, climate change and fuel poverty."
- North East England Climate Change Adaptation Study (2008) (Ref. 10.10) The study provides North East England with a clear picture of what changes are likely in the years ahead, what areas will be most affected and what is needed now to prepare and adapt.

## GUIDANCE

10.2.10. The assessment will be undertaken accordance with the following good practice guidance documents:

- National Planning Practice Guidance (PPG): Climate Change (2019) (Ref. 10.11)
- EIA Guide to: Climate Change Resilience and Adaptation (2020) (Ref. 10.12)
- ISO 14091:2021 Adaptation to climate change – Guidelines on vulnerability, impacts and risk assessment (Ref. 10.13)
- Safeguarding chemical businesses in a changing climate (Ref. 10.14)

## 10.3 CONSULTATION

10.3.1. No consultation has been undertaken to inform the production of this chapter and in the determining the baseline information, which has been based on publicly available data and follows good practice guidance.

## 10.4 STUDY AREA

10.4.1. The assessment of climate change resilience relates to the impact of climate on the Proposed Scheme (rather than the impact of the Proposed Scheme on climate). As such, the Study Area for the Proposed Scheme is defined as the Site.

- 10.4.2. In the context of the climate change resilience assessment, all elements of the Proposed Scheme are located within a relatively close proximity of each other. Therefore, the same baseline conditions and future baseline (projections) apply for all Proposed Scheme elements.
- 10.4.3. The climate change resilience assessment will explore the potential impacts of changing climate on the Proposed Scheme, and therefore considers both current and future baseline conditions to account for the full extent of climate impacts on the Proposed Scheme. In line with IEMA guidance (Ref. 10.12) the climate change resilience assessment will examine the potential impacts of climate at various temporal scales for the operation phase and maintenance of the Proposed Scheme, accounting for short-, medium- and long-term changes in climate.

## 10.5 BASELINE CONDITIONS AND FUTURE BASELINE

- 10.5.1. The IEMA Guidance identifies the need for the baseline to consider:
- The current climate baseline (defined by historic climate conditions) to provide an indication of past vulnerability; and
  - The future climate baseline (short term extremes and long-term variation) to assess a project's vulnerability to climate change.
- 10.5.2. This section provides an overview of the current baseline conditions for the Site using weather station data, and the projected future changes in the climate for the Study Area.

### DATA SOURCES

The key data sources referred for current and future baseline include:

- Met Office records for UK Climate averages (Ref. 10.25)
- State of the UK Climate Report (Ref. 10.27)
- UKCP18 climate projections (Ref. 10.28)
- UK Climate Risk Indicators (Ref. 10.29)

### EXISTING BASELINE

- 10.5.3. This section provides a summary of the climate trends over the past three decades (1991–2020) for temperature, precipitation (rain and snow), wind, humidity, and solar radiation. This provides an understanding of how recent climate trends have impacted the Study Area. This is presented for both the UK context as well as the local climate, as represented by Stockton-on-Tees weather station.

#### UK Context

- 10.5.4. According to the latest State of the UK Climate Report (Ref. 10.27) the UK's climate is changing, with recent decades warmer, wetter, and sunnier than the 20th century on a national and local scale. This report highlights that the UK has warmed at a broadly consistent (though slightly higher) rate than the observed change in global mean temperature. The key findings from the latest 2022 report are:
- All the top ten warmest years for the UK in the series from 1884 have occurred this century.
  - The most recent decade (2013–2022) has been on average 0.3°C warmer than the 1991–2020 average and 1.1°C warmer than 1961–1990.

- The most recent decade (2013–2022) had 4% and 7% fewer days of both air and ground frost, respectively, compared to the 1991–2020 average, and 15% and 18% fewer compared to 1961–1990.
- The most recent decade (2013–2022) had 3% fewer heating degree days per year on average compared to 1991–2020, and 12% fewer compared to 1961–1990.
- Five of the ten wettest years for the UK since 1836 have occurred this century.
- For the most recent decade (2013–2022), UK winters have been on average 10% wetter than 1991–2020 and 25% wetter than 1961–1990.
- Widespread and substantial snow events have occurred in 2021, 2018, 2013, 2010 and 2009, but their number and severity have generally declined since the 1960s.
- For the most recent decade (2013–2022) UK winters have been 3% sunnier than 1991–2020 and 14% sunnier than 1961–1990. UK springs have been 6%–16% sunnier.
- The UK annual mean wind speed from 1969–2022 shows a downward trend, consistent with that observed globally. However, this series must be interpreted with some caution. Changes in instrument type, station network size, station exposure, and choice of metric used mean that interpreting trends in storminess from UK wind speed data is not straightforward due to the limitations of available data.

## Local Climate

### Precipitation – Rainfall

- 10.5.5. Average seasonal rainfall at Stockton-on-Tees weather station (the closest weather station to the Site), England East and North East, and the UK for the period 1991–2020 is presented in **Table 10-1**. It demonstrates that the local weather is drier than both the region and the UK average year-round, particularly during winter.

**Table 10-1 - Long term average seasonal rainfall (mm) (1991–2020) for Stockton-on-Tees weather station, England East and North East, and the rest of the UK**

Season	Long Term Average Season Rainfall (1991-2020) (mm)		
	Stockton-on-Tees Weather Station	England East and North East	UK
Summer (June, July, August)	178mm	208.5mm	253.4mm
Winter (December, January, February)	128.5mm	205.4mm	344.9mm

### Precipitation – Snow

- 10.5.6. Snowfall is closely linked with temperature, with falls rarely occurring if the temperature is higher than 4°C. In the local area, snowfall is normally confined to the months including and between November to April.

### Temperature

- 10.5.7. **Table 10-2** shows the long-term average seasonal mean temperature for Stockton-on-Tees weather station, England East and North East, and the UK between 1991–2020. It shows that the Site is warmer than both the region and the UK average.

**Table 10-2 - Long term average mean seasonal temperature (°C) (1991–2020) for Stockton-on-Tees weather station, England East and North East, and the UK**

Season	Long Term Average Season Temperature (1991-2020) (°C)		
	Stockton-on-Tees Weather Station	England East and North East	UK
Summer (June, July, August)	15°C	14.9°C	14.6°C
Winter (December, January, February)	4.2°C	3.9°C	4.1°C

### Wind

10.5.8. The local area is one of the more sheltered parts of the UK. In general, the strongest winds are associated with the passage of deep depressions across or close to the UK. The frequency and strength of these depressions is greatest in the winter half of the year, especially from December to February, and this is when mean speeds and gusts (short duration peak values) are strongest

### Humidity

10.5.9. The annual average relative humidity for the Site is 78–80%, with a slightly higher humidity of 80–82% in the surrounding area.

### Solar Radiation

10.5.10. Average seasonal sunshine hours at Stockton-on-Tees Weather station, England East and North East, and the UK for the period 1991–2020 is presented in **Table 10-3**. **Table 10-3** shows that the area receives slightly less sunshine than the region, but greater than the UK average.

**Table 10-3 - Long-term average seasonal sunshine (hours) (1991–2020) for Stockton-on-Tees weather station, England East and North East, and the rest of the UK**

Season	Long Term Average Seasonal Sunshine hours (1991-2020) (C)		
	Stockton-on-Tees Weather Station	England East and North East	UK
Summer (June, July, August)	507 hours	534 hours	507 hours
Winter (December, January, February)	183 hours	189 hours	162 hours

### Sea Level Rise

10.5.11. The Site is located along the tidal River Tees, flowing into the nearby North Sea. Onshore, the Site is predominantly located in the low-risk Flood Zone 1. However, the northern boundary of the Site may encroach within the mapped extent of Flood Zones 2 and 3 associated with the River Tees (including Seaton on Tees Channel) as shown in **Figure 2-1a**.

### Past Major Events

10.5.12. In December 2013, Port Clarence (approximately 2.5km southwest of the Site) was subject to severe tidal flooding. A high spring tide was forecast; the tide at Teesport was due to peak at 1704hrs at a height of 2.85m Above Ordnance Datum (AOD). The meteorological conditions on that day included strong offshore wind, with a deep area of low pressure forming in the North Sea causing the positive surge on top of the already high tide. The positive surge measured 1.24m

above the spring tide, giving a total tide height of 4.09m AOD, which exceeded previous historical events. This event resulted in extensive damage and disruptions with internal flooding to residential properties, 20 businesses in Port Clarence, Billingham Reach Industrial Estate and Seal Sands in addition to severe transport disruption on major highways and evacuation of residents. The Environment Agency mobilised immediately and engaged the military, as there was no access to the breach due to the widespread flooding. (Ref. 10.15)

- 10.5.13. In the period of February to March 2018, there was the most significant spell of snow and low temperatures for the UK overall since December 2010. The snow and ice resulted in road closures, people becoming stranded, trains and flights cancelled, school closures, and power cuts (Ref. 10.16) The spell also led to many instances of broken heating or frozen pipes, which led to buildings flooding (Ref. 10.17).
- 10.5.14. In February 2022, Storm Eunice led to wind speeds reaching over 50mph in the area of the Proposed Scheme (Ref. 10.18), causing road closures, flooding, and over 100 Teesside homes were without power including properties in Stockton, Hartlepool and Stokesley – all within a 25km radius of the Proposed Scheme in (Ref. 10.19).
- 10.5.15. In July 2022, the UK experienced a brief but unprecedented extreme heatwave from 16 to 19 July 2022, as hot air moved north from the near continent, with extreme temperatures recorded on both 18 and 19 July. This heatwave marked a milestone in UK climate history, with 40°C being recorded for the first time in the UK, with a large part of England exceeding 37°C. There were several fatalities associated with open water swimming. Several fire services declared major incidents after multiple fires broke out. The UK Health Security Agency (UKHSA) published analysis of deaths during heat-periods in 2022 and which suggests that the 5-heat periods in the summer of 2022 resulted in a total of 2,803 excess deaths (excl. COVID-19) in people aged 65 and over across England as a whole (Ref. 10.20)
- 10.5.16. In December 2023, Storms Elin and Fergus made landfall in rapid succession, bringing strong winds and heavy rain to the northeast of England. These storms occurred during a four-month period (October 2023 to January 2024) where much of eastern and northeast England and eastern Scotland received more than 150% of the 1991–2020 long term average rainfall; more than twice the normal rainfall amount.

## **FUTURE BASELINE**

- 10.5.17. The UK climate projections (UKCP) 18 (Ref. 10.28) probabilistic projections for representative concentration pathways (RCP) 8.5 (high emission scenarios) have been used to infer future changes in a range of climate variables that may affect the vulnerability of the Proposed Scheme to climate change. The climate risk indicators (CRI) (Ref. 10.29), developed as part of the UK Climate Resilience Programme has been used to infer this assessment. The CRI utilises the UKCP18 projections and allows for a range of climate related indicators (including but not limited to, Met Office Heatwaves and heat stress). The CRI data for the local authority of Stockton-on-Tees local authority has been used to inform this assessment.
- 10.5.18. The future climate has been presented for the 2030s (2020–2049), the 2050s (2040–2069) and 2080s (2070–2099) to identify the anticipated climate conditions. These projections are provided against the baseline period of 1981–2010 (based on model data), and 1991–2020 (current climate) as an indication of change from the baseline period.

10.5.19. Although the assessment has been undertaken for the 50th percentile (i.e. the median, or central estimate) the 10th and the 90th percentiles are presented here to illustrate the full range of projected outcomes.

10.5.20. Climate change is projected to lead to warmer, wetter winters and hotter, drier summers, with an increase in the intensity and frequency of extreme events such as heatwaves, drought, extreme rainfall leading to flash flooding, storms, and wind events. The information presented below illustrates how the climate may evolve at the Site of the Proposed Scheme by the end of the century.

### Rainfall and Temperature

10.5.21. **Table 10-4** provides an overview of current and projected summer and winter temperature and rainfall for the location of the Proposed Scheme.

**Table 10-4 - Temperature and rainfall data for the Model Reference (1981-2010), current (1991-2020) and future climate (2030s, 2050s and 2080s) for RCP8.5 (anomalies), the table shows the 50th percentile (10th percentile to 90th percentile) values.**

Climate variable	Model Reference (1981–2010)	Current Baseline (1991–2020)	RCP8.5		
			2030s	2050s	2080s
Average summer temperature	14.7°C	15°C	+1.0°C (0.3°C to 1.7°C)	+1.9°C (0.8°C to 3.2°C)	+3.9°C (1.8°C to 6.1°C)
Average winter temperature	3.9°C	4.2°C	+0.9°C (0.1°C to 1.8°C)	+1.6°C (0.6°C to 2.8°C)	+3.0°C (1.3°C to 4.8°C)
Min winter temperature	0.8°C	1.1°C	+0.9°C (0°C to 1.9°C)	+1.6°C (0.4°C to 2.9°C)	+3.0°C (1.0°C to 5.2°C)
Max summer temperature	19.4°C	19.7°C	+1.0°C (0.2°C to 1.9°C)	+2.0°C (0.5°C to 3.6°C)	+4.0°C (1.4°C to 6.7°C)
Average summer rainfall	166mm	178mm	-5.9% (-18.9% to +8.2%)	-13.7% (-30.4% to +4.6%)	-23.1% (-42.2% to -1.8%)
Average winter rainfall	122mm	128.5mm	+6.9% (-0.9% to +14.9%)	+11.6% (+1.3% to +22.2%)	+20.9% (+6.3% to +35.7%)

10.5.22. Indicators of climate risk are shown in **Table 10-5**. These provide an indication of sector specific thresholds which are projected to change in the future. The indicators presented in **Table 10-5** are provided against the model reference period of 1981–2010. These indicators are unavailable for the current baseline period (1991–2020).

**Table 10-5 - Future projections (absolute) of climate risk indicators for the 2030s, 2050s and 2080s for RCP8.5, the table shows the 50th percentile (10th percentile to 90th percentile) values**

Climate variable	Model Reference (1981-2010)	RCP8.5		
		2030s	2050s	2080s
Met office heatwave <sup>29</sup> (events per year)	0.7	1.5 (1.0 to 2.2)	2.5 (1.3 to 4.1)	4.5 (2.5 to 6.1)
Road accident risk <sup>30</sup> (days per year)	46.4	34.0 (26.3 to 42.9)	26.8 (18.4 to 37.6)	16.9 (8.81 to 29.5)
Road melt risk (days per year) <sup>31</sup>	6.4	12.3 (8.7 to 17.4)	20.0 (10.7 to 35.3)	43.0 (19.7 to 72.9)
Heat stress <sup>32</sup> (days per year)	0	0.07 (0.01 to 0.14)	0.23 (0.03 to 1.50)	3.02 (0.30 to 10.93)
Wildfire events <sup>33</sup> (days per year)	21.7	30.3 (20.7 to 43.5)	40.3 (23.8 to 61.8)	60.1 (30.5 to 90.7)

### Precipitation – Snow

10.5.23. With regards to future changes, rising winter temperatures are likely to reduce the amount of precipitation that falls as snow in winter. Snowfall data is unavailable for the probabilistic projections (25km) of UKCP18, however both the regional (12km) and the local (2.2km) of UKCP18 show a decrease in both falling and lying snow across the UK for the period of 2061–2080 relative to the 1981-2000 baseline.

### Humidity

10.5.24. Projections for humidity anticipate an average decrease of approximately 1.1% in the 2030s (-2.1% to -0.7%), and a decrease of 2% in the 2050s (-2.9% to -1.5%).

### Soil Moisture

10.5.25. **Table 10-6 - Future projections of soil moisture (as % change) for the 2030s, 2050s and 2080s for RCP8.5, the table shows the 50th percentile (10th percentile to 90th percentile) values** Table 10-6 indicates the projected changes in soil moisture, with a decrease in soil moisture for the 50th percentile, and a slight increase under the 90th percentile.

<sup>29</sup> A UK heatwave threshold is met when a location records a period of at least three consecutive days with daily maximum temperatures meeting or exceeding the heatwave temperature threshold. The threshold for the local area is 25 °C.

<sup>30</sup> Days with minimum temperature below 0°C

<sup>31</sup> Days with maximum temperature above 25 °C

<sup>32</sup> Days with shade Wet Bulb Globe Temperature (WBGT) above 25°C

<sup>33</sup> Days with Met Office Wildfire Index at the Very High Fire Severity level or above

**Table 10-6 - Future projections of soil moisture (as % change) for the 2030s, 2050s and 2080s for RCP8.5, the table shows the 50th percentile (10th percentile to 90th percentile) values**

	2030s	2050s	2080s
Soil Moisture <sup>34</sup> (% change)	-1.2% (-5.7% to +0.8%)	-1.8% (-8.3% to +0.4%)	-2.7% (-11.7% to + 0.6%)

## Wind

- 10.5.26. UKCP18 depicts a wide spread of future changes in mean surface wind speed, however, there is large uncertainty in projected changes in circulation over the UK and natural climate variability contributes to much of this uncertainty. It is therefore difficult to represent regional extreme winds and gusts within regional climate models.
- 10.5.27. Central estimates of change in mean wind speed for the 2050s are small in all ensembles runs (<0.2ms<sup>-1</sup>). A wind speed of 0.2ms<sup>-1</sup> (approximately 0.4 knots) is small compared with the typical magnitude of summer mean wind speed of about 3.6–5.1ms<sup>-1</sup> (7–10 knots) over much of England. Seasonal changes at individual locations across the UK lie within the range of -15% to +10%.
- 10.5.28. In terms of storms, the analysis presented here is a summary of expected changes in storm patterns under a changing climate. A storm is defined by the Met Office as a wind event measuring 10 or higher on the Beaufort scale (equivalent to a wind speed of 27m/s or 60mph) (Ref. 10.22).
- 10.5.29. Studies by Belcher et al. (Ref. 10.23) relating to future projections of storms suggest that climate driven storm changes are less distinct in the northern than southern hemisphere. However, such is the wide range of inter-model variation, robust projections of changes in storm track are not yet possible and there is low confidence in the direction of future changes in the frequency, duration or intensity of storms affecting the UK.

## Sea Level Rise and Flood Risk

- 10.5.30. The Site is located along the tidal River Tees, flowing into the nearby North Sea. Therefore, it is exposed to future sea level rise. Sea level projections from the marine projections data point at the Proposed Scheme location, range from 0.12m in the 2030s to 0.74m in the 2080s. **Table 10-7** below depicts the projected sea level rise for the 2030s, 2050s and 2080s using UKCP18 marine projections data.

**Table 10-7 - Sea level rise projections (m) presented as 50th percentile (10th percentile to 90th percentile) for the Development area.**

	2030s	2050s	2080s
Sea level rise	0.16 (0.12 to 0.21)	0.29 (0.22 to 0.38)	0.55 (0.40 to 0.74)

<sup>34</sup> Potential soil moisture deficit measured by the maximum difference between accumulated rainfall and potential evaporation.



10.5.31. According to the Environment Agency flood risk summary (Ref. 10.24) for the Site, the majority of Proposed Scheme is currently at very low risk from tidal and fluvial flooding, with a localised area in the north of the Site at low risk. This is depicted in **Figure 8.1: Flood Zones and Rivers**.

## 10.6 SENSITIVE RECEPTORS

10.6.1. The Proposed Scheme elements (i.e. the receptors) that will be considered in the climate change resilience assessment are summarised below.

### CONSTRUCTION PHASE

10.6.2. The construction period is likely to be up to 12 months in duration, commencing at the end of 2025. The aim is for the project to be operational by winter 2026. The sensitive receptors during the construction phase include:

Table 1: Construction site and laydown;

Table 2: Construction materials;

Table 3: Construction workers; and

Table 4: Plant and equipment (such as vehicles, cranes and high structures and ancillary features such as fencing, drainage, freshwater supply, and lighting).

10.6.3. The Site would be sensitive to extreme weather such as heavy rainfall events and heatwaves. Heavy precipitation may lead to flash floods and waterlogging on the construction site, and potentially compromising any stored/stockpiled materials. This could be particularly disruptive during open trenching of the Export Pipeline.

10.6.4. Heatwave conditions may pose health risks to site workers and could disrupt the operation of plant and machinery. Such weather events may lead to delays in the construction process.

10.6.5. The Proposed Scheme may experience similar conditions during the decommissioning of the above ground elements of the Regas and Storage Area.

### OPERATION PHASE AND MAINTENANCE

10.6.6. The design life of the Proposed Scheme is estimated to be up to 25 years however the below ground on-shore infrastructure, the Marine Jetty (and habitat works where required) would remain beyond the operational lifespan of the Proposed Scheme.

10.6.7. The sensitive receptors for the operation phase and maintenance are vulnerable to changes in climate variables are listed below. A full description of the project components for the Proposed Scheme is provided in **Chapter 2: Site and Proposed Scheme Description** of this EIA Scoping Report.

- Marine Jetty
- LNG offloading equipment
- Regas and Storage Area that will contain:
  - Regasification Plant
  - Onshore Storage Tanks
  - Cryogenic pipelines
- Export Pipeline
- An electrical connection to Northern Power Grid; and

- A connection from the Export Pipeline to Teesside Gas Processing Plant (TGPP) and then onwards to the National Transmission System.

### **Precipitation**

- 10.6.8. All aspects of the Proposed Scheme have the potential be sensitive to high and low rainfall. Given that most of the infrastructure will be located externally, drying out and cracking of materials may affect structural stability and composition of the ground conditions. Prolonged dry periods can lead to cracking and more rapid deterioration of materials. Increased precipitation is likely to cause increased frequency and intensity of pluvial and fluvial flooding. Snow and ice also have the potential to cause damage to all above-ground infrastructure.

### **Temperature**

- 10.6.9. The majority of infrastructure will be located externally. For this reason, infrastructure may be sensitive to high and low temperature extremes through:
- Overheating of infrastructure, leading to greater demand for cooling;
  - Overheating of electronic equipment;
  - Deterioration of material structure and fabric; and
  - Damage to paved surfaces, including potential melting and deformation of surface asphalt.

### **Wind and storms**

- 10.6.10. High winds and storms could affect the stability of larger pieces of infrastructure such as the marine loading arms and hasten material degradation. High winds can also cause wind-driven rain infiltration into plant, building materials and surfaces affecting all aspects of the Proposed Scheme's above-ground infrastructure, which can increase maintenance costs and operational disruption. It is important to note that whilst the short-term consequences of wind-related disruption are large, repairs may usually be carried out quickly.

### **Relative humidity**

- 10.6.11. An increase in humidity has the potential increase condensation, corrosion and decay of metal surfaces as well as mould growth, mildew and staining.

### **Sea level rise**

- 10.6.12. The Site is located within areas identified to be at tidal flood risk. The most significant change in the future baseline condition is therefore likely to be associated with an increase in sea level associated with the potential effects of climate change.

## **10.7 DESIGN, MITIGATION AND ENHANCEMENT MEASURES**

### **CONSTRUCTION PHASE**

- 10.7.1. A Code of Construction Practice (CoCP) will be developed as the design progresses and submitted in outline with the DCO application. It is likely the CoCP will consider measures to reduce the risk of weather and climate impacts during the construction phase.
- 10.7.2. Measures will be developed for inclusion in an Outline CoCP at the ES stage and may include those identified below to support in the preparation and response to weather and climate change impacts during the construction phase:

- Provide adequate rest, shade, welfare facilities and Personal Protective Equipment (PPE), such as hats and sun cream, and drinking water, for construction staff during periods of high temperature and high solar radiation;
- An Emergency Response Plan including
  - Procedures for dealing with fire hazards in place;
  - Emergency response plans in place for accidents and emergency personnel identified;
  - Monitoring of daily weather forecasts and identify if an extreme weather event is likely to occur on the Site;
  - And procedures in the event of a forecast of a severe storm, gale, tidal surge or extreme temperature
- Increasing the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions;
- A temporary surface water drainage strategy to be prepared for the construction stage to ensure that surface run-off would not directly enter existing watercourses and temporary drainage arrangements to be constructed ahead of the construction works commencing to ensure that surface runoff will not directly enter existing watercourses;
- Measures to be put in place to prevent pollution from construction plant, vehicles and machinery including refuelling and lubricating in designated areas, on an impermeable surface, with appropriate cut-off drainage located away from watercourses.

## OPERATION PHASE AND MAINTENANCE

10.7.3. At the time of writing this chapter the committed design, mitigation and enhancement measures proposed (as stated in **Chapter 2: Site and Proposed Scheme Description**) which support the resilience of the scheme to climate change impacts include:

- The majority of project infrastructure will be located externally on concrete foundations. The foundations for the Regas and Storage Area will be piled, and geotechnical investigations will confirm the stabilisation requirements for the Marine Jetty infrastructure.
- The Marine Jetty and mooring dolphins are anticipated to be constructed of a concrete deck with steel piles.
- The Export Pipeline is expected to be buried, however in the event that it remains overground, it will be constructed on concrete or steel foundations.
- Surface water runoff will be collected within the site drainage system and discharged to the River Tees. Wastewater connection to the existing infrastructure will be made, however given the nature of the Site, limited wastewater discharges are anticipated.
- Routine maintenance will be planned and scheduled as required, in compliance with regulatory regimes and any permits and consents for the Proposed Scheme. Maintenance activities may require additional contractors temporarily at the Site.
- A health and safety plan will be prepared by the operator and will cover the works and operation of the Proposed Scheme. The facility includes a control room and will be largely unmanned other than the presence of security.

## DECOMMISSIONING PHASE

10.7.4. A Decommissioning Plan will be prepared in advance of decommissioning works being undertaken and is expected to be approved by the Local Planning Authority pursuant to a DCO requirement.

The Plan will consider the climate change risk mitigating measures as identified within the CoCP, where appropriate.

## 10.8 DESCRIPTION OF POTENTIAL LIKELY SIGNIFICANT EFFECTS

### IDENTIFYING VULNERABLE PROPOSED SCHEME ELEMENTS

- 10.8.1. The IEMA Guidance (Ref. 10.12) outlines that the scoping stage should identify the key climatic variables relevant to the Proposed Scheme and likely effects; however, it is not prescriptive in how this is undertaken.
- 10.8.2. The future baseline presented in **Section 10.5** has therefore been analysed to provide an understanding of the climate trends that have the potential to affect the Scheme. The climate variables have been assessed for the time periods across the Scheme lifetime.
- 10.8.3. The vulnerability assessment is the outcome of an assessment of sensitivity and exposure of the receptors identified in **Section 10.6** to the climate trends presented in **Section 10.5**. The vulnerability assessment has been undertaken for all phases of the Proposed Scheme in order to identify the impacts with a likely significant effect.
- 10.8.4. The exposure and sensitivity of the receptor to climate impacts is assigned a level of vulnerability as shown in the matrix in **Table 10-8**.

**Table 10-8 - Vulnerability Matrix**

Sensitivity	Exposure		
	Low	Medium	High
Low	Low vulnerability	Low vulnerability	Low vulnerability
Moderate	Low vulnerability	Medium vulnerability	Medium vulnerability
High	Low vulnerability	Medium vulnerability	High vulnerability

- 10.8.5. Sensitivity refers to the degree of response of the receptor to a change and its capacity to accommodate and recover from a change should it be affected. The typical 'sensitivity' of receptors to climate variables considers the impact of the climate on the specific receptors, considering any preliminary design measures (as detailed in **Section 10.7**). The assessment is based on literature review and professional judgement and sensitivity is rated as high, moderate, or low. Such that 'high sensitivity' implies that the receptor will lose much of its original form and function, 'moderate sensitivity' implies that the receptor is able to tolerate some climatic conditions without being fully altered though remains susceptible to be altered to some extent and that 'low sensitivity' implies that projected changes in the climatic factors have little influence on the receptor.
- 10.8.6. Exposure is the nature and degree to which climate variations may pose a risk to the Proposed Scheme. The 'exposure' of receptors to projected change in climate variables based on the current climate and the future projections identified in the baseline information presented above and rated as high, medium, or low. The construction phase is assessed as exposure to the climate trends of

the '2030s' (2020–2049), the operational phase considers the climate trends for the 2050s (2040–2069) and 2080s (2070–2099)<sup>35</sup> and the decommissioning phase considers the climate trends for the 2080s (2070–2099). To align with EIA practice assessing a worst-case scenario the operation and decommissioning phases will be assessed against the climate projections of the 2080s.

- 10.8.7. On completion of the vulnerability assessment, climate variables in the construction, operation, and decommissioning phase to which the Proposed Scheme is likely to have a low vulnerability to are scoped out of further assessment as no potential for likely significant effects is identified. Climate variables in the construction, operation, and decommissioning phase to which the Proposed Scheme is likely to have a medium or high vulnerability to are taken forward for further assessment at the next stage as these variables are identified as having the potential for likely significant effects. This is a qualitative assessment informed by expert opinion and supporting literature.

## CONSTRUCTION

- 10.8.8. **Table 10-9** presents the assessment of vulnerability of the Proposed Scheme during the construction phase. This takes into account the exposure (based on current and future baseline conditions, as defined in **Section 10.5**) and sensitivity taking into account any design, mitigation and enhancement measures addressed in **Section 10.7**.
- 10.8.9. The results of the vulnerability assessment presented show that 'low' vulnerability has been identified for all climate variables. As stated above, variables with a 'low' vulnerability are not anticipated to result in any likely significant effects. Therefore, no likely significant effects are identified in the construction phase.

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<sup>35</sup> Although the design life is a 25-year period, the climate trends for operation and decommissioning phases are considered up to the 2080s (2070-2099) to account for 'worst-case' scenario contingency planning enabling a more rapid and efficient response to climate change risk events.



**Table 10-9 - Vulnerability assessment for the Construction Phase**

Receptor	Climate Variable	Associated Hazard	Exposure	Sensitivity	Vulnerability
<b>Construction site, laydown and materials storage and handling</b>	Precipitation	Change in annual average	Medium	Low	Low
		Drought	Medium	Low	Low
		Extreme precipitation events (flooding)	High	Low	Low
	Temperature	Change in annual average	Medium	Low	Low
		Extreme temperature events	Medium	Low	Low
	Wind	Gales and high winds	High	Low	Low
		Storms and lightning	High	Low	Low
	Relative humidity	Changes in annual average	Low	Low	Low
	Sea level rise	Sea level rise	Medium	Low	Low
	<b>Construction workers</b>	Precipitation	Change in annual average	Medium	Low
Drought			Medium	Low	Low
Extreme precipitation events (flooding)			High	Low	Low
Temperature		Change in annual average	Medium	Low	Low



Receptor	Climate Variable	Associated Hazard	Exposure	Sensitivity	Vulnerability
	Wind	Extreme temperature events	Medium	Low	Low
		Gales and high winds	High	Low	Low
		Storms and lightning	High	Low	Low
	Relative humidity	Changes in annual average	Medium	Low	Low
	Sea level rise	Sea level rise	Medium	Low	Low
Construction plant and equipment	Precipitation	Change in annual average	Medium	Low	Low
		Drought	Medium	Low	Low
		Extreme precipitation events (flooding)	Medium	Low	Low
	Temperature	Change in annual average	Medium	Low	Low
		Extreme temperature events	High	Low	Low
	Wind	Gales and high winds	High	Low	Low
		Storms and lightning	High	Low	Low
	Relative humidity	Changes in annual average	Medium	Low	Low
	Sea level rise	Sea level rise	Medium	Low	Low



## OPERATION

10.8.10. **Table 10-10** presents the assessment of vulnerability the Proposed Scheme during operation and maintenance phase. This takes into account the exposure (based on current and future baseline conditions, as defined in **Section 10.5**) and sensitivity taking into account any design, mitigation and enhancement measures addressed in **Section 10.7**. Variables identified as having a medium or high vulnerability are identified as having potential likely significant effects. These effects are outlined in **Table 10-11**.



**Table 10-10 - Vulnerability assessment for the Operation Phase and maintenance**

Receptor	Variable	Associated Hazard	Exposure	Sensitivity	Vulnerability
Marine Jetty	Precipitation	Change in annual average	Low	Low	Low
		Drought	Medium	Low	Low
		Extreme precipitation events (flooding)	High	Low	Low
	Temperature	Change in annual average	Medium	Low	Low
		Extreme temperature events	High	Low	Low
	Wind	Gales and high winds	High	Low	Low
		Storms and lightning	High	Moderate	Medium
	Relative humidity	Changes in annual average	Medium	Low	Low
	Sea level rise	Sea level rise and storm surge	High	Moderate	Medium
	LNG offloading equipment	Precipitation	Change in annual average	Low	Low
Drought			Medium	Low	Low
Extreme precipitation events (flooding)			High	Low	Low
Temperature		Change in annual average	Medium	Low	Low



Receptor	Variable	Associated Hazard	Exposure	Sensitivity	Vulnerability
	Wind	Extreme temperature events	High	Moderate	Medium
		Gales and high winds	High	High	High
		Storms and lightning	High	Moderate	Medium
	Relative humidity	Changes in annual average	Medium	Low	Low
Sea level rise	Sea level rise and storm surge	High	Moderate	Medium	
<b>Regas and Storage Area including:</b> <ul style="list-style-type: none"> <li>■ LNG regasification plant</li> <li>■ Onshore storage tanks</li> <li>■ Cryogenic pipelines (vapour and liquid) from the Marine Jetty to Regas and Storage Area</li> </ul>	Precipitation	Change in annual average	Low	Low	Low
		Drought	Medium	Moderate	Medium
		Extreme precipitation events (flooding)	High	Low	Low
	Temperature	Change in annual average	Medium	Low	Low
		Extreme temperature events	High	Moderate	Medium
	Wind	Gales and high winds	High	Moderate	Medium
		Storms and lightning	High	Moderate	Medium
	Relative humidity	Changes in annual average	Medium	Low	Low
	Sea level rise	Sea level rise	High	Moderate	Medium
	<b>Export Pipeline from the Regas and Storage Area to</b>	Precipitation	Change in annual average	Low	Low



Receptor	Variable	Associated Hazard	Exposure	Sensitivity	Vulnerability	
TGPP (assuming underground <sup>36</sup> ).		Drought	Medium	Moderate	Medium	
		Extreme precipitation events (flooding)	Medium	Low	Low	
	Temperature	Change in annual average	Low	Low	Low	
		Extreme temperature events	Medium	Low	Low	
	Wind	Gales and high winds	Low	Low	Low	
		Storms and lightning	Low	Low	Low	
	Relative humidity	Changes in annual average	Low	Low	Low	
	Sea level rise	Sea level rise and storm surge	Medium	Low	Low	
	Electrical connection to Northern Power Grid	Precipitation	Change in annual average	Low	Low	Low
			Drought	Medium	Low	Low
Extreme precipitation events (flooding)			High	Moderate	Medium	
Temperature		Change in annual average	Medium	Low	Low	
		Extreme temperature events	High	High	High	

<sup>36</sup> In the event of above ground installation, extreme temperature, gales and high winds, and sea level rise would be medium or high vulnerability)



Receptor	Variable	Associated Hazard	Exposure	Sensitivity	Vulnerability
	Wind	Gales and high winds	High	Low	Low
		Storms and lightning	High	Moderate	Medium
	Relative humidity	Changes in annual average	Medium	Low	Low
	Sea level rise	Sea level rise and storm surge	High	Low	Low
<b>Connection from the Export Pipeline to TGPP and then onwards to the National Transmission System at TGPP</b>	Precipitation	Change in annual average	Low	Low	Low
		Drought	Medium	High	Medium
		Extreme precipitation events (flooding)	High	Moderate	Medium
	Temperature	Change in annual average	Medium	Low	Low
		Extreme temperature events	High	Moderate	Medium
	Wind	Gales and high winds	High	Low	Low
		Storms and lightning	High	Moderate	Medium
	Relative humidity	Changes in annual average	Medium	Low	Low
	Sea level rise	Sea level rise and storm surge	High	Low	Low
		Precipitation	Change in annual average	Low	Low
Drought			Medium	Low	Low



Receptor	Variable	Associated Hazard	Exposure	Sensitivity	Vulnerability
Operational staff <sup>37</sup>		Extreme precipitation events (flooding)	High	Low	Low
	Temperature	Change in annual average	Medium	Low	Low
		Extreme temperature events	High	Low	Low
	Wind	Gales and high winds	High	Low	Low
		Storms and lightning	High	Low	Low
	Relative humidity	Changes in annual average	Medium	Low	Low
	Sea level rise	Sea level rise and storm surge	High	Low	Low

<sup>37</sup> As set out in **Chapter 2 Site and Proposed Scheme Description** of this EIA scoping Report, it is anticipated that the Proposed Scheme will be predominantly unmanned, unless an LNG delivery is taking place whereby two operators will be present. Staff will also be required to provide 24-hour security.



10.8.11. The potential effects associated with the operation phase and maintenance are shown in **Table 10-11**. Receptors associated with the associated hazards are identified and potential impacts detailed in accordance with professional judgement and experience on past projects of similar magnitude and purpose.

**Table 10-11 - Likely Effects – Operation Phase and Maintenance**

<b>Climate Variable</b>	<b>Associated Hazard</b>	<b>Project components</b>	<b>Potential Impacts</b>
<b>Precipitation</b> <b>Sea level rise</b>	Extreme rainfall events (flooding) Sea level rise Storm surge	Marine Jetty; LNG offloading equipment Regas and Storage Area Electrical connection to Northern Power Grid; and Connection to existing entry point into the National Transmission System at TGPP.	<ul style="list-style-type: none"> <li>■ Reduction in earthwork stability and hastening the deterioration of materials;</li> <li>■ Potential for contaminated floodwater or surface water run-off from the Site, causing pollution;</li> <li>■ Mobilisation of pollutants potentially affecting building materials and consequently the structural integrity;</li> <li>■ Flooding, resulting in loss or disruption of function and associated risks;</li> <li>■ Drainage infrastructure overwhelmed leading to surface water flooding;</li> <li>■ Sea level rise may impact ground water levels - Localised impact on groundwater levels and artesian pressures as tidal reach can extend 10km to 20km inland.</li> <li>■ Overtopping of the Jetty impacting operations and delays in offloading</li> <li>■ Deterioration of material structure and fabric from increased rainfall or overtopping of structures during storm surge; and</li> <li>■ Power outages and disruption to business continuity.</li> </ul>
	Drought	Regas and Storage Area; Export Pipeline; Connection to existing entry point into the National Transmission System at TGPP.	<ul style="list-style-type: none"> <li>■ Drying out and cracking of materials which has the potential to affect structural and foundation stability</li> </ul>



Climate Variable	Associated Hazard	Project components	Potential Impacts
<b>Temperature</b>	Extreme temperature events (heatwaves and cold spells)	LNG offloading equipment Regas and Storage Area; Electrical connection to Northern Power Grid; and Connection to existing entry point into the National Transmission System at TGPP.	<ul style="list-style-type: none"> <li>■ Exacerbation of faults in machinery and equipment during extreme temperature events resulting in more frequent maintenance;</li> <li>■ Overheating of infrastructure, leading to greater demand for cooling;</li> <li>■ The potential increase in surface temperature of infrastructure may result in expansion and stress of plant, pipework and fittings.</li> <li>■ Faster deterioration of materials from UV radiation (e.g., fading and brittleness);</li> <li>■ Potential melting and deformation of materials (such as tarmac on roads);</li> <li>■ Security infrastructure and lighting may fail in heatwave conditions;</li> <li>■ Increased air emissions or odours;</li> <li>■ Increased risk of fires, including wildfires in the surrounding area;</li> <li>■ Colder winter temperatures could lead to freezing of pipework, surface water management systems or ditches.</li> </ul>
<b>Wind</b>	Extreme wind/Gales and Storms (lightning)	Marine Jetty; LNG offloading equipment; Regas and Storage Area; Electrical connection to Northern Power Grid; and	<ul style="list-style-type: none"> <li>■ Potential impact to stability of above-ground infrastructure;</li> <li>■ Damage from wind-driven rain infiltration into building materials and surfaces;</li> <li>■ Windborne dust and debris clogging drainage systems and requiring clearing;</li> <li>■ Damage and degradation of materials resulting in increased maintenance costs and operational disruption;</li> <li>■ Temporary power loss during storm events;</li> </ul>





Climate Variable	Associated Hazard	Project components	Potential Impacts
		Connection to existing entry point into the National Transmission System at TGPP.	<ul style="list-style-type: none"><li>▪ Lightning strike can cause fire as well as power surges and shock waves which can destabilise energy systems, as well as cause damage to electrical equipment;</li><li>▪ Marine infrastructure may be unsafe to operate in high wind speeds causing operational down time;</li><li>▪ Potential safety risk should structure become weakened;</li><li>▪ Storms and high winds could damage buildings and other structures, such as tall infrastructure, with the potential to increase fugitive dust &amp; odour emissions;</li><li>▪ Flying debris could damage infrastructure.</li></ul>



## **DECOMMISSIONING**

- 10.8.12. As detailed in **Chapter 2**, a Decommissioning Plan (including environmental management) will be prepared at the appropriate time to consider the potential risks of decommissioning the relevant elements of the Proposed Scheme. The Decommissioning Plan will be prepared in advance of decommissioning works being undertaken and is expected to be approved by the Local Planning Authority pursuant to a DCO requirement.
- 10.8.13. Potential significant impacts associated with decommissioning would likely be similar to those listed for construction above. Further assessment may be required to identify if there have been changes in the climate baseline at that time.

## **SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT**

- 10.8.14. A summary of the elements scoped in and out of the assessment for climate change resilience are set out in **Table 10-12** below. Each element is accompanied by a justification for its inclusion or exclusion from further assessment based on the Vulnerability Assessment completed in **Section 10.8**.

**Table 10-12 - Elements Scoped In or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
<p><b>Marine Jetty</b></p> <p>Climate variables: storms and lightning; sea level rise</p>	Operation	✓		<p>Determined as medium to high vulnerability (see <b>Table 10-10</b>).</p> <p>The Marine Jetty is vulnerable to sea level rise due to its location along the River Tees. The Marine Jetty's location and material make up also mean it is vulnerable to storms and lightning.</p> <p>Therefore, there is the potential for likely significant effects (see <b>Table 10-11</b>)</p>
<p><b>Marine Jetty</b></p> <p>Climate variables: change in annual average (precipitation); drought; extreme precipitation events (flooding); change in annual average (temperature); extreme temperature events; gales and high winds; changes in annual average (relative humidity)</p>	Operation		✓	<p>Determined as low vulnerability (see <b>Table 10-10</b>).</p> <p>The new Marine Jetty is less likely to be impacted by rainfall events (and associated surface water flooding), changes in annual average precipitation, temperature and humidity and the structure of the Marine Jetty means that is less likely to be impacted by gales and high winds.</p> <p>Therefore, no likely significant effects are anticipated (see <b>Table 10-11</b>).</p>
<p><b>LNG offloading equipment</b></p>	Operation	✓		<p>Determined as medium to high vulnerability (see <b>Table 10-10</b>).</p>

Element	Phase	Scoped In	Scoped Out	Justification
<p>Climate variables: extreme temperature events; gales and high winds; storms and lightning; sea level rise</p>				<p>The position and height of the loading arms mean that they are vulnerable to high winds, storms, and lightning. Extreme temperature events may impact the material fabric of the arms and their location on the River Tees means they are vulnerable to sea level rise.</p> <p>Therefore, there is the potential for likely significant effects (see <b>Table 10-11</b>)</p>
<p><b>LNG offloading</b></p> <p>Climate variables: change in annual average (precipitation); drought; extreme precipitation events (flooding); change in annual average (temperature); change in annual average (relative humidity)</p>	Operation		✓	<p>Determined as low vulnerability (see <b>Table 10-10</b>).</p> <p>The receptor's components and location mean they are less likely to be impacted by changes in annual average temperature and rainfall events and drought.</p> <p>Therefore, no likely significant effects are anticipated (see <b>Table 10-11</b>).</p>
<p><b>Regas and Storage Area</b></p> <p>Climate variables: drought; extreme temperature events; gales and high wind; storms and lightning; sea level rise</p>	Operation	✓		<p>Determined as medium to high vulnerability (see <b>Table 10-10</b>).</p> <p>The pipelines between the Marine Jetty and the Regas and Storage Area are vulnerable to sea level rise due to their location along the River Tees. Extreme temperature events and drought may place stress on the pipelines and damage their foundations. The pipelines' location and</p>

Element	Phase	Scoped In	Scoped Out	Justification
				<p>material makeup make them vulnerable to storms and lightning strikes.</p> <p>The storage tanks are vulnerable to sea level rise and high winds due to their structure and location along the River Tees. Extreme temperature may also damage the material fabric of the tanks and increase the risk of odours. Drought may also alter the ground conditions and cause structural issues for the tanks.</p> <p>The regasification plant is vulnerable to sea level rise, storms and high winds due to its structure and location along the River Tees.</p> <p>Extreme temperature and drought may also damage the material fabric of the plant, lead to equipment failures, and alter the ground conditions and causing structural issues.</p> <p>Therefore, there is the potential for likely significant effects (see <b>Table 10-11</b>).</p>
<p><b>Regas and Storage Area</b></p> <p>Climate variables: change in annual average (precipitation); extreme precipitation events (flooding); changes in annual average (temperature); gales and high winds; changes in annual average (relative humidity)</p>	Operation		✓	<p>Determined as low vulnerability (see <b>Table 10-10</b>).</p> <p>The flood risk for this part of the Site is low meaning the pipelines are less likely to be impacted by changes in annual average rainfall and pluvial flooding. Their structure mean that they are less vulnerable to gales and high winds.</p>

Element	Phase	Scoped In	Scoped Out	Justification
				<p>The storage tanks are less likely to be vulnerable to changes in annual average precipitation, temperature, and humidity. The flood risk for this part of the Site is low.</p> <p>The regasification plant is less likely to be vulnerable to changes in annual average precipitation, temperature, and humidity. The flood risk for this part of the Site is low.</p> <p>Therefore, no likely significant effects are anticipated (see <b>Table 10-11</b>).</p>
<p><b>Export Pipeline</b></p> <p>Climate variables: drought</p>	Operation	✓		<p>Determined as medium to high vulnerability (see <b>Table 10-10</b>).</p> <p>The Export Pipeline is vulnerable to droughts which may damage its foundations.</p> <p>Therefore, there is the potential for likely significant effects (see <b>Table 10-11</b>).</p>
<p><b>Export Pipeline</b></p> <p>Climate variables: change in annual average (precipitation); extreme precipitation events (flooding); change in annual average (temperature); extreme temperature events; gales and high winds;</p>	Operation		✓	<p>Determined as low vulnerability (see <b>Table 10-10</b>).</p> <p>Due to its location and material makeup the Export Pipeline is less likely to be impacted by changes in precipitation, temperature, or humidity. Its location also means it is less vulnerable to sea level rise, storms, and pluvial flooding.</p>

Element	Phase	Scoped In	Scoped Out	Justification
storms and lightning; changes in annual average (relative humidity); sea level rise				Therefore, no likely significant effects are anticipated (see <b>Table 10-11</b> ).
<p><b>Electrical connection to Northern Power Grid</b></p> <p>Climate variables: extreme precipitation events (flooding); extreme temperature events; storms and lightning</p>	Operation	✓		<p>Determined as medium to high vulnerability (see <b>Table 10-10</b>).</p> <p>The location of the electrical connections means it is more at risk from flooding. It's location and material makeup also makes it vulnerable to storms and lightning. Extreme temperature events may lead to equipment being damaged.</p> <p>Therefore, there is the potential for likely significant effects (see <b>Table 10-11</b>).</p>
<p><b>Electrical connection to Northern Power Grid</b></p> <p>Climate variables: change in annual average (precipitation); drought; change in annual average (temperature); gales and high winds; changes in annual average (relative humidity); sea level rise</p>	Operation		✓	<p>Determined as low vulnerability (see <b>Table 10-10</b>).</p> <p>The location of this receptor means it is less vulnerable to sea level rise and high winds. It is also less likely to be impacted by annual average changes in precipitation, temperature, and humidity.</p> <p>Therefore, no likely significant effects are anticipated (see <b>Table 10-11</b>).</p>

Element	Phase	Scoped In	Scoped Out	Justification
<p><b>Connection to existing entry point into the National Transmission System at TGPP</b></p> <p>Climate variables: drought; extreme precipitation events (flooding); extreme temperature events; storms and lightning</p>	Operation	✓		<p>Determined as medium to high vulnerability (see <b>Table 10-10</b>).</p> <p>The connection to the existing entry point is vulnerable to flooding (due to its location) and extreme temperature which may damage the material makeup of the infrastructure.</p> <p>Therefore, there is the potential for likely significant effects (see <b>Table 10-11</b>).</p>
<p><b>Connection to existing entry point into the National Transmission System at TGPP</b></p> <p>Climate variables: change in annual average (precipitation); change in annual average (temperature); gales and high winds; changes in annual average (relative humidity); sea level rise</p>	Operation		✓	<p>Determined as low vulnerability (see <b>Table 10-10</b>).</p> <p>The location of the connection point means it is less vulnerable to sea level rise and high winds. It is also less likely to be impacted by annual average changes in precipitation, temperature, and humidity.</p> <p>Therefore, no likely significant effects are anticipated (see <b>Table 10-11</b>).</p>
<p><b>Operational Staff</b></p> <p>Climate variables: change in annual average (precipitation); drought; extreme precipitation events (flooding); change in annual average (temperature); extreme temperature events; gales and high winds;</p>	Operation		✓	<p>Determined as low vulnerability (see <b>Table 10-10</b>) as the facility will be largely unstaffed meaning there is minimal risk employees and contractors. Therefore, no likely significant effects are anticipated (see <b>Table 10-11</b>).</p>





Element	Phase	Scoped In	Scoped Out	Justification
storms and lightning; changes in annual average (relative humidity); sea level rise				

## 10.9 PROPOSED METHODOLOGY

### ASSESSMENT OF SIGNIFICANT EFFECTS

- 10.9.1. The assessment of significant effects will be assessed using an approach based on the IEMA guidance (Ref. 10.12), and professional judgement.
- 10.9.2. The significance of effects of changes in (scoped in) climate variables on receptors will be identified for the operation phase. The scoped in climate variables are based on the findings of the vulnerability assessment at the scoping stage and also incorporate comments received from the Planning Inspectorate and the consultation bodies in the EIA Scoping Opinion. The significance of effects will be determined by considering the consequence and the likelihood of potential impacts associated with changes in climate variables on Proposed Scheme components occurring. Consequence and likelihood will be qualitatively assessed using the descriptions in **Table 10-13** and **Table 10-14**. These descriptions have been developed using professional judgement, informed by relevant guidance. It should be noted that the IEMA guidance definitions of consequence has been developed for large scale infrastructure specifically, and therefore, the description of the measure of consequence will have regard to the wider Proposed Scheme.
- 10.9.3. The assessment of consequence and likelihood (and therefore significance) will take embedded mitigation into account as an assumed part of the design. Embedded mitigation will be identified through engagement with the design team.

**Table 10-13 - Consequence Definitions**

Measure of consequence	Description
<b>Very large adverse</b>	Permanent damage. Disruption lasting more than ten days. Early renewal of facility/infrastructure >90%. Severe health effects and/or fatalities. Repairs cost 50% of facility reconstruction cost.
<b>Large adverse</b>	Extensive facility/infrastructure damage. Disruption lasting more than three but less than ten days. Early renewal of 50-90% of infrastructure Severe health effects and/or fatalities. Significant effect on the environment, requiring remediation. Repairs cost 50% of facility reconstruction cost.
<b>Moderate adverse</b>	Limited facility/infrastructure damage with damage recoverable by maintenance or minor repair. Disruption lasting more than one but less than three days. Adverse effects on health and/or the environment. Repairs cost 25% of facility reconstruction cost.
<b>Minor adverse</b>	Localised facility/infrastructure disruption. No permanent damage, minor restoration work required: Facility closure lasting less than one day. Slight adverse health or environmental effects. Repairs cost 2% of facility reconstruction cost.
<b>Negligible</b>	No facility/infrastructure damage, minimal adverse effects on health, safety and the environment. Facility doesn't shut down. No financial loss.

**Table 10-14 - Likelihood Definitions**

<b>Measure of likelihood</b>	<b>Description</b>
<b>Very High</b>	The event occurs multiple times during the lifetime of the Proposed Scheme e.g. approximately annually.
<b>High</b>	The event occurs several times during the lifetime of the Proposed Scheme e.g. approximately once every five years.
<b>Medium</b>	The event occurs limited times during the lifetime of the Proposed Scheme e.g. approximately once every 15 years.
<b>Low</b>	The event occurs occasionally during the lifetime of the Proposed Scheme e.g. once in 60 years.
<b>Very Low</b>	The event may occur once during the lifetime of the Proposed Scheme.

**SIGNIFICANCE OF EFFECT CRITERIA**

10.9.4. The likelihood and consequence are combined to assess the significance of effects on receptors, as shown in **Table 10-15**. The assessment is qualitative and based on professional judgment, engagement with the design team and a review of relevant literature.

**Table 10-15 - Significance Rating Matrix**

<b>Likelihood</b>	<b>Consequence</b>				
	<b>Negligible</b>	<b>Minor adverse</b>	<b>Moderate adverse</b>	<b>Large adverse</b>	<b>Very large adverse</b>
<b>Very High</b>	Not significant	Significant	Significant	Significant	Significant
<b>High</b>	Not significant	Significant	Significant	Significant	Significant
<b>Medium</b>	Not significant	Not significant	Significant	Significant	Significant
<b>Low</b>	Not significant	Not significant	Not significant	Significant	Significant
<b>Very Low</b>	Not significant	Not significant	Not significant	Not significant	Not significant

## 10.10 ASSUMPTIONS AND LIMITATIONS

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

- The UKCP18 projections have been used to infer future changes in a range of climate variables that may affect the vulnerability of the Proposed Scheme to climate change. At the time of writing, these represent the most up-to-date representation of future climate in the UK. The CRI has been developed using UKCP18 projections.
- There are inherited limitations and uncertainties within the CRI data. Further information on the methodology used to produce this data can be found in Changing climate risk in the UK: a multi-sectoral analysis using policy-relevant indicators (Ref. 10.21).
- There are inherent uncertainties associated with climate projections and they are not predictions of the future. It is possible that future climate will differ from the future baseline climate against which the resilience of the Proposed Scheme has been assessed, depending on global emissions over the next century. A 'high' emissions scenario (RCP 8.5) using the 2050s time slice (2040-2069) has been used to develop the baseline against which resilience has been assessed, this incorporates the 12-month construction period and the 25-year design life. The baseline (Section 10.5) provides projected climate trends beyond the design life, to the end of the century (2080s: 2070-2099) although climate hazards are more extreme by the end of the century, selecting a longer time period for the assessment will have no influence on the significant effects due to the limited embedded mitigation measures proposed at this stage.
- Any further research, analysis or decision-making should take account of the accuracies and uncertainties associated with climate projections. It is also important to note that the analysis is based on selected observational data, the results of climate model ensembles and a selected range of existing climate change research and literature available at the time of assessment. Any future decision-making based on this analysis should consider the range of literature, evidence, and research available at that time and any changes to this.

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# 11 GREENHOUSE GASES

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## 11.1 INTRODUCTION

11.1.1. This chapter considers the impacts of the Proposed Scheme from greenhouse gases (GHG) that may arise during construction, operation and maintenance and decommissioning (as described in **Chapter 2 Site and Proposed Scheme Description** of this EIA Scoping Report), and any potential significant effects. It sets out the proposed methodology for the GHG assessment and identifies those impacts that can be scoped out of the assessment. Where necessary, further assessment will be presented in the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES).

11.1.2. The requirement to consider a project's impact on, and vulnerability to, climate change results from Schedule 4 the EIA Regulations 2017 (Ref. 11.1). The EIA Regulations require:

*“A description of the likely significant effects of the development on the environment resulting from [...] the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change.”*

11.1.3. As such this chapter considers the impacts and effects of the Proposed Scheme in terms of its contribution to Climate Change. This is carried out through the GHG Emissions assessment. The consideration for the vulnerability of the Proposed Scheme to climate change is addressed in **Chapter 10: Climate Change Resilience**.

## 11.2 LEGISLATION, POLICY, AND GUIDANCE

11.2.1. This section outlines the relevant legislation, policy, and guidance to the GHG assessment of the Proposed Scheme.

### LEGISLATION

11.2.2. The legislation relevant to the GHG assessment are:

- United Nations Framework Convention on Climate Change (UNFCCC) (Ref. 11.2) drives international action on climate change. The UK, being a member, has pledged to reduce emissions under the 'Paris Agreement' in 2015, as a part of a joint pledge by members of the EU. This provides an overarching commitment by the UK.
- UK Nationally Determined Contribution (2020) (Ref. 11.19) established UK's GHG reduction targets to at least 68% reduction by 2030 compared to 1990 levels to align with Paris Agreement's temperature goals. This target remains unchanged in the UK's latest NDC submitted to the UNFCCC in September 2022.
- The Climate Change Act (2008) as amended 2019 (Ref. 11.3) established a legal requirement for an 80% reduction in the GHG Emissions of the UK economy by 2050 in comparison to the 1990 baseline. In June 2019 the UK Government updated this commitment to net zero emissions by 2050.
- The Carbon Budget Order 2021 (Ref. 11.20) establishes the carbon budget for the 2033-2037 budgetary period in the UK. The carbon budget for the specified period is 965 million tonnes of carbon dioxide equivalent, setting a cap on the maximum level of the net UK carbon account during this five-year period.

## POLICY

11.2.3. National Policy Statements (NPSs) set out the primary policy against which an application for the development consent of the Proposed Scheme will be considered. The Overarching National Policy Statement for Energy (EN-1) (2023) (Ref. 11.6) and NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (2023) (Ref. 11.6) where EN-1 defines the 'need' for nationally significant energy infrastructure projects, while EN-4 recognises the role of liquefied natural gas (LNG) facilities within the energy mix. EN-1 sets out the overarching need case and general assessment principles for energy, while EN-4 sets out assessment principles for LNG import facilities.

11.2.4. Other relevant policy includes:

- Infrastructure Carbon Review (2013) (Ref. 11.4) Introduced by the UK government in 2013, aimed to integrate carbon reduction into the foundation of the country's infrastructure. It prioritized 'capital carbon' associated with construction materials and processes, emphasizing early assessment in an infrastructure project's lifecycle for optimal carbon reduction. The review led to commitments from major stakeholders and the subsequent development of PAS2080:2023 (Ref. 11.5), a Publicly Available Specification on infrastructure carbon management, with an updated version released in 2023.
- The National Planning Policy Framework (NPPF) (2023) (Ref. 11.6) Whilst the NPPF does not contain specific policies for nationally significant infrastructure projects, it has the potential to be considered important and relevant to the Secretary of State (SoS) consideration of the Proposed Scheme. The NPPF has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways. One of the objectives is an environmental objective, which includes the objective of "mitigating and adapting to climate change, including moving to a low carbon economy". The NPPF provides planning policies and decisions that recognise the importance of undeveloped land, support the transition to a low carbon future, and encourage renewable and low carbon energy and associated infrastructure which are defined in section 11 and 14 of the NPPF.
- UK Net Zero Strategy (2021) (Ref. 11.9) aims to decarbonise all sectors of the UK economy to meet a net zero target by 2050. The strategy includes an ambition to deliver four carbon capture, usage, and storage clusters, capturing 20-30 million tonnes (MtCO<sub>2</sub>)/year across the economy, including 6MtCO<sub>2</sub>/year of industrial emissions, per year by 2030.
- Industrial Decarbonisation Strategy (2021) (Ref. 11.10) sets out a vision for a low carbon UK industrial sector by 2050, emphasizing the replacement of fossil fuel use with low carbon alternatives. The first strategy published by a major economy that sets out how industry can decarbonise in line with net zero, while remaining competitive and without pushing emissions abroad.
- Stockton-on-Tees Local Plan (2019) (Ref. 11.11) requires all major development to demonstrate how they contribute to the GHG emissions reduction targets set out in the Stockton-on-Tees' Climate Change Strategy 2016 under chapter 8 of Policy ENV1 - Energy Efficiency.
- Net Zero Strategy for Tees Valley (Ref. 11.12) is a collaborative effort by five local authorities (Darlington, Hartlepool, Middlesbrough, Stockton-on-Tees and Redcar & Cleveland) aiming to establish the Tees Valley as a global leader in clean energy, targeting a Net Zero carbon industrial cluster by 2040.



- Clean Growth Strategy (2017) (Ref. 11.21) outlines the UK’s plan to promote growth through a low-carbon economy. The strategy aims to decarbonize all sectors of the UK economy throughout the 2020s. It focuses on reducing greenhouse gas emissions and fostering clean growth opportunities.
- The Ten Point Plan for a Green Industrial Revolution (2020) (Ref. 11.22) outlines the UK government’s strategy to drive green growth and accelerate the path to net zero emissions. The focus areas include advancing offshore wind, accelerating electric vehicles and Jet Zero and Green ships, among others.

## GUIDANCE

- The Institute of Environment Management and Assessment (IEMA) Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (Ref. 11.13) provides a framework for the consideration of GHG emissions in the EIA process, in line with the 2014 European Union (EU) Directive. The guidance sets out how to identify the GHG emissions baseline, key contributing GHG sources, assess the impact of potential GHG emissions, and consider mitigation in accordance with the hierarchy for managing project related GHG emissions.
- The GHG Protocol (Ref. 11.14) provides overarching guidance on developing GHG inventories and reporting standards.
- Publicly Available Standard PAS” 2080:2023 (Ref. 11.5) Carbon Management in Buildings and infrastructure specifies the requirements for the management of whole life carbon in buildings and infrastructure. It guides organisations in holistic carbon management, reducing costs, fostering industry leadership, and adapting to a low-carbon future. The assessment methodology considers this framework, specifically for evaluating distinct phases in the project lifecycle.
- The Royal Institution of Chartered Surveyors (RICS) guidance note (Ref. 11.15) is a practical framework for quantity surveyors to calculate embodied carbon emissions associated with their projects. The guidance note provides a set of principles for measuring embodied carbon, helps select and specify materials that are efficient while ensuring they’re safe and durable, and quantifies the benefits of low carbon design to the client and society. The note will play a crucial role in the assessment methodology for determining embodied carbon.

## 11.3 CONSULTATION

- 11.3.1. Consultation has not been undertaken to inform the preparation of this chapter; the methodology follows IEMA (Ref. 11.13) EIA good practice guidance. Engagement in relation to the EIA with relevant stakeholders will commence shortly.

## 11.4 STUDY AREA

- 11.4.1. The assessment of GHG emissions is not restricted by geographical area, instead the focus is on any increase or decrease in emissions because of the Proposed Scheme, wherever that may be within the UK. This includes:
- **Construction emissions** from the Proposed Scheme footprint but also relating to the transport of materials to and from the Site and their manufacturing. This may be distant from the Proposed Scheme location, for example, GHG emissions associated with the manufacture of concrete in terms of embodied carbon and energy in the production process.
  - **Operational emissions** (increase or reduction) which result from the operation and maintenance of the Proposed Scheme and any shifts in energy usage that may occur. In this case, GHG

emissions include those for embodied emissions arising from materials and waste for the operation of the Proposed Scheme, operational energy, and water use.

- **Decommissioning emissions** include all emissions associated with dismantling and discontinuing elements of the Proposed Scheme, considering factors such as material disposal, transportation of decommissioned components, and the associated energy and emissions throughout the decommissioning process.

11.4.2. In accordance with industry standard practices and the Planning Inspectorate's Advice Note Nine (Ref. 11.16) 'the Rochdale Envelope', a parameter-based 'design envelope' approach has been adopted in respect of the Proposed Scheme (further detail is provided in **Chapter 4 The EIA Approach** of this EIA Scoping Report). The Study Area lies fully within the administrative area of Stockton-on-Tees Borough Council. The Study Area comprises the Proposed Scheme, and for the purposes of this chapter, the Proposed Scheme has been split into five main elements as set out in **Chapter 2 Site and Proposed Scheme Description** of this EIA Scoping Report:

- A new marine jetty (Marine Jetty) to be located on a sandy intertidal foreshore area on the River Tees estuary.;
- A regasification and storage facility on an area of derelict, industrial land within the Seal Sands (Regas and Storage Area) in the east of the Site;
- A connecting export pipeline route (Export Pipeline) which will either consist of utilising an existing or new pipeline to the north, or a new pipeline to the south along a disused railway track;
- Electrical connection to existing substation; and
- Connection from the Export Pipeline to the existing Teesside Gas Processing Plant (TGPP) and then onwards to the National Gas Transmission System.

## 11.5 BASELINE CONDITIONS AND FUTURE BASELINE

### DATA SOURCES

11.5.1. This section will be further informed by the following data source to calculate the current baseline in the ES:

- UK carbon budgets
- GHG Protocol Corporate Standard
- BS EN ISO 14064-2 (Ref. 11.16)
- PAS 2080 (Appendix B) (Ref. 11.5)
- IEMA Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (Ref. 12.13)

### EXISTING BASELINE

11.5.2. The current baseline, as per the IEMA guidance, encapsulates existing GHG emissions before the construction, operation and maintenance, and decommission of the Proposed Scheme, incorporating emissions from existing projects and infrastructure within the boundary of the Proposed Scheme. The business-as-usual scenario involves estimating baseline emissions, which represent the expected emissions from all relevant sources if the Proposed Scheme is not implemented. This baseline serves as a reference point for comparison with the projected emissions associated with the Proposed Scheme.

11.5.3. Most of the Site is currently vacant with no development/activity at present. On this basis, the existing baseline emissions at the Site are assumed to be nil. The change in GHG emissions associated with



the Proposed Scheme will be evaluated against national, regional and local targets for decarbonisation (the future baseline).

- 11.5.4. Whilst the Site extends into the existing TGPP, this is for the purposes of gas blending and nitrogen ballasting facilities (referred to as Gas Conditioning Facilities) and fiscal metering equipment. The Proposed Scheme will not alter the existing operation of this facility (i.e. TGPP will continue to be operational with or without the Proposed Scheme) and therefore GHG emissions associated with this facility are outside the scope of the assessment and are not considered.

## **FUTURE BASELINE**

- 11.5.5. To ensure compliance with government targets, there is a need for a significant reduction in GHG emissions in the future. The UK Government, has established a net zero target, requiring a 100% reduction in GHG emissions below 1990 levels by 2050. Policies addressing decarbonisation targets have been implemented on national, regional, and local scales. The future baseline accounts for pertinent policies and spans several UK carbon budgets throughout the Proposed Scheme's lifetime, including the fourth carbon budget (2023 to 2027) of 1,950MtCO<sub>2</sub>e, the fifth carbon budget (2028 to 2032) of 1,725MtCO<sub>2</sub>e, and the sixth carbon budget (2033 to 2037) of 965MtCO<sub>2</sub>e (Ref. 11.20).
- 11.5.6. In the 'business as usual' scenario, the future baseline will involve estimating emissions, which represent the expected emissions from all relevant sources, if the Proposed Scheme is not implemented. This baseline will serve as a reference point for comparison with the projected emissions associated with the Proposed Scheme. This will also include the assumption that committed development will go on as usual and their impact will be assessed based on the data received.
- 11.5.7. If the Proposed Scheme is not developed, there will not be additional emissions from the construction that would no longer be required. In terms of the future baseline, in the 'no development' scenario for the Proposed Scheme, the future baseline will be determined by the current GHG emissions from the Site. Since there is no physical development or activity at the majority of the Site in this specific scenario, GHG emissions from the Site before construction and operation are taken to be zero.
- 11.5.8. In Stockton-on-Tees Borough Council Local Plan (Ref. 11.11) under Economic Growth Strategy Policy SD4 the land at Seals Sands is described as the main growth locations for hazardous installations including liquid and gas processing; bio-fuels and bio-refineries; chemical processing; resource recovery and waste treatment; energy generation and carbon capture and storage developments. Under Specialist Uses Policy EG4, development proposals for hazardous installations, uses related to the process industries or emerging specialist sectors will be directed to available sites and expansion land in the 144ha of available land at Seal Sands. Therefore, it is possible that there may be other development within the Site on the currently undeveloped land in future in the absence of the Proposed Scheme. The emissions from other projects around the Site will be additional to the construction and operation stage of the Proposed Scheme.

## **11.6 SENSITIVE RECEPTORS**

- 11.6.1. The impacts of GHG emissions relate to their contribution to climate change. These impacts are global and cumulative in nature, with every tonne of GHGs contributing to impacts on natural and human systems. GHG emissions result in the same global effects wherever and whenever they occur and, therefore, the sensitivity of different human and natural receptors is not considered.

## 11.7 DESIGN, MITIGATION AND ENHANCEMENT MEASURES

- 11.7.1. In line with IEMA guidance (Ref. 11.13), it is important to incorporate measures to reduce GHG emissions at an early stage, meaning mitigation should be considered at all stages of design, not just as part of the EIA process. The sections below outline likely proposed GHG reduction measures for construction, operation and maintenance, and decommissioning of the Proposed Scheme.
- 11.7.2. Relevant design, mitigation and enhancement measures will be identified in the PEIR and ES, and These may include:

### CONSTRUCTION PHASE

- **Design optimization:** Streamlining the Proposed Scheme design by reducing the number of elements required and employing smart design practices to minimise the requirement for construction materials. This should reflect the carbon reduction hierarchy (from PAS 2080:2023 (Ref. 11.5)). The design aspects should also aim to view maximising the operational lifespan and minimising the need for maintenance and refurbishment.
- **Material efficiency:** Prioritising sustainable materials in procurement documentation, favouring those with reduced embodied carbon emissions, recycled content, and supported by eco- and carbon labels or verified Environmental Product Declarations (EPD).
- **Local sourcing:** Utilising locally sourced materials when feasible to minimise transportation distances and associated carbon emissions.
- **Modern construction practices:** Embracing efficient construction processes, including design for manufacture and assembly, and employing modern and efficient construction plant and delivery vehicles. Consideration is given to machinery powered by electricity from alternative or lower carbon fuels.

### OPERATION PHASE

- **Efficient equipment specification:** Selecting high-efficiency mechanical and electrical equipment, such as lighting and backup power generators, to optimize energy use.
- **Operational effectiveness:** Maximizing the operational effectiveness, including the percentage of carbon capture, while minimising loads to enhance overall efficiency.
- **Lifespan and maintenance:** Designing the Proposed Scheme to maximise operational lifespan and minimise maintenance needs, thereby reducing associated emissions.
- **Lifecycle considerations:** Designing, specifying, and constructing the Proposed Scheme to maximise operational lifespan and minimise maintenance needs, thus reducing the frequency of associated GHG emissions releases.
- **Efficient equipment specification:** Selecting efficient mechanical and electrical equipment, such as lighting and telecommunications, based on durability and energy efficiency credentials.
- **Reuse and recycling:** Maximising the potential for reuse and recycling of materials and elements at the end-of-life stage, contributing to sustainable waste management practices.
- **Energy-efficient operation:** Operating, maintaining, and refurbishing the Proposed Scheme using energy-efficient equipment to reduce energy consumption.

### DECOMMISSIONING PHASE

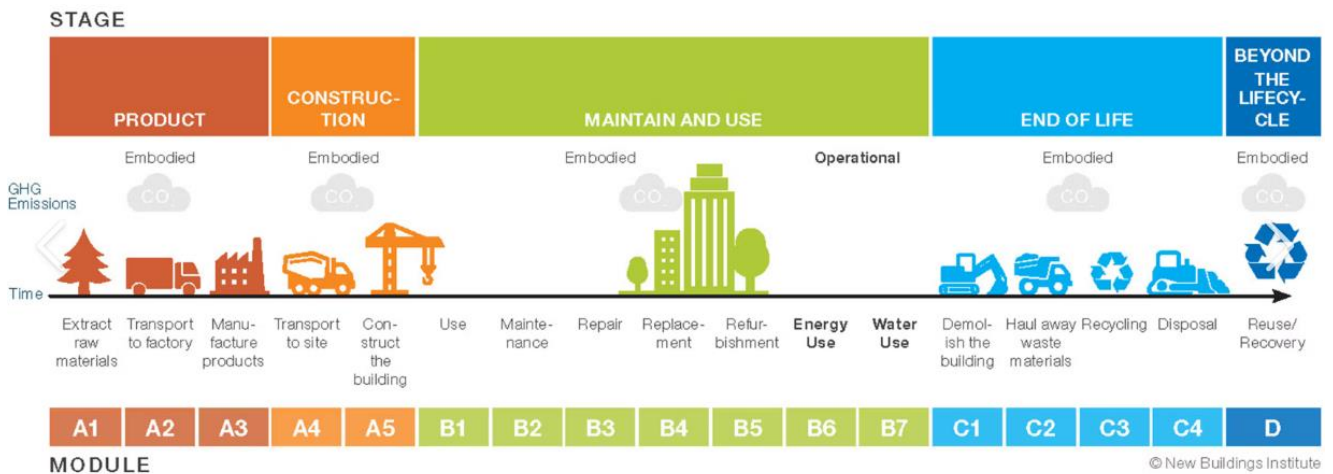
- **Develop a decommissioning plan:** that emphasises the recycling and repurposing of decommissioned components, with a focus on minimising waste and associated emissions.

- Assess and mitigate potential emissions:** Evaluating and addressing potential emissions linked to the transportation and disposal of decommissioned components. This process includes a comprehensive assessment of the environmental impact associated with each disposal option.

## 11.8 DESCRIPTION OF POTENTIAL LIKELY SIGNIFICANT EFFECTS

11.8.1. The potential significant emissions from the Proposed Scheme has been categorised by their lifecycle stages as per the PAS2080:2023 guidance document (Ref. 11.5). The proposed assessment methodology follows the PAS 2080 guidance covering the 'before use,' 'use,' and 'end of life' stages of the infrastructure lifecycle to estimate the GHG emissions throughout the Proposed Scheme's lifecycle. This approach aligns seamlessly with the latest IEMA guidance, ensuring a comprehensive evaluation with a focus on a reasonable worst-case scenario. **Graphic 11-1** represents the GHG emissions from the different PAS2080 lifecycle stages.

**Graphic 11-1 - GHG Emissions for PAS2080 Lifecycle Stages**



### CONSTRUCTION

11.8.2. The potential effects associated with the construction phase include:

- Product stage (manufacture and transport of raw materials to suppliers) (A1-3):** Embodied emissions associated with extraction and manufacturing of the required raw materials.
- Transport of materials to site (A4):** Emissions from fuel and electricity used in vehicles or vessels transporting materials to Site.
- Plant and equipment used during construction (A5):** Emissions from fuel and electricity used in plant and equipment onsite; and
- Transport of waste (A5):** Emissions from fuel/energy used in vehicles transporting waste materials from construction and excavation (for the Proposed Scheme), to destinations away from the Site for their disposal.

### OPERATION

11.8.3. The potential effects associated with operation and maintenance include:

- Operation (B1):** Emissions associated with operation and maintenance of the Proposed Scheme. This includes process emissions like those from plant and equipment, air conditioning, leakage, etc.

- **Maintenance, repair, replacement, refurbishment (B2-5):** Embodied emissions and emissions from transport and plant associated with maintenance, repair, replacement, and refurbishment. Emissions arising from maintenance dredging for the marine jetty (and approaches) at correct depth to accommodate marine vessels, transportation, and disposal of the dredged materials offsite.
- **Operational Energy use (B6):** Includes all emissions from the energy consumption of the Proposed Scheme during the operation phase.
- **Operational water use (B7):** Emissions from the use of water, which is significant.

## DECOMMISSIONING

11.8.4. The potential effects associated with the decommissioning phase include:

- **End of life stage: deconstruction, transport, waste processing for recovery and disposal (C1 – C4) -** On-site deconstruction, dismantling, and demolition of the above ground elements of the Regas and Storage Area during decommissioning present an impact on GHG emissions. This involves emissions from waste material transport, treatment, recovery, and recycling. The final disposal of demolition materials contributes significantly to GHG emissions, mirroring the construction sequence in reverse.

## SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT

11.8.5. A summary of the elements scoped in and out of the GHG assessment are set out in **Table 11-11** below. Each element is accompanied by a justification for its inclusion or exclusion from further assessment based on professional judgement/refer to specific guidance criteria.

**Table 11-1 - Elements Scoped In or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
<b>Product Stage (manufacture and transport of raw materials to suppliers) (A1-3)</b>	Construction	✓		Raw materials required for Proposed Scheme would result in embodied emissions that have the potential to be large.
<b>Transport of Materials to Site (A4)</b>	Construction	✓		Construction phase emissions from fuel/energy consumption due to the delivery of material to site have the potential to be large.
<b>Plant and Equipment Use during Construction (A5)</b>	Construction	✓		Emissions from the plant and equipment used during construction of the Proposed Scheme have the potential to be large.

Element	Phase	Scoped In	Scoped Out	Justification
Transport of Waste (A5)	Construction	✓		Emissions from fuel/energy consumption due to the transport of waste materials have the potential to be large.
Disposal of Waste (A5)	Construction	✓		Emissions from the disposal of waste materials are expected and are therefore scoped in.
Operation (B1)	Operation	✓		Emissions from operational processes of the Proposed Scheme are expected to be large.
Maintenance, repair, replacement, refurbishment (B2-5)	Operation	✓		The Proposed Scheme is expected to have some plant maintenance and repair activities, or refurbishment being required and therefore has been scoped in
Operational energy use (N6)	Operation	✓		The Proposed Scheme will be using electricity from the grid which might have some significant emissions impact. This has been scoped into the assessment.
Operational water use (N7)	Operation	✓		A quantity of process water may be required for operation of the facilities; hence it is scoped into the report.
Decommissioning process (C1)	End of life	✓		The on-site deconstruction, dismantling, and demolition activities represent a substantial impact on GHG emissions, covering onshore decommissioning. This includes emissions from the transport of waste materials until their end-of-waste state, along with activities related to treatment, recovery, and recycling.
Transport and Disposal of Materials (C2-4)	End of life	✓		

## 11.9 PROPOSED METHODOLOGY

- 11.9.1. There is potential for significant effects from GHG emissions through the lifecycle stages of the Proposed Scheme. The assessment intended to be presented in the PEIR and the ES is detailed below.
- 11.9.2. The assessment approach gauges the probable magnitude of GHG emissions (or avoided emissions) compared to the baseline without the Proposed Scheme. This comprehensive evaluation spans the lifecycle of the Proposed Scheme (as represented in **Graphic 11-1** in Section 11.8), encompassing:
- Construction phase (*A1-A3, A4, A5 emissions*): Examining embodied emissions related to materials, transportation to the site, waste/arising from the site, and the construction process.
  - Operation phase (*B stage emissions*): Assessing operations, including lighting and controls, maintenance, replacement of original materials, as well as emissions and avoided emissions from the Proposed Scheme.
  - Decommissioning (*C stage emissions*): Assessing emissions related to the dismantling and termination of the Proposed Scheme, incorporating considerations such as material disposal, transport of decommissioned components, and the associated energy and emissions during decommissioning.
- 11.9.3. For all PAS 2080:2023 lifecycle modules of the Proposed Scheme, the assessment includes:
- Emissions calculations focus on both annual and lifecycle perspectives, with values reported in tonnes of CO<sub>2</sub> equivalents (tCO<sub>2</sub>e).
- 11.9.4. The assessment of construction, operation and maintenance and decommission impacts aligns with the following guidance documents and standards:
- PAS 2080:2023 (Ref. 11.5)
  - ISO 14064-2:2019 (Ref. 11.16)
  - GHG Protocol (Ref. 11.14)

### SIGNIFICANCE OF EFFECT CRITERIA

- 11.9.5. Every emission or reduction in GHG emissions, regardless of magnitude, contributes cumulatively to climate change, whether positively, negatively, or negligibly.
- 11.9.6. The assessment of GHG impact significance aligns with IEMA guidance (Ref. 11.13). The evaluation considers a development's net lifetime impact, acknowledging emissions may be positive, negative, or negligible. Significance assessment extends beyond emission magnitude to evaluate whether the Proposed Scheme contributes to GHG reduction compared to a baseline aligned with a trajectory toward net zero by 2050.
- 11.9.7. Providing context to GHG emissions, as per IEMA guidance, involves comparing estimated emissions from the Proposed Scheme with the respective UK carbon budgets (Ref. 11.18), detailed in **Table 11-2**. These budgets, established by the UK Government for 2023-2037, guide contextualisation. Additionally, consideration will also be given to local or sector carbon budgets and potential cumulative impacts on GHG emissions and climate change.



**Table 11-2 - UK Carbon Budget**

<b>Carbon Budget Period</b>	<b>UK Carbon Budget (MtCO<sub>2e</sub>)</b>
Fourth: 2023-2027	1,950
Fifth: 2028-2032	1,725
Sixth: 2033-2037	965

## 11.10 ASSUMPTIONS AND LIMITATIONS

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

- In the Product Stage (A1-A3 stages), embodied carbon will be calculated using the RICS methodology (Ref. 11.15) and the Inventory of Carbon and Energy (ICE) Database for raw material supply and manufacture of project assets.
- In the Construction Transport (A4), the GHG emissions associated with the transport of materials, vessels, equipment, and workers will be estimated using DEFRA Emissions Factors Toolkit, industry benchmarks, and Department for Transport (DfT) data.
- During the Construction Process (A5), the GHG emissions related to installation works, onshore plant equipment, and offshore infrastructure will be calculated based on available information or industry benchmarks.
- GHG emissions during the use stage will be estimated based on available data, including operation and maintenance activities, embodied carbon of raw materials, and offshore vessel movements.
- Where specific data is unavailable, assumptions will be made to characterise GHG emissions, using proxy information and relevant case studies. All assumptions will be explicitly stated in the PEIR and ES for transparency.
- The assessment presented in the PEIR and ES will include the latest design information available at the time of the submission. Where design information is not available, reasonable worst-case assumptions will be made.

## 11.11 REFERENCES

- Ref. 11.1** The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (SI 572). [Online] Available at: <https://www.legislation.gov.uk/ukxi/2017/572/introduction/made>
- Ref. 11.2** United Nations (1992). United Nations Framework Convention on Climate Change. Available at: <https://unfccc.int/resource/docs/convkp/conveng.pdf>
- Ref. 11.3** UK Government. (2019). Climate Change Act 2008 (2050 Target Amendment) Order 2019. Available at: [The Climate Change Act 2008 \(2050 Target Amendment\) Order 2019 \(legislation.gov.uk\)](https://www.legislation.gov.uk/uksi/2019/1000/made)
- Ref. 11.4** HM Treasury, United Kingdom. (2013). Infrastructure Carbon Review. [Online] Available at: [https://assets.publishing.service.gov.uk/media/5a7c9803ed915d12ab4bbd33/infrastructure\\_carbon\\_review\\_251113.pdf](https://assets.publishing.service.gov.uk/media/5a7c9803ed915d12ab4bbd33/infrastructure_carbon_review_251113.pdf)

- Ref. 11.5** BSI. (2023). PAS 2080: Carbon Management in Buildings and Infrastructure. British Standards Institution. Available at: <https://www.bsigroup.com/en-GB/insights-and-media/insights/brochures/pas-2080-carbon-management-in-infrastructure-and-built-environment/>
- Ref. 11.6** Department for Energy Security and Net Zero, (2023). Overarching National Policy Statement for Energy (EN-1). Available at: [https://assets.publishing.service.gov.uk/media/64252f3b60a35e00120cb158/NPS\\_E](https://assets.publishing.service.gov.uk/media/64252f3b60a35e00120cb158/NPS_E)
- Ref. 11.7** Department for Energy Security and Net Zero, (2023). National Policy Statement for natural gas supply infrastructure and gas and oil pipelines (EN-4). Available at: <https://assets.publishing.service.gov.uk/media/655dc2d4046ed4000d8b9dd9/nps-natural-gas-supply-infrastructure-pipelines-en4.pdf>
- Ref. 11.8** Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government. (2023). National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>
- Ref. 11.9** Department for Energy Security and Net Zero. (2021). Net zero strategy: Build back greener. Available at: Net Zero Strategy: <https://www.gov.uk/government/publications/net-zero-strategy>
- Ref. 11.10** Department for Energy Security and Net Zero. (2021). Industrial decarbonisation strategy. Available at: <https://www.gov.uk/government/publications/industrial-decarbonisation-strategy>
- Ref. 11.11** Local plan – Stockton-on-Tees Borough Council. (2019). Available at: <https://www.stockton.gov.uk/local-plan>
- Ref. 11.12** Tees Valley Combined Authority Net Zero Strategy for Tees Valley. Available at: <https://teesvalley-ca.gov.uk/business/wp-content/uploads/sites/3/2023/03/Net-Zero-strategy-Digital.pdf>
- Ref. 11.13** IEMA. (2022). Institute of Environmental Management & Assessment (IEMA) Guide. Assessing Greenhouse Gas Emissions and Evaluating their Significance 2nd Edition. Available at: <https://www.iema.net/preview-document/assessing-greenhouse-gas-emissions-and-evaluating-their-significance>
- Ref. 11.14** World Resources Institute and World Business Council for Sustainable Development. (2015). The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard. Available at: <https://ghgprotocol.org/corporate-standard>
- Ref. 11.15** Royal Institution of Chartered Surveyors (RICS). (2023). Methodology to Calculate Embodied Carbon of Materials (2nd ed.). Available at: [https://www.igbc.ie/wp-content/uploads/2015/02/RICS-Methodology\\_embodied\\_carbon\\_materials\\_final-1st-edition.pdf](https://www.igbc.ie/wp-content/uploads/2015/02/RICS-Methodology_embodied_carbon_materials_final-1st-edition.pdf)
- Ref. 11.16** National Infrastructure Planning. (2018). Advice Note Nine: Rochdale Envelope 2018. [Online] Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-nine-rochdale-envelope/>
- Ref. 11.17** International Organization for Standardization. (2019). ISO 14064-2:2019 Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring, and reporting of greenhouse gas emission reductions or removal enhancements. Available at: <https://www.iso.org/obp/ui/#iso:std:iso:14064:-2:ed-2:v1:en>



- Ref. 11.18** Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy (2021) Carbon Budgets. Available at: <https://www.gov.uk/guidance/carbon-budgets>
- Ref. 11.19** UK Government. (2022). United Kingdom of Great Britain and Northern Ireland's Nationally Determined Contribution, updated September 2022. Available at: [UK NDC ICTU 2022.pdf \(unfccc.int\)](#)
- Ref. 11.20** UK Government. (2021). The Carbon Budget Order 2021. Available at: [The Carbon Budget Order 2021 \(legislation.gov.uk\)](#)
- Ref. 11.21** UK Government. (2017). Clean Growth Strategy, 2017. Available at: [Clean Growth Strategy - GOV.UK \(www.gov.uk\)](#)
- Ref. 11.22** UK Government. (2020). The ten point plan for a green industrial revolution, 2020. Available at: [The ten point plan for a green industrial revolution - GOV.UK \(www.gov.uk\)](#)

## 12 MATERIALS AND WASTE

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### 12.1 INTRODUCTION

- 12.1.1. This chapter considers the impacts on material resources through the use of materials, and generation and disposal of waste that may arise during the construction, operation and maintenance, and decommissioning of the Proposed Scheme (as described in **Chapter 2 Site and Proposed Scheme Description** of this EIA Scoping Report), and any potential significant effects. It sets out the proposed methodology for the material assets and waste assessment and identifies those impacts that can be scoped out of the assessment. Where necessary, further assessment would be presented in the Preliminary Environmental Information Report (PEIR) and the Environmental Statement (ES).
- 12.1.2. This chapter should be read in conjunction with the following chapters within this EIA Scoping Report:
- Chapter 5: Air Quality;
  - Chapter 6: Noise and Vibration;
  - Chapter 8: Water Environment and Flood Risk Assessment;
  - Chapter 11: Greenhouse Gases;
  - Chapter 13: Traffic and Transport; and
  - Chapter 17: Population and Human Health.

### 12.2 LEGISLATION, POLICY AND GUIDANCE

- 12.2.1. This section outlines the relevant legislation, policy and guidance to the materials and waste assessment of the Proposed Scheme.

#### LEGISLATION

##### International

- 12.2.2. The overarching European Directives applicable to the assessment of materials and waste are summarised out below:
- The Revised EU Waste Framework Directive 2008/98/EC (2008) (Ref. 12.1). The Directive provides a foundation for the management of waste across the European Community. A definition of waste is provided in the predecessor to this Directive (European Directive 2006/12/EC) which defines waste as: “any substance or object that the holder discards, or intends or is required to discard.”
  - Council Directive 1999/31/EC of 26 April 1999 on the Landfill of Waste (1999), ‘The Landfill Directive’ (Ref. 12.2). The Directive provides measures, procedures and guidance to reduce negative impacts from landfill.

##### National

- 12.2.3. A wide range of national legislation that regulates the control and management of waste and use of material resources have been considered and include the following:
- The provisions of the European Directives continue to have effect as transposed into domestic law by virtue of The Waste and Environmental Permitting etc. (Legislative Functions and

Amendment etc) (EU Exit) Regulations 2020. These regulations make provisions and amendments to the Environmental Protection Act 1990 and waste regulations to ensure that environmental permitting and waste regimes continued to operate effectively following the EU exit transition period.

- The Environment Act 2021 (Ref. 12.3). This Act sets out clear statutory targets for the recovery of the natural world in four priority areas, one of which is waste: Part 3 specifically refers to waste, incorporating producer responsibility obligations; resource efficiency; managing waste; and waste enforcement and regulation.
- Waste (Circular Economy) (Amendment) Regulations 2020 (Ref. 12.4). These regulations amend The Waste (England and Wales) Regulations 2011 and The Environmental Permitting (England and Wales) Regulations 2016 to include prevention of waste generation and establishing waste prevention programmes, greater segregation of waste and more detailed records.
- Environmental Permitting (England and Wales) Regulations 2016 (as amended) (Ref. 12.5). These regulations aims to streamline the legislative system for industrial and waste installations into a single permitting structure for those activities which have the potential to cause harm to human health or the environment.
- The Controlled Waste (England and Wales) Regulations 2012 (Ref. 12.6). These regulations provide a definition of controlled waste and classifies waste as household, industrial or commercial waste. It allows local authorities to implement charges for the collection of waste from non-domestic properties.
- The Waste (England and Wales) Regulations 2011 (Ref. 12.7). These regulations allow for the transfer of controlled waste to be recorded on alternative documentation, such as invoices, instead of waste transfer notes.
- The Clean Neighbourhoods and Environment Act 2005 (Ref. 12.8). This Act provides that it is the responsibility of construction workers on site to guarantee that waste is disposed in the appropriate manner.
- The Hazardous Waste (England and Wales) Regulations 2005 (Ref. 12.9). These regulations introduced measures to control storage, transport and disposal of hazardous waste. The regulations provide a means to ensure that hazardous waste and any associated risks are appropriately managed.
- The Waste Minimisation Act 1998 (Ref. 12.10). This Act enabled local planning authorities to take the appropriate steps to reduce and minimise the generation of household, commercial or industrial waste within their area.
- The Environmental Protection Act 1990 (Ref. 12.11). This Act defines the fundamental structure and authority for waste management and control of emissions into the environment. The Act outlines the requirement of the manager of a development to ensure that any excess materials or waste because of construction activities are recovered or disposed of appropriately.
- The Control of Pollution (Amendment) Act 1989 (Ref. 12.12). This Act makes it a criminal offence for a person who is not a registered carrier to transport controlled waste to or from any place in Great Britain. The Act also provides for the seizure and disposal of vehicles used for illegal waste disposal.
- The Control of Pollution Act 1974 (Ref. 12.13). This Act makes provisions with respect to the generation and revision of 'waste disposal plans' and prohibits the unlicensed disposal of waste.

## POLICY

12.2.4. National Policy Statements (NPSs) set out the primary policy against which an application for the development consent of the Proposed Scheme will be considered. The Overarching NPS for Energy (EN-1) (Ref. 12.14) and NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref. 12.15) are relevant to the Proposed Scheme.

- Overarching NPS for Energy (EN-1) (2023) (Ref. 12.14). Sets out the Government's policy for delivering major energy infrastructure and will be the primary basis for decision making. In Section 5.15 Government policy on hazardous and non-hazardous waste management is outlined; this is intended to protect human health and the environment by producing less waste and by using it as a resource wherever possible. Applicants should ensure that, through construction best practices, material is reused or recycled onsite where possible, or sourced from recycled or reused sources, and that low carbon materials, sustainable sources and local suppliers are used. Paragraph 5.15.9 of the policy refers to operational waste, noting that:

*“an assessment of the impact of the waste arising from development on the capacity of waste management facilities to deal with other waste arising in the area for at least five years of operation”.*

- As part of the UK's commitment of moving towards a more 'circular economy' the policy notes at 5.15.12 that “Construction best practices should be used to ensure that material is reused or recycled onsite where possible”. This also includes taking measures to ensure adequate and suitable storage of materials. Regarding dredged material the policy states at 5.15.11 that:

*“If the applicant's assessment includes dredged material, the assessment should also include other uses of such material before disposal to sea, for example through reuse in the construction process”.*

- Overarching National Policy Statement for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (2023) (Ref. 12.15). EN-4 should be read in conjunction with EN-1. Paragraph 2.13.16 outlines the requirement for the responsible disposal of dredged spoil using the Waste Hierarchy to reduce the risk of contamination.

12.2.5. In addition to the NPSs, the following policy documents have also been considered:

- National Planning Policy Framework (2023) (NPPF) (Ref. 12.16) – Whilst the NPPF does not contain specific policies for nationally significant infrastructure projects, it has the potential to be considered important and relevant to the Secretary of State (SoS) consideration of the Proposed Scheme. The NPPF sets out the Government's planning policies for England and how these should be applied. Paragraph 8 highlights that the purpose of the planning system is to contribute to the achievement of sustainable development through three overarching objectives: economic, social and environmental. The environmental objective requires the planning system to contribute to and enhance the natural and local environment by:

*‘using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy’.*

- National Planning Policy for Waste (2014) (Ref. 12.17). Outlines the Government's ambition to promote a sustainable approach to resource use and management. It sets out waste

planning policies and should be read alongside: the NPPF; the National Waste Management Plan for England and any relevant successor policies, guidance or documents.

- National Policy Statement for Hazardous Waste (2013) (Ref. 12.18). Outlines the Government's main objectives for hazardous waste and the key principles for management of hazardous waste.
- Waste Management Plan for England (2021) (Ref. 12.19). Provides a detailed analysis of the present state of waste management at the national level and assesses how the objectives of the Waste Framework Directive (Ref. 12.1) will be effectively supported. It also outlines the Waste Hierarchy, which gives top priority to waste prevention followed by preparing for reuse, recycling, other types of recovery and finally disposal (e.g. landfill).
- Our Waste, Our Resources: A Strategy for England (2018) (Ref. 12.20). Sets out how the Government will preserve stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy. It outlines the Government's aims to minimise the damage caused to the natural environment by managing waste safely and tackling waste crime. It combines actions to take now with firm commitments for the coming years and gives a clear longer-term policy direction in line with the 25 Year Environment Plan.
- 25 Year Environment Plan (Ref. 12.21). Sets out government actions to improve, regain and retain the natural world. The Plan sets out high level goals, which *includes* "using resources from nature more sustainably and efficiently" and "minimising waste" (Our 25-year goals, page 10).
- Environmental Improvement Plan (2023) (Ref. 12.22). The first of the 5-yearly progress updates of the 25 Year Environment Plan which sets out government actions to improve, regain and retain the natural world. Goal 5: Maximise our resources, minimise our waste focuses on eliminating avoidable waste by 2050, eliminate avoidable plastic waste by 2042, and halving "residual" waste (excluding major mineral waste) produced per person by 2042". Residual waste is defined as waste that is sent to landfill, incinerated (with or without energy recovery), or sent overseas. Goal 6: Using resource from nature sustainably includes an objective to prevent soil from being sent to landfill, primarily through reuse in construction.
- Tees Valley Joint Minerals and Waste Development Plan (2011). These documents have been prepared jointly by the boroughs of Darlington, Hartlepool, Middlesbrough, Redcar and Cleveland and Stockton-on-Tees. The Core Strategy Development Plan Document (DPD) (Ref. 12.23) and Policies and Sites DPD (Ref. 12.24) set out the vision and strategic policies required to achieve the key objectives for minerals and waste in the Tees Valley. The development plan aims are for the Tees Valley, by 2026, to give priority to the production of secondary and recycled aggregates for construction; limit and carefully manage primary aggregate extraction and safeguard mineral resources; and promote the reuse, recycling and recovery of value from waste.

## GUIDANCE

- 12.2.6. The materials and waste assessment will be undertaken accordance with IEMA Guide to Materials and Waste in Environmental Impact Assessment (2020) (the IEMA Guide) (Ref. 12.25) good practice document.

12.2.7. This guidance is used to assess the potential impacts and effects from the Proposed Scheme, using the process and significance criteria it sets out. This guidance is referred to as the IEMA Guide throughout this chapter.

## 12.3 CONSULTATION

12.3.1. No consultation has been undertaken to inform the production of this chapter and in determining the baseline information as all related information is publicly available.

12.3.2. At the time of writing, consultation with Stockton-on-Tees Borough Council (SoTBC) has not yet been undertaken in relation to the EIA, but will commence shortly. However, it is not expected engagement with SoTBC and other stakeholders will be required to inform the materials and waste assessment at this time.

## 12.4 STUDY AREA

12.4.1. The Study Area(s) that are applicable to the assessment (as defined in the IEMA Guide (Ref. 12.25)) are:

- The Development Study Area comprises the Site, including areas required for temporary access, site compounds and other enabling activities, (referred to as the 'Site').
- The Expansive Study Area extends to the availability of construction materials and the capacity of waste management facilities within the UK and the regions where the Proposed Scheme is located; the North East of England region (Durham, Northumberland, Tees Valley Unitary Authorities and Tyne and Wear).

## 12.5 BASELINE CONDITIONS AND FUTURE BASELINE

### DATA SOURCES

12.5.1. The materials and waste baseline described in this chapter has been informed by the following data sources:

- Mineral Products Association, Profile of the UK Mineral Products Industry, 2023 Edition (Ref. 12.26);
- North East England Aggregates Working Party Annual Report 2020 (2021) (Ref. 12.27);
- Department for Business and Trade (2023) Monthly Statistics of Building Materials and Components (Ref. 12.28);
- StatsWales. (2023). Iron and Steel Production by Year, Measure and Area (Ref. 12.29);
- Defra (2022) UK Statistics on Waste (Ref. 12.30);
- Environment Agency, Waste Data Interrogator (2023) Waste Management Information 2021 (Ref. 12.31); and
- Environment Agency (2023). 2021 Remaining landfill capacity, England (Ref. 12.32).

12.5.2. A summary of the baseline conditions is presented below.



## EXISTING BASELINE

- 12.5.1. This section describes baseline material consumption and waste disposal for the current land use and provides regional and national information and data in the context of which environmental assessment can be undertaken.
- 12.5.2. The most up to date sources of information, at the time of writing, have been used to collate data for material resource availability, landfill capacity and waste recovery. Indication of the most recent year from which data has been acquired is provided throughout. The baseline data collected and presented in this section were obtained by desk study, from the publicly available data sources outlined above.

### Materials Currently Required

- 12.5.3. The Site comprises an area of land that is predominantly open and bare ground, except for the presence of two short sections of disused pipework located on the intertidal foreshore area adjacent to Navigator Teesside Terminal and the Teesside Gas Processing Plant and then onward to the National Transmission System. As the majority of the Site is not operational, it does not currently consume any naturally or other occurring material resources. Although no data is currently available, professional judgement has been used to assert that by comparison with regional and national availability of resources, consumption of construction and other materials for routine activities currently required within the current land use, is minimal.

### Materials Availability

- 12.5.4. **Table 12-1** provides a summary of the availability of the main construction materials in the North East of England region and the UK. The items listed are appropriate to the bulk construction materials required for the Proposed Scheme. The overview provided excludes technological products but provides a proportionate context in which the assessment of impacts and significant effects from material consumption from the Proposed Scheme can be undertaken.

**Table 12-1 – Construction materials availability in the North East of England and the UK**

Material Type	North East England	UK
Sand and gravel* (Ref. 12.26)	1.6 million tonnes (Mt)	52.1 million tonnes (Mt) (GB)
Permitted crushed rock* (Ref 5.26)	5.1Mt	116.1Mt (GB)
Primary aggregate (comprises sand and gravel and crushed rock)* (Ref 5.26)	6.7Mt	191.1Mt
Concrete blocks# (Ref. 12.26)	4.0 million square meters (Mm <sup>2</sup> ) (North) (2023)	10Mm <sup>2</sup> (2023)
Recycled and secondary aggregate*	0.9Mt (Ref. 12.27)(2021)	74.0Mt (GB) (Ref. 12.26)

Material Type	North East England	UK
Ready-mix concrete* (Ref. 12.26)	0.6 million cubic meters (Mm <sup>3</sup> )	21Mm <sup>3</sup>
Steel+ (Ref. 12.29)	(no data)	5.9Mt
Asphalt* (Ref. 12.26)	0.9Mt	26.8Mt
# stocks + production * sales Data availability: 2022 unless otherwise stated GB: Great Britain (England, Wales and Scotland) figures used where UK figures (including Northern Ireland) are unavailable		

- 12.5.5. Across the UK, the availability of materials typically required for construction schemes, indicates that stocks/production/sales remain buoyant, although information on steel stocks, production or sales are not available for the region.
- 12.5.6. The North East England Aggregates Working Party Annual Monitoring Report 2020 (Ref. 12.27) indicates that the landbank of permitted reserves for sand and gravel is 12.6 years and for crushed rock is 35.1 years (as of 31 December 2020).
- 12.5.7. The Tees Valley Core Strategy (Ref. 12.23) includes plans for Mineral Safeguarding Areas. Whilst the Strategy indicates there are no shallow reserves of coal, sand and gravel, limestone, there are deep reserves of gypsum and salt located within and adjacent to the Development Study Area. However, it is also noted that these reserves are already sterilised by the existing infrastructure.

#### Site Arisings Currently Generated

- 12.5.8. As the majority of the Site is not operational, professional judgement has been used to assert that the generation of Site waste arisings is minimal, limited to vegetation clearance and litter.

#### Regional perspective: Transfer, Recovery and Recycling

- 12.5.9. The charts and data presented in this section confirm the availability of waste management facilities in the region; these facilities are expected to enable suitable recovery of site arisings generated by the Proposed Scheme. Data suggests that there is strong potential to divert any site arisings from landfill.
- 12.5.10. Defra data **Table 12-2** (Ref. 12.30) show that, within England, the recovery rate for non-hazardous construction and demolition wastes has remained above 90% since 2015.

**Table 12-2 – Non-Hazardous Construction and Demolition Waste Recovery in England**

Year	Generation (Mt)	Recovery (Mt)	Recovery rate (%)
2015	57.7	53.3	92.3%
2016	59.6	55.0	92.1%
2017	62.2	57.9	93.1%
2018	61.4	57.5	93.8%

Year	Generation (Mt)	Recovery (Mt)	Recovery rate (%)
2019	62.3	58.3	93.6%
2020	53.6	50.0	93.2%

Note: Defra's 2023 update of the data in this table did not extend the data range for England beyond 2020

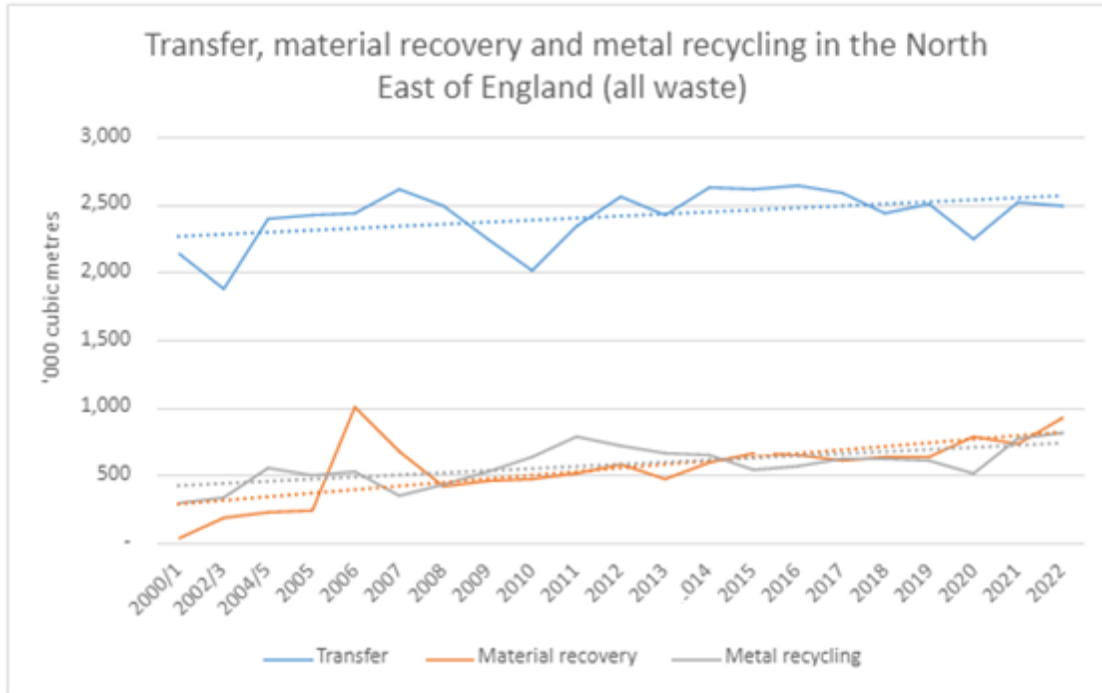
12.5.11. Regional data for construction and demolition waste (**Table 12-3**) show that the North East Region's recovery percentage is lower than the average across England, as demonstrated in **Table 12-2**. Data include the total waste received from both within North East England and from other regions in the UK (Ref. 12.31).

**Table 12-3 - Waste management routes for waste received in North East England (2022)**

Waste management route	Inert and non-hazardous waste (tonnes)	Hazardous waste (tonnes)	Total waste (tonnes)	Percentage
Recovery	2,636,546	80,890	2,717,436	57.1%
Landfill	2,012,313	22,688	2,035,001	42.8%
Other fate	4,800	2	4,801	0.1%
Totals	4,653,659	103,580	4,757,239	100%

12.5.12. Data in **Graphic 12-1** has been collated to show that trends for waste recovery in the region have risen steadily over the past 22 years (Ref. 12.31). Data is provided for all waste types in North East England and hence will include, but are not specific to, construction, demolition and excavation wastes.

**Graphic 12-1 - Transfer, Materials Recovery and Metal Recycling in North East England (2000/1-2022)**



12.5.13. Environment Agency data (Ref. 12.31) show trends for transfer, recovery and metal recycling in North East England (**Graphic 12-1**). The data in **Table 12-4** indicates that there is likely to be regional infrastructure and capacity for managing construction, demolition and excavation wastes from the Proposed Scheme.

**Table 12-4 - Permitted waste recovery sites in North East England (2022)**

Waste recovery facility type	Number of sites
Incineration	15
Transfer	158
Treatment	109
Metal recovery	119
Use of waste	1
<b>Total</b>	<b>402</b>

12.5.14. The Tees Valley Joint Minerals and Waste Development Plan Policies and Sites (Ref. 12.24) considers construction and demolition waste recycling and encourages the promotion of facilities able to manage site arisings close to their source. Policy MWC7 (Ref. 12.23) allows for land to be provided to increase construction and demolition waste recycling from 700,000 tonnes per annum (tpa) in 2016 to 791,000tpa in 2021.

**Waste Currently Generated and Disposed**

12.5.15. As the majority of the Site is not operational, it is not expected to generate any significant quantities of waste. Although no data is currently available, professional judgement can be used to assert that

by comparison with regional and national landfill void capacity, management and disposal of waste is minimal.

### **Remaining Landfill Capacity**

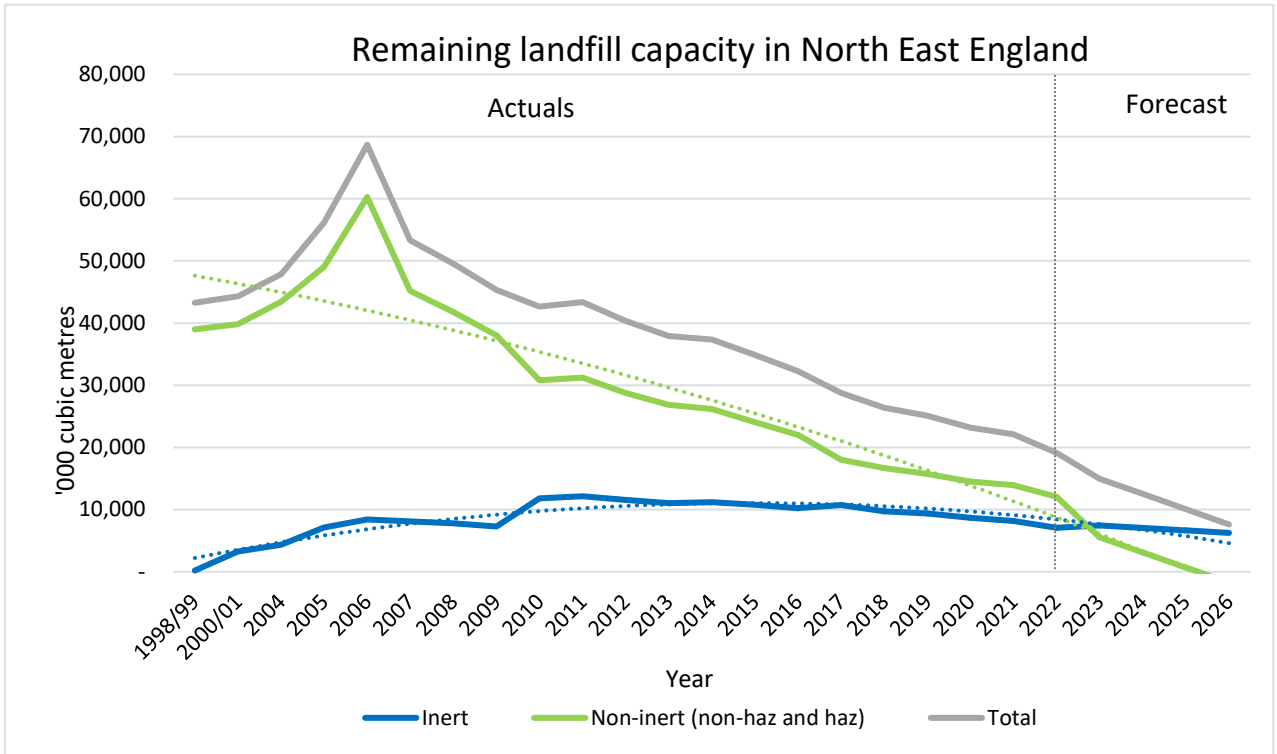
12.5.16. The most recent Environment Agency data (Ref. 12.32) confirm that at the end of 2022, 19 landfill sites in North East England were recorded as having 19 million cubic meters (Mm<sup>3</sup>) of remaining capacity; this data is presented in **Table 12-5**, which also shows the change in capacity from 2020 to 2021.

**Table 12-5 - Remaining landfill capacity in North East England (2021-2022)**

<b>Landfill type</b>	<b>Capacity in 2021 (m<sup>3</sup>)</b>	<b>Remaining capacity m<sup>3</sup> (2022)</b>	<b>2021 to 2022 capacity comparison (Million m<sup>3</sup>)</b>
Hazardous (merchant)	4,486,359	2,243,238	-2.2 (-50.0%)
Inert	8,170,173	7,078,450	-1.1 (-13.4%)
Non-hazardous (including stable hazardous waste cells)	9,445,125	9,817,823	0.4 (3.9%)
Total	22,101,657	19,139,510	-3.0 (-13.4%)
Notes	Restricted hazardous landfill sites are excluded as they only accept waste from restricted sources and producers, e.g. site operator / managing site.		

12.5.17. Baseline regional landfill capacity is detailed in **Graphic 12-2**. Simple statistical forecasting (using the Microsoft Excel forecasting function) has been used to demonstrate long term void capacity in the confirmed absence of future provision. Currently the construction phase (including enabling and ground preparation works) is assumed to commence in 2025, with completion anticipated in 2026. For the purposes of forecasting remaining landfill capacity, the year 2026 has been used.

**Graphic 12-2 - Remaining Landfill Capacity in North East England**



12.5.18. Baseline data indicates that in the absence of future provision, inert, non-inert and total landfill capacity is likely to become an increasingly sensitive receptor throughout the duration of the construction phase and in operation.

12.5.19. shows that in the absence of future provision, waste capacity in North East England is forecast to reduce between 2022 to 2026 by as much as:

- Inert waste: 12% to 6.3Mm<sup>3</sup>;
- Non-inert waste: 100% (remaining capacity is forecast to elapse in 2025); and
- Total waste: 60% to 7.6Mm<sup>3</sup>.

12.5.20. To align with the IEMA Guide (Ref. 12.25) assessment classifications, remaining hazardous landfill capacity is assessed at a national level (rather than regionally). The following data in **Table 12-6** confirms that at the end of 2022, England had 7.9Mm<sup>3</sup> of remaining capacity for hazardous (merchant) waste.

**Table 12-6 – Remaining Landfill Capacity in England (2022)**

Landfill type	Remaining capacity in 2022 (m <sup>3</sup> )
Hazardous merchant	7,921,608
Hazardous restricted*	708,383
Total hazardous	8,629,991
*Restricted landfill sites only accept waste from restricted sources and producers, e.g. site operator/managing site.	

## 12.6 FUTURE BASELINE

12.6.1. In a future baseline, and in the absence of the Proposed Scheme, it is considered that most of the land use within the Development Study Area will remain in its current state as a vacant site or utilised by other future proposals. The existing operational infrastructure operated by third parties are anticipated to remain (where they are not subject to change by the Proposed Scheme). Whilst there may be occasional requirement to manage any potential damage or dilapidation of the existing pipeline infrastructure, it is anticipated that any material consumption or waste generation for disposal to landfill would be minimal.

## 12.7 SENSITIVE RECEPTORS

12.7.1. In the context of this assessment, the following sensitive receptors have been identified:

- Material resources – consumption impacts on materials’ immediate and long-term availability, and results in depletion of natural resources.
- Landfill void capacity – reductions in regional and national landfill capacity result in unsustainable use and loss of resources, and temporary or permanent degradation of the natural environment.

## 12.8 DESIGN, MITIGATION AND ENHANCEMENT MEASURES

12.8.1. It is anticipated that the principles of circular practice and sustainable resource management (including designing out waste) - in the context of the Waste Hierarchy. Relevant design, mitigation and enhancement measures will be identified in the ES. These are likely to include the adoption of Best Practicable means, such as (but not limited to):

- **Materials**

- Identification and specification of material resources that can be acquired responsibly, in accordance with BES 6001 Responsible Sourcing of Construction Products (Ref. 12.33);
- Design for resource optimisation: simplifying layout and form, using standard sizes, balancing cut and fill, maximising the use of renewable materials, and materials with recycled or secondary content, and setting net importation as a scheme goal;
- Design for off-site construction: Maximising the use of prefabricated structures and components, encouraging a process of assembly rather than construction on site;
- Identify opportunities to minimise the export and import of material resources.
- Manage engineering plan configurations and layouts to ensure the most effective use of materials and arisings can be achieved.
- Implement a Materials Management Plan in accordance with the CL:AIRE Definition of Waste: Code of Practice (Ref. 12.34).

- **Waste:**

- Engage early with contractors to identify possible enhancement and mitigation measures (for example, waste exemption licenses), and to identify opportunities to reduce waste through collaboration and regional synergies.
- Design for recovery and reuse: identifying, securing and using material resources at their highest value, whether they already exist on site, or are sourced from other schemes.
- Ensure arisings are properly characterised before or during design, to maximise the potential for highest value reuse. The contractor will ensure that the reuse of earthworks from site preparation and trenching activities for the Export Pipeline installation (subject to suitability of material determined through a Materials Management Plan) will be undertaken.
- Working to a proximity principle, where arisings generated are handled, stored, managed and reused or recycled as close as possible to the point of origin.
- As part of a Code of Construction Practice (CoCP), specify management requirements for waste and arisings and capture information and data on site arisings recovered and diverted from landfill.

## **12.9 DESCRIPTION OF POTENTIAL LIKELY SIGNIFICANT EFFECTS**

### **CONSTRUCTION**

12.9.1. The potential effects associated with construction include:

- Consumption of construction materials will be required, which could have a potentially significant adverse effect on the environment through the depletion of natural resources. The types and quantities of construction materials will be assessed as part of the ES.
- Some waste will be generated during construction. However, the potential for waste to be diverted from landfill through reuse of site arisings and recovery, recycling or treatment of waste will reduce the adverse effects on landfill capacity, which is considered a sensitive receptor in the UK. It is expected that all excavated spoil for the Export Pipeline installation will be backfilled, subject to suitability. In addition, excavated earthworks from the ground preparation works are likely to be crushed and reused on the Proposed Scheme as sub-base. Therefore, it is



considered that the quantities of waste generated and disposed to landfill will not exceed the threshold criteria outlined in the IEMA Guide and will not be assessed as part of the ES.

- All dredged arisings, forecast to be approximately 1,000,0,00m<sup>3</sup>, associated with construction of the Marine Jetty will be disposed of at existing disposal sites at offshore locations in the Tees Bay, as shown in **Figure 2.3** (Chapter 2). These offshore sites are managed under licence and will not be considered as part of the assessment as this will not impact remaining landfill capacity in the region.

## OPERATION AND MAINTENANCE

12.9.2. The potential effects associated with operation and maintenance, include:

- Consumption of construction materials will be required for maintenance or repair works. However, it is considered that the quantities of materials likely to be required for these activities would be negligible. Routine maintenance is likely to occur on an annual basis and may require additional contractors to be temporarily present at the Site.
- The generation of waste during the operational phase is anticipated to be negligible as the Proposed Scheme will be predominantly unmanned. A minimum of two and up to four operators will be present for periods of time during the delivery of LNG, which may lead to the generation of minimal quantities of on-site welfare waste.
- There is an existing requirement for maintenance dredging of the approach channel and various berthing pockets in the lower Tees estuary. The existing maintenance dredging regime is well-established and managed by PD Ports under licence. All dredged arisings will be disposed of at existing disposal sites at offshore locations in the Tees Bay, under this licence. This will not be considered as part of the assessment as this will not impact remaining landfill capacity in the region.

## DECOMMISSIONING

12.9.3. The potential effects associated with the decommissioning phase include:

- Waste generated from the demolition of all above-ground terrestrial structures within the Regas and Storage Area. Concrete arisings will be crushed, with other demolition arisings to be sorted and recycled where possible.

12.9.4. It is assumed that after the lifespan of the Proposed Scheme, before or upon 25 years, a process of decommissioning will take place. This is assumed to last up to 12 months. Further assessment may be required at the time to determine if there have been changes in the materials and waste baseline at that time.

## SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT

12.9.5. A summary of the elements scoped in and out of the assessment for materials and waste are set out in **Table 12-7** below. Each element is accompanied by a justification for its inclusion or exclusion from further assessment based on professional judgement or specific guidance criteria (where applicable).

**Table 12-7 - Elements Scoped In or Out of Further Assessment**

<b>Element</b>	<b>Phase</b>	<b>Scoped In</b>	<b>Scoped Out</b>	<b>Justification</b>
Consumption of material resources associated with the construction of the Proposed Scheme	Construction (site preparation)	✓		Further information is required to assess the potential impacts of the Proposed Scheme's construction on regional material resource availability, in the context of the recovery and reuse of site materials and the consumption of recycled/secondary resources.
Consumption of material resources associated with the Proposed Scheme during operation and maintenance	Operation and maintenance		✓	Operational phase activities of the Proposed Scheme are not anticipated to require consumption of material resources beyond those necessary for routine repair and maintenance. As such, the impacts associated with material resource consumption are considered to be minimal and not significant. This is therefore scoped out and does not require further assessment in the ES.
Disposal and recovery of waste associated with the construction and of the Proposed Scheme	Construction (including site preparation)		✓	<p>It is proposed that all excavated arisings for the Proposed Scheme will be reused as sub-base and backfill (where suitable).</p> <p>No demolition activities are expected as part of the construction phase for the Proposed Scheme. Furthermore, all dredged arisings associated with construction of the Marine Jetty will be disposed of at existing disposal sites at offshore locations in the Tees Bay, managed under licence.</p> <p>Therefore, this is scoped out of further assessment in the ES.</p>

Element	Phase	Scoped In	Scoped Out	Justification
Disposal and recovery of waste associated with the Proposed Scheme during operation and maintenance	Operation and maintenance		✓	<p>The operation and maintenance of the Proposed Scheme is anticipated to generate negligible quantities of waste to landfill. There is an existing requirement for maintenance dredging of the approach to the channel and various berthing pockets in the lower Tees estuary. This existing maintenance dredging regime is well-established and will continue to be managed by PD Ports under licence. All maintenance dredge arisings will be disposed at existing disposal sites at offshore locations in the Tees Bay. This is therefore scoped out and does not require further assessment in the ES.</p>
Consumption of material resources associated with the Proposed Scheme decommissioning	Decommissioning		✓	<p>As described in <b>Chapter 2 Site and Proposed Scheme description</b> of this EIA Report, it is assumed that the Proposed Scheme will be decommissioned at the end of the operational lifespan, either prior to or at 25 years. Material resources are not anticipated to be required for decommissioning works. As such, the effects associated with material resource consumption are considered to be minimal and not significant. This is therefore scoped out and does not require further assessment in the ES.</p>
Disposal and recovery of waste associated with the Proposed Scheme decommissioning	Decommissioning		✓	<p>As described in <b>Chapter 2 Site and Proposed Scheme Description</b> of this EIA Report, it is assumed that the Proposed Scheme will be decommissioned at the end of the operational lifespan, either prior to or at 25 years. During decommissioning above ground structures (with the</p>

Element	Phase	Scoped In	Scoped Out	Justification
				exception of the Marine Jetty) will likely be removed and subject to a decommissioning plan. However, the Marine Jetty and all below ground structures are likely to remain. This is therefore scoped out and does not require further assessment in the ES.
Impacts and effects associated with the extraction of raw resources and the manufacture of products	Construction and operation and maintenance		✓	The impacts of extraction and manufacture of materials cannot be assured with any accuracy and are subject to separate environmental consent and permitting processes. Therefore, they are scoped out of the assessment. Furthermore, the Proposed Scheme does not require direct extraction, processing and manufacture of raw resources.
Impacts and effects resulting from the transportation of material resources and waste to and from the Site	Construction operation and maintenance		✓	The impacts associated with transportation are considered as part of <b>Chapter 5: Air Quality, Chapter 6: Noise and Vibration, Chapter 11: Greenhouse Gases, and Chapter 13: Traffic and Transport</b> – as appropriate to these aspects.
Impacts on human health and controlled waters as a result of contaminated site arisings from the Proposed Scheme	Construction and operation and maintenance		✓	Impacts and effects on human health and controlled waters are considered in <b>Chapter 17: Socioeconomics, Population and Human Health</b> and <b>Chapter 8: Water Environment and Flood Risk</b> assessment, as appropriate to that aspects.

## 12.10 PROPOSED METHODOLOGY

12.10.1. As identified in **Section 12.9**, there is the potential for significant effects on material assets and waste during construction of the Proposed Scheme. Further assessment that is proposed to be undertaken for the ES is outlined below.

- 12.10.2. The IEMA Guide (Ref. 12.25) will be used to assess the potential impacts and effects from the Proposed Scheme, using the process and significance criteria it sets out. It is anticipated that Method W1 (Void Capacity, as detailed in the IEMA Guide) will be used to best reflect the scale and nature of the Proposed Scheme.
- 12.10.3. In accordance with the IEMA Guide, the assessment will be a quantitative exercise that aims to identify the following:
- The type and volume of materials to be consumed by the Proposed Scheme, including details of any recycled materials content;
  - The type and volume of waste to be generated by the Proposed Scheme, with details of planned recovery and/or disposal method (for example on-site reuse, off-site recycling, disposal to landfill);
  - The cut and fill balance; and
  - Details of any materials to be specified, where sustainability credentials (particularly those that improve resource efficiency) afford performance beyond expected industry standards.
- 12.10.4. The sensitive receptors described in **Section 12.7** will be incorporated into the assessment.
- 12.10.5. The impacts from the Proposed Scheme during the construction phase that would be considered in the assessment include:
- Anticipated reductions in availability (stocks, production and/or sales) of materials regionally and nationally; and
  - Anticipated reductions in the landfill void capacity of regional and national infrastructure.
- 12.10.6. The likely types and estimated quantities of construction material resources required (including site arisings generated) for the Proposed Scheme will be assessed. Impacts and effects will be evaluated against data for the regional and national materials markets, where information is available.
- 12.10.7. The likely types and estimated quantities of construction waste to be generated by the Proposed Scheme will be assessed. Impacts will be evaluated against the capacity of regional (or where justified, national) waste management infrastructure.

## SIGNIFICANCE OF EFFECT CRITERIA

### Sensitivity

- 12.10.8. The criteria for assessing sensitivity of materials and waste are set out in **Table 12-8**.

**Table 12-8 - Materials and waste sensitivity criteria**

<b>Sensitivity</b>	<b>Materials criteria</b> <b>On balance, the key materials required for the construction of the Proposed Scheme...</b>	<b>Inert and non-hazardous waste criteria</b> <b>Landfill void capacity is expected to...</b>	<b>Hazardous waste criteria</b> <b>Landfill void capacity is expected to...</b>
Negligible	Are forecast (through trend analysis and other information) to be free from	...remain unchanged, or is expected to increase	...remain unchanged, or is expected to increase

Sensitivity	<b>Materials criteria</b> <b>On balance, the key materials required for the construction of the Proposed Scheme...</b>	<b>Inert and non-hazardous waste criteria</b> <b>Landfill void capacity is expected to...</b>	<b>Hazardous waste criteria</b> <b>Landfill void capacity is expected to...</b>
	known issues regarding supply and stock; and/or are available comprising a very high proportion of sustainable features and benefits compared to industry-standard materials*	through a committed change in capacity.	through a committed change in capacity.
Low	Are forecast (through trend analysis and other information) to be generally free from known issues regarding supply and stock; and/or are available comprising a high proportion of sustainable features and benefits compared to industry-standard materials.	...reduce minimally: by <1% as a result of wastes forecast.	...reduce minimally: by <0.1% as a result of wastes forecast.
Medium	Are forecast (through trend analysis and other information) to suffer from some potential issues regarding supply and stock; and/or are available comprising some sustainable features and benefits compared to industry-standard materials.	...reduce noticeably: by 1-5% as a result of wastes forecast.	...reduce noticeably: by 0.1-0.5% as a result of wastes forecast.
High	Are forecast (through trend analysis and other information) to suffer from known issues regarding supply and stock; and/or comprise little or no sustainable features and benefits compared to industry-standard materials.	...reduce considerably: by 6-10% as a result of wastes forecast.	...reduce considerably: by 0.5-1% as a result of wastes forecast.
Very High	Are known to be insufficient in terms of production, supply and/or stock; and/or comprise no sustainable features and benefits	... reduce very considerably (by>10%); end during construction or operation; is already known to be unavailable;	... reduce very considerably (by >1%); end during construction or operation; is already known to be unavailable;

<b>Sensitivity</b>	<b>Materials criteria</b> <b>On balance, the key materials required for the construction of the Proposed Scheme...</b>	<b>Inert and non-hazardous waste criteria</b> <b>Landfill void capacity is expected to...</b>	<b>Hazardous waste criteria</b> <b>Landfill void capacity is expected to...</b>
	compared to industry-standard materials.	or, would require new capacity or infrastructure to be put in place to meet forecast demand.	or, would require new capacity or infrastructure to be put in place to meet forecast demand.
Notes	<p>* Subject to supporting evidence, sustainable features and benefits could include, for example, materials or products that:</p> <ul style="list-style-type: none"> <li>▪ Comprise reused, secondary or recycled content (including excavated and other arisings);</li> <li>▪ Support the drive to a circular economy; and/or</li> <li>▪ In some other way reduce lifetime environmental impacts.</li> </ul>		

### Magnitude

12.10.9. **Table 12-9** sets out the criteria for assessing magnitude of materials and waste. For the purposes of the assessment, Method W1 (void capacity) as set out in the IEMA Guide (Ref. 12.25), will be used.

**Table 12-9 - Materials and Waste Magnitude Criteria**

<b>Magnitude</b>	<b>Materials Criteria</b> <b>The assessment of the Project is made by determining whether the consumption of...</b>	<b>Inert and non-hazardous waste criteria</b> <b>The percentage depletion of remaining landfill void capacity</b>	<b>Hazardous waste criteria</b> <b>The percentage depletion of remaining landfill void capacity</b>
No change	...no materials are required	Zero waste generation and disposal from the development.	Zero waste generation and disposal from development
Negligible	...no individual material type is equal to or greater than 1% by volume of the regional* baseline availability.	Waste generated by the development will reduce regional* landfill void capacity baseline** by <1%.	Waste generated by the development will reduce national landfill void capacity baseline** by <0.1%
Minor	...one or more materials is between 1-5% by volume of the regional* baseline availability; and/or	Waste generated by the development will reduce regional* landfill void capacity baseline** by 1-5%.	Waste generated by the development will reduce national landfill void capacity baseline** by <0.1-0.5%

Magnitude	Materials Criteria The assessment of the Project is made by determining whether the consumption of...	Inert and non-hazardous waste criteria The percentage depletion of remaining landfill void capacity	Hazardous waste criteria The percentage depletion of remaining landfill void capacity
	the development has the potential to adversely and substantially*** impact access to one or more allocated mineral site (in their entirety), placing their future use at risk.		
Moderate	...one or more materials is between 6-10% by volume of the regional* baseline availability; and/or one allocated mineral site is substantially*** sterilised by the development rendering it inaccessible for future use.	Waste generated by the development will reduce regional* landfill void capacity baseline** by 6-10%.	Waste generated by the development will reduce national landfill void capacity baseline** by <0.5-1%
Major	...one or more materials is >10% by volume of the regional* baseline availability; and/or more than one allocated mineral site is substantially*** sterilised by the development rendering it inaccessible for future use.	Waste generated by the development will reduce regional* landfill void capacity baseline** by >10%.	Waste generated by the development will reduce national landfill void capacity baseline** by >1%
Notes	<p>* or where justified, national.</p> <p>** forecast as the worst-case scenario, during a defined construction phase.</p> <p>*** justified using professional judgement, based on the scale and nature of the allocated mineral site being assessed.</p>		

### Significance of effects

12.10.10. In accordance with the IEMA Guide (Ref. 12.25), the significance of effects from materials and waste will be determined by comparing sensitivity and magnitude within the significance of effects matrix provided in **Table 12-10**.



**Table 12-10 - Matrix to assign Significance of Effects Category**

		Magnitude of impact				
		No change	Negligible	Minor	Moderate	Major
Sensitivity of receptor	Very high	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

### Effect threshold

12.10.11. Effects that are classified as Moderate, Large or Very Large are considered to be Significant, for both materials and waste.

12.10.12. Effects classified as Slight or Neutral are considered to be Not Significant in either case.

## 12.11 ASSUMPTIONS AND LIMITATIONS

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

### MATERIALS

- The assessment of materials is based upon the validity of the collated information, regarding the resources that are expected to be consumed during the 'in scope' lifecycle phases of the Proposed Scheme;
- The assessment baseline uses the most recent available data, which is up to and including 2022 (unless stated otherwise); and
- A lifecycle assessment (including embodied carbon and water) of materials has not been included, as the effort and resources required to complete such an exercise are deemed disproportionate to the benefit they would offer the assessment of significance of effects. Furthermore, many of the elements assessed within a lifecycle assessment are not directly relevant to the goals of this chapter. Embodied carbon (as part of a whole life carbon assessment) is assessed in **Chapter 11: Greenhouse Gases** of this report.

## WASTE

- The assessment of impacts and effects on landfill void capacity will be based upon the validity of the collated information, regarding the waste generated and disposed of by the Proposed Scheme during 'in scope' phases of the development;
- The assessment baseline uses the most recent available data, which is up to and including 2022 (unless stated otherwise);
- Landfill operators can claim commercial confidentiality for their data at the time of submission to the Environment Agency; data for sites with a commercial confidentiality agreement in place are therefore unavailable for the analyses presented in this chapter; and
- The assessment presented will include the latest design information available at the time of the submission. Where design information is not available, reasonable worst-case assumptions will be made.

## 12.12 REFERENCES

- Ref. 12.1** European Parliament (2008) 'Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives'. Available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0098>
- Ref. 12.2** European Parliament (1999) 'Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste'. Available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31999L0031>
- Ref. 12.3** HM Government (2021) 'Environment Act 2021'. Available at <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>
- Ref. 12.4** HM Government (2020) 'The Waste (Circular Economy) (Amendment) Regulations 2020'. Available at: <https://www.legislation.gov.uk/uksi/2020/904/contents/made>
- Ref. 12.5** HM Government (2016) 'The Environmental Permitting (England and Wales) Regulations 2016'. Available at: [The Environmental Permitting \(England and Wales\) Regulations 2016 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2016/10/contents/enacted)
- Ref. 12.6** CHM Government (2012) 'The Controlled Waste (England and Wales) Regulations 2012'. Available at: <https://www.legislation.gov.uk/uksi/2012/811/contents>
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- Ref. 12.11** HM Government (1990) 'Environmental Protection Act 1990'. Available at: <https://www.legislation.gov.uk/ukpga/1990/43/contents>
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- Ref. 12.13** HM Government (1974) 'Control of Pollution Act 1974'. Available at: <https://www.legislation.gov.uk/ukpga/1974/40/contents>
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## 13 TRAFFIC AND TRANSPORT

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### 13.1 INTRODUCTION

- 13.1.1. This chapter considers the likely impacts on traffic and transport that may arise during construction, operation and maintenance, and decommissioning of the Proposed Scheme (as described in **Chapter 2** of this EIA Scoping Report), and potential significant effects on sensitive receptors. It sets out the proposed methodology for the traffic and transport assessment and identifies those impacts that can be scoped out of the assessment.
- 13.1.2. This chapter should be read in conjunction with technical aspect chapters:
- **Chapter 5: Air Quality;**
  - **Chapter 6: Noise and Vibration;**
  - **Chapter 15: Shipping and Navigation;**
  - **Chapter 17: Population and Human Health;** and
  - **Chapter 20: Cumulative Effects.**
- 13.1.3. This chapter is supported by the following figures:
- **Figure 13-1: Transport Study Area;**
  - **Figure 13-2: Construction HGV Routes;**
  - **Figure 13-3: Walking and Cycling Active Travel Network;** and
  - **Figure 13-4: Department for Transport Traffic Count Locations.**

### 13.2 LEGISLATION, POLICY, AND GUIDANCE

- 13.2.1. This section outlines the relevant legislation, policy and guidance to traffic and transport for the assessment of the Proposed Scheme.

#### LEGISLATION

- 13.2.2. The legislation relevant to the traffic and transport assessment is set out below:
- The Highways Act (1980) (Ref. 13.1) The Highways Act 1980 sets out the requirements pertaining to delivering highways infrastructure, managing existing highways and managing highway activity including off site highway works, for example, the creation of temporary site access.
  - Town and Country Planning Act (1990) (Ref. 13.2) The Town and County Planning Act 1990 provides the legal framework for the town and country planning system in England and Wales.
  - New Roads and Street Works Act (1991) (Ref. 13.3) The New Roads and Street Works Act 1991 provides a legislative framework for street works by undertakers and works for road purposes to the extent that these must be coordinated by street authorities.
  - Traffic Management Act (2004) (Ref. 13.4) The Traffic Management Act 2004 provides powers to tackle congestion and disruption on the road network and requires local authorities, where possible, to ensure that traffic can move quickly and freely on their roads.
  - The Planning Act (2008) (Ref. 13.5) The Planning Act 2008 created a new development consent regime for major infrastructure projects in the fields of energy, transport, water, wastewater, and waste. It was intended to speed up the process for approving major new infrastructure projects.

- Infrastructure Planning (Environmental Impact Assessment) Regulations (2017) (Ref. 13.6) UK legislation that sets out the requirements for assessing and mitigating the environmental impacts of major infrastructure projects. The regulations require developers to prepare an EIA and consult with stakeholders and the public. The aim of the regulations is to ensure that the environmental impacts of major projects are fully assessed and addressed, and that sustainable development principles are followed.

## **POLICY**

- 13.2.3. National Policy Statements (NPSs) set out the primary policy against which an application for the development consent of the Proposed Scheme will be considered. The Overarching National Policy Statement for Energy (EN-1) (Ref. 13.7) and NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref. 13.8) are relevant to the Proposed Scheme.
- 13.2.4. The Overarching NPS for Energy (EN-1) includes considerations for assessment of traffic and transport impacts associated with the transport of materials, goods and personnel to and from a development during all project phases. The consideration and mitigation of transport impacts is an essential part of Government's wider policy objectives for sustainable development as set out in Section 2.6 of NPS EN-1.
- 13.2.5. The NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) includes guidance for developers of nationally significant natural gas supply infrastructure and gas and oil pipeline projects, making it easier for decision makers, applicants and the wider public to understand government policy on the need for nationally significant infrastructure projects (NSIPs), how applications for energy infrastructure will be assessed, and the way in which impacts and mitigations will be judged. Paragraph 2.21.19 of NPS EN-4 references that increased HGV traffic may be generated on local roads by the movement of materials.
- 13.2.6. Other relevant policy is outlined below:
- National Planning Policy Framework (NPPF) (2023) (Ref. 13.9) The NPPF replaced the previous Planning Policy Statements and Planning Policy Guidance used to determine planning applications under the Town and Country Planning Act 1990. Whilst the NPPF does not contain specific policies for nationally significant infrastructure projects, it has the potential to be considered important and relevant to the Secretary of State ("SoS") consideration of the project. The NPPF states all developments that will generate significant amounts of movement should be required to provide a Travel Plan (TP), and the application should be supported by a Transport Statement (TS) or Transport Assessment (TA) so that the likely impacts of the proposal can be assessed.
  - Department for Transport Circular 01/2022 Strategic Road network and the delivery of sustainable development (2022) (Ref. 13.10) Department for Transport (DfT) Circular 01/2022 explains how National Highways will engage with the planning system and fulfil its remit to be a delivery partner for sustainable economic growth whilst maintaining, managing, and operating a safe and efficient Strategic Road Network (SRN).

- Highways England Water Preferred Policy (2019) (Ref. 13.11) This policy provides guidance on when to move an Abnormal Indivisible Load (AIL)<sup>38</sup> by water and when it is allowed to be moved by road.
- Tees Valley Strategic Transport Plan (2020) (Ref. 13.12) The Tees Valley Strategic Transport Plan is a comprehensive plan outlining the long-term transportation strategies and infrastructure improvements for the Tees Valley region. It aims to improve connectivity, support economic growth, and promote sustainable travel across the area.
- Stockton-on-Tees Borough Council Local Plan (2019) (Ref. 13.13) The Local Plan sets out the Council's policies and proposals to guide planning decisions and establishes the framework for the sustainable economic growth and development of the Borough up to 2032. The Local Plan covers a range of matters including details of the number of new homes that are needed within the borough and where they should be located; the amount and proposed location of new employment land; protection and enhancement of the natural and historic environment; provision of new infrastructure and improvement of town centres and community facilities in the Borough.

## GUIDANCE

13.2.7. The traffic and transport assessment will be undertaken accordance with the following good practice guidance documents:

- Environmental Assessment of Traffic and Movement (2023) (Ref. 13.14) The Institute of Environmental Management and Assessment (IEMA) Environmental Assessment of Traffic and Movement (EATM) guidelines provide practitioners with good practice advice on how to carry out the assessment of traffic and movement of people as part of a statutory EIA or non-statutory environmental assessment.
- Planning Practice Guidance Travel Plans, Transport Assessments and Statements (2014) (Ref. 13.15) This Planning Practice Guidance (PPG) was published in March 2014. Together, PPGs and the NPPF set out what the Government expects of local authorities. The overall aim is to ensure the planning system allows land to be used for new homes and jobs, while protecting valuable natural and historic environments. The guidance includes specific details in relation to the preparation of a TA, TS and TP
- LA 101 - Introduction to environmental assessment (2019) (Ref. 13.16) LA 101 sets out the overarching requirements and principles that form an introduction to the environmental assessment of motorway and all-purpose trunk roads.
- LA 103 - Scoping projects for environmental assessment (2020) (Ref. 13.17) This document sets out the requirements for scoping motorway and all-purpose trunk road projects for environmental assessment.
- LA 104 - Environmental assessment and monitoring (2020) (Ref. 13.18) This document sets out the requirements for environmental assessment of projects, including reporting and monitoring of significant adverse environmental effects.
- LA 112 - Population and Human Health, Design Manual for Roads and Bridges (2020) ("DMRB") (Ref. 13.19) This document sets out the requirements for assessing and reporting the environmental effects on population and health from construction, operation and maintenance of highways projects.

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<sup>38</sup> An Abnormal Indivisible Load (AIL) is a large or heavy object that cannot be broken down into smaller parts for transport without undue expense or risk of damage

## 13.3 CONSULTATION

- 13.3.1. Technical consultation and engagement with statutory consultees in relation to traffic and transport will be undertaken following submission of this EIA Scoping Report.
- 13.3.2. The assessment methodology and the assumptions underpinning the assessment will be discussed further and agreed with Stockton-on-Tees Borough Council (SoTBC), as the Local Highway Authority (LHA), and National Highways to ensure that it meets the necessary standards and guidelines.
- 13.3.3. Following consultation with SoTBC and National Highways and receipt of comments from the Planning Inspectorate, the methodology to assess the traffic and transport impacts arising from the Proposed Scheme will be refined for the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES).

## 13.4 STUDY AREA

- 13.4.1. The Study Area is shown on **Figure 13-1** and comprises the following junctions and connecting highway links:
- Junction:
    - Junction 1 – A178 /A1185 Seal Sands Roundabout.
  - Highway Links:
    - Link 1 – Seal Sands Road;
    - Link 2 – A178, Seaton Carew Road (South);
    - Link 3 – A1185; and
    - Link 4 – A178, Seaton Carew Road (North).
- 13.4.2. The Study Area includes the primary transport and highway links from the Site to the surrounding local and SRN that would likely be subject to daily traffic flow changes because of the construction and operation of the Proposed Scheme.
- 13.4.3. The traffic and transport Study Area will be refined based upon ‘Rule 1’ and ‘Rule 2’ of the IEMA EATM (Ref. 13.14) guidelines which can be used to determine the effect of increased traffic volumes on links within the Study Area, as described below:
- Rule 1 - Include highway links where traffic flows (or Heavy Goods Vehicle (HGV) flows) are predicted to increase by more than 30%; and
  - Rule 2 - Include any other specifically sensitive areas where traffic flows (or HGV flows) are predicted to increase by 10% or more.
- 13.4.4. The extent of the Study Area will be subject to pre-application discussions with SoTBC and National Highway which are scheduled to start as soon as possible.

## 13.5 BASELINE CONDITIONS AND FUTURE BASELINE

### DATA SOURCES

- 13.5.1. The following sources of information will be used to define the baseline conditions on which the traffic and transport assessment will be based:
- Desktop review, supplemented by a site visit to corroborate the review, to establish existing:



- Pedestrian and cycle routes from Ordnance Survey (OS), public rights of way (PRoW) definitive maps, local authority cycle maps, Sustrans National Cycle Network Map;
  - Bus services and associated infrastructure; and
  - Highway network characteristics, including highways safety records and Google traffic data, and personal injury collision (PIC) data to be obtained from the LHA.
- Survey Data:
    - Non-Motorised User (NMU) Data:
      - On-site observations will be undertaken to assess the level of NMU activity within the Study Area and this will inform a qualitative assessment of the Proposed Scheme impacts.
  - Motorised Data:
    - Traffic Volumes:
      - DfT road traffic counts (see **Figure 13-4**);
      - Junction turning counts (JTC) at junctions within the Study Area during 2024 during a neutral month for a 24-hour period on a weekday; and
      - Automatic traffic counts (ATC) on selected connecting highway links during 2024 during a neutral month for one week.

13.5.2. The baseline conditions and the extent of surveys will be discussed and agreed with SoTBC, and National Highways through subsequent technical scoping discussions. A summary of the baseline conditions is presented below.

## EXISTING BASELINE

### Location and Access

- 13.5.3.** The Site is located in an area that is dominated by industrial uses. The north bank of the River Tees is occupied by a variety of operations including petro-chemical facilities, storage, and heavy engineering. Other nearby land uses include ConocoPhillips Teesside Terminal, Exolum Seal Sands Terminal and Teesside Biomass and Industrial Chemicals Limited. Further details of the surrounding land uses are provided in **Chapter 2: Site and Proposed Scheme Description**.
- 13.5.4. Seal Sands Road is a private access road that serves multiple businesses and links the Site to the public highway at the A178/A1185 Seal Sands Roundabout. The speed limit is 60mph for the first 850m, before reducing to a 40mph speed limit and solid double white lines with associated no overtaking signage. There are several priority junctions along the road, serving a mixture of industrial premises, with the majority of junctions including red surfacing and associated 'SLOW' road markings.
- 13.5.5. There are three main accesses to the south-eastern part of the Site (for access to the proposed Regas and Storage Area), formed with Seal Sands Road as follows:
- Navigator main visitor/office entrance – this access comprises a priority junction formed with Seal Sands Road and provides access to parking areas, silos, pipelines and wharfs associated Navigator Terminals Seal Sands. This access has overhead clearance of 5.4m, a usable width of approximately 5.6m and is suitable for light goods vehicle (LGV) and car movements. A gate house/security barrier is situated approximately 150m within the entrance from Seal Sands Road.

- Navigator T1 entrance – this access comprises a priority junction formed with Seal Sands Road and provides access into Navigator Terminals Seal Sands. This entrance has a gatehouse and associated weigh station for HGVs entering and egressing utilising this access point. There are pipelines over the T1 entrance, overhead clearance is approximately 6.9m and the usable width of the road is approximately 8.3m. This entrance is suitable for LGVs, HGVs, large plant and cranes.
- Navigator T2 entrance<sup>39</sup> – this access comprises a priority junction formed with Seal Sands Road (the main access into the Site), linking to internal roads that run along the northern periphery of the silos. The entrance is suitable for HGV, LGV and cars, with existing security barriers present. Other notable features within the Site, along Seal Sands Road, include a number of pipelines (both crossing the road overhead and underground via culverts), a disused rail line crossing the road to the east of the A178/A1185 Seal Sands Roundabout, a disused rail line running parallel to the road on the northern side, speed camera warning signs and a road liable to flooding sign. There are also a number of parking and turning areas, including parking areas opposite the entrances to the Site, which comprise open loose gravel surfacing. There is streetlighting along the entirety of the road but no footways.

### Highway Network

- 13.5.6. There are two main routes towards the SRN from the A178/A1185 Seal Sands Roundabout. The northern route uses the A1185 and A689, linking the Site to the A19 Wolviston Interchange and the southern route uses the A178, Seaton Carew Road and A1046, linking the Site to the A19 Portrack Interchange.
- 13.5.7. On the northern route, the A1185 is a single carriageway route for the majority of its length and is subject to the national speed limit, with no footways or direct frontage. There are several accesses along the route which serve a mix of land uses, including the National Grid Salthome Substation, Salthome Power Station, Cowpen Bewley Landfill & Composting Facility, Cowpen Bewley village, Cowpen Bewley Woodland Park and a number of agricultural accesses.
- 13.5.8. National Cycle Route (NCN) 14 intersects the A1185 at-grade to the west of Cowpen Bewley Woodland Park and a local cycle route crosses the A1185 at the A1185 /Cowpen Bewley Woodland Park junction. The location of this local cycle route, along with other within Tees Valley is illustrated on the Tees Valley Cycle Map (2019) (Ref. 13.20).
- 13.5.9. Further west, the A1185 changes to a dual carriageway, subject to a 50mph speed limit on approach to a priority junction with Marsh House Avenue, which serves residential areas within Billingham. The A1185 continues west and connects with the A689 at the A689 /A1185 /A19 Southbound Off-Slip Roundabout. The A689 continues from roundabout to the A19 Wolviston Interchange.
- 13.5.10. On the southern route the A178 Seaton Carew Road is a single carriageway route subject to the national speed limit. The England Coast Path (ECP) runs parallel to the eastern kerb. Billingham Community Fire Station is directly accessed from the A178, along with several priority junctions

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<sup>39</sup> It is proposed that this will be the daily construction site access gate. It is anticipated that this access provides access to both the welfare compound and the Regas and Storage Area.

which serve a mixture of uses including the Royal Society for the Protection of Birds (RSPB) Salthome, Huntsman Drive which serves a number of industrial uses and agricultural accesses.

- 13.5.11. The A178 Seaton Carew Road forms a priority junction with the A1046 Port Clarence Road. The A1046 Port Clarence Road is the main route through the residential area of Port Clarence, prior to continuing as the A1046 Haverton Hill Road to the west of the A1046 /B1275 Hope Street signal-controlled junction. To the west of the A178 Seaton Carew Road /A1046 Port Clarence Road Junction, there is a 7.5t weight restriction (except for access) that runs between this junction and the A1046 /B1275 Hope Street signal-controlled junction.
- 13.5.12. To the west of the A1046/B1275 Hope Street signal-controlled junction, there is a 4.6m height restriction on the rail bridge that crosses the A1046 Haverton Hill Road. The A1046 Haverton Hill Road serves several industrial premises prior to reaching the A19 Portrack Interchange, which provides connections to the A19 and Newport Bridge via the A1032.
- 13.5.13. At this stage it is anticipated that construction equipment and materials will be delivered directly to the Site via the northern route (as the preferred route). There are no weight or height restrictions along this route and it is suitable for all legal vehicles. **Figure 13-2** shows the anticipated route for HGV movements during the construction phase.

#### **Walking and Cycling Active Travel Network**

- 13.5.14. **Figure 13-3** shows the Walking and Cycling Active Travel Network within the Study Area including the ECP. The ECP runs parallel to the A178, Seaton Carew Road, crossing Seal Sands Road at the A178/A1185 Seal Sands Roundabout.
- 13.5.15. In addition, there are other PRowS that intersect the Link 3 'A1185' including Footpath 30 which crosses the A1185 and Footpath 8D which runs from Link 3 through residential areas within Billingham.
- 13.5.16. There are no walking or dedicated cycling routes between the public highway and the Site or the other adjacent land uses and therefore it is unlikely walking and cycling will be a realistic option for people accessing the Site.

#### **Public Transport**

- 13.5.17. The closest bus stops to the Site are situated on the A178 Seaton Carew Road to the north and south of the Seal Sands Roundabout. Both bus stops are served by Service 1 and are located approximately 3.5km from the Main Office Entrance.
- 13.5.18. Service 1 operates between Hartlepool and Middlesborough, via Seaton Carew, Port Clarence and Haverton Hill. During weekdays, there are up to two services per hour in either direction from between approximately 7am to 7pm. There is a similar level of service on Saturdays and an hourly service on Sundays.
- 13.5.19. There are no pedestrian routes between the Site and the bus stops and therefore it is unlikely public transport will be a reasonably practicable option for people accessing the Site.

## **FUTURE BASELINE**

13.5.20. The following sources of information will be used to define the Future Baseline conditions on which the traffic and transport assessment will be based:

- Background Traffic Growth: The Trip End Model Program (TEMPro) v8.0 software will be used to predict the level of background traffic growth within the local area between surveyed traffic flow year and the peak year of the construction phase; and
- Committed Developments: There may be the potential for cumulative impacts associated with the Proposed Scheme and committed developments in the surrounding area. Therefore, an assessment of the significance of the Cumulative Effects will be undertaken in the context of the potential interactions associated with the Proposed Scheme; and
- Committed Transport Improvement Schemes (if applicable).

13.5.21. The future baseline conditions will be discussed and agreed with SoTBC, and National Highways through subsequent technical scoping discussions.

## **13.6 SENSITIVE RECEPTORS**

13.6.1. The following sensitive receptors have been identified within the Study Area for the Proposed Scheme:

- Motorised Users: Motorised users of the surrounding highway network, including vehicle drivers and public transport users; and
- Non-Motorised Users: Non-motorised users of the surrounding highway network, PRow and non-designated public routes, including pedestrians, cyclists, equestrians (and vulnerable groups).

13.6.2. There are no PRow or non-designated public routes<sup>40</sup> within the Site.

## **13.7 DESIGN, MITIGATION AND ENHANCEMENT MEASURES**

### **CONSTRUCTION PHASE**

13.7.1. Relevant design, mitigation and enhancement measures will be identified in the ES, this will likely include the production and implementation of an Outline Construction Traffic Management Plan (CTMP) to be submitted with the application for development consent. The Outline CTMP will provide details of procedures for construction related traffic, including, number of vehicles; routes; frequency and timing of movements; worker hours and shift patterns; laydown areas and parking.

### **OPERATIONAL PHASE**

13.7.2. It is considered that no design, mitigation, or enhancement measures will be required as the operational phase will likely not give rise to any significant environmental traffic and transport effects. It is proposed to scope out assessment of the traffic and transport impacts during the operation phase.

### **DECOMMISSIONING PHASE**

13.7.3. Relevant design, mitigation and enhancement measures will be identified in the ES, this will likely include the production and implementation of a Decommissioning Traffic Management Plan (DTMP).

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<sup>40</sup> Non-designated public routes - routes open to the public that are not footway (part of the adopted highway), PRow (footpath, bridleway, byway), permissive paths etc.

The DTMP will provide details of procedures for construction related traffic, including, number of vehicles; routes; frequency and timing of movements; worker hours and shift patterns; laydown areas and parking.

- 13.7.4. It is proposed to scope out assessment of the traffic and transport impacts during the decommissioning phase.

## **13.8 DESCRIPTION OF POTENTIAL LIKELY SIGNIFICANT EFFECTS**

### **CONSTRUCTION PHASE**

- 13.8.1. The potential for likely significant effects, associated with the construction phase on the routes which connect to the Site within the Study Area, include:

- Increased severance and pedestrian delay (incorporating all non-motorised users);
- Reduced non-motorised user amenity;
- Increased fear and intimidation;
- Increased driver delay;
- Increased accidents and reduced road safety; and
- Adverse effects to the public transport network.

- 13.8.2. It is considered that there will not be significant effects within the Site. However further consideration will be given to these potential effects during the traffic and transport assessment.

### **OPERATION PHASE**

- 13.8.3. It is considered that the operational phase will likely not give rise to any significant environmental traffic and transport effects due to the very low traffic movements anticipated during the operation of the Proposed Scheme. It is proposed to scope out assessment of the traffic and transport impacts during the operation phase.

### **DECOMMISSIONING PHASE**

- 13.8.4. It is assumed that after the lifespan of the Proposed Scheme, before or upon 25 years, a process of decommissioning will take place. It is anticipated that the decommissioning phase will take approximately 12 months. Decommissioning will involve all above ground level structures on the Regas and Storage Area of the Site being removed. The Export Pipeline, Marine Jetty, and underground aspects of the Regas and Storage Area will remain in-situ.

- 13.8.5. Potential significant effects associated with decommissioning would likely be no worse than those listed for the construction due to the below ground infrastructure not being removed therefore less material would be transported off site during decommissioning than brought on site during the construction phase.

- 13.8.6. However, due to the lifespan of the Proposed Scheme the traffic impacts of Site decommissioning works are uncertain at this stage.

### **SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT**

- 13.8.7. A summary of the elements scoped in and out of the assessment for traffic and transport are set out in **Table 13-1**. Each element is accompanied by a justification for its inclusion or exclusion from further assessment based on professional judgement /refer to specific guidance criteria.

**Table 13-1 - Elements Scoped In or Out of Further Assessment**

<b>Element</b>	<b>Phase</b>	<b>Scoped In</b>	<b>Scoped Out</b>	<b>Justification</b>
<b>Construction Traffic</b>	Construction	✓		<p>Preliminary information indicates that on average there will be 10 to 15 people on Site during the construction phase, increasing to between 100 to 200 people at the peak of activity.</p> <p>In addition, during the construction phase, some materials will be delivered by road (raw materials) and water (plant and prefabricated equipment) as set out in further detail in <b>Chapter 2: Site and Proposed Scheme Description</b>. The number of HGV movements is currently unknown.</p> <p>It is anticipated that AILs (comprising the Onshore Storage Tanks) will be transported to site by water, with the exception of machinery such as cranes. Further detail will be set out in the PEIR and ES.</p> <p>Based on the current available construction traffic impacts are scoped in.</p>
<b>Operation Traffic</b>	Operation and maintenance		✓	<p>It is anticipated that the Proposed Scheme will be unmanned, except when an LNG delivery is taking place whereby two workers (operators) will be present up to 80 times a year. Staff will also be required to provide 24-hour security, as well as CCTV during idle periods at the terminal.</p> <p>It is not anticipated that maintenance would not involve AILs, and would take place every 5 or 10 years.</p> <p>As such, the operational traffic impacts of the Site are not expected to change the baseline traffic flows within the Study Area by more than 10%, therefore in line with EATM (Ref. 13.14) guidelines</p>

Element	Phase	Scoped In	Scoped Out	Justification
				can be scoped out. This will be evidenced in the supporting Transport Statement, which will form part of the application for development consent.
<b>Decommissioning Traffic</b>	Decommissioning		✓	The future baseline conditions and traffic impacts of Site decommissioning works are uncertain at this stage, however, it is considered that the likely significant effects would be no worse than the construction phase. A DTMP would be prepared at the time of decommissioning and this would include the AIL strategy as required (which is anticipated to form a requirement of the DCO).

## 13.9 PROPOSED METHODOLOGY

### OVERVIEW

- 13.9.1. The proposed assessment methodology will be used to evaluate the traffic and transport environmental effects associated with the Proposed Scheme construction phase only. It is proposed that operational and decommissioning impacts will be scoped out of the ES and therefore are not discussed further in this chapter.
- 13.9.2. The assessment methodology and the assumptions underpinning the assessment will be agreed with SoTBC and National Highways to ensure that it meets the necessary standards and guidelines. Hartlepool Borough Council (HBC) and Middlesbrough Council (MC) will also be consulted as neighbouring highway authorities.
- 13.9.3. It is anticipated that the following documents will be produced as part of the application for development consent:
- Transport Statement; and
  - Outline Construction Traffic Management Plan.
- 13.9.4. The proposed assessment methodology draws upon the policy, legislation and guidance contained within **Section 14.2**, along with the key traffic and transport details outlined in the following subsections.
- 13.9.5. The Study Area is set out in **Section 14.4** and will be refined based upon 'Rule 1' and 'Rule 2' of the IEMA EATM (Ref. 13.14).

### CONSTRUCTION PHASE

- 13.9.6. The construction phase assessment will be undertaken in line the IEMA Guidelines. The assessment will evaluate the traffic and transport conditions during the 'peak construction' year.

13.9.7. The construction phase assessment will include:

- Construction traffic volume (HGVs and light vehicles) including movements associated with materials and waste;
- Anticipated vehicle routing during construction; and
- Journey to work data (obtained from the latest available Census data).

13.9.8. Junction capacity assessments will be undertaken at the junctions for the 'peak construction' year aligning with peak construction activities. The following assessment scenarios are proposed for the construction phase and will be discussed further with SoTBC and National Highways through additional scoping discussions:

- Baseline Scenario: this is the surveyed traffic flows;
- Do Minimum Scenario: this is the Baseline Scenario plus traffic growth using TEMPro and committed development; and
- Do Something Scenario: this is the Do Minimum plus construction traffic associated with the Proposed Scheme.

13.9.9. If traffic surveys are required, the survey methodology will be discussed with SoTBC. It is not anticipated that surveys of National Highways, HBC, or MC junctions/links will be required, but as the neighbouring LHA's to the north and south, respectively, they will be consulted where appropriate.

### **SIGNIFICANCE OF EFFECT CRITERIA**

13.9.10. As described at **Chapter 4: Approach to EIA**, the methodology for assessing the significance of an effect will be based on the environmental sensitivity (or value/importance) of a receptor and the magnitude of change from baseline conditions.

13.9.11. The approach to determining the sensitivity of receptors, magnitude of impacts and the significance of effects considered for the impacts identified in **Table 13-1** and required by the IEMA EATM (Ref. 13.14) guidelines.

#### **Sensitivity of Receptor (Non-Motorised Users)**

13.9.12. A desktop exercise will be undertaken to classify the sensitivity of the routes within the Study Area based on the guidance in LA104 (Ref. 13.18). The classification of the link sensitivity is based on professional judgement. For example, if the route passes a school, care home or similar it would have a higher sensitivity due to the presence of vulnerable users. Similarly, if the route runs through the middle of a town or village, it would have a higher sensitivity than if there was limited direct access to frontage development.

13.9.13. In accordance with Table 3.2 in DMRB 'LA 104 - Environmental assessment and monitoring' (Ref. 13.18), the sensitivity of the affected receptors will be assessed on a scale of very high, high, medium, low and negligible in the context of the sensitivity of the road links within the Study Area. This is set out in **Table 13-2**.



**Table 13-2 – Environmental Value (Sensitivity) and Descriptions – Non Motorised Users**

<b>Value (Sensitivity) of receptor/resource</b>	<b>Typical Description</b>
<b>Very High</b>	Very high importance and rarity, international scale and very limited potential for substitution.
<b>High</b>	High importance and rarity, national scale, and limited potential for substitution.
<b>Medium</b>	Medium or high importance and rarity, regional scale, limited potential for substitution.
<b>Low</b>	Low or medium importance and rarity, local scale.
<b>Negligible</b>	Very low importance and rarity, local scale.

13.9.14. The sensitivity of a road link, or the immediate area through which it passes including PRoW, is defined by the type of user groups who may use it. Vulnerable users include elderly residents and children. It is also necessary to consider footpath and cycle route networks that cross the roads within the Study Area. The sensitivity will be informed by information obtained from viewing Strava ‘heat maps’ of the local area showing the usage of routes including PRoW and other non-PRoW routes, in addition to local knowledge.

**Sensitivity of Receptor (Motorised Users)**

13.9.15. The sensitivity of a junction will be classified in relation to the baseline operational performance of the junction. The level of traffic a junction can theoretically accommodate without incurring significant delays and/or congestion, the ‘capacity’, is compared to the level of traffic which is typically travelling through that junction. This relationship between capacity and traffic flow is assessed by the metric of ‘ratio of flow to capacity’ (RFC). It is typically recognised that a maximum RFC value of 0.85 is desirable. If the RFC is greater than this, but below 1.00, this suggests that the junction is approaching capacity and at risk of queues building. Where an RFC exceeds 1.00, the junction is exceeding its theoretical capacity.

13.9.16. The sensitivity of a junction will be assigned according to the values in **Table 13-3**.

**Table 13-3 - Environmental Value (Sensitivity) – Motorised Users**

	<b>RFC Value</b>				
	> 0.50	0.50 – 0.70	0.70 – 0.85	0.85 – 1.00	> 1.00
<b>Sensitivity</b>	Negligible	Low	Medium	High	Very High

13.9.17. Prior to the preparation of the ES, the sensitivity of the receptors will be agreed with the LHA, taking into account locally specific issues.

## MAGNITUDE OF IMPACT

- 13.9.18. The traffic generated by the Proposed Scheme will be used to assess the impacts on the key links and junctions on the surrounding network. The likely effects of the Proposed Scheme in environmental terms will be evaluated in accordance with the IEMA EATM (Ref. 13.14) guidelines.
- 13.9.19. The guidelines acknowledge that for many effects, there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and the application of professional judgement on the part of the assessor, backed up by data or quantified information wherever possible.

### Severance and Pedestrian Delay (incorporating all non-motorised users)

- 13.9.20. Severance occurs in a community when a major artery separates people from places and other people. Severance occurs from difficulty of crossing a road or where the road itself creates a physical barrier. Severance can be caused to pedestrians or motorists. EATM (Ref. 13.14) states that historical guidance published by the DfT suggested changes in total traffic flow of 30%, 60% and 90% result in slight, moderate, and substantial changes in severance respectively. EATM (Ref. 13.14) notes that this guidance no longer appears in DfT guidance but has not been superseded by subsequent changes and is established through planning case law. On this basis, it is considered appropriate to continue using these indicators to assess severance.
- 13.9.21. **Table 13-4** contains how the magnitude of impacts on receptors shall be reported within this preliminary assessment with respect to severance.

**Table 13-4 - Magnitude of Impact (Severance)**

	Magnitude of Impact (degree of change)				
	No Change	Negligible	Minor	Moderate	Major
<b>Severance and Pedestrian Delay</b>	No change in traffic flow	Change in total traffic flow of <30%	Change in total traffic flow of 30% to 60%	Change in total traffic flow of 61% to 90%	Change in total traffic flow of >90%

- 13.9.22. Together the sensitivity of the receptor and magnitude of the impact will be used to determine the significance of effect, as described at.

### Non-Motorised User Amenity

- 13.9.23. Non-motorised user amenity is broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition, pavement width and separation between vehicles and pedestrians. The impact manifests itself in fear and intimidation, exposure to noise and vehicle emissions. EATM (Ref. 13.14) states that historical guidance published by the DfT suggested that a doubling or halving of total traffic flow or the HGV composition could lead to perceptible adverse or beneficial impacts upon non-motorised user amenity. EATM (Ref. 13.14) notes that this guidance no longer appears in DfT guidance however it has not been superseded by subsequent changes and is established through planning case law. On this basis, it is considered appropriate to continue using these indicators to assess non-motorised user amenity. **Table 13-5**

contains how the magnitude of impacts on receptors shall be reported within this preliminary assessment with respect to non-motorised user amenity.

**Table 13-5 - Magnitude of Impact (Non-Motorised User Amenity)**

	<b>Magnitude of Impact</b>				
	<b>No Change</b>	<b>Negligible</b>	<b>Minor</b>	<b>Moderate</b>	<b>Major</b>
<b>Non-Motorised User Amenity</b>	No change in traffic flow	Changes in traffic flow (or HGV component) <30%	Changes in traffic flow (or HGV component) >30 and <50%	Changes in traffic flow (or HGV component) of 50% to 100%	Changes in traffic flow (or HGV component) of >100%

13.9.24. Together the sensitivity of the receptor and magnitude of the impact will be used to determine the significance of effect, as described at **Table 13-9**.

**Fear and Intimidation**

13.9.25. EATM (Ref. 13.14) states that the extent of fear and intimidation is dependent on the total volume of traffic, the heavy vehicle composition, the speed that these vehicles are passing and the proximity of traffic to people. EATM provides a weighted system to provide an approximation of the likelihood of pedestrian fear and intimidation. The degree of hazard is assessed with reference to the established thresholds (a, b and c) (see **Table 13-6**) and a score is provided for each combination on a highway link under consideration (see **Table 13-7**). The magnitude of impact is approximated with reference to changes in the level of fear and intimidation from baseline conditions with reference to annual average daily traffic movements (AADT) (see

13.9.26.

13.9.27.

13.9.28. Table 13-8).

**Table 13-6 – Fear and Intimidation Degree of Hazard**

<b>Average traffic flow over 18-hour day – all vehicles /hour 2-way (a)</b>	<b>Total 18-hour heavy vehicle flow (b)</b>	<b>Average vehicle speeds (c)</b>	<b>Degree of hazard score</b>
+1,800	+3,000	-> 40	30
1,200 – 1,800	2,000 – 3,000	30 – 40	20
600 – 1,200	1,000 – 2,000	20 – 30	10

<600	<1,000	<20	0
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**Table 13-7 – Levels of Fear and Intimidation**

<b>Level of fear and intimidation</b>	<b>Total hazard score (a) + (b) + (c)</b>
<b>Extreme</b>	71+
<b>Great</b>	41 – 70
<b>Moderate</b>	21 – 40
<b>Small</b>	0 – 20

**Table 13-8 – Magnitude of Impact (Fear and Intimidation)**

<b>Magnitude of Impact</b>	<b>Change in step /traffic flows (AADT) from baseline conditions</b>
<b>High</b>	Two step changes in level
<b>Medium</b>	One step change in level, but with: <ul style="list-style-type: none"> <li>• &gt;400 veh increase in average 18-hr All Vehicle (AV) two-way all vehicles flow; and /or</li> <li>• &gt;500 Heavy Vehicle (HV) increase in total 18hr HV flow.</li> </ul>
<b>Low</b>	One step change in level, but with: <ul style="list-style-type: none"> <li>• &lt;400 veh increase in average 18-hr All AV two-way all vehicles flow; and /or</li> <li>• &lt;500 HV increase in total 18hr HV flow.</li> </ul>
<b>Negligible</b>	No change in step changes.

<b>No Change</b>	No change in traffic flows
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13.9.29. Together the sensitivity of the receptor and magnitude of the impact will be used to determine the significance of effect, as described at **Table 13-9**.

#### **Driver Delay**

13.9.30. The use of industry standard junction capacity modelling programmes (Junctions 10 and LINSIG) provides a methodology to quantify junction delay. Driver delay is only likely to be significant where the existing Study Area highway network is at or close to capacity. In accordance with EATM (Ref. 13.14) this approach is considered to be appropriate to assess driver delay.

13.9.31. The magnitude of impact will be derived using professional judgment, informed by the increase in vehicle delay and whether a junction is at, or close to capacity. At this stage, the impact on driver delay has not been assessed. Impacts to local network performance will be assessed in the TS and impacts to driver delay presented in the ES.

#### **Road Safety**

13.9.32. Road safety is assessed by the frequency and severity of injury accidents that are attended by the police and recorded in official accident statistics. Intensification of use or changes in the composition of traffic has the potential to have an effect on collision rates. The examination of recent collision statistics on routes within the Study Area will highlight any hotspots that need further examination.

13.9.33. PIC records for the local highway network will be examined for the five-year period prior to the onset of the Covid-19 pandemic to allow for a full highway safety analysis to be undertaken which is unaffected by the Covid-19 pandemic, along with obtaining all PIC records since then to ensure a comprehensive analysis has been undertaken. In accordance with EATM (Ref. 13.14), this approach is considered to be appropriate to assess road safety.

13.9.34. The magnitude of impact will be derived using professional judgment, informed by the frequency and severity of recorded collisions within the Study Area and the forecast increase in traffic.

#### **Road Safety Audits**

13.9.35. Thought not currently proposed, if any engineering changes are required within the adopted highway network, the road safety attributes would be reviewed in accordance with the standard and prescribed Road Safety Audits (GG 119 – Road Safety Audit DMRB).

#### **Hazardous Loads/Large Loads**

13.9.36. The assessment of dangerous or hazardous loads will be based upon the nature of dangerous or hazardous loads being transported and the number of movements anticipated to illustrate the potential and likely effect of a catastrophic event. Depending on the nature and number of movements this assessment could be included within the assessment of 'Fear and Intimidation' or a separate assessment.

#### **SIGNIFICANCE OF EFFECT**

13.9.37. The traffic generated by the Proposed Scheme will be used to assess the likely impacts on the key links and junctions on the surrounding network. The significance of the traffic and transport related environmental effects is a function of the magnitude of change associated with the Proposed

Scheme and the sensitivity of the affected receptor. The significance of effect will be reported using the classifications and matrix for significance basis set out in **Table 13-9**.

13.9.38. **Table 13-9** combines sensitivity with the magnitude of impact (degree of change), classifying the effects as negligible, minor, moderate or major (adverse or beneficial) which is based on Table 3.8.1 from LA 104 (Ref. 13.18).

**Table 13-9 – Significance of Effect Criteria (Severance and Pedestrian Delay, Non-Motorised User Amenity, Driver Delay)**

		Magnitude of Impact (degree of change)				
		No Change	Negligible	Minor	Moderate	Major
Environmental Value (Sensitivity)	Very High	Neutral	Slight	Moderate	Large	Very Large
	High	Neutral	Slight	Moderate	Moderate	Large
	Medium	Neutral	Neutral	Slight	Moderate	Moderate
	Low	Neutral	Neutral	Slight	Slight	Moderate
	Negligible	Neutral	Neutral	Neutral	Neutral	Slight

**Table 13-10 – Significance of Effect Criteria (Fear and Intimidation)**

		Magnitude of Impact (degree of change)				
		No Change	Negligible	Low	Medium	High
Environmental Value (Sensitivity)	Very High	Neutral	Slight	Moderate	Large	Very Large
	High	Neutral	Slight	Moderate	Moderate	Large
	Medium	Neutral	Neutral	Slight	Moderate	Moderate
	Low	Neutral	Neutral	Slight	Slight	Moderate
	Negligible	Neutral	Neutral	Neutral	Neutral	Slight

13.9.39. The assessment of the significance of environmental effects shall also cover the following factors:

- The receptors/resources (natural and human) which would be affected and the pathways for such effects;
- The geographic importance, sensitivity or value of receptors/resources;
- The duration (long or short term); permanence (permanent or temporary) and changes in significance (increase or decrease);
- Reversibility - e.g. is the change reversible or irreversible, permanent or temporary;
- Environmental and health standards (e.g. local air quality standards) being threatened; and

- Feasibility and mechanisms for delivering mitigating measures, e.g. Is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment?

13.9.40. 'Significant effects' comprise residual effects that are within the moderate, large or very large categories for the purposes of this EIA; neutral or slight effects are 'not significant'.

## 13.10 ASSUMPTIONS AND LIMITATIONS

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

- The construction phasing and associated construction worker profile will be developed with the Applicant and the relevant contractors. This will feed into discussions regarding assessment scenarios and will be shared with the highway authorities.; and
- The assessment presented in the PEIR and ES will include the latest design information available at the time of the submission. Where design information is not available, reasonable worst case assumptions will be made.

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## 14 MAJOR ACCIDENTS AND DISASTERS

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### 14.1 INTRODUCTION

- 14.1.1. This chapter considers the vulnerability of the Proposed Scheme to major accidents and disasters (MA&D) during its construction, operation and maintenance, and decommissioning, caused by natural hazards or manmade hazards (including operational failure), and any potential significant effects. It also considers impacts to receptors arising from MA&D affecting the Proposed Scheme (which is described in **Chapter 2: Site and Proposed Scheme Description** of this EIA Scoping Report).
- 14.1.2. This chapter also sets out the proposed methodology for the MA&D assessment and identifies those MA&D categories and types that can be scoped out of the assessment. Where necessary, further assessment will be presented in the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES). For the ES, the vulnerability of the Proposed Scheme to an MA&D event during decommissioning is anticipated to be no worse than that for the construction phase following the implementation of risk management plans for decommissioning. Construction and decommissioning are therefore considered together.
- 14.1.3. Based on professional judgement, MA&D are events or situations that have the potential to affect the Proposed Scheme and to go on to cause immediate or delayed serious damage to one or more of the following: human health; welfare; cultural heritage; and the environment.
- 14.1.4. Due to the nature of the Proposed Scheme, it will fall under a number of regulatory regimes requiring licenses and consents the compliance with which will be externally monitored. This being the case, potential health, safety and environmental risks associated with the Proposed Scheme will be proactively managed via these regulatory regimes.
- 14.1.5. The list of MA&D categories and types to which the Proposed Scheme may be vulnerable during construction and operation and maintenance phases are listed in **Table 14-1**.

**Table 14-1 – MA&D Categories and Types**

<b>Category</b>	<b>Type</b>
<b>Natural</b>	Geophysical
	Hydrological
	Climatological and Meteorological
	Biological
<b>Technological or Manmade Hazards</b>	Societal
	Industrial and Urban Accidents
	Transport Accidents
	Pollution Accidents
	Utility Failures
	Malicious Attacks
	Engineering Accidents and Failures

- 14.1.6. This chapter should be read in conjunction with the environmental aspect chapters (**Chapter 5: Air Quality to Chapter 18: Geology and Soils**) to provide a broader environmental context of the risks associated with these MA&D events/situations. These chapters also include examples of the measures that may be used to prevent or mitigate significant effects and details of the preparedness for, and proposed response to emergencies. Measures will be identified further in the PEIR and ES.
- 14.1.7. The definitions of key terms used in this chapter are given in **Table 14-2**. These definitions have been developed by reference to the definitions used in EU and UK legislation and guidance relevant to MA&D (as set out below in **Section 14.2**), as well as professional judgement in the context of the Proposed Scheme.

**Table 14-2 – MA&D Key Terms and Definitions**

<b>Term</b>	<b>Definition</b>
<b>(Major) Accident</b>	In the context of the Proposed Scheme, an event that threatens immediate or delayed serious damage to human health, welfare and/or the environment and requires the use of resources beyond those of the Applicant or their contractor(s) to respond. Serious damage includes the loss of life or permanent injury, and/or permanent or long-lasting damage to a receptor that cannot be restored through minor clean-up and restoration efforts. The significance of this effect will consider the extent, severity and duration of harm and the sensitivity of the receptor.
<b>ALARP</b>	"ALARP" stands for "as low as reasonably practicable". Reasonably practicable involves weighing a risk against the trouble, time and money needed to control it. Thus, ALARP describes the level to which the Health & Safety Executive (HSE) expect to see workplace risks controlled.
<b>Adaptive Capacity</b>	The capacity of receptors to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.
<b>Consultation Zone</b>	The Office for Nuclear Regulation (ONR) and the HSE set consultation distances around nuclear installations, major hazard sites and major accident hazard pipelines after assessing the risks and likely effects of major accidents at the nuclear installation/major hazard site/pipeline. The area enclosed within the consultation distance is referred to as the Consultation Zone (CZ). The local planning authority is notified of this consultation distance and has a statutory duty to consult the ONR/HSE on certain proposed developments within that CZ.
<b>Disaster</b>	In the context of the Proposed Scheme, a naturally occurring phenomenon such as an extreme weather event (for example storm, flood, temperature) or ground-related hazard events (for example subsidence, landslide, earthquake) with the potential to cause an event or situation that meets the definition of a (major) accident, as defined above.
<b>External Influencing Factor</b>	A factor that occurs beyond the Site that may present a risk to the Proposed Scheme, e.g. if an external major event occurred (e.g. fire or a Control of Major Accident Hazards (COMAH) site major accident) it would increase the risk of serious damage to a receptor associated with the Proposed Scheme.
<b>Hazard</b>	Anything with the potential to cause harm, including ill-health and injury, damage to property or the environment; or a combination of these.
<b>Internal Influencing Factor</b>	A factor which occurs within the Site that may present a risk to the Proposed Scheme.
<b>Magnitude of Impact</b>	The magnitude of an impact is typically defined by the following factors: <ul style="list-style-type: none"> <li>■ Extent – the area over which an effect occurs;</li> </ul>

Term	Definition
	<ul style="list-style-type: none"> <li>Duration – the time for which the effect occurs;</li> <li>Frequency – how often the effect occurs; and</li> <li>Severity – the degree of change relative to existing conditions.</li> </ul>
<b>MA&amp;D Group</b>	A MA&D which can be grouped as either a natural hazard (disaster) or technological or manmade hazard (major accident).
<b>MA&amp;D Category</b>	A set of values used to categorise events within a related parent MA&D group.
<b>MA&amp;D Type</b>	A set of values used to sub-categorise events within a MA&D category.
<b>Risk</b>	The likelihood of an impact occurring, combined with effect or consequence(s) of the impact on a receptor if it does occur.
<b>Risk Event</b>	An identified, unplanned event, which is considered relevant to the Proposed Scheme and has the potential to be a MA&D subject to assessment of its potential to result in a significant adverse effect on a receptor.
<b>Sensitivity</b>	<p>The sensitivity of a receptor is a function of its value, and capacity to accommodate change reflecting its ability to recover if it is affected. It is typically defined by the following factors:</p> <ul style="list-style-type: none"> <li>Adaptability – the degree to which a receptor can avoid, adapt to or recover from an effect.</li> <li>Tolerance – the ability of a receptor to accommodate temporary or permanent change.</li> <li>Recoverability – the temporal scale over and extent to which a receptor will recover following an effect.</li> </ul>
<b>Vulnerability</b>	In the context of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref. 14.1) (on the assessment of the effects of certain public and private projects on the environment) the term refers to the ‘exposure and resilience’ of the Proposed Scheme to the risk of a MA&D. Vulnerability is influenced by sensitivity, adaptive capacity and magnitude of impact.

## 14.2 LEGISLATION, POLICY AND GUIDANCE

14.2.1. This section outlines the relevant legislation, policy and guidance for the assessment of the vulnerability of the Proposed Scheme to MA&D.

### LEGISLATION

14.2.2. Legislation applicable to the assessment of MA&D includes:

- The Infrastructure Planning (Environmental Impact Assessment (EIA)) Regulations 2017 (the 'EIA Regulations') (Ref. 14.1) which cover the process of EIA in the context of nationally significant infrastructure projects.

- The Health and Safety at Work etc. Act 1974 (c. 37) (Ref. 14.2) which provides the framework for the regulation of workplace health and safety in the UK. It provides a legal framework for the provision of safe plant and equipment and prevention of harm to people from occupational hazards present in a workplace, including emergencies, which may affect those offsite or visiting the Proposed Scheme.
- The Construction (Design and Management) (CDM) Regulations 2015 (Ref. 14.3) place legal duties on almost all parties involved in construction work, with specific duties on clients, designers and contractors, so that health and safety is considered throughout the life of a construction project from inception to demolition and removal. The client, designer(s) and contractor(s) must avoid foreseeable risks, so far as is reasonably practicable, by eliminating hazards associated with the design, construction and operation and maintenance of the Proposed Scheme. The CDM Regulations ensure that mechanisms are in place to continually identify, evaluate and manage safety risks throughout the design, construction, and operation and maintenance phases of the Proposed Scheme. Many of the risks identified and managed at the detailed design phase also serve to eliminate or reduce the risk of a major accident (and therefore environmental consequence) occurring during the construction and operation and maintenance phases.
- The Control of Major Accident Hazards (COMAH) Regulations 2015 (Ref. 14.4) aim to prevent major accidents involving dangerous substances and limit the consequences to people and the environment of any accidents which do occur. There are at least 20 COMAH sites within a 5km radius of the Proposed Scheme which present a potential source of MA&D hazards.
- The Planning (Hazardous Substances) Regulations 2015 (Ref. 14.5) transpose the land use planning requirements of the European Seveso III Directive and relate to the way hazardous substances consents operate, and the way in which the planning system reduces the likelihood and impact of major accidents. Hazardous substance consents focus on ensuring the safety of the public around the consented site from potential major accident hazards. Many of the risks identified and managed at the detailed design phase also serve to eliminate or reduce the risk of a major accident (and therefore environmental consequence) occurring during the construction, operation and maintenance, and decommissioning phases.
- The Supply of Machinery (Safety) Regulations 2008 (Ref. 14.6) aim to remove technical barriers to trade, in particular products, by harmonising national health and safety provisions applicable to such products when they are first placed on the market or put into service in the European Economic Area. Many of the risks identified and managed in the design of machinery used in and associated with the Proposed Scheme will serve to eliminate or reduce the risk of a major accident (and therefore environmental consequence) occurring during the construction and operation and maintenance phases of the Proposed Scheme.
- The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) (Ref. 14.7) implement the Chemical Agents Directive 98/24/EC and the Explosive Atmospheres Directive 99/92/EC. DSEAR sets minimum requirements for the protection of staff from fire and explosion risks arising from dangerous substances and potentially explosive atmospheres.
  - Under the regulations, the Proposed Scheme will require that mechanisms are in place to identify, evaluate and manage the risk of a major accident due to loss of containment to ALARP.

- Many of the risks identified and managed will serve to eliminate or reduce the risk of a major accident (and therefore environmental consequence) occurring during the construction and operation and maintenance phases of the Proposed Scheme.
- The Equipment and Protective Systems for Use in Potentially Explosive Atmospheres Regulations 1996 and 2016 (Ref. 14.8) implement measures for safety and consumer protection with respect to electrical equipment and any provisions concerning the composition, labelling, marketing, classification or description of electrical equipment intended to be used in potentially explosive atmospheres. The use of the correct level of intrinsically safe equipment and protective systems will likely minimise the likelihood of a large-scale release of liquified natural gas (LNG) or natural gas from the Proposed Scheme and therefore reduce the risk of a major accident.
- The Occupier's Liability Act 1984 (c.3) (Ref. 14.9) amends the law of England and Wales as to the liability of persons as occupiers of premises for injury suffered by persons other than their visitors. The Occupier's Liability Act provides a legal framework for the prevention of harm to people from occupational safety and health hazards present on premises under the control of the occupier, including to those visiting the premises. The Proposed Scheme will include premises controlled by the Applicant that will attract visitors who could be impacted by MA&D whilst on/crossing those controlled premises.
- The Pipelines Safety Regulations 1996 (Ref. 14.10) aim to ensure that pipelines are designed, constructed and operated properly to ensure their integrity and reduce risks. These regulations are applicable as the Proposed Scheme includes the construction of a pipeline. In addition, there are a number of major accident hazard pipelines within 1km of the Proposed Scheme.

## POLICY

14.2.3. The National Planning Policy Framework (NPPF) (Ref. 14.11) sets out the Government's planning policies for England and how these should be applied, with the following paragraphs relating to MA&D:

- Paragraph 45 states "*Local planning authorities should consult the appropriate bodies when considering applications for the siting of, or changes to, major hazard sites, installations or pipelines, or for development around them*".
- Paragraph 97 states: "*Planning policies and decisions should promote public safety and take into account wider security and defence requirements by:*
  - a) *anticipating and addressing possible malicious threats and natural hazards, especially in locations where large numbers of people are expected to congregate. ... This includes appropriate and proportionate steps that can be taken to reduce vulnerability, increase resilience and ensure public safety and security; and*
  - b) *recognising and supporting development required for operational defence and security purposes and ensuring that operational sites are not affected adversely by the impact of other development proposed in the area*".

14.2.4. National Policy Statements (NPSs) set out the primary policy against which an application for the development consent of the Proposed Scheme will be considered. The Overarching National Policy Statement for Energy (EN-1) (Ref. 14.12) and NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref. 14.13) are relevant to the Proposed Scheme. EN-1 sets out the Government's policy for delivery of major energy infrastructure and will be the primary basis for decision making. EN-1 includes reference to the need for mitigation measures to "*prevent, control and mitigation major accidents*". EN-4 includes reference to the COMAH Regulations (Ref. 14.4) and

states that “Gas storage and supply infrastructure sites are subject to stringent safety standards”. It also makes reference to The Pipelines Safety Regulations (Ref. 14.10) and identifies the HSE as the enforcing authority. EN-4 states that the Infrastructure Planning Commission “*should seek advice from HSE about safety issues when considering an application*”.

- 14.2.5. The Stockton-on-Tees Borough Council - Local Plan (Adopted 30 January 2019) (Ref. 14.14) sets out the Council’s policies and proposals to guide planning decisions and establishes the framework for the sustainable economic growth and development of the Borough up to 2032. Policy EG4 specifically considers development proposals for hazardous installations, uses related to the process industries, or emerging specialist sectors. It states that: “*Proposals which require hazardous substance consent will be designed and located to prevent an unacceptable increase in the level of risk to human health and the environment from an industrial accident or prejudice adjacent operational facilities or allocated sites.*”

## **GUIDANCE**

- 14.2.6. The MA&D assessment will be undertaken accordance with the following good practice guidance documents:
- IEMA: Major Accidents and Disasters in EIA: A Primer 2020 (Ref. 14.15);
  - ‘Green Leaves III’ Guidelines for Environmental Risk Assessment and Management 2011 (Ref. 14.16);
  - Guideline – Environmental Risk Tolerability for COMAH Establishments 2013 (Ref. 14.17); and
  - ISO 31000:2018 Risk Management – Guidelines 2018 (Ref. 14.18).

## **14.3 CONSULTATION**

- 14.3.1. Consultation has not been undertaken to inform this chapter for MA&D. However, it is anticipated that ongoing engagement will be undertaken with the HSE to understand the major accident hazard (MAH) site and pipeline CZ’s which overlap the Proposed Scheme boundary.
- 14.3.2. The Applicant has liaised with the HSE regarding the industrial permits and consents required, including COMAH, and these will continue, as well as engagement with the Environment Agency as part of the pre-application process.

## **14.4 STUDY AREA**

- 14.4.1. Based on professional judgement, the following factors, and associated distances from the Site, were adopted for setting the Study Area to capture internal and external influencing factors that may have high adverse consequences on the Proposed Scheme:
- Manmade features:
  - Airports and airfields within 13km (the general safeguarding zone<sup>41</sup>);
    - Control of Major Accident Hazard facilities within 5km;
    - Major accident hazard pipelines within 1km;
    - Nuclear installations within 3km (distance to The Land Use Planning Outer Consultation Zone<sup>42</sup>);

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<sup>41</sup> Defined by the Civil Aviation Authority

<sup>42</sup> Defined by the Office for Nuclear Regulation

- Fuel retail sites (including Liquefied Natural Gas, Liquefied Petroleum Gas) within 1km;
- Rail infrastructure within 500m; and
- Transmission (gas, electrical, oil/fuels) crossing the Site.
- Natural features with the potential to create risks within:
  - 3km (chiefly hydrological and geological, for example dam failure and seismic activity respectively); and
  - 1km (chiefly hydrological and geological, for example flood risk and unstable ground conditions respectively).

14.4.2. The Study Area has been based primarily on information held by the Applicant and information gathered to inform this chapter from the data sources discussed below.

## 14.5 BASELINE CONDITIONS AND FUTURE BASELINE

### DATA SOURCES

14.5.1. The baseline conditions for MA&D described in this section has been informed by the following data sources:

- National Risk Register (Ref. 14.19);
- British Geological Survey (BGS) GeolIndex Onshore (Ref. 14.20);
- Tsunamis Hazard Map (Ref. 14.21);
- The International Disaster Database (Ref. 14.22);
- Health and Safety Executive's (HSE) Planning Advice Web App (Ref. 14.23);
- HSE's COMAH 2015 Public Information Search (Ref. 14.24);
- Ordnance Survey mapping;
- Google aerial and street view maps (Ref. 14.25); and
- Environmental aspect chapters (**Chapter 5: Air Quality** to **Chapter 18: Geology and Soils**).

14.5.2. A summary of the baseline conditions is presented below.

### EXISTING BASELINE

14.5.3. The baseline relevant to MA&D comprises:

- Features external to the Proposed Scheme that contribute a potential source of hazard to the Proposed Scheme;
- Sensitive environmental receptors at risk of significant effect; and
- Current (without the Proposed Scheme) MA&D risks for the existing locality.

14.5.4. Baseline conditions for MA&D are presented in **Table 14-3**.

### FUTURE BASELINE

14.5.5. In the future baseline and in the absence of the Proposed Scheme, it is considered that the current industrial land use within the Study Area would remain the same.

## 14.6 SENSITIVE RECEPTORS

14.6.1. Schedule 4 of the EIA Regulations (Ref. 14.1) sets out the information that should be included in an ES where that information is relevant to the specific characteristics of the development. As such, this chapter has considered the following receptors:



- Members of the public and local communities;
- Infrastructure and the built environment;
- The natural environment, including ecosystems, land and soil quality, air quality, surface and groundwater resources and landscape;
- The historic environment, including archaeology and built heritage; and
- The interaction between the factors above.

## 14.7 DESIGN, MITIGATION AND ENHANCEMENT MEASURES

14.7.1. Relevant design, mitigation and enhancement measures will be identified in the PEIR and ES, and these may include:

- Compliance with applicable regulatory regimes such as COMAH (during the construction, operation and maintenance, and decommissioning phases);
- Good engineering practice (during the construction, operation and maintenance, and decommissioning phases);
- Environmental, health & safety management systems (during the construction, operation and maintenance, and decommissioning phases);
- Supplier management environmental, health and safety standards (e.g. Construction Skills Certification Scheme) (during the construction, operation and maintenance, and decommissioning phases);
- Risk management systems (during the construction, operation and maintenance, and decommissioning phases); and
- A Code of Construction Practice (CoCP) (during the construction phase).

14.7.2. This assessment assumes that embedded mitigation measures identified in each of the technical aspect chapters (**Chapter 5: Air Quality** to **Chapter 18: Geology and Soils**) will be implemented for the Proposed Scheme, in order to assess the magnitude of impact.

## 14.8 DESCRIPTION OF POTENTIAL VULNERABILITY TO MAJOR ACCIDENT AND DISASTER RISKS

14.8.1. There is no published guidance for the application of the legal requirements to the assessment of MA&D. However, selected relevant guidance for risk assessment methodologies is summarised in **Section 14.2**.

14.8.2. In addition to the information sources used to collate baseline information (detailed in **Section 14.5**), the following have been consulted to support the identification of potential MA&D:

- The Cabinet Office National Risk Register (2023 Edition) (Ref. 14.19). This document is the unclassified version of the National Risk Register and it identifies the main types of civil emergencies that could affect the UK in the next five years. It is recognised, however, that this document does not provide an all-encompassing list of all potential accidents and disasters and its timescales are short term.
- The International Federation of Red Cross & Red Crescent Societies Early Warning, Early Action (Ref. 14.26). This guidance looks to other countries including those in warmer climates, thereby identifying risks that the UK may encounter in the future in light of climate change and global warming.
- The International Disaster Database (Ref. 14.22) contains data covering over 22,000 mass disasters in the world since 1900 to the present day and aims to "rationalise decision making for



disaster preparedness, as well as provide an objective base for vulnerability assessment and priority setting".

## SCOPING PROCESS FOR MAJOR ACCIDENT AND DISASTER RISKS

### Likelihood and Consequence Events

- 14.8.3. Low likelihood and low consequence events are scoped out as these are unlikely to result in significant adverse effects; because they do not fall into the definition of a MA&D (see **Table 14-2**).
- 14.8.4. High likelihood and low consequence events are also scoped out, as they will not lead to significant adverse effects.
- 14.8.5. High likelihood and high consequence events are also scoped out, as it is assumed that existing legislation and regulatory controls would not permit the Proposed Scheme to be progressed under these circumstances.
- 14.8.6. The remaining events, low likelihood and high consequence events, are the subject of the MA&D assessment. Using professional judgement, the assessment identifies relevant events and determines whether a significant environmental effect is possible.

### Occupational Health and Safety

- 14.8.7. In accordance with emerging EIA practice, occupational health and safety (H&S) is scoped out of this topic. Other health issues are covered in relevant environmental aspect sections of **Chapter 5: Air Quality**, **Chapter 6: Noise and Vibration** and **Chapter 8: Water Environment and Flood Risk**. As 'in combination' impacts, human health is also considered within **Chapter 19: Cumulative Effects**, not least as it is covered by detailed H&S legislation: The Management of Health and Safety at Work Regulations 1999 (Ref. 14.27), The Workplace (Health, Safety and Welfare) Regulations 1992 (Ref. 14.28) and The Dangerous Substances and Explosive Atmospheres Regulations 2002 (Ref. 14.7).

## IMPACTS SCOPED IN OR OUT OF FURTHER ASSESSMENT

- 14.8.8. A long list of all possible MA&D groups, categories and types has been prepared in **Table 14-3** below. This is reviewed to rule out any potential MA&D that are considered highly unlikely to occur due to the location of the Proposed Scheme, based on baseline information and information provided for the technical topics relevant to MA&D.
- 14.8.9. Those MA&D types that cannot be screened out from the three-component process will require further detailed assessment in the ES.
- 14.8.10. The review of the MA&D groups, categories and types identified in the Study Area, has been undertaken to inform the scoping process, summarised in **Table 14-3**. This table shows the potential vulnerability of the Proposed Scheme to the risk of a MA&D at the type level. A determination on whether the MA&D type is to be scoped in or out of the MA&D assessment is provided, in accordance with either phase of the Proposed Scheme. The phases are indicated in the table as "C" for construction and, "O" for operation and maintenance. The ES will provide greater assessment and justification for the topic areas scoped in and for those that are scoped out no further assessment is considered necessary in the EIA.

**Table 14-3 – Elements Scoped In or Out of Further Assessment**

<b>MA&amp;D Group</b>	<b>MA&amp;D Category</b>	<b>MA&amp;D Type</b>	<b>Basis of Decision to Scope In / Out</b>	<b>Scope In?</b>
Natural Hazards	Geophysical	Earthquakes	<p>Earthquakes do not occur in Britain of a sufficient intensity owing to the motion of the Earth’s tectonic plates causing regional compression. In addition, uplift from the melting of the ice sheets that covered many parts of Britain thousands of years ago can also cause movement.</p> <p>The BGS acknowledges that on average, a magnitude 4 earthquake happens in Britain roughly every two years and a magnitude 5 earthquake occurs around every 10 to 20 years.</p> <p>As such the Cabinet Office National Risk Register states that “<i>Earthquakes in the UK are moderately frequent but rarely result in large amounts of damage. An earthquake of sufficient intensity (determined on the basis of the earthquake’s local effect on people and the environment) to inflict severe damage is unlikely</i>”.</p> <p>The Proposed Scheme is not located in, or close to an active area. Therefore, further consideration of this risk is not required as part of ES.</p>	No
Natural Hazards	Geophysical	Volcanic Activity	<p>The Proposed Scheme is not located in, or close to, an active area. It is highly unlikely that an ash cloud could significantly impact on any aspect of the Proposed Scheme. Therefore, further consideration of this risk is not required as part of the ES.</p>	No
Natural Hazards	Geophysical	Landslides	<p>The Proposed Scheme is surrounded by flat topography. There are no records of historical landslides in the area. No steep slopes or embankments are expected to be constructed as part of the Proposed Scheme. Therefore, further consideration of this risk is not required as part of the ES.</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
Natural Hazards	Geophysical	Sinkholes	There are no examples of sinkholes in the locality. The geotechnical design of the Proposed Scheme will take into consideration the underlying geology and any potential ground stability issues. Therefore, further consideration of this risk is not required as part of the ES.	No
Natural Hazards	Geophysical	Tsunamis	The Proposed Scheme is located in Teesside, inland, outside a tsunamis risk zone within (for the new Marine Jetty) and adjacent to the River Tees. Tsunami risk in England is considered to be low, although potential meteotsunamis (caused by weather conditions rather than seismic activity) have been recorded on several occasions in the UK. Meteotsunamis commonly strike the coasts of the UK, damaging harbours, boats and very rarely, causing fatalities. There are no records of historical meteotsunamis affecting the River Tees. Therefore, this risk event type has been scoped out.	No
Natural Hazards	Hydrological	Coastal Flooding	The Proposed Scheme is located sufficiently inland from the North Sea, and therefore is not subject to coastal flooding.	No
Natural Hazards	Hydrological	Fluvial Flooding	<p>Most of the Site is located in the low-risk Flood Zone 1, as illustrated on <b>Figure 8.1</b> within Volume III. However, the proposed northern Export Pipeline route option may encroach within the mapped extent of Flood Zones 2 and 3 associated with the River Tees (including Seaton on Tees Channel). The proposed Marine Jetty is located in the River Tees that is identified as Flood Zone 3. Flood risk in the Study Area is deemed to be tidally dominated given the Site's proximity to the River Tees and the North Sea.</p> <p>Therefore, there is the potential for fluvial flooding to cause damage to infrastructure, hastening the deterioration of materials. High levels of precipitation (i.e. in winter) not only can result in the flooding of the Site but may also damage infrastructure (through increased scour).</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<p>The CDM Risk Register will consider the potential impact of fluvial flooding during the construction phase and identify any appropriate mitigation measures to address the risk. Therefore flooding associated with the construction phase can be scoped out.</p> <p><b>Chapter 8: Water Environment and Flood Risk</b> identifies that a specific flood risk assessment will be undertaken for the ES and a surface water drainage strategy (including SuDS) during the detailed design of the Proposed Scheme. Therefore, it is considered that fluvial flooding associated with the operational phase can be scoped out from further assessment from a MA&amp;D perspective in the ES.</p>	
Natural Hazards	Hydrological	Pluvial Flooding	<p>A review of the Environment Agency’s Flood Risk from Surface Water mapping shows small, isolated areas within the Site which are indicated to be at low to high susceptibility to flooding from surface water, as illustrated on <b>Figure 8.2</b> within Volume III. These areas are likely to be associated with the locally low ground where water would pond after intense or prolonged rainfall events.</p> <p>Regarding future projections, UKCP18 suggests that climate change is projected to lead to wetter winters and drier summers, with more extreme rainfall events. The UKCP18 projections for changes in extreme precipitation in winter under High emissions scenarios estimates that by the 2030s, average precipitation in winter is expected to increase by approximately 6.9%, by 2050s by 11.6% and by 2080s by 20.9%.</p> <p>In the event of pluvial flooding during the construction phase, construction work would be paused in accordance with the requirements that would be set out within the CoCP.</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<p>The increase in impermeable surfaces because of the Proposed Scheme along with the likely increase in rainfall as a result of climate change over the lifetime of the Proposed Scheme would increase flood risk if not mitigated, in addition to, a potential pollution threat to nearby water courses.</p> <p><b>Chapter 8: Water Environment and Flood Risk</b> identifies that a specific flood risk assessment will be undertaken for the ES and a surface water drainage strategy (including SuDS features) will be developed during the detailed design of the Proposed Scheme. Therefore, it is considered that pluvial flooding associated with the operational phase can be scoped out from further assessment from a MA&amp;D perspective in the ES.</p>	
Natural Hazards	Hydrological	Groundwater Flooding	<p><b>Chapter 8: Water Environment and Flood Risk</b> identifies that data regarding groundwater flood risk was not available for the preparation of this EIA Scoping Report. However, the data will be obtained and used to inform the assessment of flood risk in the PEIR and ES. As part of this assessment, appropriate mitigation measures will be identified, if required. Therefore, it is considered that groundwater flooding associated with both the construction and the operational phases can be scoped out from further assessment from a MA&amp;D perspective in the ES.</p>	No
Natural Hazards	Hydrological	Avalanches	<p>The Proposed Scheme's topography is relatively flat and therefore an avalanche will not occur. Therefore, further consideration of this risk is not required as part of the ES.</p>	No
Natural Hazards	Climatological and Meteorological	Cyclones, hurricanes, typhoons, storms and gales	<p>Cyclones, hurricanes and typhoons do not occur in the UK.</p> <p>The local area is one of the more sheltered parts of the UK. In February 2022, Storm Eunice led to wind speeds reaching over 50mph in the area of the Proposed Scheme, causing road closures, flooding, and over 100</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<p>Teesside homes were without power. In February 2023 Storm Otto led to wind speeds reaching over 65mph in the area of the Proposed Scheme, resulting in disruption to transportation and damage to some buildings. In December 2023, Storms Elin and Fergus made landfall in rapid succession, bringing strong winds and heavy rain to the north east of England. These storms occurred during a four-month period (October 2023 - January 2024) where much of eastern and north east England and eastern Scotland received more than 150% of the 1991-2020 long term average rainfall, more than twice the normal rainfall amount.</p> <p>Storms and gales could result in damage to new site infrastructure, property and works on-site. However, it is anticipated that the risk of vulnerability to a MA&amp;D event for the Proposed Scheme would be comparable to that for other industrial sites in the vicinity and design standards would take into account these weather conditions. Specific measures are therefore not considered to be required as part of the Proposed Scheme.</p>	
Natural Hazards	Climatological and Meteorological	Thunderstorms	<p>This type of event could result in lightning strikes to temporary elevated structures during construction (e.g. tower cranes) and new elevated structures introduced as part of the Proposed Scheme; however, the risk is no different to similar elevated structures in the vicinity. New elevated structures will be designed taking into account historical experience at this location and current design standards which consider climate change resilience.</p> <p>Specific measures are therefore not considered to be required as part of the Proposed Scheme.</p>	No
Natural Hazards	Climatological and Meteorological	Wave surges	<p>In December 2013, there was a storm surge in the North Sea that caused flooding along the east coast of England, with some industrial sites flooded on Teesside.</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<p>The Proposed Scheme is located sufficiently inland from the North Sea, and is unlikely to be subject to wave surges.</p> <p>The CDM Risk Register will consider the potential impact of fluvial flooding (including from wave surges) during the construction phase and identify any appropriate mitigation measures to address the risk. Therefore, flooding associated with wave surges during the construction phase can be scoped out.</p> <p><b>Chapter 8: Water Environment and Flood Risk</b> identifies that a specific flood risk assessment will be undertaken for the ES. Therefore, it is considered that flooding associated with wave surges during the operational phase can be scoped out from further assessment from a MA&amp;D perspective in the ES.</p>	
Natural Hazards	Climatological and Meteorological	Extreme temperatures: Heatwaves Low (sub-zero) temperatures and heavy snow	<p>High temperature records are being broken with increasing frequency. On 3<sup>rd</sup> August 1990, a record high of 37.1°C was reached in Cheltenham. This was broken in 2003, when 38.5°C was reached in Faversham, Kent, then again in 2019, when Cambridge reached 38.7°C, and most recently on 19<sup>th</sup> July 2022, when the current record of 40.3°C was recorded in Coningsby, Lincolnshire and the Met Office declared its first ever red alert for heat and declared a national emergency. Widespread transport disruption occurred, and the increased electricity demand almost led to a blackout in London, which was averted by the emergency purchase of electricity.</p> <p>The most widespread and prolonged low temperatures and heavy snow in recent years occurred from December 2009 to January 2010. Daytime temperatures were mostly sub-zero across the UK. At night, temperatures in England regularly fell to -5°C to -10°C. Snowfall across the UK lasted for some time, allowing 20cm to 30cm of snow to build up, closing schools and making it very difficult to travel.</p>	No



MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<p>At the Site:</p> <ul style="list-style-type: none"> <li>■ Between 1981 and 2010, there were 154 occurrences in which summer mean temperatures exceeded 18.09°C on five or more consecutive days;</li> <li>■ Between 1981 and 2010, there have been 1,226 days with a maximum minimum temperature below zero degrees Celsius; and</li> <li>■ Between 1981 and 2010, there were 217 days with snow lying at 0900 however, there are no records from the Met Office of the depth of snow.</li> </ul> <p>The Proposed Scheme will be vulnerable to extreme temperatures. However, the Proposed Scheme is not expected to increase risks associated with extreme weather in the area.</p> <p>The CDM Risk Register will consider the potential risks associated with extreme temperatures during the construction phase. The design of the Proposed Scheme will take into consideration local climatic conditions and consider the potential impact of climate change. Therefore, specific measures are not considered to be required as part of the Proposed Scheme.</p>	
Natural Hazards	Climatological and Meteorological	Droughts	<p>Over the past 40 years or so England has experienced five long-duration droughts and two shorter periods of drought.</p> <p>Potable water for the area of the Proposed Scheme is supplied from the Kielder Water Resource Zone.</p> <p>There is one principal aquifer present in the study area and there are eight active groundwater abstraction licences within 1.2km of the Site, none of these are within the Site. The nearest active potable abstraction borehole is recorded 488m west for water abstracted from the sandstone for use in industrial processes. It is not anticipated that the Proposed Scheme will significantly impact abstraction points.</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<p>Prolonged periods of drought can also impact infrastructure as drying out and cracking of soils may affect structural stability, and prolonged dry periods can lead to cracking of surfaces and more rapid deterioration of materials. Decreased rainfall combined with an increase in the average temperature can also increase subsidence, affecting the stability of the foundations and structures.</p> <p>The Proposed Scheme would be vulnerable to drought as water is used in the process, however in the event of water scarcity the facility could be safely shut down. The design of the sub-structure will be resilient to ground shrinkage and should be considered in the development of the design for the Proposed Scheme. This risk should remain in the design risk register until it is designed out.</p>	
Natural Hazards	Climatological and Meteorological	Severe Space Weather: Solar Flares	<p>Solar flare events are known to interrupt radio and other electronic communications. Records from solar storms in 1921 and 1960 describe widespread radio disruption and impacts on railway signalling and switching systems.</p> <p>There will be the use of technology to control processes and plant, however this will be appropriately protected, therefore the Proposed Scheme is no more vulnerable than other similar infrastructure in the locality.</p>	No
Natural Hazards	Climatological and Meteorological	Severe Space Weather: Solar Energetic Particles	<p>Solar energetic particles cause solar radiation storms, but only in outer space.</p> <p>Therefore, further consideration of this risk is not required as part of the ES.</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
Natural Hazards	Climatological and Meteorological	Severe Space Weather: Coronal Mass Ejections	<p>Coronal mass ejections (CME) cause geomagnetic storms. The geomagnetic storm in 2003 caused the UK aviation sector to lose some Global Positioning System (GPS) functions for a day, however there was no known significant impact on road users or infrastructure.</p> <p>Therefore, further consideration of this risk is not required as part of the ES.</p>	No
Natural Hazards	Climatological and Meteorological	Fog	<p>Fog is one of the most common weather conditions in the UK, particularly throughout autumn and winter. Severe disruption to transport occurs when the visibility falls below 50m over a wide area.</p> <p>There would be a risk to construction workers travelling to the Site, but this risk would not be significantly different from the baseline. Workers' health and safety is also managed by Occupational Health and Safety legislation.</p> <p>During the construction phase, works would be paused during poor visibility conditions.</p> <p><b>Chapter 15 Shipping and Navigation</b> states that safety zones may apply around the berth to manage navigational hazards such as risk of collision by a passing vessel and risk of mooring breakout. Potential safety zones will be reviewed and considered for both the construction phase and the operation and maintenance phase of the Proposed Scheme as the assessment and navigational risk assessment progresses.</p> <p>Therefore, it is considered that this MA&amp;D event type can be scoped out and does not require further assessment in the ES.</p>	No
Natural Hazards	Climatological and Meteorological	Wildfires: Forest fire, Bush / brush, pasture	<p>In April and May 2011 numerous wildfires broke out across the UK after unusually hot and dry weather. England received only 21% of its usual rainfall for April 2011.</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<p>The Proposed Scheme is located in a heavily industrial area. There is some vegetation in the surrounding area, but it does not have a potential high fuel load (e.g. gorse) and as such it is unlikely that a wildfire would occur. Urban fires are assessed under manmade hazards below.</p>	
Natural Hazards	Climatological and Meteorological	Poor Air Quality	<p>In 2006 the UK experienced two periods of extended hot weather with associated elevated ozone and harmful airborne particles. In the spring of 2015, two particle pollution episodes caused widespread poor air quality throughout the UK, with multiple areas measuring ‘High’ on the Daily Air Quality Index and resulted in around 1,100 deaths due to exacerbation of pre-existing ill-health conditions. Summer 2015 also contained two elevated ozone episodes.</p> <p>Construction: Construction effects would be temporary for the duration of the construction phase and will be managed through the CoCP. These effects would relate to:</p> <ul style="list-style-type: none"> <li>■ Increased dust deposition from construction activities close to Teesmouth and Cleveland Coast SSSI and nearby places of work; and</li> <li>■ Increased exposure to emissions from vehicles (NO<sub>2</sub> / PM<sub>10</sub> / PM<sub>2.5</sub>) from construction plant and construction vehicle movements. However, due to the scale of the Proposed Scheme it is considered that any impacts on local air quality will be temporary and reversible.</li> </ul> <p>Operation and maintenance: Operational traffic flows associated with maintenance are anticipated to be low given the largely unmanned and remotely operated nature of the Proposed Scheme, it is not anticipated to attract any significant vehicular movements (with the exception of occasional maintenance vehicles). There is the potential for increases in pollutant concentrations during the deliveries of LNG to the Proposed Scheme via marine vessels, this risk will be further assessed in the air quality</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			assessment presented in the ES. This assessment will identify appropriate mitigation measures (if required) to prevent harm to environmental receptors. Therefore, significant residual air quality effects which could result in a MA&D event are not anticipated during construction and operation and maintenance of the Proposed Scheme.	
Natural Hazards	Biological	Disease epidemics: Viral; Bacterial; Parasitic; Fungal; and Prion.	<p>The Proposed Scheme is located in a developed country where the population is in general good health. The most recent disease epidemics in England was COVID-19, the first cases of which were identified in February 2020. Although no longer considered a global health emergency by The World Health Organisation, the vulnerability of the Proposed Scheme to a MA&amp;D event caused by COVID-19 during construction and operation and maintenance should be mitigated by the occupational health and safety processes that are implemented by both the contractor and government rules and guidelines on the control of spread of COVID-19. The construction and use of the Proposed Scheme will not give rise to any disease epidemics. The UK Health Security Agency, the executive agency of the Department of Health is responsible for protecting the nation from public health hazards, preparing for and responding to public health emergencies. One of the UK Health Security Agency's functions is to protect the public from infectious disease outbreaks and the Agency has produced a document providing operational guidance for the management of outbreaks of communicable disease, 'Communicable Disease Outbreak management: Operational Guidance'.</p> <p>Risks from Weil's Disease (or leptospirosis) is considered to be of low likelihood, but not of high consequence as a low number of people contract this disease in the UK each year. It would be unlikely for any workers to contract Weil's as appropriate PPE will be worn and any risks managed in the construction environmental management plan.</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
Natural Hazards	Biological	Animal Diseases: Avian influenza; West Nile virus; Rabies; Foot and mouth; and Swine fever.	<p>Low and highly pathogenic avian influenza has been recorded in poultry in the UK several times in the last 10 years, most recently during the period between 2021-2023, although with no human cases reported.</p> <p>There was a devastating foot and mouth outbreak in 2001. There are no known foot and mouth burial pits in the area, and it is considered unlikely that they will be present in the Proposed Scheme area due to its highly industrialised location.</p> <p>The use of the Proposed Scheme is not going to be the source of any disease epidemics.</p>	No
Natural Hazards	Biological	Plants	<p><b>Chapter 7: Biodiversity</b> has not identified any invasive non-native species on Site. However, the desk study has identified that Himalayan balsam was recorded at Greatham Beck, located approximately 7km upstream from the Site, during surveys undertaken by the Environment Agency between 2013 and 2016.</p> <p><b>Chapter 7: Biodiversity</b> states that during construction invasive species control and biosecurity measures will be implemented by the appointed contractor to avoid the spread of invasive non-native species and infested materials. These measures will be included in the CoCP.</p> <p>Intertidal and subtidal surveys conducted as part of the Net Zero Teesside Project identified one invasive species of intertidal kelp in the area of the Tees Estuary surveyed. There is the potential for vessel movements, during both the construction and operation and maintenance phase, to provide a vector for the spread of invasive non-native species. This risk will be assessed further in the Marine Biodiversity chapter of the ES.</p>	No



MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			It is therefore considered that the risk associated with the presence of invasive non-native species associated with both the construction and the operational phases can be scoped out from further assessment from a MA&D perspective in the ES.	
Technological or Manmade Hazards	Societal	Extensive public demonstrations which could lead to violence and loss of life.	The Proposed Scheme is located in a developed country that has steady, yet small population growth. England is politically stable with no direct border with countries experiencing conflicts. The Proposed Scheme should not lead to high profile public demonstrations or disorder.	No
Technological or Manmade Hazards	Societal	Widespread damage to societies and economies.	The Proposed Scheme is located in a developed country that has steady, yet small population growth. England is politically stable with no direct border with countries experiencing conflicts.	No
Technological or Manmade Hazards	Societal	The need for large-scale multi-faceted humanitarian assistance.	The Proposed Scheme is located in a developed country that has steady, yet small population growth. England is politically stable with no direct border with countries experiencing conflicts.	No
Technological or Manmade Hazards	Societal	The hindrance or prevention of humanitarian assistance by political and military constraints.	The Proposed Scheme is located in a developed country that has steady, yet small population growth. England is politically stable with no direct border with countries experiencing conflicts.	No



MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
Technological or Manmade Hazards	Societal	Significant security risks for humanitarian relief workers in some areas.	The Proposed Scheme is located in a developed country that has steady, yet small population growth. England is politically stable with no direct border with countries experiencing conflicts.	No
Technological or Manmade Hazards	Societal	Famine	The Proposed Scheme is located in a developed country that produces its own crops and imports food. It is politically stable and not subject to hyperinflation and therefore food is available, whether produced within the UK or imported. Famine is also not relevant to the use of the Proposed Scheme.	No
Technological or Manmade Hazards	Societal	Displaced population	There will be no displacement of populations as part of the Proposed Scheme.	No
Technological or Manmade Hazards	Industrial and Urban Accidents	Major Accident Hazard Chemical sites	<p>As identified in <b>Appendix 18A: Phase 1 Preliminary Environmental Risk Assessment</b> which includes a Groundsure Report and the HSE's COMAH 2015 Public Information Search, there are 20 Control of Major Accident Hazard (COMAH) sites within a 5km radius of the Proposed Scheme. These sites include:</p> <ul style="list-style-type: none"> <li>■ Univar Solutions UK Limited (upper tier);</li> <li>■ Wood Group PSN Limited (upper tier);</li> <li>■ Qualitech Environmental Services Limited (lower tier);</li> <li>■ Exwold Technology Limited (upper tier);</li> <li>■ Venator Materials UK Limited (upper tier);</li> <li>■ EDF Energy Nuclear Generation Limited (lower tier);</li> <li>■ BOC Limited (upper tier);</li> <li>■ Air Products (BR) Limited (lower tier);</li> </ul>	Yes C, O



MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<ul style="list-style-type: none"> <li>■ Chemoxy International Limited (upper tier);</li> <li>■ MP Storage and Blending Limited (lower tier);</li> <li>■ SABIC UK Petrochemicals Limited (upper tier);</li> <li>■ CF Fertilisers UK Limited (upper tier);</li> <li>■ Navigator Terminals North Tees Limited (upper tier);</li> <li>■ Calor Gas Limited (upper tier);</li> <li>■ Industrial Chemicals Limited (upper tier);</li> <li>■ Fine Organics Limited (upper tier);</li> <li>■ ConocoPhillips (U.K.) Teesside Operator Limited (upper tier);</li> <li>■ Navigator Terminals Seal Sands Limited (upper tier);</li> <li>■ Tees Valley Net Zero Limited (lower tier); and</li> <li>■ px (TGPP) Limited (upper tier).</li> </ul> <p>The potential risks to the Proposed Scheme associated with the presence of these COMAH sites will be considered further in the PEIR and ES.</p>	
Technological or Manmade Hazards	Industrial and Urban Accidents	Major Accident Hazard Pipelines	Due to the industrial nature of the area, there are numerous major accident hazard (MAH) pipelines within a 1km radius of the Proposed Scheme. Further consultation will be undertaken with the HSE as part of the ES to understand which MAH pipeline Consultation Zones overlap with the Proposed Scheme.	Yes C, O
Technological or Manmade Hazards	Industrial and Urban Accidents	Nuclear	<p>Nuclear sites are designed, built and operated so that the chance of accidental releases of radiological material in the UK is extremely low. The last historical major accident in the UK was Windscale in 1957.</p> <p>The nearest nuclear facility is Hartlepool Power Station which is approximately 2.6km north west from the Proposed Scheme.</p> <p>The development of the Proposed Scheme in the existing heavily industrialised area of Teesside is not going to significantly increase the risk</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			of a MA&D impacting Hartlepool Power Station. Therefore, further consideration of this risk is not required as part of the ES.	
Technological or Manmade Hazards	Industrial and Urban Accidents	Fuel storage	<p>In December 2005 Europe's largest peacetime fire occurred at the Buncefield Oil Storage Terminal in Hemel Hempstead, England. The surrounding area was temporarily evacuated and some local businesses experienced long-term disruption to operations.</p> <p>There are numerous fuel storage sites within the study area as identified above (under major accident hazard chemical sites), including Conoco Phillips and Navigator Terminals within Seal Sands.</p>	Yes C, O
Technological or Manmade Hazards	Industrial and Urban Accidents	Dam breaches	<p>Dam breaches in the UK are rare; the last major breach was at the Cwm Eigiau dam in 1925, which caused 17 fatalities and widespread flooding. The Environment Agency Flood Risk summary indicates that flooding from reservoirs is unlikely in this area and as such further consideration of this risk is not required as part of the ES, as set out in <b>Chapter 8: Water Environment and Flood Risk</b> of this EIA Scoping Report.</p>	No
Technological or Manmade Hazards	Industrial and Urban Accidents	Mines and storage caverns	<p>As identified in <b>Chapter 18: Geology and Soils</b> and <b>Appendix 18A Phase 1 Preliminary Environmental Risk Assessment</b>, Coal Authority records state that there are no areas of coal workings in the area of the Proposed Scheme. No active or historic mining activity has been identified in the area. The risk from coal mining related features is therefore considered to be negligible and can therefore be scoped out.</p> <p>The Site is within an area which contains brine and salt, which have subsequently been mined in the area. The Groundsure report (included within <b>Appendix 18A Phase 1 Preliminary Environmental Risk Assessment</b>) notes the following:</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<ul style="list-style-type: none"> <li>■ One Britpit located 124m west of the Site was used to mine salt.</li> <li>■ 27 various types of surface ground workings and one water body is noted on-site.</li> <li>■ Four tunnels, two of which are located on Site.</li> <li>■ Three historical mineral planning areas, the nearest of which is located 23m southwest of the Site.</li> <li>■ Four underground salt-brine mine workings, two of which are located on Site.</li> <li>■ Four mining cavities, the nearest of which is located 660m northwest of the Site.</li> <li>■ One Historical Mineral Planning Area within 250m of the Site, namely Cassel Works is located 23m southwest of the Site and the mineral is recorded as salt - brine.</li> <li>■ Four non-coal mining locations, the nearest of which is Saltholme Brinefield, located on Site.</li> </ul> <p>The risk associated with the collapse of salt caverns and associated infrastructure to construction workers can be scoped out as construction workers are outside of the scope of the MA&amp;D assessment. This risk to construction workers will be recorded in the CDM Risk Register.</p> <p>The potential impact of salt cavern collapse on members of the public requires further consideration in the ES once the geotechnical assessment has been undertaken for the detailed design stage. Therefore, further consideration in relation to MA&amp;D in the ES is not required.</p>	
Technological or Manmade Hazards	Industrial and Urban Accidents	Fires	Fires could be initiated by construction related activities which impact areas adjacent to the construction activities. During construction, standard control measures would be implemented by the appointed contractor to manage the	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<p>risk of fire. Therefore, further consideration in the ES is not considered necessary.</p> <p>Teesside International Airport is located approximately 19km south west of the Proposed Scheme, as well as numerous fuel storage sites as identified above (under fuel storage and major accident hazard chemical sites).</p> <p>The Proposed Scheme is located in a heavily industrial area.</p> <p>An emergency preparedness and response plan will be prepared for the Proposed Scheme which will consider the risks associated with fires impacting the Proposed Scheme (including those mentioned above) and the potential for the Proposed Scheme to be an ignition source for a fire. In addition, the design of the Proposed Scheme will incorporate fire suppression systems, as required.</p>	
Technological or Manmade Hazards	Transport accidents	Road	<p>Significant transport accidents occur across the UK on a daily basis, mainly on roads, and involving private and/or commercial vehicles.</p> <p>Construction: During construction there will be an increase in heavy construction plant and equipment on local road network which may increase the risk of accidents. It is not envisaged that the construction of the Proposed Scheme would generate or attract any hazardous loads.</p> <p>Operation: The Proposed Scheme will be largely unmanned and remotely operated and therefore it is not anticipated to attract any significant vehicular movements (with the exception of occasional maintenance vehicles).</p> <p><b>Chapter 13: Traffic and Transport</b> concludes that the operational phase is unlikely to give rise to any significant environmental traffic and transport effects due to the very low traffic movements anticipated during the operation of the Proposed Scheme.</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			On this basis, it is proposed that further assessment from a MA&D perspective in the ES is not required.	
Technological or Manmade Hazards	Transport accidents	Rail	The Navigator North Tees Rail Terminal is located approximately 3.6km southwest of the Proposed Scheme and is operated by Navigator.  There is no rail terminal within the Site, and so it is not anticipated that this mode be utilised for construction logistics.	No
Technological or Manmade Hazards	Transport accidents	Waterways	The Proposed Scheme is located immediately adjacent to the River Tees, which carries significant water traffic and will also be used to transport LNG to the Proposed Scheme. It is also proposed to use the River Tees to transport the Onshore Storage Tanks to the Site during the construction phase. Therefore, it is proposed to scope in this MA&D event type for further consideration in the ES.	Yes C, O
Technological or Manmade Hazards	Transport accidents	Aviation	There have been no major air accidents in the UK since the Kegworth incident in 1989.  The closest airports/airfields are Teesside International Airport which is located approximately 19km south west of the Proposed Scheme and Fishburn Airfield which is located approximately 20.5km northwest.	No
Technological or Manmade Hazards	Pollution accidents	Air	Stockton-on-Tees Brough Council and Redcar and Cleveland Borough Council do not have Air Quality Management Areas (AQMAs) within their administrative areas. Both local authorities measure annual mean concentrations of NO <sub>2</sub> within their jurisdiction however, there is no monitoring undertaken within approximately 4km of the Site.	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<p><b>Chapter 5: Air Quality</b> identifies that background pollutant concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are well below the relevant air quality objectives and all pollutants are showing improvements in concentrations over recent years.</p> <p>Construction: Construction impacts would be temporary for the duration of the construction phase and will be managed through the CoCP and the CTMP. Increased dust emissions from construction activities and traffic could lead to potential loss of amenity at sensitive receptors. Traffic management measures may result in both positive and adverse changes to emissions from vehicle exhausts and roadside pollution concentrations. Emissions from mobile plant and equipment are covered under health and safety and environmental legislation.</p> <p>Operation: During operation the only source of emissions is likely to be associated with the deliveries of LNG to the Proposed Scheme via marine vessels. This risk will be further assessed in the air quality assessment presented in the ES. This assessment will identify appropriate mitigation measures (if required) to prevent harm to environmental receptors.</p> <p>It is anticipated that there are limited opportunities for pollution accidents to air during either construction or operation due to the nature of the Proposed Scheme. Therefore, it is considered that further assessment in the ES from a MA&amp;D perspective is not required.</p>	
Technological or Manmade Hazards	Pollution accidents	Land	<p>During construction there may be an increase in the risk of leaks and spillages of hazardous materials associated with construction activities. During construction, standard control measures would be implemented by the appointed contractor and identified in the Outline CoCP to manage the risk of spillages and leaks. It is therefore proposed not to evaluate this further in the ES for the construction phase.</p>	No



MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<p>During operation there may be a fuel storage tank, protected in accordance with the relevant safety and process requirements, to provide fuel for the emergency generators (if required). As this tank will be provided with appropriate secondary containment measures and inspected in accordance with a preventative maintenance programme, it is not considered necessary to evaluate this further in the ES for the operational phase.</p>	
Technological or Manmade Hazards	Pollution accidents	Water	<p><b>Chapter 8: Water Environment and Flood Risk</b> does not identify any surface water features within the Site boundary (with the exception of the River Tees located in the east of the Site). It goes on to identify a complex network of ordinary watercourses, ditches and ponds located to the west of the Site within the Teesmouth and Cleveland Coast Site of Special Scientific Interest and Ramsar site.</p> <p>In addition, several aquifers are present in the study area, including a Secondary Undifferentiated Aquifer (superficial Tidal Flats deposits), a Secondary B Aquifer (Mercia mudstone bedrock deposits) and a Principal Aquifer (Sherwood sandstone group). It is important that these water resources are protected.</p> <p>During construction there may be an increase in the risk of leaks and spillages of hazardous materials associated with construction activities. During construction, standard control measures would be implemented by the appointed contractor and identified in the Outline CoCP to manage the risk of spillages and leaks into surface water features and/or groundwater. It is therefore proposed not to evaluate this further in the ES for the construction phase.</p> <p>During operation there may be a fuel storage tank, protected in accordance with the relevant safety and process requirements, to provide fuel for the emergency generators (if required). As this tank will be provided with</p>	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			appropriate secondary containment measures and inspected in accordance with a preventative maintenance programme, it is not considered necessary to evaluate this further in the ES for the operational phase.	
Technological or Manmade Hazards	Utilities failures	Electricity	<p>Instances of electricity failure (also referred to as power loss or blackout) can be caused by a number of things, such as severe weather (e.g. very strong winds, lightning and flooding) which damage the distribution network. These tend to be mainly specific place, local (e.g. metropolitan area) and less frequently regional (e.g. North East) as a result of severe winter storms and consequent damage to the distribution overhead line network.</p> <p>Underground and above-ground electrical transmission lines are present across the Site, the responsibilities of which lie with the relevant local operator or company should this infrastructure fail.</p> <p>The responsibility for any diversion works and the installation of new electrical infrastructure will lie with the relevant local operator or company. Information regarding diversion works will be considered in the ES, however the potential risk of construction-related incidents when undertaking diversion works as part of the Proposed Scheme would be covered by existing legislation and as such does not require further consideration in the MA&amp;D assessment.</p>	No
Technological or Manmade Hazards	Utilities failures	Gas	<p>Underground and above-ground gas transmission pipelines are present across the Site.</p> <p>As part of the Proposed Scheme, works may include the installation of a new Export Pipeline for the transmission of natural gas from the Regas and Storage Area to the connection point to the existing UK National Transmission System (NTS). Installation and connection of this new pipeline would be undertaken with the agreement of the pipeline operator, which will</p>	No



MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<p>include providing risk assessment and method statements covering the works before they can commence, under existing legal requirements and as such does not require further consideration in the MA&amp;D assessment during the construction phase.</p> <p>In the event of LNG supply failure during the operational phase, the Proposed Scheme would be safely shut down. Therefore, it is considered that this MA&amp;D type does not require further consideration in the ES.</p>	
Technological or Manmade Hazards	Utilities failures	Water supply	<p>The Kielder Water Resource Zone (WRZ) serves the vast majority of Northumberland which is supplied primarily by Kielder Water (reservoir). Most development coming forward in this zone would be capable of being supplied without problem.</p> <p>It is assumed that a potable water connection will be available from existing mains supplies, provided by the local statutory undertaker Northumbrian Water. A small amount of water would be required during construction, however, as this will be an unmanned operational site the requirement for water supplies is expected to be minimal during the operational phase. Top up supplies may be required in small volumes for fire water and for the Boil Off Gas (BOG) management system. However, there is the opportunity to connect to existing fire water supplies via the Port Authority or nearby operators in addition to harvesting rainwater to make up for evaporative losses. In the event of water scarcity, additional supplies could be brought in by tankering, or the facility could be safely shut down until water supplies are restored. Therefore, further consideration in the ES is not required.</p>	No
Technological or Manmade Hazards	Utilities failures	Sewage system	During the construction phase temporary portable systems will be in place covered by H&S welfare requirements.	No

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
			<p>As this will be a largely unmanned operational site the requirement for wastewater disposal is expected to be minimal during the operational phase. It is assumed that a wastewater connection will be available, provided by the local statutory undertaker Northumbrian Water.</p>	
<p>Technological or Manmade Hazards</p>	<p>Malicious Attacks</p>	<p>Unexploded Ordnance</p>	<p>According to <b>Chapter 18: Geology and Soils</b>, the Zetica Unexploded Ordnance (UXO) Pre-Desk Study recorded significant World War II military activity and bombing in close proximity to the Site. It was also a strategic target during World War I, however no bombing was identified in the Study Area.</p> <p>Seal Sands was previously used as a practice bombing range for the Royal Air Force (RAF) Coastal Command. The area also contained one Civil QL/QF (C Series) bombing decoy to deflect bombing on Middlesbrough. The district of Billingham (nearby town) officially recorded 221 High Explosive bombs with a bombing density of 28.1 bombs per 405 hectares (ha).</p> <p>As the Site is brownfield land which has already been developed and the estuary has been dredged, the discovery of previously unidentified UXO during development is unlikely.</p> <p>Measures would be undertaken during construction to brief staff to raise awareness of this issue, and to define appropriate response strategies such this be discovered during the works.</p> <p>There would be a limited risk of UXO affecting the Proposed Scheme, once operational but no greater than similar schemes in the vicinity.</p> <p>It is therefore considered that the risk associated with the potential presence of UXO does not require further consideration in the MA&amp;D assessment.</p>	<p>No</p>

MA&D Group	MA&D Category	MA&D Type	Basis of Decision to Scope In / Out	Scope In?
Technological or Manmade Hazards	Malicious Attacks	Attacks: Chemical; Biological; Radiological; and Nuclear.	<p>Extremists remain interested in Chemical, Biological, Radiological and Nuclear (CBRN) materials, however alternative methods of attack such as employing firearms or conventional explosive devices remain far more likely.</p> <p>Historical use has been in closed densely occupied structures (underground, buildings) or targeted at specific individuals.</p> <p>The Proposed Scheme is unlikely to be a target for this type of event due to the low number of exposed targets.</p>	No
Technological or Manmade Hazards	Malicious Attacks	Transport systems	<p>Potential systems would include (but are not limited to) railways, buses, passenger ferries, cargo vessels and aircraft.</p> <p>The Proposed Scheme is unlikely to be a target for this type of event due to the low number of exposed targets.</p>	No
Technological or Manmade Hazards	Malicious Attacks	Crowded places	<p>The Proposed Scheme does not fall within the definition of a crowded place, i.e. pedestrian routes and other thoroughfares as well as sports arenas, retail outlets and entertainment spaces.</p> <p>The Proposed Scheme is unlikely to be a target for this type of event due to the low number of exposed targets.</p>	No
Technological or Manmade Hazards	Malicious Attacks	Cyber	<p>Cyber-attacks occur almost constantly on key national and commercial electronic information, control systems and digital industries. The increasing reliance on technology to control the Plant could render the Proposed Scheme more vulnerable to a cyber-attack.</p> <p>Notwithstanding this, it is not considered to be more vulnerable to attack than similar infrastructure installed and operating in the UK.</p>	No

<b>MA&amp;D Group</b>	<b>MA&amp;D Category</b>	<b>MA&amp;D Type</b>	<b>Basis of Decision to Scope In / Out</b>	<b>Scope In?</b>
Technological or Manmade Hazards	Malicious Attacks	Infrastructure	<p>Terrorists in the UK have previously attacked, or planned to attack, national infrastructure. Attempts were made to attack electricity substations in the 1990s. Bishopsgate, in the City of London, was attacked in 1993 and South Quay in London's Docklands in 1996. These attacks resulted in significant damage and disruption but relatively few casualties.</p> <p>The Proposed Scheme would have minimal impact on local infrastructure and is unlikely to be considered a high profile target. In addition, it is not considered to be more vulnerable to attack than other similar infrastructure in the UK.</p>	No
Technological or Manmade Hazards	Engineering accidents and failures	Bridge failure	Bridge works are not proposed as part of the Proposed Scheme.	No
Technological or Manmade Hazards	Engineering accidents and failures	Flood defence failure	<p>The study area associated with the Proposed Scheme does not benefit from flood defences.</p> <p>The design of the Proposed Scheme has been developed to include allowances for future climate change predictions that could result in flooding. The potential risk of breach events will be considered in the Flood Risk Assessment produced as part of the ES and as such does not require further consideration in the MA&amp;D assessment.</p>	No
Technological or Manmade Hazards	Engineering accidents and failures	Mast and tower collapse	There are no towers or masts in close proximity to the Proposed Scheme or being built as part of the Proposed Scheme.	No



<b>MA&amp;D Group</b>	<b>MA&amp;D Category</b>	<b>MA&amp;D Type</b>	<b>Basis of Decision to Scope In / Out</b>	<b>Scope In?</b>
Technological or Manmade Hazards	Engineering accidents and failures	Property or bridge demolition accidents	There are no above ground structures located within the Site and so no demolition is required.	No
Technological or Manmade Hazards	Engineering accidents and failures	Tunnel failure / fire	There are no tunnel structures proposed as part of the Proposed Scheme.	No

Note: C = Construction, O = Operation.

14.8.11. To summarise the following MA&D types have been scoped in for further assessment in the ES:

- Major accident hazard chemical sites (construction and operation phase);
- Major accident hazard pipelines (construction and operation phase);
- Fuel storage (construction and operation phase);
- Mines and storage caverns (construction phase); and
- Transport accidents – waterways (construction and operation phase).

### **DECOMMISSIONING**

14.8.12. It is assumed that after the lifespan of the Proposed Scheme, before or upon 25 years, a process of decommissioning will take place. This is assumed to last up to 12 months. Potential significant impacts associated with decommissioning would likely be similar to those listed for construction above. Further desk top review of information sources may be required to assess if there have been changes in the MA&D baseline at that time. At the time of decommissioning a Decommissioning Environmental Management Plan will be prepared which will consider potential MA&D events and the necessary mitigation measures.

## **14.9 PROPOSED METHODOLOGY**

14.9.1. In line with the IEMA Primer (Ref. 14.15), for those MA&D types which have been scoped in for detailed assessment in the ES, the proposed assessment process to be used in the ES will include:

- Identifying potential risk events related to the scoped in MA&D types;
- Screening these risk events, e.g. to remove unrealistic worst-case scenarios;
- Defining the likely worst-case consequences (impact);
- Assessing the likelihood; and
- Determining whether the risk event could be a MA&D and, if relevant, whether the risk is ALARP with the proposed mitigation measures.

### **SIGNIFICANCE OF EFFECT CRITERIA**

14.9.2. By definition, a major accident and/or disaster would have a major Significant effect on the environment (including human health, welfare and/or the environment). Accordingly, any risks that could result in a MA&D without suitable mitigation, management or regulatory controls in place will be assessed as Significant in the context of EIA.

## **14.10 ASSUMPTIONS AND LIMITATIONS**

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

- The design of the Proposed Scheme will be subject to relevant hazard identification
- Studies and actions identified will be integrated into the final design, to reduce risks to ALARP.
- The construction phase of the Proposed Scheme will be managed through the implementation of the construction phase plan required under the CDM Regulations 2015 (Ref. 14.3) and a COCP.
- The Proposed Scheme is being designed, and its implementation guided by other industry standards and codes, many of which are mandatory. These require infrastructure and systems to be designed so that risks to people and the environment are either eliminated or reduced to levels that are ALARP.

- Environmental effects associated with unplanned events that do not meet the definition of a MA&D (e.g. minor leaks and spills that may be contained within the construction sites) are addressed in other environmental aspect chapters as appropriate and not in this chapter.
- It is recognised that the management framework for the Proposed Scheme is not fully defined at this stage; however, a presumption of standard practice and regulatory compliance within the adopted management framework has been assumed and will be developed following the appointment of the principal contractor.
- The assessment presented in the PEIR and ES will include the latest design information available at the time of the submission. Where design information is not available, reasonable worst-case assumptions will be made.

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## 15 SHIPPING AND NAVIGATION

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### 15.1 INTRODUCTION

- 15.1.1. This chapter considers the impacts on shipping and navigation that may arise during construction, operation and maintenance, and decommissioning of the Proposed Scheme (as described in **Chapter 2: Site and Proposed Scheme Description** of this EIA Scoping Report), and any potential significant risks.
- 15.1.2. This chapter also sets out the proposed methodology for the Navigational Risk Assessment (NRA), which will be conducted as part of the ES and form an appendix to the ES.
- 15.1.3. This chapter should be read in conjunction with the following chapters of this EIA Scoping Report:
- **Chapter 7 Biodiversity;** and
  - **Chapter 17: Population and Human Health.**
- 15.1.4. This chapter is supported by the following figures included within Volume III of this EIA Scoping Report:
- **Figure 15.1: Shipping and Navigation Study Area;**
  - **Figure 15.2: AIS Data Tracks by Vessel Type (July 2023);**
  - **Figure 15.3: AIS Data Tracks by Vessel Length (July 2023);** and
  - **Figure 15.4: AIS Vessel Density (July 2023).**

### 15.2 LEGISLATION, POLICY AND GUIDANCE

- 15.2.1. This section outlines the relevant legislation, policy and guidance considered relevant to the shipping and navigation risk assessment of the Proposed Scheme.

#### LEGISLATION

- 15.2.2. As the Statutory Harbour Authority (SHA) for the Port of Tees and Hartlepool, known collectively as Teesport, PD Ports Ltd (PD Ports) is responsible for a 12 mile stretch of the River Tees, which includes a section three miles out into the North Sea. SHAs are created under Acts of Parliament, with further powers and amendments (Special Acts) made over time; the SHA powers for Teesport are predominantly derived under the Statutory Harbour Authority for the Port of Tees and Hartlepool Act 1966 (Ref. 15.1). Under UK legislation, the Harbour Master has powers to issue directions to ensure safe navigation within the harbour limits.
- 15.2.3. PD Ports is also the Competent Harbour Authority (CHA) for the purposes of pilotage within its jurisdiction. The Pilotage Act 1987 (Ref. 15.2) gives the CHA the power to make pilotage compulsory within their pilotage district and grant Pilotage Exemption Certificates (PECs).

#### POLICY

- 15.2.4. National Policy Statements (NPSs) set out the primary policy against which an application for the development consent of the Proposed Scheme will be considered. The overarching policies, as well as those most relevant to the Proposed Scheme with respect to shipping and navigation, are as follows:
- Overarching National Policy Statement for Energy (EN-1) (Ref. 16.2)

- National Policy Statement for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref. 15.4).
- The National Policy Statement for Ports (Ref. 15.5); This provides the framework for decisions on nationally significant infrastructure projects for new port developments which meet the Planning Act 2008 thresholds. The Applicant considers that the proposed Marine Jetty does not meet the relevant threshold and so the National Policy Statement for Ports does not meet the criteria of section 104(2) of the Planning Act 2008 and does not 'have effect' in relation to the Proposed Scheme. The Applicant considers that this national policy statement is, however, an important and relevant consideration in the determination of an application for development consent for the Proposed Scheme.
- UK Marine Policy Statement (MPS) (Ref. 15.6): The UK MPS recognises the vital role of ports and shipping to the UK economy. In terms of potential environmental impacts, these can be through accidental pollution from ships in the course of navigation or lawful operations, pollution caused by unlawful operational discharges by ships, such as oil, waste or sewage, or physical damage caused by groundings or collisions. Increased competition for marine resources may affect the sea space available for the safe navigation of ships. Marine plan authorities and decision makers should take into account and seek to minimise any negative impacts on shipping activity, freedom of navigation and navigational safety and ensure that their decisions are in compliance with international maritime law.

## **GUIDANCE**

- 15.2.5. The following guidance documents will be considered in the preparation of the NRA for the Proposed Scheme. These documents provide supplementary information that, when applicable, can assist the assessment of navigational risk and marine safety:
- Port Marine Safety Code (PMSC) (Ref. 15.7);
  - A Guide to Good Practice (GtGP) on Port Marine Operations (Ref. 15.8); and
  - Revised Guidelines for Formal Safety Assessment (FSA) For Use In The IMO Rule-Making Process (Ref. 15.9).
- 15.2.6. The NRA will be conducted to conform to the PMSC and its associated GtGP, which has the aim of enhancing the safety of port operations. Supplementary guidance will include industry codes and guidance on LNG carriers and terminals.

## **15.3 CONSULTATION**

At this stage, no specific consultation has been undertaken in regard to the EIA Scoping Report. However, the Applicant has commenced consultation with PD Ports and the Harbour Master during the development of the design of the Proposed Scheme.

- 15.3.1. During the NRA, further consultation will take place with Teesport personnel including the Harbour Master, Pilots, Vessel Traffic Services (VTS), and other port users. This will include a Navigational Hazard Review Workshop attended by the Applicant team personnel, port personnel, and external stakeholders.

## **15.4 STUDY AREA**

- 15.4.1. For this assessment professional judgement has been used to inform the extent of the Study Area covers the area over which potential direct and indirect consequences of the Proposed Scheme are

predicted to arise during the construction, operational and maintenance, and decommissioning periods. The location of the Project Scheme, along with the extents of the Study Area, are presented in **Figure 15.1**.

- 15.4.2. The Study Area for shipping and navigation has been defined as the area bound by Teesport buoy No.23 in the south (near the overhead cable by SABIC refinery), and the Tees North and Tees South buoys, outside the breakwaters to the north. The River Tees is approached from the NE at Tees Bay through a deepwater channel. The approach channel has a charted depth of 15.4m which progressively reduces to 10.4 m at the proposed project location. Depth reduces further to 4.5m east of Billingham Beck, 8 nautical miles from the entrance. The channel depth is not maintained beyond Tees (Newport) Bridge.
- 15.4.3. The location of the proposed Marine Jetty lies on the west bank of the River Tees, opposite Tees Dock No.10 gas jetty and container terminal, at Teesport Estate. It is currently an unused area, adjacent to the Navigator Seal Sands Terminals, aligned approximately north/south. The proposed Marine Jetty will utilise an area of shoal depths and drying heights to the west of the navigable channel, currently bound within starboard lateral buoys 17, 17A and 19. The Study Area is considered sufficient to appropriately characterise the shipping activity and navigational features, and to encompass any vessel traffic which may be impacted by the Proposed Scheme.

## 15.5 BASELINE CONDITIONS AND FUTURE BASELINE

### DATA SOURCES

- 15.5.1. The shipping and navigation baseline described in this section has been informed by the following data sources:
- Automatic Identification System (AIS) data;
  - PD Ports data; and
  - UK Hydrographic Office (UKHO) Admiralty Charts and Publications.

### AIS Data

- 15.5.2. Up to date AIS vessel tracking data has been used to characterise baseline marine traffic. One month of AIS data for July 2023<sup>43</sup> has been reported within this chapter and considered to be a representative sample and thus appropriate to inform the scope of the assessment to be undertaken for the EIA. The NRA will however be based on the full dataset comprised of 12 months from 01 January to 31 December 2023, to cover seasonal variations.
- 15.5.3. AIS equipment (Class A) is required to be fitted on all vessels of 300 gross tonnage (GT) and upwards engaged on international voyages, cargo vessels of 500GT and upwards not engaged on international voyages, passenger vessels irrespective of size, built on or after 01 July 2002, and fishing vessels of 15m length and above. Smaller vessels (e.g., fishing vessels less than 15m in length and recreational craft) are not required to broadcast on AIS, but a proportion do so voluntarily typically using Class B units. Both Class A and B vessels are included in the AIS dataset that has been used. Further research of non-AIS vessel activity will be carried out in the NRA.
- 15.5.4. The AIS data have been analysed and divided into the following vessel categories:

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<sup>43</sup> It is noted that small time gaps between AIS positions being received can occasionally give the appearance of a vessel track crossing land, e.g., if navigating a river bend; this occasional slight inaccuracy does not materially affect the analysis.

- Vessels engaged in dredging or underwater operations;
- Tugs;
- Cargo vessels (e.g., general cargo vessels, ro-ro cargo vessels and bulk carriers etc);
- Tankers (e.g., oil tankers, chemical tankers, and gas carriers);
- Pilot vessels;
- Offshore support vessels (e.g., wind farm, oil and gas); and
- Other (e.g., military, patrol boats, recreational vessels, etc).

#### **PD Ports Data**

15.5.5. Information on vessel services, towage operations and passage planning has been taken from PD Ports publications for Teesport. These include the following documents:

- River Tees Passage Plan (Ref. 15.10);
- Notices to Mariners – River Tees (Ref. 15.11);
- Port Towage Requirements (Ref. 15.12);
- Service Providers (Ref. 15.13); and
- General Directions for the Safety of Navigation, Persons and Property in the Harbour (Ref. 15.14).

15.5.6. Information has also been obtained from PD Ports on historical vessel callings and maritime incidents which will be analysed in detail within the NRA.

#### **Admiralty Charts and Sailing Directions**

15.5.7. Navigational features have been considered in this assessment and have been identified using information from Admiralty Charts 2567, 2566, 134 and 152. These charts are used by mariners as part of the passage planning process and to plot progress during a passage and so contain all relevant navigational information. More details can be found in the Admiralty Sailing Directions NP54 (12th edition 2021) issued by UKHO (Ref. 15.15)

15.5.8. A summary of the baseline conditions is presented below.

#### **EXISTING BASELINE**

15.5.9. The following sections review the baseline information for shipping and navigation within the study area. The following elements are covered in the baseline:

- Statutory responsibilities and management procedures;
- Visual aids to navigation;
- Vessel services;
- Vessel traffic management; and
- Vessel traffic analysis.

#### **Statutory Responsibilities and Management Procedures**

15.5.10. PD Ports is the SHA and CHA for the Port of Tees and Hartlepool (Teesport).

15.5.11. PD Ports is committed to meeting the requirements of the PMSC, which requires the port to operate a Marine Safety Management System (MSMS) based on comprehensive and continuously updated risk assessments. The MSMS details how the port fulfils its duties as SHAs and meet the marine safety requirements prescribed by the PMSC.

15.5.12. PD Ports also operates a dedicated conservancy team that maintains water depths with hydrographic surveying and a fleet of dredgers. The team look after the maintenance of all navigational aids, with PD Ports acting as Local Lighthouse Authority (LLA). As LLA, PD Ports is responsible for the provision and maintenance of Aids to Navigation (AtoN).

### **Visual Aids to Navigation**

15.5.13. Aids to navigation within the Study Area conform to the requirements of Trinity House Lighthouse Service and the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). A safe water marker buoy, and cardinal buoys mark the outer approaches to Tees Bay. Leading lights are aligned with the entrance to the navigable channel from Tees Bay, leading into the river Tees. Lateral buoys and beacons are also used to mark the approach channel to the River Tees. Lateral buoys and beacons also mark the width of the navigable channel in the river. Numerous additional AtoNs are present to identify the terminals, breakwaters and jetties in Teesport. New AtoN(s) are likely to be installed and/or existing AtoN(s) reconfigured to ensure the Project is effectively marked and lit.

### **Vessel Services**

15.5.14. Tees Bay Pilots (Tees and Hartlepool Pilotage Company Ltd.) operate a compulsory pilotage service. Pilotage may be compulsory in the following four areas of Teesport:

- The Approach Channel from Tees North buoy to the inner limit of the Seaton Turning Area;
- The navigable area of the Seaton Channel and Holding Basin;
- The navigable area of the Tees between the inner limit of the Seaton Turning Area and No.23 Buoy; and
- The navigable area of the Tees between No.23 Buoy and the upper limit of PD Ports jurisdiction.

15.5.15. Compulsory pilotage applies to certain vessels, including vessels exceeding 95m length, as well as vessels exceeding 20m with dangerous goods or marine pollutants onboard. LNG carriers visiting the port will therefore be subject to the pilotage requirements.

15.5.16. Towage services in Teesport are provided by Svitzer Marine Ltd. and SMS Towage Ltd.

### **Vessel Traffic Management**

15.5.17. The Tees and Hartlepool Harbour Byelaws, General Directions, Marine Safety Plan, and River Tees Passage Plan are the primary documents that control the operation of vessels within Teesport.

15.5.18. Tees VTS operates 24 hours, 7 days a week for 365 days of the year and provides a full range of VTS services, including Information Services (INS), Traffic Organisations Services (TOS) and Navigational Assistance Services (NAS). The VTS maintains radar tracking AIS surveillance throughout the VTS area to facilitate the safe and efficient navigation of vessels in the Tees and its approaches. VTS also broadcasts Maritime Safety Information (MSI) to mariners regarding the weather, tidal information and navigational warnings.

15.5.19. Tees VTS controls all vessels over 20m in length. All vessel movements, arrivals and departures must obtain permission from VTS. Pre arrival notification must be given 2 hours in advance. No vessel may leave the berth without permission of Tees VTS.

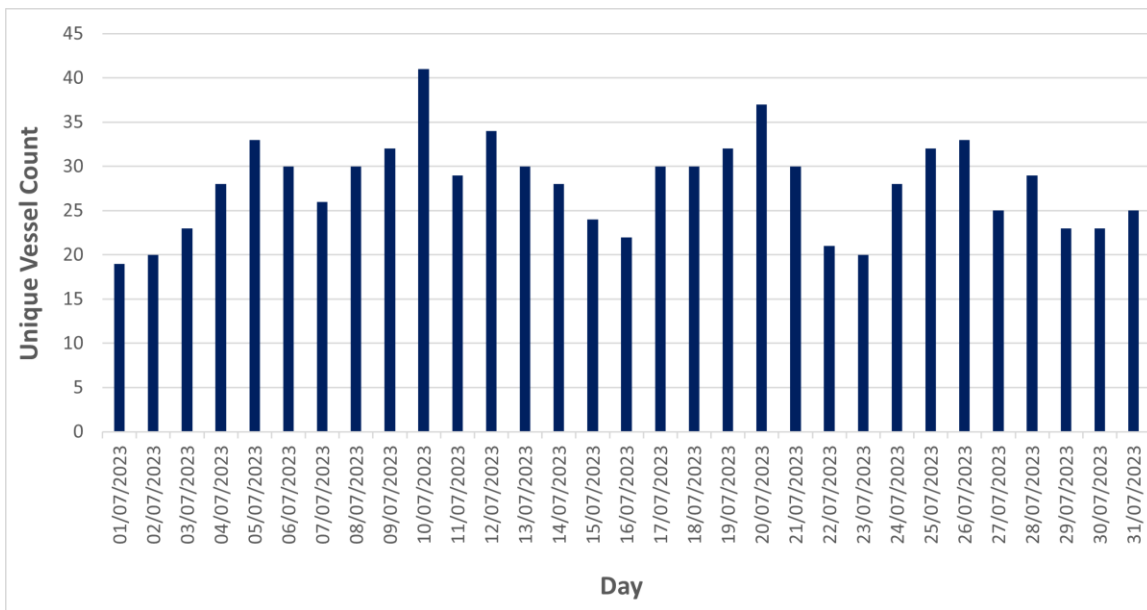
15.5.20. VTS controlled vessels must comply with the International Regulations for Preventing Collisions at Sea (COLREGs) (Ref. 15.16) at all times. Overtaking is not permitted in the River Tees. VTS

controlled vessels must keep a separation distance of at least 2.5 cables (460m) from other vessels proceeding ahead of them in the Tees. Vessels are generally not permitted to navigate on the river if visibility is less than 1000 m, unless granted special permission by the Harbour Master. Traffic control signal lights are in use to manage traffic.

### Vessel Traffic Analysis

15.5.21. This section presents a summary of the analysis of vessel traffic in the Study Area based on one month of AIS data (July 2023). **Graphic 15-1** shows the daily vessel count, based on the number of unique vessels<sup>44</sup> recorded within the study area on each day during July 2023.

**Graphic 15-1 - Daily Unique Vessel Count (July 2023)**



15.5.22. An average of 28 vessels per day were recorded within the Study Area during the one month period. The busiest day was 10<sup>th</sup> July 2023 with a total count of 41 vessels, and 1<sup>st</sup> July 2023 was the quietest with a total count of 19 vessels.

15.5.23. **Figure 15.2** presents the tracks of vessels recorded within the study area in July 2023, colour-coded by vessel type. It is noted that Teesport is a commercial port mostly trading dry bulk and project cargoes, i.e., metals, agricultural bulk and forest cargoes. Hence, the small number of passenger vessels, recreational vessels, fishing vessels and military vessels have been included in the ‘other’ category.

15.5.24. The most common vessel types recorded in July 2023 were cargo vessels (30%), followed by tugs (29%), tankers (23%) and dredgers (10%). Tugs and dredgers were recorded across the entire study area. The majority of cargo vessels were recorded transiting from Teesport Container Terminal 1 & 2 to Rotterdam and Moerdijk in Netherlands, and Zeebrugge in Belgium. Tankers were observed transiting between the Tees tanker terminals and international ports such as Rotterdam,

<sup>44</sup> Each unique vessel is counted once each day within the Study Area to avoid over-counting if the vessel leaves and re-enters the Study Area, or if otherwise dropped and reacquired.

Antwerp and Skagen. Offshore Support vessels were observed transiting via the River Tees to/from offshore infrastructure such as the Dogger Bank and Tees Offshore Wind Farms (OWFs).

- 15.5.25. **Figure 15.3** presents the AIS vessel tracks recorded in the study area during the one-month period, colour-coded by vessel length. Excluding vessels with unspecified lengths (less than 1%), the average length recorded within the study area was 95m in July 2023.
- 15.5.26. Smaller vessels (< 30m) were mostly tugs assisting larger commercial vessels in manoeuvring operations near berths. The majority of larger vessels (> 120m) were cargo vessels and tankers transiting to their respective terminals at Teesport. The largest vessels recorded were two 256m long crude oil tankers transiting to/from ConocoPhillips Inset Dock.
- 15.5.27. **Figure 15.4** presents a plot of AIS vessel density for July 2023, based on a 100m x 100m grid of cells. It can be seen that the highest vessel densities were associated with the dredged approach channel.

## **FUTURE BASELINE**

- 15.5.28. The potential for changes to the future baseline for shipping and navigation over the lifetime of the Proposed Scheme, e.g., due to changes in trading and/or other developments in vicinity of the Proposed Scheme, will be considered in the NRA.

## **15.6 SENSITIVE RECEPTORS**

- 15.6.1. Navigational risks will be considered within the NRA in terms of their potential impacts on the following receptors:
- People (i.e., human injury or loss of life);
  - Property (i.e., damages);
  - Planet (i.e., environment); and
  - Port (i.e., business and reputation).

## **15.7 DESIGN, MITIGATION AND ENHANCEMENT MEASURES**

- 15.7.1. Mitigation measures (risk controls) will be identified to ensure the risks are both Tolerable and As Low As Reasonably Practicable (ALARP) as required within the PMSC.
- 15.7.2. A set of measures will be identified through the NRA process. These will include existing measures already in place at Teesport, such as Pilotage and VTS, as well as specific measures relating to the Proposed Scheme.
- 15.7.3. Examples of measures that may apply during construction and/or operation are listed below (non-exhaustive):
- Updated Port Controls, Plans and Procedures: Existing Harbour Authority documents including the Port MSMS shall be updated to take into account the Proposed Scheme.
  - Pilotage/PEC: Operational traffic calling at the Proposed Scheme shall be subject to pilotage requirements. A significant proportion of passing vessels will also be subject to Pilotage requirements or have PEC holders onboard.
  - VTS: Vessels associated with the Proposed Scheme shall adhere to VTS requirements and instructions. VTS shall help control vessel movements and avoid potential risk of collision, grounding or allision situations, e.g., involving construction vessels. VTS can make MSI broadcasts as required.



- Weather Limits: The maximum weather limits for each activity during the construction and operational phases shall be determined. These shall be monitored against real-time observations and forecasted weather conditions throughout the activity.
- Contractor RAMS and SMS: Contractors shall have Risk Assessment Method Statement (RAMS) and Safety Management System (SMS) covering all of the construction activities which shall be reviewed by the Harbour Authority prior to the commencement of activities.
- Weather limits: The maximum weather limits for operations shall be assessed and set for all activities. These shall be monitored against real time and forecasted weather conditions throughout the construction process. In addition, operational weather limits shall also be considered for vessels using the terminal during the operational phase.
- Designated point of contact (PoC): A designated PoC shall be appointed during the construction activities to provide appropriate information and respond to emergency situations.
- Hydrographic surveying program: The current programme of surveying at Teesport shall be updated to include the Proposed Scheme. The results of the survey shall be provided to the UKHO for use in navigational charts and compared with previous surveys to inform potential requirements for maintenance dredging.
- Notices to Mariners: Temporary and Preliminary Notices to Mariners (NtMs), updates to Admiralty charts, nautical publications and electronic equivalents shall be issued by UKHO about the Proposed Scheme. Local Notices to Mariners (LNtMs) will be issued by Teesport.
- Mooring studies and plans: A mooring study shall be completed for the proposed mooring arrangements at the berth to confirm that there is appropriate restraint available to restrain the vessel for the operational wind limits and the expected tidal flows.
- Restricted Areas: Restricted areas shall be established during construction and/or operation, where necessary, to reduce navigational risks, such as the risk of mooring breakout due to hydrodynamic effects associated with passing vessels.

## 15.8 DESCRIPTION OF POTENTIAL LIKELY SIGNIFICANT EFFECTS

15.8.1. The Proposed Scheme has the potential to affect vessel navigation during both the construction and operational phases. A full set of impacts for each phase will be identified through the NRA process. An initial list of impacts is presented below.

### CONSTRUCTION

15.8.2. The potential impacts associated with the construction phase include:

- Contact (allision) of construction vessel with port infrastructure.
- Contact (allision) between passing vessel and marine works.
- Collision between passing vessel and construction vessel, at or near marine works.
- Collision with construction vessel while in transit to/from marine works.
- Collision during towage operations.
- Increased risk of collision due to re-routeing of traffic away from marine works.
- Increased risk of grounding due to re-routeing traffic away from marine works.

### OPERATION

15.8.3. The potential impacts associated with the operation phase include:

- Increased vessel-to-vessel collision due to increased traffic.
- Increased collision risk due to additional maintenance dredging.

- Collision with vessel using the Proposed Scheme, when manoeuvring at or near berth.
- Contact (allision) with mooring infrastructure.
- Mooring breakout.
- Increased risk of collision due to re-routeing of passing traffic away from vessels using the Proposed Scheme.
- Increased risk of grounding due to re-routeing of passing traffic away from vessels using the Proposed Scheme.
- Risk of uncontrolled or accidental release of cargo.

## DECOMMISSIONING

15.8.4. It is assumed that the new marine facility will become part of the fabric of the Port and continue to be maintained so that it can be used for port related activities to meet future needs. On this basis, potential effects on marine transport and navigation from decommissioning have been scoped out..

## SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT

15.8.5. A summary of the elements scoped in and out of the assessment for shipping and marine navigation are set out in **Table 15-1**. Each element is accompanied by a justification for its inclusion or exclusion from further assessment based on professional judgement. These may be added to or refined during the NRA process.

**Table 15-1 Elements Scoped In or Out of Further Assessment**

Impact	Phase <sup>45</sup>	Scoped In	Scoped Out	Justification
Contact (allision) of construction vessel with port infrastructure	Construction	✓		Further assessment required to consider the impact on navigation due to location of the Proposed Scheme and introduction of new marine works in the River Tees to construct the Marine Jetty.
Contact (allision) between passing vessel and marine works.	Construction	✓		
Collision between passing vessel and construction vessel, at or near marine works.	Construction	✓		
Collision with construction vessel while in transit to/from marine works.	Construction	✓		

<sup>45</sup> It is assumed that the new marine facility will become part of the fabric of the Port and continue to be maintained so that it can be used for port related activities to meet future needs. On this basis, potential effects on marine transport and navigation from decommissioning have been scoped out.

Impact	Phase <sup>45</sup>	Scoped In	Scoped Out	Justification
Collision during towage operations.	Construction	✓		
Increased risk of collision due to re-routing of traffic away from marine works	Construction	✓		
Increased risk of grounding due to re-routing traffic away from marine works	Construction	✓		
Collision due to increased traffic.	Operation and maintenance	✓		Further assessment required to consider the impact on navigation due to location of the Proposed Scheme and future increase in vessel traffic associated with its operation.
Collision due to increased maintenance dredging.	Operation and maintenance	✓		
Collision with vessels using the Proposed Scheme, manoeuvring at or near berth.	Operation and maintenance	✓		
Contact (allision) with mooring infrastructure.	Operation and maintenance	✓		
Mooring breakout.	Operation and maintenance	✓		
Increased risk of collision due to re-routing of passing traffic away from vessels using the Proposed Scheme.	Operation and maintenance	✓		
Increased risk of grounding due to re-routing of passing traffic away from vessels using the Proposed Scheme.	Operation and maintenance	✓		

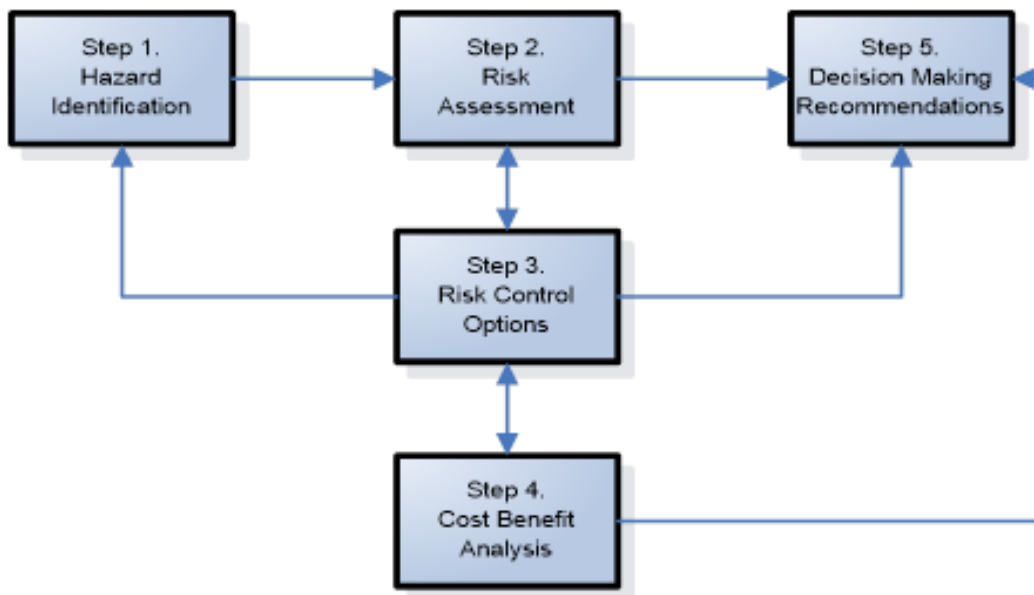
Impact	Phase <sup>45</sup>	Scoped In	Scoped Out	Justification
Risk of uncontrolled or accidental release of cargo.	Operation and maintenance	✓		

## 15.9 PROPOSED METHODOLOGY

15.9.1. As identified in Section 15.8, there is the potential for significant impacts on shipping and navigation during construction and operation of the Proposed Scheme. Further assessment that is proposed to be undertaken for the ES is outlined below.

An NRA will be carried out in line with the PMSC as well as following the IMO Formal Safety Assessment process (Ref. 15.5). This is a structured and systematic methodology with five basic steps, as presented in **Graphic 15-2**.

**Graphic 15-2 - Overview of Formal Safety Process Assessment Process**



15.9.2. The impact assessment will consider the potential change in navigational risk associated with construction and operation of the Proposed Scheme, as well as any cumulative impacts.

15.9.3. Hazards will be identified and reviewed at the Navigational Hazard Review Workshop attended by key stakeholders. Following the workshop, each hazard will be ranked in terms of frequency and consequence using appropriate definitions for the Proposed Scheme. This will be informed by the detailed baseline review including analysis of one year of AIS data, 10 years of historical maritime incident data, stakeholder consultation, and vessel simulations.

15.9.4. For each hazard, embedded mitigation in the form of existing safety measures in place at the port, or planned for the Proposed Scheme, will be documented and taken into account within the ranking.

- 15.9.5. Hazards will be ranked according to their most likely and worst-credible outcomes as required by the PMSC and associated GtGP. Consequences will be considered in terms of People, Property, Planet, and Port.
- 15.9.6. The frequency and consequence categories applied are presented in **Table 15-2** and **Table 15-3**, with the latter being assessed against the four receptors: People, Property, Planet, and Port.

**Table 15-2 Frequency of Occurrence Ranking Definitions**

Rank	Description	Definition
1	Negligible	< 1 occurrence per 10,000 years
2	Extremely Unlikely	1 per 100 to 10,000 years
3	Remote	1 per 10 to 100 years
4	Reasonably Probable	1 per 1 to 10 years
5	Frequent	Yearly

**Table 15-3 Severity of Consequence Ranking Definitions**

Rank	Description	Definition			
		People	Property	Planet	Port (Business)
1	Negligible	No perceptible impact	Negligible (< £10k)	None (potential incident or near miss)	No perceptible impact
2	Minor	Slight injury(ies)	Minor (£10k-500k)	No Measurable Impact (Tier 1 but no pollution control measures needed)	Minor reputational risk – little local publicity
3	Moderate	Multiple minor or single serious injury	Moderate (£500k-£5M)	Minor (pollution with limited/local impact - Tier 1, Harbour)	Moderate damage to reputation – negative local publicity

Rank	Description	Definition			
		People	Property	Planet	Port (Business)
				Authority pollution control measures deployed)	
4	Serious	Multiple serious injuries or single fatality	Serious (£5M-£10M)	Significant (Potential for significant impact – Tier 2, pollution control measures from external organisations required)	Serious damage to reputation – negative national publicity
5	Major	More than one fatality	Major (> £10M)	Major (Potential for catastrophic and/or widespread impact - Tier 3, requires major external assistance)	Major damage to reputation - negative national and international publicity

### SIGNIFICANCE OF EFFECT CRITERIA

15.9.7. The frequency of occurrence and severity of consequence rankings will be used to determine the level of significance for each impact. The risk matrix used to assign significance is shown in **Table 15-4**. The overall significance of impacts has been assessed as “Unacceptable”, “Tolerable” or “Broadly Acceptable” with the definitions of these given in **Table 15.5**.

**Table 15-4 Tolerability Matrix and Risk Rankings**

		Frequency of Occurrence				
		Negligible	Extremely Unlikely	Remote	Reasonably Probable	Frequent
Severity of Consequence	Major	Tolerable	Tolerable	Unacceptable	Unacceptable	Unacceptable
	Serious	Broadly Acceptable	Tolerable	Tolerable	Unacceptable	Unacceptable
	Moderate	Broadly Acceptable	Broadly Acceptable	Tolerable	Tolerable	Unacceptable
	Minor	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Tolerable	Tolerable
	Negligible	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Tolerable

**Table 15.5 Significance Definitions**

Significance	Definition
Unacceptable (High Risk)	Generally regarded as unacceptable whatever the level of benefit associated with the activity. Significant risk mitigation or design modification required to reduce to tolerable (ALARP).
Tolerable (Moderate Risk)	Typical of the risks from activities which people are prepared to tolerate to secure benefits. There is however an expectation that such risks are properly assessed, appropriate control measures are in place, residual risks are ALARP, and that risks are periodically reviewed to monitor if further controls are appropriate.
Broadly Acceptable (Low Risk)	Generally regarded as acceptable and adequately controlled. At these risk levels the opportunity for further reduction is limited.

15.9.8. Once identified, the significance of each risk will be assessed to ensure it is ALARP. Further risk control measures may be required to further mitigate a hazard in accordance with the ALARP principles. Unacceptable risks are not considered to be ALARP and will require further mitigation.

## 15.10 ASSUMPTIONS AND LIMITATIONS

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

- The AIS vessel tracking data used in the baseline assessment does not fully cover all vessel movements, such as smaller fishing vessels and recreational vessels. Additional data sets (e.g., Port Callings Data) and consultation with relevant experts will be carried out as part of the NRA.

## 15.11 REFERENCES

- Ref. 15.1** HM Government (1966). Tees and Hartlepool Port Authority Act 1966. Available at: <https://www.legislation.gov.uk/ukla/1966/25/contents/enacted>
- Ref. 15.2** UK Government (1987). Pilotage Act 1987.
- Ref. 15.3** Department for Energy Security and Net Zero (2023) 'Overarching National Policy Statement for Energy (EN-1)'. Available at: <https://assets.publishing.service.gov.uk/media/65bbfdbc709fe1000f637052/overarching-nps-for-energy-en1.pdf>
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- Ref. 15.9** IMO (2018). Revised Guidelines for Formal Safety Assessment (FSA) For Use in the IMO Rule-Making Process. MSC-MEPC.2/Circ.12/Rev.2.
- Ref. 15.10** PD Ports (2021). PD Teesport River Tees Passage Plan.
- Ref. 15.11** PD Ports (2024). Notice to Mariners. <https://www.pdports.co.uk/marine-information/notice-to-mariners/> [accessed 5<sup>th</sup> March 2024]
- Ref. 15.12** PD Ports (2023a). Ports of Tees and Hartlepool Towage License Requirements.
- Ref. 15.13** PD Ports (2023b). Service Providers.





- Ref. 15.14** PD Ports (2015). General Directions for the Safety of Navigation, Persons and Property in the Harbour.
- Ref. 15.15** UK Hydrographic Office (2021). Admiralty Sailing Directions North Sea (West) Pilot NP54 (12th edition).
- Ref. 15.16** IMO (1972/77). Convention on the International Regulations for Preventing Collisions at Sea 1972 (COLREGS).

## 16 CULTURAL HERITAGE AND ARCHAEOLOGY

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### 16.1 INTRODUCTION

- 16.1.1. This chapter considers the impacts on cultural heritage that may arise during construction, operation and maintenance, and decommissioning of the Proposed Scheme (as described in **Chapter 2 Site and Proposed Scheme Description** of this EIA Scoping Report), and any potential significant effects.
- 16.1.2. Heritage assets comprise below and above ground archaeological remains, buildings, structures, monuments or heritage landscapes. A statutory provision for the safeguarding of heritage assets has been made at a national and local level.

### 16.2 LEGISLATION, POLICY AND GUIDANCE

- 16.2.1. This section outlines the relevant legislation, policy and guidance to consideration of the cultural heritage effects associated with the Proposed Scheme.

#### LEGISLATION

- 16.2.2. The legislation relevant to cultural heritage for this Site includes:

- The Planning (Listed Buildings and Conservation Areas) Act (1990) (Ref. 16.1) Sets out legal requirement for the control of development and alterations which affect listed buildings or conservation areas.

#### POLICY

- 16.2.3. National Policy Statements (NPSs) set out the primary policy against which an application for the development consent of the Proposed Scheme will be considered. The Overarching National Policy Statement for Energy (EN-1) (Ref. 16.2) and NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref. 16.3) are relevant to the Proposed Scheme. EN-1 includes details on the potential of adverse impacts to the historic environment through the construction, operation and maintenance, and decommissioning of energy infrastructure and how they should be considered.
- 16.2.4. Other relevant policy to cultural heritage are:
- National Planning Policy Framework (NPPF) (2023) (Ref. 16.4) Sets out the Government's planning policies for England and how these are expected to be applied. Whilst the NPPF does not contain specific policies for nationally significant infrastructure projects, it has the potential to be considered important and relevant to the Secretary of State's (SoS) consideration of the project. Chapter 16: Conserving and enhancing the historic environment within the NPPF identifies national policy for the preservation and conservation of designated and non-designated heritage assets.
  - Stockton-on-Tees Local Plan (2019) (Ref. 16.5) Local planning policy that highlights key objectives for the local council, which include the following relating to the Historic Environment:
    - Policy HE1 – Conservation and Enjoyment of Historic Environment
    - Policy HE2 – Conserving and Enhancing Stockton's Heritage Assets

## GUIDANCE

16.2.5. Good practice guidance relevant for cultural heritage are:

- Chartered Institute for Archaeologists (CIfA): regulations for professional conduct (CIfA 2021) (Ref. 16.6);
- CIfA Standard and guidance for historic environment desk-based assessment (CIfA 2020a) (Ref. 16.7);
- CIfA Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (CIfA 2020b) (Ref. 16.8);
- Good Practice Advice (GPA) 2 – Managing Significance in Decision-taking (2015) (Ref. 16.9);
- GPA 3 – The Setting of Heritage Assets (2017) (Ref. 16.10);
- Statements of Significance: Historic England Advice Note 12 (2019) (Ref. 16.11); and
- Planning Practice Guidance (2019) (Ref. 16.12).

## 16.3 CONSULTATION

16.3.1. At the time of writing, consultation with Stockton-on-Tees Borough Council (SoTBC) has not yet been undertaken in relation to the EIA, but will commence shortly.

## 16.4 STUDY AREA

16.4.1. To determine the historic environmental potential within the Site and in line with standard industry practice, the following Study Area has been applied:

- Within the Site, potential for physical impacts to heritage was assessed.
- A 1km radius Study Area around the Site was assessed for effects arising from change within the setting of assets which may affect their heritage significance, and recorded heritage assets which may assist in understanding the archaeological potential of the Site. This 1km Study Area was considered to be sufficient based on professional judgement, due to the urban/industrial nature of the Site and the topographic conditions of the area.

## 16.5 BASELINE CONDITIONS AND FUTURE BASELINE

### DATA SOURCES

16.5.1. A range of desk-based publicly accessible sources were reviewed. This allows the assessment of the likely nature, extent, preservation, and significance of any known or previously unrecorded heritage assets that may be present within the Site. This method will also be applied for considering impacts to heritage asset significance through changes to setting. Where appropriate, reference will be made to key heritage assets beyond the Study Area.

16.5.2. Sources used within this assessment include:

- Heritage Gateway (Ref. 16.13)
- Tees Archaeology Historic Environment Record (HER) map (Ref. 16.14);
- National Heritage List for England (NHLE) data (Ref. 16.15); and
- OS maps on National Library of Scotland (NLS) (Ref. 16.16).

16.5.3. The Groundsure Report included within **Volume II Appendix 18A Phase 1 Preliminary Environmental Risk Assessment** of this EIA Scoping Report has also been reviewed.

16.5.4. A summary of the baseline conditions is presented below.

## EXISTING BASELINE

- 16.5.5. A high-level appraisal of heritage assets has been undertaken to inform this scoping chapter using publicly available information. This is deemed sufficient to identify constraints and key assets which will be considered during design development.
- 16.5.6. There are no designated heritage assets within the Site, or within the 1km study area. This includes protected wrecks in the River Tees and along the coastline. This is illustrated on **Figure 2.1d** included within **Volume III** of this EIA Scoping Report.
- 16.5.7. The Stockton-on-Tees HER dataset was consulted via Tees Archaeology's online map (Ref. 16.14). No HER records are located within the Site. The entirety of the Site is located on ground reclaimed from a former tidal flats environment in the 20<sup>th</sup> century to accommodate developing heavy industry. The recorded presence of medieval to post-medieval salterns from approximately 2.5km north of the Site at Seaton Common Nature Reserve (HER ref 1653 for the closest example to the Site) indicates the Site may have been a focus for similar activity prior to reclamation and development.
- 16.5.8. A review of historic Ordnance Survey mapping indicates that the Site was sand banks, consisting of sand and mud, known as Seal Sands, until at least the 1950s. The land was reclaimed in the later part of the 20<sup>th</sup> century and used for industry. The previous use of the Site is considered to have removed any surviving sub-surface archaeological remains, although given the nature of the land before it was reclaimed, extensive remains would not be anticipated.
- 16.5.9. The Site has been subject to successive periods of development including the present chemical works and oil and gas processing facilities. The infrastructure of these developments, including roads, tanks, factory buildings, rail tracks, storage tanks, and pipelines and utilities are all anticipated to have had below ground impacts, which will have substantially truncated or entirely removed evidence of any archaeological remains related to previous development or human activity (archaeological remains) within the Site.
- 16.5.10. There are no recorded assets within the River Tees and no impacts are anticipated by works in this area.

## FUTURE BASELINE

- 16.5.11. The future baseline is not expected to change from the existing baseline described above. This is because buried heritage assets are a static resource, which have reached equilibrium with their environment and do not change (i.e. decay or grow) unless their environment changes as a result of human or natural intervention.
- 16.5.12. For above ground heritage assets there may be some decay over time in the absence of the Proposed Scheme. However, the setting of heritage assets may change if future development takes place. Future development could have a detrimental or positive effect on setting and could result in the intervening presence of buildings and/or vegetation.

## 16.6 SENSITIVE RECEPTORS

- 16.6.1. No sensitive receptors have been identified in this scoping exercise. As illustrated on **Figure 2.1d** included within **Volume III** of this EIA Scoping Report, the closest designated heritage asset is Haverton Hill and Port Clarence War Memorial (NHLE ref 1439661) at a distance of 2.7km and there are no non-designated heritage assets within the Site itself. The Site's archaeological potential is considered to be negligible owing to 20<sup>th</sup> century industrial developments and land reclamation.

## 16.7 DESIGN, MITIGATION AND ENHANCEMENT MEASURES

- 16.7.1. Any requirements for mitigation and/or protection measures of sensitive receptors will be defined in an Outline Code of Construction Practice (OCoCP) to be submitted with the application for development consent. It is envisaged that the final CoCP will be secured by a DCO requirement.
- 16.7.2. The Outline CoCP will include the following measures to mitigate any unexpected discoveries of buried assets as follows:
- Immediately stop works in the area of the find;
  - Protect the find and the area surrounding by fencing/blocking off and immediately contact the Site Manager;
  - Contact an Archaeologist and obtain advice on how to proceed; and
  - All significant finds reported to the SoTBC archaeological advisor.
- 16.7.3. Therefore, there is no requirement for further design, mitigation and enhancement measures for non-designated assets or below ground archaeology beyond those defined that will be identified in the outline CoCP as there are anticipated to be no likely significant effects.

## 16.8 DESCRIPTION OF POTENTIAL LIKELY SIGNIFICANT EFFECTS

### CONSTRUCTION

- 16.8.1. Archaeological below ground remains are not anticipated to exist within the Site due to truncation associated with the industrial activity in the 20<sup>th</sup> century and previous development as referenced in section **Existing Baseline**.
- 16.8.2. There are no designated heritage assets within 1km of the Site, with the nearest (Haverton Hill and Port Clarence War Memorial) being 2.7km away. Due to this distance, and that the nature of the Proposed Scheme (within the Site) is consistent with the industrial character of the Study Area, no effects arising from change within the settings of any assets are anticipated.
- 16.8.3. Overall, it is considered that there are no likely significant effects anticipated to cultural heritage during the construction phase of the Proposed Scheme

### OPERATION AND MAINTENANCE

- 16.8.4. Archaeological below ground remains are only considered within the construction phase due to the nature of the assets (being below ground).
- 16.8.5. There are no designated heritage assets within 1km of the Site, with the nearest (Haverton Hill and Port Clarence War Memorial) being 2.7 km away. Due to this distance, and that the nature of the Proposed Scheme (within the Site) is consistent with the industrial character of the Study Area there are no anticipated effects arising from change within the setting of any assets during the operation and maintenance of the Proposed Scheme.

### DECOMMISSIONING

- 16.8.6. Archaeological below ground remains are only considered within the construction phase due to the nature of the assets (being below ground).
- 16.8.7. There are no designated heritage assets within 1km of the Site, with the nearest (Haverton Hill and Port Clarence War Memorial) being 2.7km away. Due to this distance no anticipated effects arising from change within the setting of any assets during the decommissioning phase.

## SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT

16.8.8. A summary of the elements scoped in and out of the assessment for cultural heritage are set out in **Table 16-1** below. Each element is accompanied by a justification for its inclusion or exclusion from further assessment, based on professional judgement.

**Table 16-1 - Elements Scoped In or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
<b>Buried heritage assets within the Site</b>	Construction		✓	No archaeological remains are anticipated to survive within the Site. Therefore, these effects can be scoped out of the construction phase as no likely significant effects are anticipated.
<b>Designated and non-designated heritage assets outside of the Site</b>	Construction, operation and maintenance, and decommissioning		✓	No likely significant effects are anticipated during the construction, operation and maintenance, and decommissioning phases of the Proposed Scheme. This is because there are no assets that would be affected by changes in their setting in proximity to the Site.

## 16.9 PROPOSED METHODOLOGY

16.9.1. As it is proposed that cultural heritage will be scoped out of the EIA, no further desk-based or impact assessment is required.

## 16.10 ASSUMPTIONS AND LIMITATIONS

16.10.1. Due to the works being at scoping stage, only publicly available sources and datasets have been consulted in order to provide an overview of designated and non-designated historic assets within the Site.

16.10.2. No consultation with SoTBC has been undertaken as part of this scoping assessment.

16.10.3. This scoping chapter is based on a review of the available desk-based data including evidence of the industrial use and nature of the Site, the previous sub-surface impacts, and the industrial nature of the setting of the assets within the Study Area.

## 16.11 REFERENCES

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- Ref. 16.13.** Heritage Gateway. Available at: <https://www.heritagegateway.org.uk/gateway/>
- Ref. 16.14.** Tees Archaeology Historic Environment Record (HRD). Available at: <https://teesarchaeology.com/historical-environmental-record-her>
- Ref. 16.15.** Historic England. The National Heritage List for England (NHLE). Available at: <https://historicengland.org.uk/listing/the-list/>
- Ref. 16.16.** National Library of Scotland (NLS) OS maps. Available at: [Ordnance Survey Maps - National Library of Scotland \(nls.uk\)](https://www.nls.uk/ordnance-survey-maps/)

## 17 POPULATION AND HUMAN HEALTH

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### 17.1 INTRODUCTION

17.1.1. This chapter considers the impacts on population and human health that may arise during construction, operation and maintenance, and decommissioning of the Proposed Scheme (as described in **Chapter 2 Site and Proposed Scheme Description** of this EIA Scoping Report), and any potential significant effects. It sets out the proposed methodology for the population and human health assessment and identifies those impacts that can be scoped out of the assessment. Where necessary, further assessment would be presented in the Preliminary Environmental Information Report (PEIR) and the Environmental Statement (ES).

### 17.2 LEGISLATION, POLICY AND GUIDANCE

17.2.1. This section outlines the relevant legislation, policy and guidance to the assessment of the population and human health effects associated with the Proposed Scheme.

#### LEGISLATION

17.2.2. The following legislation is relevant to the population and human health assessment:

- Countryside and Rights of Way (CRoW) Act (2000) (Ref. 17.1) The CRoW Act makes provision for and aims to protect public access to the countryside. It extends the right of public access to the countryside, including to woodlands, the Green Belt, waters and grasslands; and for connected purposes.
- Equality Act (2010) (Ref. 17.2) The Equality Act outlines legislation to protect people from discrimination in the workplace and in wider society, addressing the protected characteristics of:
  - Age;
  - Disability;
  - Gender reassignment;
  - Marriage and civil partnership;
  - Pregnancy and maternity,
  - Race;
  - Religion or belief;
  - Sex; and
  - Sexual orientation.
- Localism Act (2011) (Ref. 17.3) The Localism Act gives rights and powers to both communities and individuals. It is relevant in the context of the Proposed Scheme due to its proximity to recreational facilities.

#### POLICY

17.2.3. The following policies are relevant to the population and human health assessment:

- Overarching National Policy Statement (NPS) for Energy (EN-1) (2023) (Ref. 17.4) Was designated on 17 January 2024. Paragraph 4.3.4 states that an Environmental Statement (ES) should:



*“consider the potential effects, including benefits, of a proposal for a project, the applicant must set out information on the likely significant environmental, social and economic effects of the development, and show how any likely significant negative effects would be avoided, reduced, mitigated or compensated for, following the mitigation hierarchy. This information could include matters such as employment, equality, (...), community cohesion, health and well-being.”*

Paragraph 4.4.4 states:

*“(…) where the proposed project has an effect on humans, the ES should assess these effects for each element of the project, identifying any potential adverse health impacts, and identifying measures to avoid, reduce or compensate for these impacts as appropriate.”*

Paragraph 4.4.6 states:

*“Opportunities should be taken to mitigate indirect impacts, by promoting local improvements to encourage health and wellbeing, this includes potential impacts on vulnerable groups within society,(…) i.e. those groups which may be differentially impacted by a development compared to wider society as a whole.”*

- National Planning Policy Framework (NPPF) (2023) (Ref. 17.5). Whilst the National Planning Policy Framework (NPPF) does not contain specific policies for nationally significant infrastructure projects, it has the potential to be considered important and relevant to the Secretary of State (SoS) consideration of the project. The NPPF provides a framework within which locally prepared plans for housing and other development can be produced. Paragraph 96 states that *“Planning policies and decisions should aim to achieve healthy, inclusive and safe places.”*
- North East Inshore and North East Offshore Marine Plan (2021) (Ref. 17.6). The North East Marine Plan will help to enhance and protect the marine environment and achieve sustainable economic growth while respecting local communities both within and adjacent to the marine plan areas which stretches from the Scottish border and Flamborough Head, in Yorkshire. It includes the River Tees. Relevant policies include:
  - NE-CO-1: Co-existence;
  - NE-PS-1: Ports, Harbours and Shipping;
  - NE-ACC-1: Access;
  - NE-TR-1: Tourism and Recreation; and
  - NE-SOC-1: Social Benefits.
- Stockton-on-Tees Local Plan (2019) (Ref. 17.7). The Local Plan sets out the Council’s policies and proposals to guide planning decisions and establishes the framework for the sustainable economic growth and development of the Borough up to 2032. Relevant policies include:
  - Policy SD4 – Economic Growth Strategy
  - Policy ENV1 – Energy Efficiency
  - Policy ENV2 – Renewable and Low Carbon Energy Generation
  - Policy ENV3 – Decentralised Energy Generation and Supply
- Stockton-on-Tees Open Spaces Strategy (2017) (Ref. 17.8). This report provides an evidence base to help to inform the future provision of open spaces in Stockton-on-Tees.
- Stockton-on-Tees Communities Strategy (2020) (Ref. 17.9). The strategy sets out the vision for the communities to be *“cohesive, strong and welcoming”*.

## GUIDANCE

17.2.4. Consideration has been given to the following good practice guidance documents in the preparation of this chapter:

- National Planning Practice Guidance (2021) (Ref. 17.10)
- Planning Practice Guidance - Open Space, Sports and Recreation Facilities, Public Rights of Way and Local Green Space (2014) (Ref. 17.11)
- Planning Practice Guidance - Healthy and Safe Communities (2014) (Ref. 17.12)
- Design Manual for Roads and Bridges LA 112 Population and human health (2020) (Ref. 17.13) (DMRB LA 112)
- IEMA Determining Significance for Human Health in Environmental Impact Assessment (2022) (Ref. 17.14)

## 17.3 CONSULTATION

17.3.1. No specific consultation relating to the assessment of population and human health is currently proposed, beyond stakeholder opinions gathered as part of the Scoping process. However, statutory consultation will be undertaken with the local community which may illicit some responses relating to socio-economic and population matters which may become further embedded measures.

## 17.4 STUDY AREA

17.4.1. The Study Area considered for population and human health within this chapter varies according to the likely spatial extent of the effect under consideration.

17.4.1. In relation to the potential impacts on the population as a result of effects associated with land use, accessibility and human health, the Study Area has been based on the DMRB LA 112 - population and human health (DMRB LA 112) (Ref. 17.13). DMRB LA 112 advises a Study Area of 500m surrounding the Proposed Scheme for the land use and accessibility elements of the assessment (such as the effects on walkers, cyclists, and horse riders). Whilst DMRB LA 112 is written for the assessment of highways schemes, due to the limited nature of available guidance for the assessment of population and human health effects, DMRB LA 112 provides an appropriate methodology for assessing population and human health in the context of the Proposed Scheme.

17.4.2. In relation to human health, the relevant Study Area for human health is informed by the IEMA guidance - Determining Significance for Human Health in Environmental Impact Assessment (IEMA Guidance) (Ref. 17.14) and is defined by the extent and characteristics of the Proposed Scheme, and the communities directly and indirectly affected. For the purpose of the assessment, the Study Area is therefore comprised of the communities closest to the Proposed Scheme, whose populations are most likely to potentially experience changes to their health outcomes. These populations fall within the Billingham South ward in Stockton-on-Tees and therefore the baseline has been informed by data from these administrative areas.

## 17.5 BASELINE CONDITIONS AND FUTURE BASELINE

### DATA SOURCES

17.5.1. The population and human health baseline described in this section has been informed by the following data sources:

- Google Maps (Ref. 17.15);

- Fingertips Public Health Data (Ref. 17.16);
- English Indices of Multiple Deprivation (Ref. 17.17);
- Official Census and Labour Market Statistics (NOMIS) (Ref. 17.18);
- Tees Joint Strategic Needs Assessment (Ref. 17.19);
- Stockton-on-Tees Borough Council Local Plan Policies Map (Ref. 17.20);
- Stockton-on-Tees Active Travel Hub (Ref. 17.21); and
- Sustrans National Cycle Network map (Ref. 17.22).

17.5.2. A summary of the baseline conditions is presented below.

## **EXISTING BASELINE**

### **Land Use and Accessibility**

#### **Private Property and Housing**

17.5.3. Private property is residential land and residential development land that does not accommodate public space or any other community facility or assets. Commercial property is considered under the 'Development land and businesses' section below.

17.5.4. The principal land associated with the Study Area is industrial. There are no residential areas or housing allocations located within the Study Area. The nearest residential area to the Site is Port Clarence, located 3.3km to the south-west of the Site and the nearest housing allocation is located 7.5km west of the Site (Ref. 17.20).

#### **Community Land and Assets**

17.5.5. Within the Study Area, the Teesmouth National Nature Reserve (NNR) is located adjacent to the Site to the north and is used for recreation purposes such as bird watching and walking. There are no visitor facilities on the Teesmouth NNR site aside from a car park, which is situated approximately 1km north of the Site boundary. See **Chapter 7: Biodiversity** of this report for more information.

17.5.6. There are no other community land or assets within the Study Area or surrounding locality. The nearest community land is the RSPB Saltholme nature reserve, located approximately 3.5km west of the Site. The nearest community assets are located 3.7km south-west of the Site boundary, such as the Riverside Stadium, Middlesbrough College and the Middlesbrough Transporter Bridge.

#### **Development Land and Businesses**

17.5.7. The Site is located within Tees Valley, a connected economic area covering Darlington, Hartlepool, Middlesbrough, Redcar and Cleveland and Stockton-on-Tees. The 500m Study Area includes Seal Sands; an industrial 'park' on reclaimed land which is dominated by chemical and industrial uses. The north bank of the River Tees is occupied by a variety of operations including petro-chemical facilities storage and heavy engineering. Within the Site, this includes land associated with:

- Seal Sands Navigator Terminals;
- Exolum Seal Sands Terminal;
- ConocoPhillips Teesside Terminal;
- Teesside Biomass and Industrial Chemicals Limited; and
- Teesside Gas Processing Plant

17.5.8. Other businesses within the Study Area include:

- Intertek Chemical Plant;
- Greenergy Biofuels Teesside;
- The Mission to Seafarers North Tees and Hartlepool Branch;
- Lianhetech Seal Sands;
- KD Pharma LTD;
- Tees Industrial Substation;
- Wood UK; and
- Whitetower Energy Viking

### Walkers, Cyclists and Horse Riders (WCH)

17.5.9. There are no public rights of way (PRoW) identified within the 500m Study Area. The English Coast Path is located approximately 1.2km west of the Proposed Scheme on Seaton Carew Road passing the RSPB Salthome Nature Reserve. This is a new ten-mile route from Newport Bridge to North Gare which opened in 2019, to provide increased access to the Tees Valley coastline (Ref. 17.23) and is of national significance. This route is also part of the 9.3km long North Tees Trail walking route from Port Clarence to Seal Sands (Ref. 17.24).

### Marine Recreation

17.5.10. The River Tees is used for a variety of recreational uses, including (Ref. 17.25):

- Commercial passenger boats;
- Leisure craft - powered and unpowered;
- Smaller craft involved in various river events and activities;
- Water Skiing;
- Jet Skiing; and
- Angling (including a number of angling associations: Stockton Angling Ltd, Thornaby Angling Association, and Yarm Angling Ltd (Ref. 17.26)).

17.5.11. Whilst these marine recreational activities take place on the River Tees, due to the heavy industry use of the River Tees in the area adjacent to the Proposed Scheme (and beyond the 500m Study Area), these types of uses are very limited, with the majority of these uses taking place in the section of the River Tees further up-river where publicly accessible routes and launch points provide more readily access to the river compared with the sections adjacent to the Proposed Scheme.

### Human Health

#### Age Breakdown

17.5.12. The number and proportion of the population per age group for Billingham South, Stockton-on-Tees (in which the Proposed Scheme is located), County Durham, North East, and England is presented in **Table 17-1**. Overall, Billingham South has a population age profile that is similar to both regional and national averages, however, the ward has the lowest working age population (16-64 years) at 59.7% compared to the other jurisdictions at 61.5%, 61.8%, 61.9% and 63% for Stockton-on-Tees, County Durham, North East and England respectively. The ward also has a slightly larger proportion of elderly people (65+ years) compared to the regional and national averages.



**Table 17-1 – Age breakdown for Billingham South, Stockton-on-Tees, County Durham, North East, and England 2021 (Ref. 17.27)**

Age group (years)	Billingham South		Stockton-on-Tees		County Durham		North East		England	
	Total	Proportion	Total	Proportion	Total	Proportion	Total	Proportion	Total	Proportion
<b>0-15</b>	1,225	19.4	38,585	19.6	88,108	16.9	468,052	17.7	10,483,094	18.5
<b>16-24</b>	553	8.8	17,904	9.1	58,785	11.3	284,150	10.7	598,9231	10.6
<b>25-64</b>	3,211	50.9	102,922	52.4	263,832	50.5	1,354,255	51.2	29,616,420	52.4
<b>65-84</b>	1,168	18.5	32,871	16.2	98,546	18.9	474,650	17.9	902,9000	16.0
<b>85+</b>	146	2.3	4,312	2.2	12,791	2.5	65,908	2.5	137,2300	2.4

## Population Health

17.5.13. Overall, the health of the Billingham South ward is similar to the health status at both a regional and national level, as presented in **Table 17-2**. Billingham South has a higher percentage of obese children in both reception year and year 6 compared to national averages, as well as significantly worse emergency hospital admissions for coronary heart disease, emergency admissions for Chronic Obstructive Pulmonary Disease (COPD), deaths from respiratory disease, limiting long-term illness or disability.

**Table 17-2 – Indicators of Population Health for Billingham South, the North East, and England (Ref. 17.28)**

Indicator	Indicator value	Period	Billingham South	North East	England
Life expectancy at birth for males	Years	2016 – 2020	77.7	77.1	79.5
Life expectancy at birth for females	Years	2016 – 2020	79.5	82.8	83.2
Obese children (reception year)	%	2019/20 – 2021/22	14.3	11.4	9.9
Obese children (year 6)	%	2019/20 – 2021/22	25.0	26.6	21.6
Emergency hospital admissions for coronary heart disease	Standardised admission ratio	2016/17 – 2020/21	160.6	153.7	100.0
Deaths from coronary heart disease	Standardised mortality ratio	2016 – 2020	119.7	111.1	100.0
Emergency admissions for COPD	Standardised admission ratio	2016/17 – 2020/21	176.4	159.1	100.0
Deaths from respiratory disease	Standardised mortality ratio	2016 – 2020	142.0	112.9	100.0
Deaths from all cancer (all ages)	Standardised mortality ratio	2016 – 2020	113.4	110.9	100.0
Limiting long term illness or disability	%	2011	21.7	19.0	17.6

## Indices of Deprivation

17.5.14. The English Indices of Multiple Deprivation 2019 (IMD) (Ref. 17.17) comprised seven different 'domains' which relate to income, employment, education, health, skills and training, barriers to housing, and services to create an overall deprivation score.

17.5.15. The Proposed Scheme falls within the Stockton-on-Tees 003B. This neighbourhood ranked 2,363 out of the 32,844 Lower Super Output Areas (LSOAs) in England, where 1 is the most deprived. Therefore, this neighbourhood is within the 10% most deprived neighbourhoods in England. This neighbourhood is also within the top 10% and 20% most deprived neighbourhoods for income deprivation affecting children index, and income deprivation affecting older people index, respectively.

### **Air Quality, Landscape, Noise and Water Environment**

17.5.16. The Proposed Scheme is not located within or near any existing Air Quality Management Areas or Noise Important Areas.

17.5.17. Whilst the Proposed Scheme is located on the bank of the River Tees, the majority of the Study Area lies within low risk Flood Zone 1.

17.5.18. A full review of baseline conditions for air quality, landscape, noise and water receptors is set out in **Chapter 5: Air Quality, Chapter 6: Noise and Vibration, Chapter 8: Water Environment and Flood Risk and Chapter 9: Landscape and Visual.**

### **FUTURE BASELINE**

17.5.19. Between 2018 and 2043, the population of Stockton-on-Tees is anticipated to only increase by 2% (Ref. 17.29), whereas the population for England is anticipated to increase by 10% in the same period (Ref. 17.30). Aging of the population is set to continue, with Stockton-on-Tees population aged 65 and over projected to increase by 46% between 2018 and 2043 (Ref. 17.29). This growth is likely to put strain on existing services and require additional housing, facilities, services and infrastructure.

17.5.20. Existing businesses are anticipated to remain operational in the future baseline, however it is acknowledged that market fluctuations and economic factors cannot be predicted which may lead to some businesses relocating or closing. It is noted that the Proposed Scheme Site is allocated within the Stockton-on-Tees Local Plan (Ref. 17.7) as a site for Specialist Employment, in support of economic development in the borough. As such, it is considered likely that in the absence of the Proposed Scheme, the Site would come forward for development of a scheme of a similar industrial nature.

17.5.21. Despite the projected population growth and demographic changes, these factors are not considered likely to change the overall assessment outcome.

## **17.6 SENSITIVE RECEPTORS**

17.6.1. On the basis of the baseline conditions, the sensitive receptors for population identified are as follows:

- Businesses that rely upon access to the River Tees; and
- Recreational users of the River Tees.

17.6.2. Human health focuses on the potential effects on vulnerable groups who are most likely to experience health impacts due to the nature of the Proposed Scheme. Given the location of the Proposed Scheme; the closed nature of the Site which prevents public access; the lack of PRoW and routes for walkers and cyclists within the Study Area; and the absence of residential and community receptors in the locality; there are unlikely to be any sensitive receptors for human health.

## 17.7 DESIGN, MITIGATION AND ENHANCEMENT MEASURES

### CONSTRUCTION

17.7.1. Relevant design, mitigation and enhancement measures will be identified in the ES. These are likely to include the adoption of Best Practicable means, such as:

- Access to businesses within and surrounding the Study Area (both terrestrial and marine) would be maintained throughout the construction period;
- Navigation routes on the River Tees for recreational and commercial vessels would be maintained (see **Chapter 15: Shipping and Navigation** for further information). This would include an approved plan to be agreed with the Harbour Master and other relevant bodies to ensure that construction vessels using the river channel do not impede movements associated with other marine businesses and recreational river users;
- Navigation protection measures for vessels associated with construction of the Marine Jetty will require construction vessels (such as cranes or barges) to display to appropriate lighting, shapes, sounds and signals in accordance with the International Regulations for Preventing Collisions at Sea (COLREG); and
- Mitigation measures from other technical environmental assessments, including traffic and transport, air quality and noise and vibration will be incorporated into an Outline Code of Construction Practice (CoCP) which will be submitted with the application for development consent.

### OPERATION AND MAINTENANCE PHASE

17.7.2. Relevant design, mitigation and enhancement measures will be identified in the ES. These are likely to include:

- An approved plan for marine LNG deliveries will be agreed with the Harbour Master and other relevant bodies to ensure that vessels do not unreasonably impede movements associated with other marine businesses and recreational river users; and
- Mitigation measures from other technical environmental assessment, including traffic and transport, air quality, noise and vibration, and landscape and visual.

## 17.8 DESCRIPTION OF POTENTIAL LIKELY SIGNIFICANT EFFECTS

17.8.1. It is not anticipated that the Proposed Scheme will give rise to any significant construction, operation and maintenance, or decommissioning phase effects on sensitive receptors.

### SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT

17.8.2. A summary of the elements scoped in and out of the assessment for population and human health are set out in **Table 17-3** below. Each element is accompanied by a justification for its inclusion or exclusion from further assessment based on professional judgement/refer to specific guidance criteria.



**Table 17-3 - Elements Scoped In or Out of Further Assessment**

<b>Element</b>	<b>Phase</b>	<b>Scoped In</b>	<b>Scoped Out</b>	<b>Justification</b>
<b>Private Property and Housing</b>	Construction, Operation and maintenance, and Decommissioning		✓	Due to the absence of private properties and housing located within the Study Area and the contained nature of the construction works, effects on access to private property and housing are not anticipated during construction, operation, and decommissioning of the Proposed Scheme.
<b>Community Land and Assets</b>	Construction, Operation and maintenance, and Decommissioning		✓	Whilst the Teesmouth National Nature NNR is located within the Study Area and is used for recreational purposes, there will be no disruption to access during construction, operation, or decommissioning. Due to the NNR being located within an already heavily industrialised area, the construction works and operation of the Proposed Scheme would not significantly decrease recreational activities or user enjoyment. As such, effects are not anticipated during construction, operation and decommissioning of the Proposed Scheme.
<b>Walkers and Cyclists</b>	Construction, Operation and maintenance, and Decommissioning		✓	Due to the absence of PRoW routes within the Study Area, effects on WCH users are not anticipated during construction, operation or decommissioning of the Proposed Scheme.
<b>Terrestrial Businesses</b>	Construction and Decommissioning		✓	Construction of the Proposed Scheme (and subsequent decommissioning activities) are not anticipated to result in significant effects on access to businesses within the Study Area, as construction traffic is expected to be limited.
	Operation and maintenance		✓	Once operational, the Proposed Scheme would be largely unmanned and would have minimal operational traffic on roads.

Element	Phase	Scoped In	Scoped Out	Justification
				<p>The Statutory Harbour Authority would oversee the movement of vessel movements and undertake maintenance in accordance with its statutory duties reducing impact on other businesses using Teesport (further details in <b>Chapter 15: Shipping and Navigation</b> of this EIA Scoping Report). On this basis the Proposed Scheme is not anticipated to result in any impacts to nearby businesses.</p>
<p><b>Businesses that rely upon access to the River Tees</b></p>	<p>Construction and Decommissioning</p>		<p>✓</p>	<p>Construction of the Proposed Scheme (and subsequent decommissioning activities) are not anticipated to significantly affect businesses that rely upon access to the River Tees, as limited marine traffic is anticipated during construction and decommissioning phases.</p> <p>The potential effects associated with the construction phase would be managed by measures included within the Outline CoCP to ensure that businesses reliant upon access to the River would be able to undertake marine operations. It is not anticipated that any significant construction material traffic is proposed by marine vessels, with the exception of that associated with the construction of the Marine Jetty. This will be managed through an approved plan agreed with the Harbour Master to lessen or remove the impact of any vessel movements by the Applicant's vessels during construction of the Marine Jetty. Further details are considered in <b>Chapter 15: Shipping and Navigation</b> of this EIA Scoping Report, where further assessment is provided in relation to marine vessel navigation and traffic.</p>
	<p>Operation</p>		<p>✓</p>	<p>There is likely to be an increase in marine vessels associated with the operation of the Proposed Scheme. It is anticipated that there will be an average</p>

Element	Phase	Scoped In	Scoped Out	Justification
				<p>of 1-2 LNG delivery a week or up to approximately 80 vessels a year. This will depend on the UK requirements for energy security (and is the current working assumption subject to discussions with Department for Energy Security and Net Zero (DESNZ) and Ofgem). These weekly vessel numbers are not predicted to impede on businesses that also rely on the river for transportation of materials and goods. Further details are considered in <b>Chapter 15: Shipping and Navigation</b> of this EIA Scoping Report, where further assessment is provided in relation to marine vessel navigation and traffic.</p>
<p><b>Recreational Users of the River Tees</b></p>	<p>Construction, Operation and maintenance, and Decommissioning</p>		<p>✓</p>	<p>Due to the heavy industrial use of the River Tees at its mouth, adjacent to the Site, recreational users of the river are understood to be limited within the Study Area, and construction, operation and maintenance, and decommissioning of the Proposed Scheme would not significantly decrease the enjoyment of recreational activities for river users. As such, effects are not anticipated during construction, operation or decommissioning of the Proposed Scheme.</p>
<p><b>Human Health</b></p>	<p>Construction, Operation and maintenance, and Decommissioning</p>		<p>✓</p>	<p>There is limited potential for adverse health effects as a result of the Proposed Scheme. Any which do arise are likely to be temporary and minor given the location of the site in an existing industrial area with limited human health receptors. Whilst people in vulnerable groups (e.g. older people, younger people) may access Teesmouth NNR, given the existing surrounding industrial context and associated environmental amenity, the construction, operation and maintenance, and decommissioning of the Proposed Scheme is not considered</p>

Element	Phase	Scoped In	Scoped Out	Justification
				<p>likely to present specific considerations relevant to Human Health and vulnerable groups.</p> <p>Any human health effects detailed in <b>Chapter 5: Air Quality, Chapter 6: Noise and Vibration, and Chapter 13: Traffic and Transport</b> will be assessed within those respective ES chapters, and mitigation considered where relevant and appropriate.</p>

## 17.9 PROPOSED METHODOLOGY

17.9.1. As identified in **Section 17.8**, there are no potential significant effects on population and human health identified during construction, operation and maintenance, and decommissioning of the Proposed Scheme. No further assessment is proposed to be undertaken in the ES for population and human health.

## 17.10 ASSUMPTIONS AND LIMITATIONS

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

- This chapter relies on, in part, data provided by third parties (e.g. OS Mapping, Local Authorities, NOMIS which are the most up-to-date, available at the time of writing;
- No significant limitations in these datasets have been identified that would affect the outcome of this assessment; and
- The assessment of effects on human health has relied on the use of reasonable assumptions and professional judgement to determine the likely significance of effects.

## 17.11 REFERENCES

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- Ref. 17.2.** UK Government (2010). 'Equality Act'. Available at: <https://www.legislation.gov.uk/ukpga/2010/15/contents>
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- Ref. 17.4.** Department for Energy Security & Net Zero (2023) 'Overarching National Policy Statement (NPS) for Energy EN-1'. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1147380/NPS\\_EN-1.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147380/NPS_EN-1.pdf)
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## 18 GEOLOGY AND SOILS

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### 18.1 INTRODUCTION

- 18.1.1. This chapter considers the impacts on geology and soils that may arise during construction, operation and maintenance, and decommissioning of the Proposed Scheme (as described in **Chapter 2: Site and Proposed Scheme Description** of this EIA Scoping Report), and any potential significant effects. It sets out the proposed approach for the assessment of potential effects on geology and soils and identifies those impacts that can be scoped out of further assessment.
- 18.1.2. This chapter has been written in consideration of a proportionate approach to the assessment of geology and soils and the significance of effects that may be posed as a result of the Proposed Scheme. In writing this chapter, the baseline environment has been considered alongside the nature of the Proposed Scheme and the various elements of its development. Particular consideration has been given to mitigation measures which are inherent to a scheme such as the design of the Proposed Scheme and where it is considered that mitigation through standard industry practice (either via design requirements, secured via DCO Requirements and other regulatory requirements during operation) is integrally embedded within the Proposed Scheme. Following this analysis consideration has then been given as to whether further assessment is required within the EIA.
- 18.1.3. This chapter should be read in conjunction with the following chapters of this EIA Scoping Report:
- **Chapter 8: Water Environment and Flood Risk;**
  - **Chapter 12: Materials and Waste;** and
  - **Chapter 14: Major Accidents and Disasters.**
- 18.1.4. This chapter is supported by the following appendix provided in Volume II:
- **Appendix 18A – Preliminary Environmental Risk Assessment**
- 18.1.5. This chapter is supported by the following figures provided in Volume III:
- **Figure 18.1 – Artificial Ground**
  - **Figure 18.2 – Superficial Deposits;** and
  - **Figure 18.3 – Bedrock Geology.**

### 18.2 LEGISLATION, POLICY AND GUIDANCE

- 18.2.1. This section outlines the relevant legislation, policy and guidance for the assessment of potential geology and soils effects associated with the Proposed Scheme.

#### LEGISLATION

- 18.2.2. The relevant legislation for geology and soils comprise:
- Environmental Protection Act (1990) (Ref. 18.1) This is the key regulatory regime relating to historical land contamination. Part 2A of the Environmental Protection Act 1990 describes a regulatory role for local authorities and provides local authorities with the power to inspect land to identify land which is contaminated within the meaning of the Part 2A definition, to establish liability and to ensure its remediation. In England and Wales the Part 2A regime consists of three main legislative/statutory elements, these are Part 2A itself, the statutory guidance, and the Regulations.



- Contaminated Land Regulations (England) (2006) (amended 2012) (Ref. 18.2) Regulation 3 provides a definition of what constitutes ‘contaminated land’ and sets out the responsibilities of the local authority and the Environment Agency in the identification and management of contaminated land. Contaminated land assessment works associated with Part A are to be conducted in accordance with these regulations.
- The Water Environment (Water Framework Directive) (England and Wales) Regulations (2017) (Ref. 18.3) Legislation that seeks to establish an integrated approach to the protection and sustainable use of the water environment.
- Environmental Damage (Prevention and Remediation) (England) Regulations (2015) (Ref. 18.4) These Regulations aim to prevent serious environmental effects or ensure that remediation is carried out. The emphasis is on encouraging operators to put in place appropriate pollution prevention measures and where appropriate agreed voluntary remedial action. They also specifically define three types of environmental damage: biodiversity damage to European Union protected species and habitats and Sites of Special Scientific Interest (SSSI); water damage; and land damage.
- The Environmental Permitting (England and Wales) Regulations 2016 (Ref. 18.5) These regulations streamline the legislative system for industrial and waste installations into a single permitting structure for those activities which have the potential to cause harm to human health or the environment. They require every regulated facility (as defined) to be operated under the authority of an environmental permit. They provide, among other things, for: the discharge of functions by the regulator in relation to permits, procedure for environmental permitting, enforcement notices and other enforcement measures and powers of the regulator.
- Control of Substance Hazardous to Health Regulations (COSHH) (2002) (Ref. 18.6) Under COSHH Regulations employers are required to control substances that are hazardous to health. It outlines a precautionary approach to risk management with control strategies aiming to reduce exposure as much as possible.
- Control of Asbestos Regulations (CAR) 2012 (Ref. 18.7) Legislation to set out the duties to manage risks from asbestos and asbestos containing materials (ACM) in existing non-domestic premises and during any work activity involving asbestos. Duty holders must make sure anyone who carries out any work in non-domestic premises and any occupants of the premises are not exposed to asbestos from ACM that may be present.
- Construction (Design & Management) Regulations (CDM) (2015) (Ref. 18.8) Legislation to ensure health and safety issues are properly considered during a project’s development so the risk of harm to those who have to build, use and maintain the development is reduced. CDM regulations apply to all building and construction work, including new build, demolition, refurbishment, extensions, conversions, repair and maintenance.

## POLICY

- 18.2.3. National Policy Statements (NPSs) set out the primary policy against which an application for the development consent of the Proposed Scheme will be considered. The Overarching National Policy Statement for Energy (EN-1) (Ref. 18.9) and NPS for Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Ref. 18.10) are relevant to the Proposed Scheme.
- 18.2.4. Section 5.4 within EN-1 outlines the requirement for biodiversity and geological conservation. It is stated that where the development site is subject to EIA the applicant should ensure that the ES

clearly sets out any effects on internationally, nationally and locally designated sites of ecological or geological conservation importance.

18.2.5. Other relevant planning policies include:

- The National Planning Policy Framework (NPPF) (2023) (Ref. 18.11) Whilst the NPPF does not contain specific policies for nationally significant infrastructure projects, it has the potential to be considered important and relevant to the Secretary of State's (SoS) consideration of the Proposed Scheme. The NPPF presents the Government's planning policies for England and how these are to be applied. Chapters within the NPPF relevant to geology and soils include: Chapter 11: Making effective use of land; Chapter 15: Conserving and enhancing the natural environment; and Chapter 17: Facilitating the sustainable use of minerals.
- Stockton on Tees Borough Council Local Plan (Adopted 30 January 2019) (Ref. 18.12) The Local Plan sets out the Council's policies and proposals to guide planning decisions and establishes the framework for the sustainable economic growth and development of the Borough up to 2032. Chapter 8 of the Local Plan relates to the Natural, Built and Historic Environment. The following policies relate to the assessment of geology and soils.
  - Policy ENV5 – Preserve, Protect and Enhance Ecological Networks, Biodiversity and Geodiversity
  - Policy ENV6 – Green Infrastructure, Open Space, Green Wedges and Agricultural Land
  - Policy ENV7 – Ground, Air, Water, Noise and Light Pollution
- Tees Valley Joint Minerals and Waste Development Plan Documents. The development plan documents (DPDs) were prepared jointly by the five boroughs of Darlington, Hartlepool, Middlesbrough, Redcar and Cleveland and Stockton-on-Tees. The following two DPDs have been produced and provide information on the planning related issues which arise from minerals and waste in the Tees Valley Region. The DPDs cover the period 2011-2026.
  - Core Strategy (Adopted September 2011) (Ref. 18.13). Details the long-term spatial vision and the strategic policies needed to achieve the key objectives for minerals and waste developments in the Tees Valley
  - Policies and Sites (Adopted September 2011) (Ref. 18.14). Identifies specific sites for minerals and waste development and sets out policies which will be used to assess minerals and waste planning applications.

## GUIDANCE

18.2.6. Good practice guidance relevant for geology and soils are:

- Natural Environment (Published January 2016, updated July 2019) (Ref. 18.15)
- Health and Safety Executive (HSE) (1991) Guidance Note HS(G) 66, Protection of Workers, and the General Public during the Development of Contaminated Land (Ref. 18.16)
- Environment Agency (2020 Updated July 2023) Land Contamination Risk Management (LCRM) (Ref. 18.17)
- Environment Agency and National House Building Council (NHBC) (2008) Guidance for the safe development of housing on land affected by contamination, Environment Agency R&D Publication 66 (R&D66) (Ref. 18.18)
- CIRIA C552 (2001), Contaminated Land Risk Assessment: A guide to good practice (Ref. 18.19)
- CIRIA C532 (2001) Control of Water Pollution from Construction Sites (Ref. 18.20)

- BS 10175 (2011 +A2:2017) Investigation of Potentially Contaminated Sites – Code of Practice (Ref. 18.21)
- Department for Environment, Food and Rural Affairs (DEFRA), Contaminated Land Statutory Guidance April 2012 (Ref. 18.22)
- Environment Agency (2018) Groundwater Protection (Ref. 18.23)
- British Standards Institute (BSI) BS 5930 (2015 +A1:2020) The Code of Practice for Site Investigations (Ref. 18.24)
- Design Manuals for Roads and Bridges (DMRB) (October 2019) LA 109 - Geology and Soils (Ref. 18.25)

## 18.3 CONSULTATION

18.3.1. At the time of writing, no consultation has been undertaken to date in relation to geology and soils. However, engagement will be undertaken with key stakeholders such as the Environment Agency and Stockton-on-Tees Borough Council ahead of the submission of the application for development consent.

## 18.4 STUDY AREA

- 18.4.1. The Site is an irregular shaped parcel of land lying approximately 2 to 6 metres above ordnance datum (m AOD), and is illustrated on **Figure 1.1**.
- 18.4.2. The Study Area considered for the geology and soils includes the Site, plus the following buffers:
- A 50m buffer from the Site has been used in identifying sources of contamination posing a risk to human health receptors. This is the area that is considered to have the potential to be impacted in terms of geology and soils because of the Proposed Scheme and surrounding sensitive environmental receptors and contamination migration potential. Given there is no direct citing of a recommended buffer in industry guidance for the assessment of human health in relation to contaminated land, the 50m buffer used is based on professional judgement and its acceptance on other schemes.
  - A 250m buffer from the Site has been used to identify sources of contamination posing a risk to sensitive controlled waters receptors (groundwater and surface water). This is consistent with safe development on contaminated land guidance document R&D66 (Ref. 18.16) when considering the impacts of contamination on sensitive environmental receptors.
- 18.4.3. It is noted that the above buffers are based on human health and controlled waters receptors. Other sensitive receptors such as mineral resources, are summarised within **Section 18.5** of this chapter. However, these other receptors are specifically within the Site and do not require consideration within a buffer beyond the Site boundary.

## 18.5 BASELINE CONDITIONS AND FUTURE BASELINE

### DATA SOURCES

- 18.5.1. To inform the assessment of baseline conditions, a Phase 1 Preliminary Environmental Risk Assessment (Phase 1 PERA) (**Appendix 18A**) has been completed. The Phase 1 PERA comprises a review of the following publicly available data and data purchased from third parties, the key data sources are listed below:
- 18.5.2. The geology and soils described in this section has been informed by the following data sources:

- Groundsure Enviro + Geo Insight and Groundsure Insight Historical Ordnance Survey mapping (Ref. 18.27) (provided in Annex B of **Appendix 18A**);
- Zetica UXO Pre-Desk Study Assessment (February 2024) (provided in Annex D of **Appendix 18A**);
- British Geological Survey (BGS) Onshore GeoIndex online viewer (Ref. 18.26)
- BGS 1:50,000 map, Sheet 33 Stockton Solid and Drift Geology (Ref. 18.28);
- BGS 1:10,000 map, Sheet NZ52SW, Solid and Drift Geology (Ref. 18.29);
- DEFRA Magic Map website (Ref. 18.30); and,
- Cranfield Soil and Agrifood Institute Soilscales (Ref. 18.31).

18.5.3. At the time of writing, a geoenvironmental Site reconnaissance has not been carried out. The Phase 1 PERA (**Appendix 18A**) is therefore completely desk based.

### **EXISTING BASELINE**

18.5.4. The following sections present a summary of the baseline conditions, further detail along with historical Ordnance Survey (OS) maps are provided within the Phase 1 PERA (**Appendix 18A**).

#### **Site History**

18.5.5. The Site is situated within Seal Sands, a heavily industrialised area of Teesside with much of the area to the south comprising reclaimed land which has latterly been developed. The area to the immediate north of the site comprises Teemouth National Nature Reserve (NNR).

18.5.6. The Site historically comprised sand and mud flats with some fluvial channels (Greatham and West Chanel) in the west and northwest prior to being reclaimed between 1955 and 1983. The land to the east, along the River Tees, although reclaimed, remains undeveloped and in its current state. By 1983, the Seal Sands Road had been constructed along the south of the Site along with an industrial railway and several pipelines running adjacent to the road from nearby oil terminals and oil storage facilities. The emergency access road to the north of the Site and pylons were constructed by 1992. By 2001, areas of the Teesside Gas Processing Plant had been erected to the southwest of the Site and has subsequently developed over time to 2024.

#### **Soil Quality**

18.5.7. The Site lies within an area where the soil type is loamy and clayey soils of coastal flats with naturally high groundwater (Ref 18.31). However, it is noted that the Site itself and the wider area to the south of the Site was subject to extensive reclamation between 1955 and 1983 and, as such, the shallow ground conditions consist of artificial ground comprising dredged material from the River Tees and in some areas potential slag fill.

#### **Agricultural Land**

18.5.8. The majority of the Site is classified as urban with small areas to the northwest and southwest classified as Grade 5 agricultural land (very poor quality) (Ref 18.30).

#### **Geological Designated and Non-Designated Features**

18.5.9. A review of available information indicates that there are no potential Local Geological Sites (formerly referred to as Regionally Important Geological Sites (RIGS)) within the Site or in the immediate vicinity of the Site.

## Published Geology

- 18.5.10. BGS mapping indicates that artificial deposits of Made Ground are present across the Site and extend extensively across the wider area to the south of the Site. The 1:10,000 map (Sheet NZ52SW) notes the Made Ground as reclaimed (Made) Ground over marine and estuarine alluvium. Available BGS borehole records along the eastern portion of the emergency access road indicate the depth of Made Ground in that area of the Site extends to approximately 5.50m below ground level (bgl).
- 18.5.11. The superficial geology beneath the entire Site is shown to comprise Tidal Flat Deposits comprising of sand, silt and clay. Available BGS borehole records indicate the superficial deposits to consist of sand to depths between 10.0m bgl and 11.0m bgl. BGS borehole records in the west of the Site indicate superficial deposits of very loose silt to a depth of approximately 4.0m bgl, underlain by loose and medium dense sand to a depth of 10.1m bgl, overlying boulder clay.
- 18.5.12. The superficial deposits are predominately underlain by bedrock of the Mercia Mudstone Group (MMG), the north and northwestern portion of the Site is underlain by Sherwood Sandstone Group (SSG). A BGS borehole record located in the western portion of the Site records bedrock comprising siltstone was encountered at 28.5m bgl.
- 18.5.13. The published geology is illustrated on the following figures included in Volume III of the EIA Scoping Report.
- **Figure 18.1 – Artificial Ground**
  - **Figure 18.2 – Superficial Deposits; and**
  - **Figure 18.3 – Bedrock Geology.**

## Hydrogeology

- 18.5.14. According to the Groundsure report the superficial Tidal Flats deposits are classified as a Secondary Undifferentiated Aquifer and the underlying bedrock beneath most of the Site is classified as a Secondary B Aquifer (MMG), the bedrock beneath the northern and northwestern extent of the Site is classified as a Principal Aquifer (SSG).
- 18.5.15. The Groundsure report classifies the superficial and bedrock deposits as high vulnerability which are deposits that can easily transport pollution to groundwater. The Site does not lie in a groundwater source protection zone.
- 18.5.16. There are no active groundwater abstractions recorded on, or within, 250m of the Site.
- 18.5.17. A Brine Field is situated 80m southwest of the Site and influence from abstractions should be considered when assessing likely deeper groundwater flow direction as large-scale abstractions can influence local groundwater flow directions.
- 18.5.18. The Water Framework Directive (WFD) classifies the SSG as having a good chemical and overall rating and the MMG as having a poor chemical and overall rating.

## Mining, Ground Workings and Natural Cavities

- 18.5.19. A review of the Coal Authority Interactive map viewer available online (Ref. 18.37) indicates the Site does not lie within a Coal Mining Reporting Area.
- 18.5.20. The Site is within an area which has historically been subject to extensive brine extraction. The Groundsure reports the following:

- One Britpit located 124m west of the Site. The commodity is listed as salt.
- 27 various types of Surface Ground Workings, one water body is noted on Site.
- Four tunnels, two are located on Site.
- Three historical mineral planning areas, nearest is located 23m southwest of the Site.
- Four underground mine workings two are located on-site. The commodity is listed as salt-brine.
- Four mining cavities, the nearest is located 660m northwest of the Site.
- One Historical Mineral Planning Area within 250m of the Site, Cassel Works is located 23m southwest of the Site and the mineral is recorded as salt – brine.
- Four non-coal mining locations, the nearest is Saltholme Brinefield, located on site.

### **Environmental Designated Sites**

18.5.21. The northern extent of the Site and the section of the River Tees within the Site boundary lie within the Teesmouth and Cleveland Coast Site of Special Scientific Interest (SSSI). Also designated as a Conserved Wetland Site (Ramsar) and a Special Protection Area (SPA).

### **Landfills and Waste Management**

18.5.22. The Phase 1 PERA (**Appendix 18A**) reports one active or recent landfill on, or within, 250m of the Site:

- York Potash Processing & Ports Limited (291m east) for taking in Special Waste.

18.5.23. The Phase 1 PERA reports three historical landfills on, or within, 250m of the Site:

- South of Seal Sand Road (on site) for inert, industrial and commercial waste. Last recorded waste input indicated as occurring in 1978;
- Seal Sands, North Bank (on site) for inert and industrial waste. Last recorded waste input indicated as occurring in 1989.
- Seabanks Lagoon Site (156m west of the Site) for inert and industrial waste. Last recorded waste input indicated as occurring in 1979.

18.5.24. The Phase 1 PERA reports seven licenced waste sites onsite (some pertaining to the same site) and a further 11 within 250m of the Site:

- Seal Sands Storage Facility (on site) – stated to be an in-house storage facility.
- Vopak Terminal (on site) – stated to be an in-house storage facility.
- Teesside Site (31m south of the Site) – stated to be an in-house storage facility.
- Seal Sands (34m east of the Site) – stated to be an in-house storage facility.
- Seal Sands Storage (126m east of the Site) – stated to be an in-house storage facility.
- Lundbeck Pharmaceuticals (131m southwest of the Site) – stated to be an in-house storage facility.

### **Unexploded Ordnance (UXO)**

18.5.25. A Zetica UXO Pre-Desk Study Assessment (PDSA) recorded significant World War II military activity and bombing in close proximity to the Site, it was also a strategic target during World War I however no bombing was identified. Seal Sands was previously used as a practice bombing range for the Royal Air Force (RAF) Coastal Command and the area also contained one Civil QL/QF (C Series) bombing decoy to deflect bombing on Middlesbrough. Based on the findings of the PDSA, Zetica recommended that a detailed desk study to be commissioned to assess and potentially zone UXO hazard level at the Site.

18.5.26. Two detailed desk studies for separate areas of the Site have been commissioned previously and are provided in Annex D of the Phase 1 PERA (**Appendix 18A**). P1297/08/R1/B covers the eastern section of the Site and P4680-14-R1-A covers a section of the River Tees.

18.5.27. P1297/08/R1/B concludes the study area to be Low risk providing suitable measures are taken, especially if piling. Suitable measures include informing the site staff that the potential presence of UXO cannot be discounted and that site staff are informed of the actions to be taken should potential UXO be encountered. It is stated that clearance certification for borehole or pile locations, whilst considered prudent is not essential. Management measures in relation to UXO would be outlined in the Code of Construction Practice (CoCP).

18.5.28. P4680-14-R1-A concludes the study area to be Low to Moderate risk. The Moderate Risk area is located south of the Site and the Low risk is adjacent to the Site.

### **Potential Sources of Contamination**

18.5.29. The following relevant potential contamination sources have been identified in consideration of the Site's previous industrial use:

- Made Ground including stockpiled materials and former use as an inert landfill.
- Hazardous ground gasses and vapours from Made Ground and potentially surrounding contaminated land from nearby industries.
- Contamination (soil/groundwater) from past spills on and offsite from current and historical activities.

18.5.30. In consideration of the operational phase of the Proposed Scheme, notable areas of potential contamination sources include bulk liquid storage facilities (which will include existing facilities that are likely to be expanded) as well as liquid transfer pipelines and pipe connections.

### **Potential Contaminant Pathways**

18.5.31. Based on the initial Conceptual Site Model presented in the Phase 1 PERA

- Pathways to Human Health receptors:
  - Dermal contact with soils and groundwater;
  - Ingestion of dusts/soil particles;
  - Inhalation of dusts and fibres; and,
  - Inhalation of hazardous ground gases/vapours.
- Pathways to Controlled Water receptors:
  - Leaching of contaminants through the unsaturated zone and subsequent impact of groundwater within the underlying aquifers;
  - Lateral migration of contaminants within groundwater and subsequent impact of surface water receptors; and,
  - Vertical migration from piling during construction.
- Pathways to Site infrastructure:
  - Direct contact with contaminants (e.g. sulphates and hydrocarbons) in the soil and groundwater with below ground structures (underground potable water pipes and buried concrete); and,

- Accumulation of hazardous gases within below ground structures in the future development (explosive risk).
- Pathways to Site plant life:
  - Direct contact with contaminants within soils and shallow groundwater.

18.5.32. Confirmation of the nature and extent of impact to receptors via these pathways would require ground investigation, plus testing and assessment of contaminant concentrations in soil, water, gas and vapour phases. These pathways are potentially more plausible during the construction phase, but could also be relevant during the operational phase dependent on the nature of the developed site (i.e. foundation types, presence of areas of soft landscaping etc.). It is anticipated that the potential for impacts in both the construction and operational phases could be readily mitigated through typical health and safety and site remediation activities (if needed).

## **FUTURE BASELINE**

18.5.33. In a future baseline, if the Proposed Scheme does not go ahead, it is considered that the baseline within the development study area will remain in its current condition or undergo redevelopment of a different industrial nature.

## **18.6 SENSITIVE RECEPTORS**

18.6.1. Based on the initial Conceptual Site Model (CSM) presented in the Phase 1 PERA, relevant potential receptors are considered to include the following:

- Construction workers during the development and/or future maintenance workers;
- Future Site users;
- Neighbouring users of existing operational facilities during the development;
- Third parties during and after the development (e.g. visitors and users of the public road);
- Mineral resources (underlying deep reserves of gypsum and salt);
- Groundwater in superficial deposits (Secondary Undifferentiated Aquifer) and bedrock (Secondary B and Principal Aquifer); and
- Surface waters (River Tees).

## **18.7 DESIGN, MITIGATION AND ENHANCEMENT MEASURES**

18.7.1. At this stage of the Proposed Scheme's design (for more information on the current design and alternatives which have been considered, see **Chapter 2: Site and Proposed Scheme Description** of this EIA Scoping Report), specific details on embedded design or management measures to be secured and in place during the construction phase are not yet available. However, for a development such as the Proposed Scheme it is considered that there are a number of industry standard management measures, which should be considered when considering the potential effects that the Proposed Scheme may have on geology and soils. In consideration of geology and soils key management measures generally include the following (with further detail associated with the Phase 1 PERA recommendations provided in **Paragraph 18.7.2**):

- The preparation of CoCP, which will be secured as part of the DCO requirements. An Outline CoCP will be submitted with the application for development consent and be finalised as per a DCO Requirement.
- Undertaking of geo-environmental ground investigation, geo-environmental monitoring, generic quantitative risk assessment, followed by preparation and implementation of a remediation



strategy (where required). This would be secured under a DCO requirement, to correspond to standard land quality conditions generally imposed under the planning regime.

- Working in accordance with standard industry design guidance appropriate for a scheme such as the Proposed Scheme.
- Implementation of the requirements of an environmental permit during the operational phase. This would be secured by the requirements of the environmental permit.

18.7.2. Further detail on the management measures which are recommended in the Phase 1 PERA (**Appendix 18A**) are summarised as follows:

- Completion of a detailed UXO desk study across areas of the Site (covering locations where an existing detailed UXO desk study are not available), to ascertain the UXO risk at the Site, and to potentially zone the Site prior to future intrusive works. The detailed study would be delivered by way of Site-specific UXO report. The completion of detailed UXO desk study would be in accordance with standard industry practice, to be completed in advance of construction work commencing. This would be secured through the CoCP prepared for the construction phase of the Proposed Scheme.
- An intrusive investigation to refine the CSM and geotechnical design parameters. The requirement for an intrusive geo-environmental ground investigation would be secured via the planning regime and the standard land quality related conditions ordinarily imposed on a scheme such as the Proposed Scheme. The requirement for ground investigation to further assess design parameters will be secured by industry design standards such as, but not limited to: Eurocode 7 Geotechnical Design (1997) (Ref. 18.32), British Standards BS8004 Code of Practice for Foundations (Ref. 18.33) and British Standards BS6031 Code of Practice for Earthworks (Ref. 18.34). The scope of ground investigation would be proportional to the final design of the Proposed Scheme.
- The design process would include the initial completion and iterative update of a Geotechnical Risk Register, secured by working within accepted industry design standards. The Geotechnical Risk Register would be updated throughout the design process as further site-specific information becomes available and the design progresses.
- The installation and monitoring of gas/vapour and groundwater monitoring wells would be completed as part of the ground investigation. The results of which will be subject to a generic quantitative risk assessment and the interpretation delivered within a ground investigation interpretative report. As above the requirement for a ground investigation interpretative report will be secured via both the planning regime and the requirement for the Proposed Scheme to be designed in accordance with industry standard guidance.
- Should there be a need for the off-site disposal of soils, the soils destined for disposal will require classification to satisfy the Environment Agency, land contamination officers and planners. A preliminary waste classification assessment would be included within the ground investigation interpretative report, however the final disposal route would be confirmed via additional, material specific testing, completed during the works. The need for waste classification testing would be secured via inclusion within the CoCP prepared for the construction phase of the Proposed Scheme.
- The Proposed Scheme will look to reuse of materials where practicable. Where appropriate, this will be managed in accordance with a Materials Management Plan (MMP) prepared in line with the guidance provided within CL:AIRE guidance: The Definition of Waste: Development Industry Code of Practice (DoWCoP) (Ref. 18.35). The management of the reuse of materials to be

undertaken in accordance with an MMP would be included within the CoCP prepared for the construction phase of the Proposed Scheme.

- Identification of any remediation requirements, and likely timescales for remediation to aid development of the construction programme (described within a remediation strategy). The requirement for a remediation strategy would be secured via the planning regime standard land quality related conditions ordinarily imposed on a scheme such as the Proposed Scheme; and
- Identification of short-term monitoring requirements during the construction phase. These would be detailed within a CoCP prepared for the construction phase of the Proposed Scheme.
- Identification of likely long term monitoring requirements. If required, any potential long term monitoring could be secured by two potential avenues; a remediation strategy (if required) secured via requirements of the DCO and environmental permitting required for the operational phase of the Proposed Scheme.

## **CONSTRUCTION AND OPERATION (AND MAINTENANCE) PHASE**

18.7.3. It is anticipated that management measures during the construction phase, including but not limited to the following, will be secured as part of the DCO requirements:

- Earthworks would be completed in accordance with a Contaminated Land: Applications in Real Environments (CL:AIRE) compliant MMP to ensure reused material does not present a risk to human health or the environment and complies with UK waste legislation regulations;
- Incorporation of a temporary surface water drainage strategy to limit any contaminated run-off entering surrounding surface watercourses;
- Subject to the findings of future intrusive ground investigation (secured by a Requirement of the DCO), a suitable remediation strategy will be prepared to manage unacceptable contaminated land related risks in the context of the Proposed Scheme;
- Activities completed as part of the construction phase which have the potential to promote potential contaminant migration pathways to the underlying aquifers, for example piling, will be completed following an appropriate risk assessment and completed in accordance with appropriate Risk Assessments and Method Statements (RAMS).
- Appropriate measures to limit release of contaminants to the ground from construction related activities (e.g. use of plant/machinery and storage of materials).
- Short-term monitoring of sensitive surface and groundwater receptors during the construction phase to obtain initial baseline data and regular monitoring data throughout the construction phase.

18.7.4. While in the operation and maintenance phase:

- It is anticipated that management measures will be inherent in the design of the future facility and the future operations will be undertaken in line with the appropriate environmental permitting requirements with particular reference to the Environmental Permitting (England and Wales) Regulations 2016 (Ref. 18.5).
- To manage any potential operational effects, the drainage design for the Proposed Scheme will require consideration of measures to prevent contamination from migrating toward sensitive surface watercourses and underlying aquifers. Design options are currently being investigated and further detail relating to the management of surface water will be provided in the application.
- All storage and loading/unloading areas will be adequately bunded.
- Periodic long-term monitoring of sensitive surface water and groundwater receptors may be required as part of any environmental permits for the Proposed Scheme.

## DECOMMISSIONING

- 18.7.5. It is envisaged that management measures similar to those reported for construction would be required during decommissioning of the above ground elements of the Regas and Storage Area.
- 18.7.6. A Decommissioning Plan (including environmental management) will be prepared at the appropriate time to consider the potential risks of decommissioning the relevant elements of the Proposed Scheme.

## 18.8 DESCRIPTION OF POTENTIAL LIKELY SIGNIFICANT EFFECTS

### CONSTRUCTION

18.8.1. Based on the Proposed Scheme description (as set out in **Chapter 2: Site and Proposed Scheme Description** of this EIA Scoping Report), the findings of the Phase 1 PERA (provided in **Appendix 18A**) and professional experience from other similar schemes, the potential effects, without embedded design and secured management or control measures, associated with the construction phase include:

- Exposing construction staff to contaminated dust and soil particulates during construction related earthworks activities (specific receptors include construction workers during development);
- Mobilising existing contamination in soils and groundwater as a result of ground disturbance and de-watering and creating preferential migration pathways for contaminants to reach sensitive receptors (e.g. as a result of piling or along new service trenches). Specific receptors include construction workers, neighbouring users of existing operational facilities, member of the public, groundwater and surface watercourses;
- Introduction of new sources of contamination to the ground, such as fuels and oils used in construction plant, associated with any spillages and leaks. Specific receptors include construction staff, neighbouring users of existing operational facilities, groundwater and surface watercourses; and
- Release of hazardous gas and subsequent accumulation within confined spaces associated with disturbing organic soils or infilled areas of land. Specific receptors include construction workers during development.

18.8.2. Following implementation of the management or control measures outlined in **Section 18.7** it is considered that the significance of the effects of the above during construction would be reduced.

### OPERATION AND MAINTENANCE

18.8.3. The potential effects associated with the operation and maintenance phase, without embedded design and secured management or control measures, include:

- Damage to structures and infrastructure from ground contaminants. Specific receptors include foundations and other buried structural components, below-ground pipework; and
- Introduction of new sources of contamination to the ground as a result of potential spills, leaks and uncontrolled discharge of potential pollutants during the operation and maintenance phase. Specific receptors include maintenance groundworkers during operation and controlled waters.

18.8.4. Following implementation of the management or control measures outlined in **Section 18.7** it is considered that the significance of the effects of the above during operation and maintenance would be reduced.



## DECOMMISSIONING

- 18.8.5. It is anticipated that the decommissioning phase will be completed in accordance with a precise decommissioning plan that complies with the requirements of the environmental permit and takes into consideration the requirement for the implementation of measures to limit the potential contamination of sensitive receptors.
- 18.8.6. Governing bodies such as the Environment Agency will likely request an intrusive site investigation when surrendering of any permits or licences previously need for the activities or structures onsite. This intrusive investigation would complete to ensure compliance with the permit/licence requirements in respect that the land has not be degraded/contaminated from onsite activities or structures during the operation and maintenance phase. The results from the ground investigation would be compared with pre-permit/licence levels and should any degradation or contamination found after the review, the areas would need to be remediated to pre-permit or licence levels.
- 18.8.7. A Decommissioning Plan (including environmental management) will be prepared at the appropriate time to consider the potential risks of decommissioning the relevant elements of the Proposed Scheme.

## SUMMARY OF ELEMENTS SCOPED IN OR OUT OF FURTHER ASSESSMENT

- 18.8.8. A summary of the elements scoped in and out of the assessment for geology and soils are set out in **Table 18-1** below. Each element is accompanied by a justification for its inclusion or exclusion from further assessment based on professional judgement/refer to specific guidance criteria.

**Table 18-1 – Elements Scoped In or Out of Further Assessment**

Element	Phase	Scoped In	Scoped Out	Justification
<p><b>Contaminated soil and detriment to Human Health</b></p>	<p>Construction, operation (and maintenance), and decommissioning</p>		<p>✓</p>	<p>Potential for primarily construction staff for the Proposed Scheme, as well as neighbouring site users to be exposed to potential contaminants in the ground associated with materials used in reclamation of the area and landfilling activities.</p> <p>The management of risks posed to human health during construction is considered as embedded design and management of the Proposed Scheme, and will comprise the completion of and adherence to robust risk assessments and method statements (RAMS). The preparation of RAMS is standard practice during any construction scheme and will be included within the CoCP, which is envisaged to be secured as a requirement of the DCO.</p> <p>Information obtained through future intrusive ground investigation, which will be completed for design and planning purposes, ahead of the main construction phase will be used to inform the RAMS and the nature of mitigation required.</p> <p>Given the embedded design and management measures proposed to be in place it is considered that the effect of the Proposed Scheme in relation to contaminated soils and detriment to human health during the construction phase is negligible.</p> <p>Planning requirements for a development such as the Proposed Scheme ordinarily, as standard, include land quality related conditions including the requirement for intrusive ground investigation, generic quantitative risk assessment and, if required following geo-environmental risk assessment, production and implementation of an appropriate</p>

Element	Phase	Scoped In	Scoped Out	Justification
				<p>remediation strategy to ensure that the Site is suitable for use. This is considered to be embedded measures, which will be secured via a requirement of the DCO.</p> <p>Potential contamination pathways identified as posing a risk to human health would be addressed via the remediation strategy, thereby mitigating risks to potential site users during the operational phase.</p> <p>Given the embedded design and management measures proposed to be in place to be secured through the DCO it is considered that the effect of the Proposed Scheme in relation to contaminated soils and detriment to human health during the operation phase is negligible.</p>
<p><b>Controlled Water Body Contamination (including Ramsar and SSSI sites)</b></p>	<p>Construction, Operation (and maintenance), and decommissioning</p>		<p>✓</p>	<p>Potential for contaminants to be mobilised and impact sensitive controlled water receptors. The extent and nature of potential sources of contamination and further understanding of the hydrogeological regime will be acquired through future intrusive ground investigation which will include groundwater monitoring. The requirement for geo-environmental ground investigation would ordinarily be secured via the planning regime and as such will be secured by a requirement of the DCO. The requirement for the implementation of standard practices during construction to minimise the potential for release of contaminants to the environment will be included within the CoCP, which will be secured as a requirement of the DCO.</p> <p>Given that embedded mitigation and management measures proposed to be in place it is considered that the effect of the Proposed Scheme in relation to controlled waters contamination during the construction phase is negligible.</p>

Element	Phase	Scoped In	Scoped Out	Justification
				<p>No contaminated land source-pathway-receptors linkage identified as part of the operational phase. The Proposed Scheme will be operated in accordance with the environmental permitting requirements to limit the potential for contamination as a result of the proposed operations.</p> <p>Given that embedded design and management measures proposed to be in place in place it is considered that the effect of the Proposed Scheme in relation to controlled waters contamination during the operation phase is negligible.</p>
<p><b>Hazardous Ground Gas to accumulate within confined spaces</b></p>	<p><b>Construction, Operation (and maintenance), and decommissioning</b></p>		<p>✓</p>	<p>Potential for works to create additional pathways to allow hazardous gas (e.g., methane and carbon dioxide) to accumulate within underground chambers/pipeline runs or pipeline support infrastructure, or to migrate towards buildings will be assessed during future ground investigation and mitigated through standard construction practices and implementation of good design. Construction works will be completed in accordance with the CoCP which will include the requirement for construction activities to be completed in accordance with relevant RAMS and consideration of working in confined spaces. Geo-environmental ground investigation, to include the completion of a ground gas risk assessment will be conditioned via the planning regime and is considered to be embedded mitigation. The requirement for a CoCP will be a requirement of the DCO..</p> <p>Given that embedded measures and management measures proposed to be in place it is considered that the effect of the Proposed Scheme in relation to hazardous ground gases during the construction phase is negligible.</p>

Element	Phase	Scoped In	Scoped Out	Justification
				<p>If confined spaces or other areas where gas could accumulate are included in the final design of the Proposed Scheme, the construction of these would include gas protection measures in the form of gas protection membranes or ventilation systems dependent on the extent of risk.</p> <p>The data required to assess the ground gas regime and the potential risks would be obtained via completion of a geo-environmental ground investigation to include ground gas monitoring in areas where occupied structures are proposed. The requirement for a geo-environmental ground investigation would be secured via conditions imposed at planning stage alongside the requirement for a remediation strategy to include, if necessary, gas protection measures and a gas protection verification plan. The implementation of an appropriate remediation strategy would mitigate risks associated with ground gases and ensure that the identified risks were reduced. The requirement of a geo-environmental ground investigation to be conditioned via planning is considered as embedded mitigation.</p> <p>Given the embedded mitigation and management measures proposed to be in place it is considered that the effect of the Proposed Scheme in relation to potential presence of hazardous ground gases during the operation phase is negligible.</p>



Element	Phase	Scoped In	Scoped Out	Justification
<p><b>Built Environment – detriment of inground structures and pipes and cables from aggressive ground conditions and contaminants over time.</b></p>	<p>Construction, Operation (and maintenance), and decommissioning</p>		<p>✓</p>	<p>It is considered that there is negligible effect at construction phase as there is insufficient time for contaminants to impact structures, pipe/ducting materials during the construction phase of the Proposed Scheme.</p> <p>Potential for contaminants and or aggressive ground conditions to affect inground structures and cables in the medium to long term. The potential for contaminants and or aggressive ground conditions to impact pipe and cable material over time will be assessed during future intrusive works and mitigated through implementation of good design (layout and or construction material choices). The completion of intrusive ground investigation to inform detailed design is considered inherent to the progression of the Proposed Scheme and will be completed in accordance with the relevant industry design standards. The requirement for site specific data and progression of detailed design is secured via the requirements of standard industry guidance and considered as embedded mitigation.</p> <p>Given the embedded mitigation and management measures proposed to be in place it is considered that the effect of the Proposed Scheme in relation to the built environment, in particular aggressive ground conditions, during the operation phase is negligible.</p>
<p><b>Agricultural Soils</b></p>	<p>Construction, Operation (and maintenance), and decommissioning</p>		<p>✓</p>	<p>Agricultural soils have been discounted from further assessment as they have not been identified to be a sensitive receptor. The majority of the Site has an agricultural classification of ‘urban’ with a small area of the north west corner being classed as Grade 5 (very poor quality) and therefore of negligible sensitivity.</p>

Element	Phase	Scoped In	Scoped Out	Justification
<b>Mineral Resources</b>	Construction, Operation (and maintenance), and decommissioning		✓	<p>It is proposed that mineral resources are scoped out from further assessment. There are no shallow resources shown to be present beneath or in the vicinity of the Proposed Scheme. The Site is shown to lie within an area underlain by deep reserves of salt and gypsum, however given the scale and nature of the Proposed Scheme is not considered likely to sterilise access to the deeper reserves of gypsum and salt.</p> <p>Given the Proposed Scheme is considered unlikely to sterilise the deep reserves of salt and gypsum it presents a negligible effect on mineral resources.</p>

## 18.9 PROPOSED METHODOLOGY

- 18.9.1. As set out in **Table 18-1**, it is considered that there is no potential for significant effects on geology and soils during the construction, operation and maintenance, and decommissioning phase of the Proposed Scheme. It is proposed to scope the topic of geology and soils out of further assessment and such no further assessment is proposed to be undertaken as part of the ES.
- 18.9.2. Appropriate good practice management measures will be secured through the DCO, including the preparation of a CoCP and commitments within the commitment register to be submitted with the application for development consent.

## 18.10 ASSUMPTIONS AND LIMITATIONS

- 18.10.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- The geology and soils scoping chapter has focussed on the onshore element of the Proposed Scheme and the potential effects associated with for example the generation of materials as a result of dredging required for the construction of the proposed Marine Jetty are considered in **Chapter 12 Materials and Waste** of this Scoping Report. Water quality within the River Tees is discussed further in **Chapter 8 Water Environment and Flood Risk** of this Scoping Report.

## 18.11 REFERENCES

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- Ref. 18.4** UK Government (2015) Environmental Damage (Prevention and Remediation) (England) Regulations. Available at: <https://www.legislation.gov.uk/uksi/2015/810>
- Ref. 18.5** UK Government (2016) The Environmental Permitting (England and Wales) Regulations. Available at: <https://www.legislation.gov.uk/uksi/2016/1154>
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- Ref. 18.14** Tees Valley Joint Minerals and Waste Development Plan Documents. Policies & Sites. Adopted September 2011. [Policies and sites \(stockton.gov.uk\)](https://www.stockton.gov.uk/policies-and-sites)
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- Ref. 18.17** Environment Agency (2020) Land Contamination Risk Management (LCRM) (Updated July 2023). Available at: <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>
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## 19 CUMULATIVE EFFECTS

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### 19.1 INTRODUCTION

- 19.1.1. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) (Ref. 19.1) require that consideration is given to how various effects may interact, and also how the effects of a project could accumulate with the effects of the other developments proposed within the same zone of influence (Zol). These type of effects are referred to as 'cumulative effects'.
- 19.1.2. There are two types of cumulative effect:
- **Intra-project effects** – the interaction and combination of different residual environmental effects of the Proposed Scheme affecting the same receptor. For example, visual and noise effects during construction affecting nearby ecological features.
  - **Inter-project effects** – the residual environmental effects of the Proposed Scheme combining and interacting with the residual environmental effects of other, committed development(s), affecting the same receptor. For example, traffic effects upon users of the local road network because of the Proposed Scheme and a proposed industrial development nearby.
- 19.1.3. This chapter of the EIA Scoping Report sets out the approach that will be followed for the Cumulative Effects Assessment (CEA) within the EIA. The CEA will be presented as a standalone chapter of the Environmental Statement (ES).

### 19.2 LEGISLATION, POLICY AND GUIDANCE

- 19.2.1. This section outlines the relevant legislation, policy and guidance to CEA.

#### LEGISLATION

- 19.2.2. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) states:

*“The EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors- ... (e) the interaction between the factors referred to in sub-paragraphs (a) to (d).*

- 19.2.3. Furthermore Schedule 4 of the EIA Regulations requires an ES to include:

*“A description of the likely significant effects of the development on the environment resulting from, inter alia: ... (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources...*

*The description of the likely significant effects on the factors specified in regulation 5(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development”.*

## POLICY

19.2.4. National Policy Statements (NPSs) set out the primary policy against which an application for the development consent of the Proposed Scheme will be considered. The Overarching National Policy Statement for Energy (EN-1) (Ref. 19.2) states in relation to cumulative effects:

*“the Secretary of State should take into account ... its potential adverse impacts, including on the environment, and including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce, mitigate or compensate for any adverse impacts, following the mitigation hierarchy.” (Paragraph 4.1.5)*

19.2.5. Paragraph 4.3.5 states:

*“The Secretary of State should consider how the accumulation of, and interrelationship between, effects might affect the environment, economy, or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place.”*

19.2.6. The Stockton-on-Tees Local Plan (2019) Policy EG4 specific to economic growth in specialist areas Seal Sands, North Tees and Billingham states:

*“...Development proposals in the North Tees and Seal Sands area will recognise the cumulative importance for bird species associated with the Teesmouth and Cleveland Coast SPA and Ramsar site. Appropriate development proposals will be encouraged at locations within the limits to development where:*

- a) If necessary, land has been identified to provide appropriate strategic mitigation; or*
- b) The applicant can demonstrate that the proposed development, in-combination with other proposals, will not adversely impact the Teesmouth & Cleveland Coast SPA and Ramsar site.*

*3. Should it become apparent that proposals for strategic mitigation cannot be identified, the Council will work with the Tees Estuary Partnership and relevant stakeholders to take appropriate action...”*

19.2.7. The Local Plan states that Stockton-on-Tees Borough Council (SoTBC) will monitor the cumulative level of developments, including planned developments, on allocated land in line with Policy ENV5 to ensure appropriate level of mitigation is delivered to support the developments. In line with Policy ENV7, all developments must consider required mitigation to maintain acceptable levels of pollution considering the cumulative effects of other proposed or existing sources of pollution in the vicinity. Developments are required to be supported by full and detailed assessments of the likely impacts where there is potential for significant pollution, either individually or in combination. SoTBC will be consulted on the proposed long list of other developments to be considered in the CEA.

## GUIDANCE

- 19.2.8. There is no widely adopted methodology or best practice for the assessment of Cumulative Effects, although there are several guidance documents available. These include the following good practice guidance documents:
- Planning Inspectorate Advice Note 17 :Cumulative effects assessment relevant to nationally significant infrastructure projects (Ref. 19.3): This Advice Note identifies the nature of projects (referred to as ‘Other Developments’) that should be considered in a CEA. It advises that a pragmatic approach should be used, in respect of what is feasible and reasonable, where there is a lack of information to identify impacts and assess effects.
  - IEMA. ‘Demystifying Cumulative Effects, Impact Assessment Outlook Journal’ (Ref. 19.4) which explains cumulative impacts can be defined as:  
*“the additional changes caused by a Proposed Development in conjunction with other similar developments as the combined effect of a set of developments, taken together, in practice ‘effects’ and ‘impacts’ are used interchangeably”.*

## 19.3 PROPOSED ASSESSMENT METHODOLOGY

- 19.3.1. Given the absence of a formal methodology or best practice for the assessment of Cumulative Effects, Planning Inspectorate’s Advice Note 17 (Ref. 19.3) has informed the approach taken to the intra-project Effects and Inter-project Effects assessments. In addition, the proposed approach is also based on professional experience, the types of receptors being assessed and the scale and nature of the Proposed Scheme.
- 19.3.2. The assessment will be qualitative and based on the available information. Partially quantitative assessments may be undertaken for some elements where appropriate and practicable. Where information is not available, assumptions that adopt a worst-case approach will be made based on professional judgement. All assumptions will be clearly stated alongside any uncertainty as part of the intra-project effects and inter-project effects assessments.

### INTRA-PROJECT EFFECTS

- 19.3.3. The assessment of intra-project effects will be based on the information and Study Areas within the technical chapters. It is anticipated that the intra-project cumulative assessment will be limited given the scale of the Proposed Scheme although it is recognised that some intra-project effects may occur.
- 19.3.4. The assessment will consider any residual effects that are reported as Minor or worse within the technical chapters. Minor effects, while not significant, are considered in the assessment on the basis that multiple minor effects may interact to result in a significant effect. Negligible residual effects reported in the technical chapters are considered unlikely to accumulate to the extent that a significant intra-project effect would occur.
- 19.3.5. If required, the assessment methodology for intra-project effects will involve the following key stages (as illustrated on **Graphic 19-1**).

#### Stage 1 – Pre-Screening

- 19.3.6. A screening of sensitive receptors (as identified in each aspect chapter) will be undertaken to determine whether any sensitive receptor has the potential to be exposed to more than one type of residual effect during either the construction or operation phases of the proposed scheme. These



sensitive receptors are termed ‘common receptors’ and will be taken forward to Stage 2 of the assessment.

**Stage 2 – Screening**

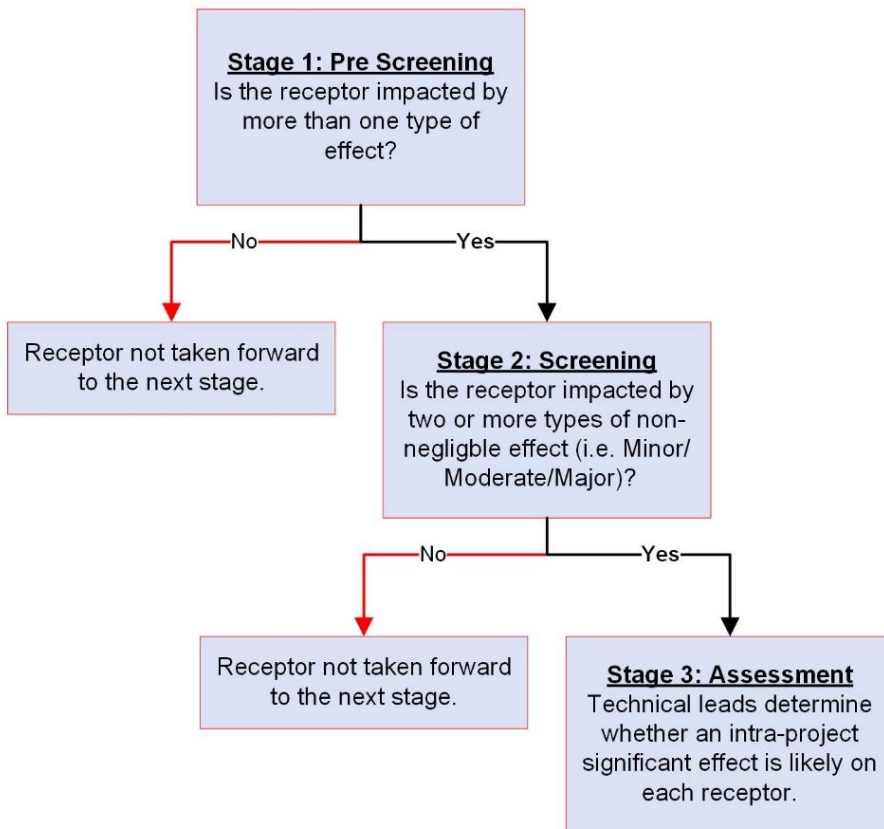
19.3.7. Of the common receptors identified in Stage 1, those that have two or more non-negligible residual effects will be identified (i.e. effects after the application of all committed mitigation) and taken forward to Stage 3 of the assessment.

**Stage 3 – Assessment**

19.3.8. Where a potential for an intra-project effect was identified at stage 2 consideration has been given to whether there would be a cumulative effect and if so whether that effect is likely to be significant.

19.3.9. Each receptor taken through to this stage will be considered in turn and using professional judgement a view reached as to whether there would be a likely cumulative effect and if so whether that effect would be of the same or greater significance than the constituent effects.

**Graphic 19-1 – Overview of the intra-project effects assessment**



**Significance Criteria**

19.3.10. The significance classifications for intra-project effects will adhere to those described in **Chapter 4: Approach to EIA** of this EIA Scoping Report. The criteria for these classifications will be detailed in the ES.

- 19.3.11. However, given that the types of effects are likely to be different in some cases, a quantitative assessment is unlikely, and it will be necessary to apply professional judgement in determining the level of significance, based on information provided within the technical topic assessments.
- 19.3.12. If significant residual intra-project effects are identified, additional mitigation measures will be proposed in the ES.

### INTER-PROJECT EFFECTS

- 19.3.13. Advice Note 17 provides a methodology to assess inter-project Cumulative Effects. The approach outlined is in four stages and will involve the identification of incremental changes to baseline conditions likely to be caused by other relevant projects together with the Proposed Scheme.

#### Stage 1 – Identification and Evaluation of Developments for Consideration

- 19.3.14. Stage 1 requires the identification of a Zone of Influence (Zol) within which an initial long list of projects can be identified.
- 19.3.15. The Zol for the CEA will be based off the largest study area of the environmental topic chapters, as the maximum area within which potential effects of the Proposed Scheme could occur. This will be derived from the Study Areas in consideration within the ES for the Proposed Scheme, with other, reasonably foreseeable developments identified within those Zol. These projects are termed ‘Other Developments’.
- 19.3.16. ‘Other Developments’ will be identified through an initial search, within the identified Zol, of the: planning registers of the local planning authorities; Planning Inspectorate’s planning register; and relevant development plans.
- 19.3.17. The initial long list has been determined under the three tiers as set out in Advice Note 17 detailed in **Table 19-1**. The criteria are presented, descending from Tier 1 (most certain) to Tier 3 (least certain) and reflect a diminishing degree of certainty that can be assigned to each ‘Other Development’.

**Table 19-1 - Other Development for inclusion in the inter-project cumulative effects assessment**

Tier	Certainty
Tier 1	<ul style="list-style-type: none"> <li>■ Under construction;</li> <li>■ Permitted application(s), whether under the Planning Act (PA2008) (Ref. 19.7) or other regimes, but not yet implemented; and</li> <li>■ Submitted application(s) where a full ES of an equivalent has been submitted.</li> </ul>
Tier 2	<ul style="list-style-type: none"> <li>■ Projects on the Planning Inspectorate’s Programme of Projects where a Scoping Report, Preliminary Environmental Information Report (PEIR) or an equivalent has been submitted.</li> <li>■ Projects from Local Authority Websites where a Scoping Opinion request under the Town and Country Planning Act</li> </ul>

Tier	Certainty
Tier 3	<ul style="list-style-type: none"> <li>■ Projects on the Planning Inspectorate’s Programme of Projects where a Scoping Report or PEIR has not been submitted.</li> <li>■ Identified in the relevant Development Plan (and emerging Development Plans – with appropriate weight being given as they move closer to adoption) recognising that there will be limited information available on the Other Development.</li> <li>■ Identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, recognising that there will be limited information available on the ‘Other Development’.</li> </ul>

19.3.18. For the selection of ‘Other Developments’ the following criteria will be considered ahead of inclusion in the long list:

- The development is of at least an equivalent size to 50 residential units;
- The development or marine activity is under construction but is not yet completed;
- The development or marine activity has been permitted within the last five years but is yet to be constructed/implemented;
- Submitted application(s) and marine licences (via local authorities, Marine Management Organisation and the Planning Inspectorate for NSIPs) for a development that are yet determined, or refused, but are subject to appeal procedures not yet determined;
- Identified in relevant development plans (and emerging development plans) which would have the characteristics of ‘Other Developments’; and
- Other plans and programmes (as appropriate) which set out an approach for future development consents/approvals, where such development is reasonably likely to come forward and would likely be ‘Other Developments’.

19.3.19. The long list will be sent to the host local planning authority (i.e. SoTCB) for comment, and agreement will be sought prior to progressing to Stage 2. A draft long list will be produced for the PEIR, and this list will be reviewed and updated at the ES stage ahead of progressing to Stage 2, to ensure that the search of ‘Other Developments’ is as up to date as practicable. The long list will be updated throughout the ES stage, being finalised at a date ahead of submission of the ES. This date will be determined and outlined in the ES.

19.3.20. At the time of writing the long list has not been drafted. However, an initial review of major developments in the area has identified the following three NSIPs that meet the criteria outlined above for inclusion in the draft long list when it is produced for the PEIR:

- H2Teesside<sup>46</sup>: A proposed 1,200 megawatt capacity Hydrogen Production Plant and associated infrastructure, including connectivity to the Net Zero Teesside Project (see below). The development is located within the Seal Sands industrial area, with Order Limits overlapping that of the Proposed Development;
- Net Zero Teesside Project<sup>47</sup>: A full chain carbon capture, utilisation and storage project, comprising a CO2 gathering network, a combined cycle gas turbine electricity generating station and other associated infrastructure (including connectivity with the Proposed Development). The development is located within the Seal Sands industrial area and Redcar, with Order Limits

<sup>46</sup> <https://infrastructure.planninginspectorate.gov.uk/projects/north-east/h2teesside/?ipcsection=overview>

<sup>47</sup> <https://infrastructure.planninginspectorate.gov.uk/projects/north-east/the-net-zero-teesside-project/?ipcsection=docs>

overlapping that of the Proposed Development. The project has now been granted development consent; and

- Lighthouse Green Fuels<sup>48</sup>: A ‘waste-to-sustainable aviation fuel’ facility. The facility will treat a combination of commercial & industrial waste, refuse derived fuel (domestic waste) and solid recovered fuel and convert it to various energy-related products, including sustainable aviation fuel and naphtha.

19.3.21. The following marine projects have also been identified for inclusion in the draft long list:

- Northern Gateway Container Terminal<sup>49</sup>: Capital dredging of the approach channel to the proposed container terminal facility, creation of a new berth pocket and realignment of existing approach channel in the Tees estuary, and associated disposal of dredged material.
- Riverside Ro-Ro: Upgrading the existing facility requiring construction of a new fixed ramp landing platform immediately adjacent to the existing linkspan, removal of an existing mooring dolphin, installation of new mooring dolphins and a new walkway, minor alterations to existing mooring bollards, minor highway works within the PD Ports estate, dredging and offshore disposal of dredged material. Dredging has not been included as an activity within this application on the basis that PD Ports has power to dredge under the Tees and Hartlepool Port Authority Act 1966.
- South Bank Quay<sup>50</sup>: The construction of a new quay at South Bank in the Tees estuary required to support landside proposals for general industry and storage, or distribution uses within part of the South Industrial Zone. The proposed scheme comprises demolition, capital dredging, offshore disposal of dredged material, placement of rock in the berth pocket and construction and operation of a new quay (to be set back into the riverbank).

### **Stage 2 – Identify a Short list of ‘Other Developments’**

19.3.22. Following the data collection (Stage 1) the long list will be refined to a short list by reviewing each of the ‘Other Developments’ identified against the following criteria:

- Is there a concurrent construction or operation phase between the Other Development and the Proposed Scheme?
- Is there potential that the Other Development shares some of the same sensitive receptors with the Proposed Scheme?

19.3.23. Those Other Development that have no, or insufficient, environmental assessment information will, typically, not be considered as it will not be possible to accurately identify shared sensitive receptors or inter-project effects.

### **Stage 3 – Identification of Information for the Other Developments**

19.3.24. Information on Other Development(s) included within the short list will be gathered from available third-party information sources within the public domain.

19.3.25. The information captured will look to include, but not necessarily limited to:

- Proposed design and site boundary information;
- Proposed programme of construction and operation; and

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<sup>48</sup> [Lighthouse Green Fuels Project - Project Information \(planninginspectorate.gov.uk\)](https://www.gov.uk/government/publications/northern-gateway-container-terminal)

<sup>49</sup> <https://www.gov.uk/government/publications/northern-gateway-container-terminal>

<sup>50</sup> [South Bank Quay marine licence applications - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/south-bank-quay-marine-licence-applications)

- Technical information that sets out baseline data and effects arising from the other development on common receptors

#### **Stage 4 – Assessment of Inter-Project Effects**

- 19.3.26. The assessment of inter-project effects will consider the deviation from the baseline conditions at Common Receptor(s) because of changes brought about due to the Proposed Scheme in combination with one or more Other Development(s) in the short list.
- 19.3.27. The assessment of the inter-project effects will be based upon the residual effects identified in the technical topic assessments of the ES, as well as available environmental information for the Other Development(s).
- 19.3.28. The assessment of inter-project effects will consider the following:
- Duration (temporary or permanent) and reversibility of effect;
  - The extent of effect (geographical area or aspect) and combined magnitude of change;
  - Sensitivity/value/importance of the receptor to change; and
  - Likely impact/success of mitigation proposed.
- 19.3.29. Through a combination of the qualitative evaluation presented in the ES and the environmental information available for Other Developments, conclusions will be drawn as to the likelihood for significant inter-project effects, i.e. those over and above, or different to, those identified for the Proposed Scheme on its own.
- 19.3.30. If significant residual inter-project effects are identified, as a result of the Proposed Scheme, necessary mitigation measures will be proposed in the ES.

#### **Significance Criteria**

- 19.3.31. The assessment of inter-project effects will consider the potential for significant residual effects, for which appropriate, additional mitigation measures will be proposed. The significance of the effect is formulated as a function of a Sensitive Receptor's or a resource's environmental value/sensitivity and the magnitude of the impact of the Proposed Scheme. This aligns with Advice Note 17 which states:

*“The significance criteria used to assess likely cumulative effects should consider the capacity of environmental resources and receptors to accommodate changes that are likely to occur. The terminology used to determine significance should be explicit and ensure a clear understanding of the outcome of the CEA”.*

- 19.3.32. The classifications used for this significance criteria will adhere to those outlined in Chapter 4: Approach to EIA

## **19.4 LIMITATIONS AND ASSUMPTIONS**

- 19.4.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- The assessment of intra-project effects resulting from the Proposed Scheme will be focused on the residual effects from the construction and operation phases following the implementation of mitigation measures that are secured through DCO requirements or other mechanisms.
  - The assessment of inter-project effects will be based on the interpretation and assessment of publicly available data and limited by the level of information available.

- There may be cases that Other Development screened into the short list present information for some or most of the technical topics, but not for others. In such instances, the inter-project effects assessment for the given Other Development(s) may be limited to only those topics for which there is appropriate information available. However, this will be avoided where practicable with efforts made to make an assessment based upon the available information, assumptions and professional judgement. This will be stated in the PEIR and ES where appropriate.
- Although information may be available for Other Developments, it may be limited in its compatibility where different assessment methodologies or criteria have been used in the technical topic assessments. Where this occurs and limits and/or prevents the inter-project effects assessment, it will be stated in the PEIR and ES.

## 19.5 REFERENCES

- Ref. 19.1.** UK Government. (2017). 'The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at [The Infrastructure Planning \(Environmental Impact Assessment\) Regulations 2017 \(legislation.gov.uk\)](https://www.legislation.gov.uk)
- Ref. 19.2.** Department for Energy Security and Net Zero, (2023). Overarching National Policy Statement for energy (EN-1). Available at [Overarching National Policy Statement for Energy - EN-1 \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)
- Ref. 19.3.** National Planning Infrastructure. (2019). 'Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects'. Version 2. Available at: [Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects | National Infrastructure Planning \(planninginspectorate.gov.uk\)](https://www.planninginspectorate.gov.uk)
- Ref. 19.4.** IEMA. (2020). 'Demystifying Cumulative Effects, Impact Assessment Outlook Journal'. Vol. 7.
- Ref. 19.5.** Stockton-on-Tees (2019). 'Local Plan'. Available at: [https://www.stockton.gov.uk/media/2518/Local-Plan-2019/pdf/Local\\_Plan\\_2019.pdf](https://www.stockton.gov.uk/media/2518/Local-Plan-2019/pdf/Local_Plan_2019.pdf)
- Ref. 19.6.** UK Government. (2017). 'The Town and Country Planning (Environmental Impact Assessment) Regulations 2017'.
- Ref. 19.7.** UK Government. (2008). 'Planning Act 2008'. Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents>

## 20 SUMMARY

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### 20.1 Scope of EIA

20.1.1. It is proposed that the following environmental topics are included in the scope of the EIA:

- Air quality;
- Noise and vibration;
- Biodiversity;
- Water environment and flood risk;
- Climate change resilience;
- Greenhouse gases;
- Materials and waste;
- Traffic and transport;
- Major accidents and disasters;
- Shipping and navigation; and
- Cumulative effects

20.1.2. The following environmental topics are proposed to be scoped out of the ES:

- Landscape and visual;
- Cultural heritage
- Population and human health; and
- Geology and soils.

20.1.3. **Table 20-1** summarises each of the topic-specific matters proposed to be scoped in and out of the ES.

20.1.4. Justification for the proposed scoping in or out of further assessment of topic-specific matters are detailed within the technical aspect **Chapters 5 to Chapter 19** of this EIA Scoping Report.

**Table 20-1 - Elements Scoped In or Out of Further Assessment**

Topic Chapter	Element	Phase	Scoped In	Scoped Out
Chapter 5: Air Quality	Impacts from dust, PM <sub>10</sub> and PM <sub>2.5</sub>	Construction	✓	
	Emissions of pollutants from road traffic and construction plant			
	Emissions of pollutants from marine vessel movements	Operation	✓	
	Emissions of pollutants from road traffic	Operation		✓
	Emissions of pollutants during venting scenarios			
	Emissions of odours from fugitive leaks			
Impacts from dust, PM <sub>10</sub> and PM <sub>2.5</sub>	Decommissioning		✓	
Chapter 6: Noise and Vibration	Terrestrial ecology – onsite generated noise	Construction, operation, decommissioning	✓	
	Marine ecology receptors – underwater noise	Construction, operation	✓	
	Human receptors – noise & vibration	Construction, operation, decommissioning		✓
	Terrestrial ecology – offsite traffic noise & vibration			
	Marine ecology receptors – underwater noise & airborne noise	Decommissioning		✓
Chapter 7: Biodiversity	International statutory designated sites: Teesmouth and Cleveland Coast Ramsar Site & Teesmouth and Cleveland Coast SPA	Construction, Operation and Decommissioning	✓	
	National statutory designated sites: Teesmouth and Cleveland Coast SSSI & Teesmouth NNR			



Topic Chapter	Element	Phase	Scoped In	Scoped Out
	Local statutory designated sites: Seaton Dunes and Common (Part of the SSSI) LNR			
	Local statutory designated sites: Black Bobbies Field Thornaby LNR			
	Other elements: Non-statutory designated sites, HPI, Badger, Bats (roosting), Amphibians (GCN and common toad), Otter, Water vole, Plants (protected), Breeding and non-breeding birds (including Schedule 1 species)			
	Other elements: SPI and other conservation-notable species (terrestrial invertebrates, vertebrates and plants)			
	Freshwater: Fish			
	Freshwater: INNS	Construction	✓	
	Marine: Benthic Habitats and associated benthic communities, Fish, Marine mammals (seals and porpoise), INNS	Construction and operation	✓	
	International statutory designated sites: North York Moors SPA, North York Moors SAC, Durham Coast SAC, Northumbria Coast Ramsar Site, Northumbria Coast SPA & Castle Eden Dene SAC	Construction, Operation and Decommissioning		
	Local statutory designated sites: Cowpen Bewley Woodland Country Park LNR, Greatham Beck LNR, Berwick Hills LNR, Linthorpe Cemetery LNR, Billingham Beck Valley LNR, Flatts Lane Woodland Country Park LNR & Spion Kop Cemetery LNR			
	Other elements: Bats (foraging and commuting), Reptiles, White-clawed crayfish			
Freshwater: Invertebrates & Macrophytes				

Topic Chapter	Element	Phase	Scoped In	Scoped Out
	Marine: Phytoplankton, Marine Plants and Macroalgae, Other marine mammals	Construction and Operation		✓
<b>Chapter 8: Water Environment and Flood Risk</b>	Quality of surface water resources	Construction, Operation and Decommissioning	✓	
	Flood risk to adjacent receptors and Proposed Scheme			
	Groundwater Flood Risk			
	Groundwater Abstractions (private and licenced) including non-potable water supply abstractions			
	Groundwater Levels and Flows			
	GWDTE			
WFD Water Bodies				
<b>Chapter 9: Landscape and Visual</b>	Landscape Character	Construction, Operation and Decommissioning		✓
	Visual Amenity			
<b>Chapter 10: Climate Resilience</b>	Marine Jetty - Climate variables: storms and lightning; sea level rise	Operation	✓	
	LNG offloading equipment - Climate variables: extreme temperature events; gales and high winds; storms and lightning; sea level rise			
	Regas and Storage Area - Climate variables: drought; extreme temperature events; gales and high wind; storms and lightning; sea level rise			
	Export Pipeline - Climate variables: drought			
	Electrical connection to Northern Power Grid - Climate variables: extreme precipitation events (flooding); extreme temperature events; storms and lightning			



Topic Chapter	Element	Phase	Scoped In	Scoped Out
	Connection to existing entry point into the National Transmission System (NTS) at TGPP - Climate variables: drought; extreme precipitation events (flooding); extreme temperature events; storms and lightning			
	Marine Jetty - Climate variables: change in annual average (precipitation); drought; extreme precipitation events (flooding); change in annual average (temperature); extreme temperature events; gales and high winds; changes in annual average (relative humidity)	Operation		✓
	LNG offloading - Climate variables: change in annual average (precipitation); drought; extreme precipitation events (flooding); change in annual average (temperature); change in annual average (relative humidity)			
	Regas and Storage Area - Climate variables: change in annual average (precipitation); extreme precipitation events (flooding); changes in annual average (temperature); gales and high winds; changes in annual average (relative humidity)			
	Export Pipeline - Climate variables: change in annual average (precipitation); extreme precipitation events (flooding); change in annual average (temperature); extreme temperature events; gales and high winds; storms and lightning; changes in annual average (relative humidity); sea level rise			
	Electrical connection to Northern Power Grid - Climate variables: change in annual average (precipitation); drought; change in annual average (temperature); gales and high winds; changes in annual average (relative humidity); sea level rise			
	Connection to existing entry point into the National Transmission System (NTS) at TGPP - Climate variables: change in annual average			

Topic Chapter	Element	Phase	Scoped In	Scoped Out
	(precipitation); change in annual average (temperature); gales and high winds; changes in annual average (relative humidity); sea level rise			
	Operational Staff - Climate variables: change in annual average (precipitation); drought; extreme precipitation events (flooding); change in annual average (temperature); extreme temperature events; gales and high winds; storms and lightning; changes in annual average (relative humidity); sea level rise			
<b>Chapter 11: Greenhouse Gases</b>	Product Stage (manufacture and transport of raw materials to suppliers) (A1-3)	Construction	✓	
	Transport of Materials to Site (A4)			
	Plant and Equipment Use during Construction (A5)			
	Transport of Waste (A5)			
	Disposal of Waste (A5)	Operation	✓	
	Operation (B1)			
	Maintenance, repair, replacement, refurbishment (B2-5)			
	Operational energy use (N6)			
	Operational water use (N7)	End of life	✓	
	Decommissioning process (C1)			
Transport and Disposal of Materials (C2-4)				
<b>Chapter 12: Materials and Waste</b>	Consumption of material resources associated with the construction of the Proposed Scheme	Construction (site preparation)	✓	
	Consumption of material resources associated with the Proposed Scheme during operation	Operation		✓

Topic Chapter	Element	Phase	Scoped In	Scoped Out
	Disposal and recovery of waste associated with the Proposed Scheme during operation			
	Disposal and recovery of waste associated with the construction and of the Proposed Scheme	Construction (including site preparation)		✓
	Consumption of material resources associated with the Proposed Scheme decommissioning	Decommissioning		✓
	Disposal and recovery of waste associated with the Proposed Scheme decommissioning			
	Impacts and effects associated with the extraction of raw resources and the manufacture of products	Construction and operation		✓
	Impacts and effects resulting from the transportation of material resources and waste to and from the site			
	Impacts on human health and controlled waters as a result of contaminated site arisings from the Proposed Scheme			
<b>Chapter 13: Traffic and Transport</b>	Construction Traffic	Construction	✓	
	Operation Traffic	Operational		✓
	Decommissioning Traffic	Decommissioning		✓
<b>Chapter 14: Major Accidents and Disasters</b>	Technological or Manmade Hazards: Industrial and Urban Accidents - Major Accident Hazard Chemical sites	Construction, operation	✓	
	Technological or Manmade Hazards: Industrial and Urban Accidents - Major Accident Hazard Pipelines			

Topic Chapter	Element	Phase	Scoped In	Scoped Out
	Technological or Manmade Hazards: Industrial and Urban Accidents - Fuel storage			
	Technological or Manmade Hazards: Transport accidents - Waterways			
	Technological or Manmade Hazards: Industrial and Urban Accidents - Mines and storage caverns	Construction	✓	
	Natural Hazards: Geophysical - Earthquakes, Volcanic Activity, Landslides, Sinkholes, Tsunamis			
	Natural Hazards: Hydrological - Coastal Flooding, Fluvial Flooding, Pluvial Flooding, Groundwater Flooding, Avalanches			
	Natural Hazards: Climatological and Meteorological - Cyclones, hurricanes, typhoons, storms and gales, Thunderstorms, Wave surges, Extreme temperature (Heatwaves / Low (sub-zero) temperatures and heavy snow), Droughts, Severe Space Weather (Solar Flares/Solar Energetic Particles/Coronal Mass Ejections), Fog, Wildfires (Forest fire, Bush / brush, pasture)and Poor Air Quality.	Construction, operation and decommissioning		✓
	Natural Hazards: Biological - Disease epidemics (Viral/Bacterial/Parasitic/Fungal/Prion), Animal Diseases (Avian influenza/West Nile virus/Rabies/Foot and mouth/Swine fever) and Plants.			
	Technological or Manmade Hazards: Societal - Extensive public demonstrations which could lead to violence and loss of life, widespread damage to societies and economies, the need for large-scale multi-faceted humanitarian assistance, the hindrance or prevention of humanitarian assistance by political and military constraints, significant security risks for humanitarian relief workers in some areas, famine, and displaced population.			

Topic Chapter	Element	Phase	Scoped In	Scoped Out
	Technological or Manmade Hazards: Industrial and Urban Accidents - Dam breaches, Nuclear, Fires			
	Technological or Manmade Hazards: Transport accidents - Road, Rail and Aviation			
	Technological or Manmade Hazards: Pollution accidents - Air, Land and Water			
	Technological or Manmade Hazards: Utilities failures - Electricity, Gas, Water supply, Sewage system			
	Technological or Manmade Hazards: Malicious Attacks - Unexploded Ordnance, Attacks (Chemical, Biological, Radiological and Nuclear), Transport systems, Crowded places, Cyber, Infrastructure			
	Technological or Manmade Hazards: Engineering accidents and failures - Bridge failure, Flood defence failure, Mast and tower collapse, Property or bridge demolition accidents, Tunnel failure/fire			
<b>Chapter 15: Shipping and Navigation</b>	Contact (allision) of marine works craft with port infrastructure	Construction	✓	
	Contact (allision) between passing vessel and marine works.			
	Collision between passing vessel and marine works craft, at or near marine works.			
	Collision with marine works craft while in transit to/from marine works.			
	Collision during towage operations.			
	Increased risk of collision due to re-routeing of traffic away from marine works			
	Increased risk of grounding due to re-routeing traffic away from marine works			

Topic Chapter	Element	Phase	Scoped In	Scoped Out
	Collision due to increased traffic.	Operation and maintenance	✓	
	Collision due to maintenance dredging.			
	Collision with vessels using the Proposed Scheme, manoeuvring at or near berth.			
	Contact (allision) with mooring infrastructure.			
	Mooring breakout.			
	Increased risk of collision due to re-routeing of passing traffic away from vessels using the Proposed Scheme.			
	Increased risk of grounding due to re-routeing of passing traffic away from vessels using the Proposed Scheme.			
	Risk of uncontrolled or accidental release of cargo.			
<b>Chapter 16: Cultural Heritage</b>	Buried heritage assets within the Site	Construction		✓
	Designated and non-designated heritage assets outside of the Site	Construction, operation and decommissioning		✓
<b>Chapter 17: Population and Human Health</b>	Private Property and Housing	Construction, Operation and Decommissioning		✓
	Community Land and Assets			
	Walkers and Cyclists			
	Terrestrial Businesses			
	Businesses that rely upon access to the River Tees			
	Recreational Users of the River Tees			
	Human Health			





Topic Chapter	Element	Phase	Scoped In	Scoped Out
<b>Chapter 18: Geology and Soils</b>	Contaminated soil and detriment to Human Health	Construction, Operation and Decommissioning		✓
	Controlled Water Body Contamination (including Ramsar and SSSI sites)			
	Hazardous Ground Gas to accumulate within confined spaces			
	Built Environment – detriment of pipes and cables from aggressive ground contaminants over time.			
	Agricultural Soils			
	Mineral Resources			



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