

H2Teesside Project

Environmental Statement

Volume III – Appendices

Appendix 10A: Geology, Hydrogeology and Contaminated Land Desk Based Summary Report

Document Reference: 6.4.11

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended)

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



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10A.0 GEOLOGY, HYDROGEOLOGY AND CONTAMINATED LAND DESK BASED SUMMARY REPORT

10A.1 Introduction

10A.1.1 The Proposed Development comprises the construction, operation (including maintenance where relevant) and decommissioning of an approximately 1.2-Gigawatt Thermal (GWth) Lower Heating Value (LHV) Carbon Capture and Storage (CCS) enabled Hydrogen Production Facility (the 'Hydrogen Production Facility') located in Teesside, along with the pipeline infrastructure required to supply hydrogen (H₂) to offtakers (customers) and the necessary utility connections. Carbon captured by the Proposed Development will be transported by pipeline to the separately consented Northern Endurance Partnership (NEP) infrastructure on the adjacent Net Zero Teesside site for high-pressure compression and offshore transport and underground storage.

10A.1.2 The Hydrogen Production Facility at the Main Site will need a Hydrogen Pipeline Corridor to transport the H₂ produced to potential industrial off-takers around Teesside as well as a CO₂ Export Corridor and other Connection Corridors including natural gas, water and electricity.

10A.1.3 The proposed capture technology uses an amine-based solvent to absorb CO₂ produced by the H₂ production process, with an anticipated design carbon capture rate in excess of 95%. This process is also known as 'pre-combustion amine-based absorption regeneration'. The design capture rate will be defined in the Environmental Permit that will be required to operate the Proposed Development. The Hydrogen Production Facility will connect via a short CO₂ export connection to the NEP compression and pipeline infrastructure on the adjacent Net Zero Teesside (NZE) site. Based on current projections, the Proposed Development will have the capacity to continuously export approximately 1.4 megatonnes (Mt) of dehydrated and compressed CO₂ per year per phase or use up to approximately 2.8 Mt/year once both phases are operational (100% utilisation) to NEP for offshore underground storage with no temporary CO₂ storage required on site.

10A.1.4 In summary, the Proposed Development comprises the following elements:

- a low carbon H₂ production plant of up to approximately 1.2 GWth capacity to be developed in two phases, each up to 600 MW;
- Hydrogen Pipeline Corridor to supply H₂ to various offtakers on Teesside and within the surrounding area, such pipelines to be utilised in association with the H₂ production plant;
- an Air Separation Unit (ASU) to supply O₂ for the H₂ production process;
- an supply pipeline (as an alternative to the ASU) to supply O₂ and N₂ for the H₂ production process;
- carbon capture and compression facilities and a connection to the NEP high pressure compression facilities and CO₂ Export Pipeline on the adjacent NZE site;

- a Natural Gas Connection Corridor for the supply of gas to the H₂ production plant;
- an Electrical Connection Corridor to provide power to the Proposed Development;
- Water Connections Corridor to supply water to and from the Proposed Development;
- wastewater treatment and disposal infrastructure; and
- other utilities connections, telecommunications, and other associated and ancillary infrastructure.

Proposed Development Details

- 10A.1.5 The Proposed Development is shown on Figure 1-1 (Environmental Statement (ES) Volume II, EN070009/APP/6.3). The Proposed Development is separated into a number of different elements and areas as shown on Figures 4-1 to 4-8 (ES Volume II, EN070009/APP/6.3) and as described in the following sections.
- 10A.1.6 These different elements and areas will be used as the basis of the descriptions provided in this Summary Report.
- 10A.1.7 The location of the Hydrogen Production Facility at the Main Site is shown on Figure 4-2 (ES Volume II, EN070009/APP/6.3).
- 10A.1.8 A summary of the process infrastructure of the Hydrogen Production Facility, as well as details of the associated Connection Corridors is presented in Chapter 4: Proposed Development (ES Volume I, EN070009/APP/6.2). This includes details of the components and facilities that have been incorporated into the layout of the Main Site.
- 10A.1.9 Details of the construction programme of the Proposed Development and its subsequent management are provided in Chapter 5: Construction and Programme Management (ES Volume I, EN070009/APP/6.2).

Objectives of the Report

- 10A.1.10 The purpose of this Report is to collate baseline geotechnical and geo-environmental information for the Proposed Development, present a summary of that information and identify possible geotechnical and geo-environmental development constraints as supporting information for Chapter 10: Geology, Hydrogeology and Contaminated Land (ES Volume I, EN070009/APP/6.2).
- 10A.1.11 The primary objectives of this Report are to:
- determine whether potentially contaminative uses have taken place within, or in close proximity to, the Proposed Development Site which could have led to the contamination of underlying soils or groundwater; and
 - to understand the effects of the geological conditions and Site activities on the geotechnical properties for Site redevelopment.

10A.1.12 This Report has been prepared in accordance with the technical guidance and procedures described in the UK Government guidance Land Contamination: Risk Management (2021), British Standard (BS) 5930:2015+A1:2020 (as amended) Code of Practice for Site Investigations (BSI, 2020), BS:EN 1997 Eurocode 7 – Geotechnical Design (BSI, 1997) and BS 10175:2011+A2:2017 (as amended) Investigation of Potentially Contaminated Sites – Code of Practice (BSI, 2017), to:

- describe the geology, hydrology and shallow mining potential;
- describe the environmental setting / sensitivity and current / historical land use of the Proposed Development Site;
- describe the findings of site reconnaissance visits undertaken in available areas of the Proposed Development Site;
- summarise the history of the Proposed Development Site;
- summarise the underlying geology and hydrogeology;
- summarise the findings of any historical ground investigation work; and
- provide the necessary information to inform the Appendix 10B Contaminated Land – Conceptual Site Model (CSM), Appendix 10C Contaminated Land – Environmental Risk Assessment and Appendix 10D Geotechnical Risk Register (ES Volume III, EN070009/APP/6.4) for the prevailing ground conditions.

Limitations and Exceptions to the Report

10A.1.13 Any risks identified in this Report are perceived risks, based on the information reviewed during the Report and therefore partially based on conjecture from available information. The Report is limited by the non-intrusive nature of the work and actual risks can only be assessed following a physical investigation of the Proposed Development Site.

10A.1.14 The opinions expressed in this Report and the comments given are based on a desk assessment of readily available information. Intrusive investigations will be undertaken at the Proposed Development Site to confirm actual ground and groundwater conditions and to provide data for an assessment of the geotechnical and geo-environmental status of the Proposed Development Site.

10A.1.15 Reference to historical Ordnance Survey (OS) maps and / or data provides invaluable information regarding the land use history of a site. However, it should be noted that historical evidence will be incomplete for the period pre-dating the first edition and between the release of successive maps and / or data. Selected features from data supplied by Groundsure have been presented on constraints maps (Figures 10-1a to 10-23) (ES Volume II, EN070009/APP/6.3), however as these do not capture every feature, reference should be made to the original historical mapping supplied in the Groundsure Reports for detailed design.

Sources of Information

10A.1.16 Sources of information have been obtained as part of this study are summarised in Table 10A-1.

Table 10A-1: Sources of Information.

SOURCE	TYPE OF INFORMATION
British Geological Survey (BGS)	1:50,000 scale BGS online Onshore GeoIndex (undated)
BGS	1:50,000 scale BGS Geological Map Sheet 33, Solid and Drift Edition – Stockton (1987). 1:50,000 scale BGS Geological Map Sheet 34, Solid and Drift Edition – Guisborough (1998).
BGS	1:10,000 BGS Geological Map Sheet NZ42SE (1984). 1:10,000 BGS Geological Map Sheet NZ42NE (1997). 1:10,000 BGS Geological Map Sheet NZ52NE (2006). 1:10,000 BGS Geological Map Sheet NZ52NW (1995). 1:10,000 BGS Geological Map Sheet NZ52SW (1984). 1:10,560 County Series Geological Map, Yorkshire, Sheet 7 FS (1881).
BGS	Triassic Sandstones of the Vale of York, Baseline Series Report, Report CR/02/102N, 2002.
BGS	Geological Memoir: Frost, DV (1998). Geology of the country around Northallerton. Memoir of the British Geological Survey, Sheet 42 (England and Wales). Mineral Resources: Highley, DE, Lawrence, DJD, Young, B, Harrison, DJ, Cameron, DG, Holloway, S, Lott, GK and Bloodworth, AJ (2000). Mineral Resource Information for Development Plans: Phase One County Durham and the Tees Valley: Resources and Constraints (Co Durham, Darlington, Hartlepool, Middlesbrough, Redcar & Cleveland, and Stockton-on-Tees): Resources and Constraints. British Geological Survey Technical Report WF/00/6 ISBN 0 85272 368 7.
BGS	BGS Boreholes BGS 1:50,000 Digital Mapping Web Mapping Service Streamed into ArcGIS
Coal Authority	The Coal Authority Interactive Map Viewer
Environment Agency	The Environment Agency Catchment Data Explorer "Protect Groundwater and Prevent Groundwater Pollution," March 2017.
Department of Environment	Industry Profiles, "CL:AIRE," "Nitrate Vulnerable Zones," September 2021.

SOURCE	TYPE OF INFORMATION
Groundsure / Envirocheck (Annex A)	Envirocheck – 284970768_1_1 – 21/09/2021 (Main Site) Envirocheck – 233803971_1_1 – 10/02/2020 (Main Site and All Connection Corridors) GISP-2022-13154-11993 – 05/12/2022 (Hydrogen Pipeline Corridor) GSIP-2023-13293-12624_A_1 to G_1 – 06/12/2022 (Hydrogen Pipeline Corridor) GS-9167762 – 01/11/2022 (Main Site and All Connection Corridors) GS-9167693 – 01/11/2022 (Hydrogen Pipeline Corridor) GS-9167761 – 01/11/2022 (Main Site)GS-9167761 – 01/11/2022 (Hydrogen Pipeline Corridor) GS-9167787 – 01/11/2022 (Hydrogen Pipeline Corridor and Electrical Connection Corridor) GS-9167692 – 01/11/2022 (Hydrogen Pipeline Corridor) GS-9167765 – 01/11/2022 (Hydrogen Pipeline Corridor) GS-9167694 – 01/11/2022 (Main Site and All Connection Corridors) GS-9366848 – 20/02/2023 (The Main Site and Hydrogen Pipeline Corridor) GS-9167696 01/11/2022 (Hydrogen Pipeline Corridor) Groundsure Associated GIS Mapping
Historic England	"Aerial Photo Explorer," 12 November 2015.
Landis	Cranfield Soil and Agrifood Institute Soilscales.
Natural England	Natural England Agricultural Land Classification. "Agricultural Land Classification (ACL) Grades – Post 1988 Survey (Polygons)" December 2021. "Special Protection Areas (England)" March 2022. "Ramsar (England)" December 2021.
Department for Environment, Food and Rural Affairs (Defra)	DEFRA's MAGIC Map Application.
Open Street Map	"Britain From Above" 1924.
Ordnance Survey	"Old Maps Online" 1893.
Previous Desk Study Reports	CH2M (2017), SSI1 Redcar Works – Phase 1 Geo-Environmental Desk Study, Report Reference: 678079_SSI1_001 . CH2M (2017), SSI2 Redcar Works – Phase 1 Geo-Environmental Desk Study, Report Reference: 678079_SSI2_001 Arcadis (2015) Phase 1 Environmental Assessment, Land West of Warrenby, Teesworks

SOURCE	TYPE OF INFORMATION
	<p>Arcadis (2022) Land West of Warrenby, Teesworks, Redcar, South Tees Development Corporation, REPORT NO. 10035117-AUK-XX-XX-RP-ZZ-0417-05-Rem_Strat_LwoW</p> <p>Arcadis (2022) Land West of Warrenby, Teesworks, Redcar, Site Condition Report, Generic Quantitative Risk Assessment and Detailed Quantitative Risk Assessment, South Tees Development Corporation, REPORT NO: 10035117-AUK-XX-XX-RP-ZZ-0428-03-LwoW_DORA</p> <p>Arcadis (2018), Site Condition Report, Report No. Redcar Steelworks-AUK-XX-XX-RP-GE-0001-02-SSI1_SSI2A_GI_SCR.</p> <p>Arcadis (2018), Geotechnical Risk Assessment Report, Report No. Redcar Steelworks-AUK-XX-XX-RP-GE-0001-P1-SSI1_SSI2A_GI_GRA</p> <p>Arcadis (2018), Ground Remediation Options Appraisal Report, Report No. Redcar Steelworks-AUK-XX-XX-RP-GE-0001-02-SSI1_SSI2A_GI_ROA.</p>
Previous Ground Investigation Factual Reports	<p>Allied Exploration & Geotechnics Limited, "Ground Investigation Contract, Reference – Priority Areas within SSI Landholdings Contract 1 and Contract 2 (Area A): 4153 & 4154," 2018.</p> <p>Allied Exploration and Geotechnics Ltd, "(2018a). Former SSI Steelworks Redcar – Advance Boreholes in SSI1, Areas C & D, Final Factual Report" 2018.</p> <p>CH2M, SSI Redcar – SSSI, Factual Report – Initial Trial Pitting, South Tees Site Company, November 2017</p> <p>CH2M, SSI Redcar – SSSI, Factual Report – Initial Trial Pitting, South Tees Site Company, November 2017</p>
Previous GI Interpretative Reports	<p>CH2M, Former SSI Steelworks, Redcar – Initial Ground Investigation Works – Geoenvironmental Summary, South Tees Site Company Ltd. May, 2018.</p>
Zetica	Unexploded Ordnance (UXO) Risk Maps.

Field Studies

Site Walkover

10A.1.17 A site walkover of the Main Site was undertaken on the 17 November 2022. The details of the findings of the walkover is presented in Annex B.

Geomorphological / Geological Mapping

10A.1.18 No development specific mapping undertaken. Outside of scope of works.

Probing, Pitting and Testing

10A.1.19 None reviewed or undertaken for this report. Outside of scope of works.

Drainage / Hydrogeological Mapping

10A.1.20 None reviewed or undertaken. Outside of scope of works.

Geophysical Surveys

10A.1.21 None reviewed or undertaken. Outside of scope of works.

Previous Assessments / Ground Investigations

10A.1.22 A summary of the previous assessments and ground investigations associated with the Proposed Development are presented in Annex C.

10A.2 Baseline Conditions

10A.2.1 This section describes the baseline conditions at the Proposed Development Site. The study area is as follows:

- Topography – Proposed Development Site Boundary
- Geology and Soils – Proposed Development Site Boundary and within 250m
- Landfills – Proposed Development Site Boundary and within 250m
- Natural Ground Hazards – Proposed Development Site Boundary and within 500m
- Hydrology – Proposed Development Site Boundary and within 1 km
- Hydrogeology – Proposed Development Site Boundary and within 1 km
- Historical Development – Proposed Development Site Boundary and within 500m
- Land Use – Proposed Development Site Boundary and within 250m
- Current Industrial Land Use – Proposed Development Site Boundary and within 250m
- Regulatory Information – Proposed Development Site Boundary and within 250m
- Sensitive Land Use – Proposed Development Site Boundary and within 1 km
- Radon – Proposed Development Site
- UXO – Proposed Development Site

Site Description

Main Site

10A.2.2 The location of the Hydrogen Production Facility at the Main Site is shown on Figure 1-1 (ES Volume II, EN070009/APP/6.3).

10A.2.3 The Main Site covers approximately 86 hectares (ha). The elevation varies between approximately 5 m and 7 m above ordnance datum (AOD). A number of raised areas are observed at approximately 11 m AOD, notably in the central area of the Main Site. Variations in elevation can be attributed to roads and railway lines sitting at a

slightly higher elevation compared to the rest of the Main Site. The Main Site is located on approximate grid reference 456208E, 525535N.

- 10A.2.4 The Main Site comprises remaining industrial infrastructure associated with the historical use of the site as Redcar Steelworks. A site walkover was undertaken on the 17 November 2022, a summary of the findings is presented in Annex B. The South Tees Development Corporation (STDC) site is undergoing a phase of demolition.
- 10A.2.5 The relevant features immediately surrounding the Main Site are summarised in Table 10A-2.

Table 10A-2: Features Surrounding the Main Site.

DIRECTION	SUMMARY
North	The Main Site is bound immediately by an unnamed road, with Teesmouth and Cleveland Coast, a Site of Specific Scientific Interest (SSSI), beyond. The coastline to the North Sea is approximately 600 m north at its closest.
South	The Main Site is bound immediately by other land formerly part of Redcar Steelworks, which is owned by South Tees Development Corporation (STDC) and is now derelict and undergoing demolition and remediation. There is a plot of reclaimed land approximately 280 m south and Northumbrian Water Facility 420 m south-east. Dabholm Cut, which discharges to the River Tees is situated 775 m south of Main Site.
East	The Main Site is immediately bound by other land formerly part of Redcar Steelworks, which is owned by South Tees Development Corporation (STDC) and is now derelict and undergoing demolition and remediation. There is a 66KV substation approximately 400 m east and several unnamed roads associated with the South Tees Development Corporation (STDC) site. The Applicant is aware that this is the site of the future Net Zero Teesside facility.
West	The Main Site is bounded immediately to the north-west by land formerly part of Redcar Steelworks, which is now derelict industrial land owned by South Tees Development Corporation (STDC). Red Car Bulk Terminal and associated bulk material storage area is situated immediately west of this. Bran Sands Lagoon is situated approximately 380 m south-west of the Main Site. Beyond this is the River Tees (approximately 800 m west).

CO₂ Export Corridor

- 10A.1.1 The CO₂ Export Corridor is located within the wider South Tees Development Corporation (STDC) site, off Trunk Road, Redcar, TS10 5QW. The Corridor section is centred on approximate grid reference 456945E, 5252905N.
- 10A.1.2 The location of the CO₂ Export Corridor is shown on Figure 4-3 (ES Volume II, EN070009/APP/6.3).

10A.2.6 The CO₂ Export Corridor is located within the wider South Tees Development Corporation (STDC) site to the east of the Main Site. The CO₂ Export Corridor is intersected by various roads running north to south and east to west, with a historical railway track likely to be present in the south. Previous infrastructure associated with the historical use of the site, as an iron and steel works, may still be present including conveyors. The South Tees Development Corporation (STDC) site is undergoing a phase of demolition.

10A.2.7 The relevant features immediately surrounding the CO₂ Export Corridor are summarised in Table 10A-3.

Table 10A-3: Features Surrounding the CO₂ Export Corridor

DIRECTION	SUMMARY
North	The CO ₂ Export Corridor is bound immediately by South Gare road, with Teesmouth and Cleveland Coast, a SSSI, beyond. The coastline to the North Sea is approximately 600 m north at its closest. The western portion of the CO ₂ Export Corridor is bound by the Main Site to the north-west.
South	The CO ₂ Export Corridor is bound immediately by other land formerly part of Redcar Steelworks, which is owned by South Tees Development Corporation (STDC) and is now derelict and undergoing demolition and remediation. There is a plot of reclaimed land approximately 280m south and Northumbrian Water Facility 420 m south-east know as Dabholm Gut, which discharges to the River Tees.
East	The east of the CO ₂ Export Corridor comprises a road network, open industrial land and Warrenby.
West	The CO ₂ Export Corridor is bounded immediately to the west by Main Site, which is undergoing demolition and remediation, beyond which land formerly part of Redcar Iron and Steelworks. The River Tees is approximately 1.8 km west.

Natural Gas Connection Corridor

10A.2.8 The Natural Gas Connection Corridor is located within the wider South Tees Development Corporation (STDC) Site, off Trunk Road, Redcar, TS10 5QW. The Natural Gas Connection Corridor crosses over the boundary of Main Site along its southern boundary and to the south of the NZT site area. The Natural Gas Connection Corridor is centred on approximate grid reference 456930E, 524698N.

10A.2.9 The Natural Gas Connection Corridor is intersected by various roads running north to south and east to west. A historical railway track is likely present along the southern boundary. Previous infrastructure associated with the historical use of the site as a steelworks may still be present including conveyors. However, it is understood that the South Tees Development Corporation (STDC) site is undergoing a phase of demolition and so it is likely that some of these features are no longer present. Bran Sands Landfill encroaches on the western boundary towards the

south of the Natural Gas Connection Corridor and continues off-site towards the west.

10A.2.10 The relevant features immediately surrounding the Natural Gas Connection Corridor are summarised in Table 10A-4.

Table 10A-4: Features Surrounding the Natural Gas Connection Corridor

DIRECTION	SUMMARY
North	The Main Site and the NZT site is located to the north of the Natural Gas Connection Corridor, beyond which other land formerly part of Redcar Steelworks and Teesmouth and Cleveland Coast SSSI.
South	Immediately to the south of the Natural Gas Connection Corridor is a disused railway track likely to be present and a vacant area of land associated with the former site use. Beyond this is the Bran Sands Effluent Treatment Works.
East	Immediately to the east of the Natural Gas Connection Corridor is an access road leading to the wider South Tees Development Corporation (STDC) site and a possible pipe network, beyond which is a vacant area of land and a the Teesmouth and Cleveland Coast SSSI.
West	Immediately adjacent to the western boundary of the Natural Gas Connection Corridor is the Main Site is other land formerly part of Redcar Steelworks.

Water Connection Corridor

10A.2.11 The north of the Water Connection Corridor is located within the wider South Tees Development Corporation (STDC) site, off Trunk Road, Redcar, TS10 5QW. The Water Connection Corridor crosses over the boundary of the Main Site in the south-eastern corner. The Water Connection Corridor is centred on approximate grid reference 456992E, 525304N. The location and layout of the Water Connection Corridor is presented on Figure 4-7 (ES Volume II, EN070009/APP/6.3).

10A.2.12 The Water Connection Corridor extends into the wider South Tees Development Corporation (STDC) site in the north and comprises the southern and south-eastern extent of the Main Site. Infrastructure including conveyors and tanks are expected to be present within this area. Moving south, the Water Connection Corridor encompasses a thin strip of land parallel to the eastern boundary of the planned Net Zero Teesside Facility. The Water Connection Corridor extends towards the south-east through the Coatham Marsh site approximately 295 m north-east of Steel House buildings. The Water Connection Corridor is intersected by various roads, railway tracks and pipelines including pipe gantries. Infrastructure associated with historical site uses may be present including various works, pylons, electricity sub stations, tanks and travelling cranes.

10A.2.13 The relevant features immediately surrounding the Water Connection Corridor are summarised in Table 10A-5.

Table 10A-5: Features Surrounding the Water Connection Corridor

DIRECTION	SUMMARY
North	The Water Connection Corridor is bound immediately by the Main Site in the western half and Teesmouth and Cleveland Coast, a SSSI in the eastern half and the coastline of the North Sea beyond. Vacant marshland is located adjacent to the north-east boundary of the Water Connection Corridor. Commercial and industrial properties are located approximately 315 m north-east.
South	The southern extent of the Water Connection Corridor is bounded by the former Redcar Steelworks / Redcar Bulk Terminal and the remainder of the Coatham Marsh site. Industrial buildings associated with British Steel Lackenby is located approximately 1 km south from the central extent of the Water Connection Corridor. Commercial and industrial properties are located approximately 1 km south. Residential properties within Dormanstown are located between approximately 275 m south-east and 770 m south-east, beyond which the land use comprises undeveloped agricultural fields. The Northumbrian Water Facility (sewage works) are located approximately 280 m south from the Water Connection Corridor. Dabholm Gut is present approximately 800 m south.
East	The Water Connection Corridor is bounded immediately by vacant marshland associated with Coatham Marsh in the north-east. Residential properties associated with Dormanstown are located approximately 300 m from the eastern boundary of the Water Connection Corridor.
West	The Water Connection Corridor is bounded immediately by the Main Site, the former Redcar Steelworks, now derelict industrial land which is owned by South Tees Development Corporation (STDC) beyond which is the River Tees (approximately 1.1 km west). Redcar Bulk Terminal and associated bulk material storage area is situated approximately 200 m west from the Water Connection Corridor.

Electrical Connection Corridor

10A.2.14 The Electrical Connection Corridor is centred on approximate grid reference 457085E 523464N. The north and north-western section of the Electrical Connection Corridor is located within the wider South Tees Development Corporation (STDC) Site, off Trunk Road, Redcar, TS10 5QW. The western section of the Electrical Connection Corridor crosses the southern boundary of the Main Site. The Electrical Connection Corridor extends in an easterly direction to encompass land between South Tees Development Corporation (STDC) Steel House Gate and Trunk Road south to the A1053.

10A.2.15 The land required for the Electrical Connection Corridor is shown on Figure 4-6: (ES Volume II, EN070009/APP/6.3).

10A.2.16 The Electrical Connection Corridor extends from the south of the NZT site, and moving south, includes the area to the east of Northumbrian Water and to the west of Trunk Road, to include the South Tees Development Corporation (STDC) Steel House Gate, with various unnamed roads intersecting the area and a railway track which runs north-east to south-west. Bran Sands Landfill encroaches on the western boundary towards the south of the Electrical Connection Corridor and continues off-site towards the west.

10A.2.17 The relevant features immediately surrounding the Electrical Connection Corridor are summarised in Table 10A-6.

Table 10A-6: Features Surrounding the Electrical Connection Corridor

DIRECTION	SUMMARY
North	Immediately bounding the north of the Electrical Connection Corridor is the Main Site and Teesmouth and Cleveland Coast SSSI. The coastline to the North Sea is located approximately 445 m north.
South	A series of pipelines orientated east to west are located immediately to the south of the Electrical Connection Corridor is Greystone Road, Broadway Trunk Road and the A66. A vacant parcel of land within the British Steel Lackenby site is located approximately 180 m south. Trunk Road is located approximately 150 m south-east, beyond which the land use comprises industrial and commercial properties within Wilton Works approximately 645 m south-east.
East	To the north-east is the Teesmouth and Cleveland Coast SSSI. The area to the east comprises vacant industrial land and Coatham Marsh. Steelhouse is located approximately 340 m east, beyond which the land use comprises of Dormanstown Industrial Estate approximately 440 m east. Residential properties within Dormanstown are located approximately 580 m east.
West	To the west on the eastern extent of the Electrical Connection Corridor is Redcar Bulk Terminal. The southern extent of the Electrical Connection Corridor is immediately bound to the west by the Northumbrian Water Effluent Treatment Works and Dabholm Gut. Bran Sands Lagoon is located approximately 1.3 km west. The River Tees is located approximately 1 km west.

Hydrogen Pipeline Corridor

10A.2.18 The Corridor crosses the River Tees at the Dabholm Gut area. For the purposes of this report, the Pipeline Corridor is referred to in two sections, the section to the north of the River Tees and the section to the south of the River Tees.

10A.2.19 The land take required for the Hydrogen Pipeline Corridor is presented on Figure 4-4: Hydrogen Pipeline Corridor (ES Volume II, EN070009/APP/6.3).

10A.2.20 To the south of the River Tees, the Corridor extends from the south of the Main Site, along the southern boundary of the NZT site and the area to the south that surrounds including the eastern boundary of the Bran Sands Landfill which extends off-site towards the west. The Corridor diverts to the west along Damholm Gut to the south of the Northumbrian Water Sewage Treatment Works and towards the River Tees. The Corridor runs to the south-east around the industrial and commercial works of the Wilton Works site.

10A.2.21 To the north of the River Tees, the Corridor follows from the River Tees inland to the west through a vacant parcel of land and along existing pipelines within the Seal Sands industrial estate. There are two spurs where the corridor runs northwards to the east of Seaton Carew Rd and Tees Road comprising open fields, roads, Greatham Creek, towards industrial infrastructure within the Venator site. The Corridor diverts through open fields to the west to the A1185 roads leading to Cowpen Bewley Woodland Park. The Corridor continues to the south-east along existing pipelines within an area of industrial development within Haverton Hill.

10A.2.22 Due to the size of the Hydrogen Pipeline Corridor, the features surrounding the Corridor has been divided into two tables, with Table 10A 7 relating to the area to the north of the River Tees and the area to the south of the River, noted in Table 10A 8.

Table 10A-7: Features Surrounding the Hydrogen Pipeline Corridor, North of the River Tees

DIRECTION	SUMMARY
North	<p>To the north of the Corridor on the Northern side of the River Tees is the following:</p> <ul style="list-style-type: none"> - Seal Sands industrial estate (directly) - Holding lagoons (directly) - Teesmouth National Nature Reserve (125 m NE) and Teesmouth and Cleveland Coast RAMSAR site (700 m N) - Industrial works of Billingham industrial area (directly) - Open fields, shrubland, woodland (directly) - Cowpen Bewley Woodland Park (directly)
South	<p>To the south of the Corridor on the Northern side of the River Tees is the following:</p> <ul style="list-style-type: none"> - Seal Sands industrial estate (directly) - Teesmouth and Cleveland Coast RAMSAR site (directly) - Industrial works of Billingham industrial area (directly) - Open fields, shrubland, woodland (directly)
East	<p>To the east of the Corridor on the Northern side of the River Tees is the following:</p> <ul style="list-style-type: none"> - Seal Sands industrial estate (directly) - Teesmouth National Nature Reserve (85 m E) and Teesmouth and Cleveland Coast RAMSAR site (Directly)

DIRECTION	SUMMARY
	<ul style="list-style-type: none"> - Industrial works of Billingham industrial area (directly) - Open fields, shrubland, woodland (directly) - Cowpen Bewley Woodland Park (directly) - Various railway lines and pipeline bound the east of the Corridor.
West	<p>To the east of the Corridor on the Northern side of the River Tees is the following:</p> <ul style="list-style-type: none"> - Seal Sands industrial estate (directly) - Teesmouth and Cleveland Coast RAMSAR site (Directly) - Industrial works of Billingham industrial area (directly) - Open fields, shrubland, woodland (directly) - Cowpen Bewley Woodland Park (directly) <p>Various railway lines and pipeline bound the east of the Corridor.</p> <p>Adjacent to the River Tees, the Corridor encompasses areas of the Seal Sands industrial estate. The Corridor is understood to entirely bound SSSI and RAMSAR sites associated with the Teesmouth and Cleveland Coast within the east and centre. To the west the Corridor encompasses various areas of agricultural land, Saltholme Brine Reservoirs, and a landfill (Cowpen Bewley Landfill Site).</p>

Table 10A-8: Features Surrounding the Hydrogen Pipeline Corridor, South of the River Tees

DIRECTION	SUMMARY
North	The north of the Corridor is bounded by the Main Site and the former Redcar Iron and Steelworks, beyond which is Teesmouth and Cleveland Coast (SSSI). Directly adjacent to the northern boundary is infrastructure associated with the former steelworks such as conveyors (above ground and below ground) and various access roads.
South	The British Steel Lackenby site is present adjacent to the south of the central extent of the Corridor. To the south-east is the industrial area within the Wilton Works site area with various associated infrastructure present including cooling towers, tanks, pipelines and various warehouse units. The area to the south of Dabholm Gut comprises industrial port infrastructure and depots.
East	Agricultural fields and residential properties within Dormanstown are located to the east of the Corridor. An industrial estate is also located approximately 260 m NE.
West	To the north-east, the Corridor entirely circles the Bran Sands Landfill and various ports and container terminals. The British Steel Lackenby site is located to the west and south-west of the Corridor. Bran Sands Landfill continues off-site towards the west.

Other Gases Connection Corridor

- 10A.2.23 The Other Gases Connection Corridor is centred on grid reference 457068N 524481N. The north and north-western section of the Other Gases Connection Corridor is located within the wider South Tees Development Corporation (STDC) Site, off Trunk Road, Redcar, TS10 5QW. The southern section of the Other Gases Connection Corridor follows to the south adjacent to the east of the British Steel Lackenby Site.
- 10A.2.24 The Other Gases Connection Corridor extends from the south of the Main Site and is intersected by an unnamed road to the east. Infrastructure associated with the previous site use may be present within the boundary including conveyors, pipe gantries and tanks. The Other Gases Connection Corridor moves south adjacent to the Northumbrian Water site and the South Tees Development Corporation (STDC) Steel Gate House, along a railway track, which terminates along an unnamed road. Bran Sands Landfill encroaches on the western boundary towards the south of the Other Gases Connection Corridor and continues off-site towards the west.
- 10A.2.25 The relevant features immediately surrounding the Other Gases Connection Corridor are summarised in Table 10A-9.

Table 10A-9: Features Surrounding the Other Gases Connection Corridor

DIRECTION	SUMMARY
North	To the north-west moving north-east is the Main Site, NZT site and part of the former Redcar Steelworks, beyond which is Teessmouth and Cleveland Coast SSSI approximately 1 km north. Directly adjacent to the northern boundary is infrastructure associated with the former steelworks such as conveyors (above ground and below ground) and various access roads.
South	Access roads and railway lines are located to the south of the Other Gases Connection Corridor. The British Steel Lackenby site is located approximately 200 m south.
East	In the northern extent of the Other Gases Connection Corridor, the land use to the east comprises vacant industrial land, railway lines, access roads and Coatham Marsh. South Tees Development Corporation (STDC) Gatehouse is located approximately 565 m east. The British Steel Lackenby site is located approximately 190 m south-east.
West	To the west of the Other Gases Connection Corridor is the Northumbrian Water site and beyond which is Dabholm Gut and Bran Sands Lagoon. Works are located immediately south-west from the Other Gases Connection Corridor. South-west of the Other Gases Connection Corridor are various commercial warehouses between 590 m and 1.5 km west and docks approximately 1.8 km west.

Topography

10A.2.26 A summary of the topography at the Main Site and associated corridors is presented in Table 10A-10.

Table 10A-10: Summary of Topography

SITE	TOPOGRAPHY SUMMARY
Main Site	The overall topography is varied across the site but typically sits between approximately 5 – 8 m AOD. Several areas such as the roads and railway lines sit at a slightly higher elevation compared to the rest of the site due to embankments. Most notably a raised area in the north-eastern area of the site sits at approximately 10 m AOD.
CO ₂ Export Corridor	Ground levels across the wider site generally slope from the south to the north, towards the North Sea Coastline, generally between 6 – 10 m AOD with only minor changes in topography.
Natural Gas Connection Corridor	The topography in the Corridor is generally flat between 6 – 7 m AOD along the north-western extent and 5 – 8 m AOD along the southern extent. Slightly higher elevations between 7 – 10 m AOD are located along the northern extent of the Corridor.
Water Connection Corridor	The Corridor has a varied topography, with a general overall decline to the north, towards the North Sea. Most variations in topography come from roads, railways and buildings which are present across the Corridor, causing the elevation to be higher in some places. In the areas of existing pipeline corridors, a drop in elevation is observed (approximately 4 m AOD). The typical elevation across the site is between 4 and 11 m AOD, with 6 – 10 m AOD in the north and west and 5 - 11 m AOD in the eastern area.
Electrical Connection Corridor	The topography is varied across the entirety of the Corridor but typically follows the general trend of declining from south to north, with an overall range across the site between approximately 4 and 12 m AOD. In the south-east, the topography is typically higher between 8 – 12 m AOD in the surrounding area to railway lines and the existing Tod Point Sub Station. The topography is noted to be varied in the north and west between 5 – 10 m AOD, and generally the lowest in the north-east area between 5 – 7 m AOD.
Hydrogen Pipeline Corridor	<p>The Corridor follows a general trend of falling in elevation towards the River Tees and Teesmouth. To the south of the River Tees, the topography varies between 1 m AOD parallel to Dabholm Cut and up to 18 m AOD towards the south within the Wilton site. To the north of the River Tees, the topography varies between 0 m AOD adjacent to Seal Sands and up to 17 m AOD in the south adjacent to Billingham. The topography generally increases towards to the south.</p> <p>In the areas where the Corridor crosses over the River Tees, the topography is likely to change based on the tidal regime, with neap tides</p>

SITE	TOPOGRAPHY SUMMARY
	from -0.85 m to +1.45 m AOD and spring tides between -1.95 and +2.70 m AOD.
Other Gases Connection Corridor	The topography along the north-western extent is mostly between 6 – 7 m AOD, although the elevation in the north-east corner is approximately 10 m AOD. Along the southern extent, the topography varies between 4 – 8 m AOD.

Geology and Soils

Introduction

- 10A.2.27 The geology beneath the Proposed Development Site is shown on BGS 1:50,000 Sheet 33 Stockton (1987) and Sheet 34 Guisborough (1998), 1:10,000 BGS Geological Map Sheet NZ42SE (1984), 1:10,000 BGS Geological Map Sheet NZ42NE (1997), 1:10,000 BGS Geological Map Sheet NZ52NE (1995), 1:10,000 BGS Geological Map Sheet NZ52NW (1995), 1:10,000 BGS Geological Map Sheet NZ52SW (1984) and 1:10,560 County Series Geological Map, Yorkshire, Sheet 7 FS (1881) and extracts of the BGS 1:50,000 mapping obtained as part of the Groundsure GIS Mapping.
- 10A.2.28 BGS 1:50,000 scale mapping reproduced from the Groundsure Reports (Annex A) and associated GIS Mapping is presented on Figures 10-1a to 10-1g to 10-3a to 10-3g (ES Volume II, EN070009/APP/6.3).
- 10A.2.29 Artificial Ground (Made Ground), superficial geology (recent and drift soils) and bedrock geology mapped across individual work areas of the Proposed Development Site is summarised in Table 10A-11.
- 10A.2.30 Table 10A-11 is based on GIS data layers of 1:50,000 digital BGS mapping obtained as part of the Groundsure Reports (Annex A) and associated GIS Mapping.

Table 10A-11: Geology

SITE	ARTIFICIAL GEOLOGY (MADE GROUND)	SUPERFICIAL GEOLOGY	BEDROCK GEOLOGY
Main Site	Present – most of the Main Site, apart from the northeastern corner.	<p>Tidal Flat Deposits: BGS geological mapping anticipates that the Tidal Flat Deposits underlies the entirety of the Main Site. The BGS has provided two different layer types for these deposits; Sand and Silt and Sand, Silt and Clay, respectively, depending on which 1:50,000 geological map sheet covers the area of interest. Across land covered by the Stockton sheet (Sheet 33) (BGS, 1987), the deposits are indicated to comprise Sand, Silt and Clay whilst further east on the Guisborough sheet (Sheet 34) (BGS, 1998) they are reported to comprise of Sand and Silt.</p> <p>Glaciolacustrine Deposits: It is anticipated that Glaciolacustrine Deposits will underlie the Tidal Flat Deposits.</p> <p>Till, Devensian (Glacial Till, Boulder Clay, Drift): It is anticipated that Glacial Till Deposits will underlie the Glaciolacustrine Deposits.</p>	<p>Redcar Mudstone Formation (Lower Lais): The south-east corner is anticipated to be underlain by the Redcar Mudstone Formation.</p> <p>Penarth Group (Rhaetic): A thin strip of land through the centre of the Main Site, and the Redcar Mudstone Formation are anticipated to be underlain by the Penarth Group.</p> <p>Mercia Mudstone Group (Keuper Marl, New Red Sandstone Group): The north-west extent and the Penarth Group are anticipated to be underlain by the Mercia Mudstone Group.</p>
CO ₂ Export Corridor	Present – most of the CO ₂ Export Corridor, apart from northwestern corner	<p>Blown Sand: The northeast corner is underlain by Blown Sand Deposits.</p> <p>Tidal Flat Deposits: The remainder of the CO₂ Export Corridor, and the Blown Sand Deposits are anticipated to be underlain by Tidal Flat Deposits.</p>	<p>Redcar Mudstone Formation (Lower Lais): The Redcar Mudstone Formation is anticipated to underlie most of the CO₂ Export Corridor, apart from a small parcel of land in the north-west and south-west corner.</p> <p>Penarth Group (Rhaetic): The northwest corner and far south-west corner and the Redcar</p>

SITE	ARTIFICIAL GEOLOGY (MADE GROUND)	SUPERFICIAL GEOLOGY	BEDROCK GEOLOGY
		<p>Glaciolacustrine Deposits: It is anticipated that Glaciolacustrine Deposits will underlie the Tidal Flat Deposits.</p> <p>Till, Devensian (Glacial Till, Boulder Clay, Drift): It is anticipated that Glacial Till Deposits will underlie the Glaciolacustrine Deposits.</p>	<p>Mudstone Formation are anticipated to be underlain by the Penarth Group.</p> <p>Mercia Mudstone Group (Keuper Marl, New Red Sandstone Group): The Mercia Mudstone Group is anticipated to underlie the Penarth Group.</p>
Natural Gas Connection Corridor	Present – most of the Natural Gas Connection Corridor, apart from a small parcel of land to the north.	<p>Blown Sand: The north extent is anticipated to be underlain by Blown Sands.</p> <p>Tidal Flat Deposits: The remainder of the Natural Gas Connection Corridor and the Blown Sand Deposits are anticipated to be underlain by Tidal Flat Deposits.</p> <p>Glaciolacustrine Deposits: It is anticipated that Glaciolacustrine Deposits will underlie the Tidal Flat Deposits.</p> <p>Till, Devensian (Glacial Till, Boulder Clay, Drift): It is anticipated that Glacial Till Deposits will underlie the Glaciolacustrine Deposits.</p>	<p>Redcar Mudstone Formation (Lower Lais): The Redcar Mudstone Formation is anticipated to underlie most of the Natural Gas Connection Corridor, apart from a small parcel of land in the far west.</p> <p>Penarth Group (Rhaetic): The west corner and the Redcar Mudstone Formation are anticipated to be underlain by the Penarth Group.</p> <p>Mercia Mudstone Group (Keuper Marl, New Red Sandstone Group): The Mercia Mudstone Group is anticipated to underlie the Penarth Group.</p>
Water Connection Corridor	Present – western extent of the Water Connection Corridor.	<p>Blown Sand: The central area of the Water Connection Corridor is anticipated to be underlain by Blown Sands.</p> <p>Tidal Flat Deposits: The remainder of the Water Connection Corridor and the Blown Sand Deposits are anticipated to be underlain by Tidal Flat Deposits.</p>	<p>Redcar Mudstone Formation (Lower Lais): The Redcar Mudstone Formation is anticipated to underlie most of the Water Connection Corridor, apart from a small parcel of land in the north-west and south-west corner.</p> <p>Penarth Group (Rhaetic): The north-west corner, south-west corner and the Redcar</p>

SITE	ARTIFICIAL GEOLOGY (MADE GROUND)	SUPERFICIAL GEOLOGY	BEDROCK GEOLOGY
		<p>Glaciolacustrine Deposits: It is anticipated that Glaciolacustrine Deposits will underlie the Tidal Flat Deposits.</p> <p>Till, Devensian (Glacial Till, Boulder Clay, Drift): It is anticipated that Glacial Till Deposits will underlie the Glaciolacustrine Deposits.</p>	<p>Mudstone Formation are anticipated to be underlain by the Penarth Group.</p> <p>Mercia Mudstone Group (Keuper Marl, New Red Sandstone Group): The Mercia Mudstone Group is anticipated to underlie a small parcel of land in the north-west corner and the Penarth Group.</p>
Electrical Connection Corridor	Present – most of the Electrical Connection Corridor, apart from small parcels of land in the north-west and along eastern boundary.	<p>Blown Sand: It is anticipated that a thin strip of land along the eastern boundary will be underlain by Blown Sand Deposits.</p> <p>Tidal Flat Deposits: The remainder of the Electrical Connection Corridor and the Blown Sand Deposits are anticipated to be underlain by Tidal Flat Deposits.</p> <p>Glaciolacustrine Deposits: It is anticipated that Glaciolacustrine Deposits will underlie the Tidal Flat Deposits.</p> <p>Till, Devensian (Glacial Till, Boulder Clay, Drift): It is anticipated that Glacial Till Deposits will underlie the Glaciolacustrine Deposits.</p>	<p>Redcar Mudstone Formation (Lower Lais): The Redcar Mudstone Formation is anticipated to underlie most of the Electrical Connection Corridor, apart from a small parcel of land in the north-west and far south-west corner.</p> <p>Penarth Group (Rhaetic): The north-west corner, south-west corner and the Redcar Mudstone Formation are anticipated to be underlain by the Penarth Group.</p> <p>Mercia Mudstone Group (Keuper Marl, New Red Sandstone Group): The Mercia Mudstone Group is anticipated to a small parcel of land in the north-west corner and underlie the Penarth Group.</p>
Hydrogen Pipeline Corridor	Present – central and western extent east of the River Tees and eastern	Blown Sand: It is anticipated that a thin strip of land in the north-eastern extent of the Hydrogen Pipeline Corridor to the east of the River Tees will be underlain by Blown Sand.	Redcar Mudstone Formation (Lower Lais): The eastern and south-eastern extent (east of the River Tees) is underlain by the Redcar Mudstone Formation.

SITE	ARTIFICIAL GEOLOGY (MADE GROUND)	SUPERFICIAL GEOLOGY	BEDROCK GEOLOGY
	<p>extent and localised areas west of the River Tees</p>	<p>Peat: A small area of Peat encroaches on the central extent of the Hydrogen Pipeline Corridor (west of the River Tees).</p> <p>Alluvium: Alluvium Deposits are anticipated to underlie the far north-western extent of the Hydrogen Pipeline Corridor (west of the River Tees).</p> <p>Tidal Flat Deposits: The Blown Sand Deposits, Peat Deposits, the north-eastern extent (east of the River Tees) and central extent (west of the River Tees) as well as small parcels of land in the far western extent are anticipated to be underlain by Tidal Flat Deposits.</p> <p>Glaciolacustrine Deposits: The south-eastern extent (east of the River Tees) and south-western extent (west of the River Tees), and the Tidal Flat Deposits are anticipated to be underlain by Glaciolacustrine Deposits.</p> <p>Till, Devensian (Glacial Till, Boulder Clay, Drift): The far south-western extent (east of the River Tees) and the Glaciolacustrine Deposits are anticipated to be underlain by Glacial Till Deposits.</p>	<p>Penarth Group (Rhaetic): The western and south-western extent (east of the River Tees) and the Redcar Mudstone Formation is underlain by the Penarth Group.</p> <p>Mercia Mudstone Group (Keuper Marl, New Red Sandstone Group): The far western and south-western extent (east of the River Tees), the eastern area (west of the River Tees) and the Penarth Group are anticipated to be underlain by the Mercia Mudstone Group.</p> <p>Sherwood Sandstone Group (Keuper Marl, New Red Sandstone Supergroup): The western extent (west of the River Tees) and the Mercia Mudstone Group are anticipated to be underlain by the Sherwood Sandstone Group.</p>
<p>Other Gases Connection Corridor</p>	<p>Present – most of the Other Gases Connection Corridor, apart from a small parcel of land in the north-east corner.</p>	<p>Blown Sand: It is anticipated that Blown Sand will underlie a small parcel of land in the north-east corner of the Other Gases Connection Corridor.</p>	<p>Redcar Mudstone Formation (Lower Lais): The Redcar Mudstone Formation is anticipated to underlie most of the Other Gases Connection Corridor, apart from a small parcel of land in the north-west corner.</p>

SITE	ARTIFICIAL GEOLOGY (MADE GROUND)	SUPERFICIAL GEOLOGY	BEDROCK GEOLOGY
		<p>Tidal Flat Deposits: The remainder of the Other Gases Connection Corridor and the Blown Sand Deposits are anticipated to be underlain by Tidal Flat Deposits.</p> <p>Glaciolacustrine Deposits: It is anticipated that Glaciolacustrine Deposits will underlie the Tidal Flat Deposits.</p> <p>Till, Devensian (Glacial Till, Boulder Clay, Drift): It is anticipated that Glacial Till Deposits will underlie the Glaciolacustrine Deposits.</p>	<p>Penarth Group (Rhaetic): The north-west corner and the Redcar Mudstone Formation are anticipated to be underlain by the Penarth Group.</p> <p>Mercia Mudstone Group (Keuper Marl, New Red Sandstone Group): The Mercia Mudstone Group is anticipated to underlie the Penarth Group.</p>

Artificial Ground

- 10A.2.31 Artificial Ground is described by the BGS Lexicon of Named Units as *Made Ground – Undivided, Made Ground is an area where the pre-existing (natural or artificial) land surface is raised by artificial deposits. The purpose of made ground is unspecified.*
- 10A.2.32 Figure 10-1a to 10-1g (ES Volume II, EN070009/APP/6.3) indicates that Artificial Ground (Made Ground) is widespread across the Proposed Development Site. The Artificial Ground (Made Ground) is associated with the long historical industrial use of the Proposed Development Site.
- 10A.2.33 Historical mapping and anecdotal evidence suggest that the River Tees was confined within training walls built of slag mostly constructed between 1859 and 1871, and adjacent areas were infilled in sections divided by slag walls with estuary dredging's and industry wastes e.g., slag. The South Gare Breakwater was constructed between 1863 and 1888 of slag and topped with a concrete wall.
- 10A.2.34 The land areas to the north underlying the Main Site and localised areas of the Connection Corridors, were completed using mainly blast furnace slag and smaller quantities of basic steel slag in the late nineteenth and twentieth century.
- 10A.2.35 Between 1900 and 1930 areas east and south of the Brinefields were reclaimed by infilling between porous slag walls, the Reclamation Pond remaining tidal until further land was reclaimed to the north. The area of "The Marshes" to the south of the Main Site appears to have been drained in the 1950s and thereafter it is assumed raised with industrial wastes and/or dredgings. Between 1964 and 1969 the main River Tees channels were deepened with dredgings pumped into the eastern margin of Seal Sands creating a raised bank of sand and clay known as "The Peninsular". This merged into the enclosure of the "Monsanto Option". The latter was progressively filled by dredging of the Tees deep water channel which continued irregularly until 1974 using the Dutch hydraulic fill method, which became the exclusive fill technique for the remainder of Seal Sands and potentially also Bran Sands.

Superficial Geology

- 10A.2.36 The BGS defines superficial geology as *the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 2.6 million years from the present. They rest on older deposits or rocks referred to as bedrock.* The published BGS 1:50,000 scale maps show the Proposed Development Site is underlain by variable superficial deposits. Details of superficial geology mapped across the Proposed Development Site and surrounding parts of Teesside are shown on Figure 10-2a to 10-2g (ES Volume II, EN070009/APP/6.3).

Peat

- 10A.2.37 Peat is described by the BGS Lexicon of Named Units as a *"partially decomposed mass of semi-carbonized vegetation which has grown under waterlogged, anaerobic conditions, usually in bogs or swamps."*

Tidal Flat Deposits

- 10A.2.38 Tidal Flat Deposits, including mud flat and sand flat deposits are described by the BGS Lexicon of Named Units as *"forming extensive nearly horizontal marshy land in the intertidal zone that is alternately covered and uncovered by the rise and fall of the tide. They consist of unconsolidated sediment, mainly mud and/or sand. They may form the top surface of a deltaic deposit."*

Blown Sand

- 10A.2.39 Blown Sand is described by the BGS Lexicon of Named Units as *"sand that has been transported by wind, or sand consisting predominantly of wind-borne particles."*

Glaciolacustrine Deposits

- 10A.2.40 Glaciolacustrine Deposits are described by the BGS Lexicon of Named Units as *"deposits that were laid down in glacial lakes. Composed of coarse-grained bedload and suspended fine-grained material transported by meltwater flowing into lakes bordering the glacier. Deposits include sands, silts and clays of deltaic origin, shoreface sand and gravel and lake bottom varved, fine-grained (fine sand, silt and clay) sediments. Drop stones from floating ice are a common feature."*

Till, Devensian

- 10A.2.41 Till (Devensian) is described by the BGS Lexicon of Named Units as *"unsorted and unstratified drift, generally over consolidated, deposited directly by and underneath a glacier without subsequent reworking by water from the glacier. It consists of a heterogenous mixture of clay, sand, gravel, and boulders varying widely in size and shape (diamicton)."*

Bedrock Geology

Introduction

- 10A.2.42 Figure 10-3a to 10-3g (ES Volume II, EN070009/APP/6.3) presents the BGS 1:50,000 bedrock geology below the Proposed Development Site. In sequence oldest to youngest four rock formations subcrop across the Proposed Development Site: the Sherwood Sandstone Group in the west, the Mercia Mudstone Group in the centre and Redcar Mudstone Formation in the south and east. A fourth unit, the Penarth Group occurs as a thin band between the Mercia Mudstone Group (centre) and Redcar Mudstone Formation (south and east). The outcrop of the Penarth Group generally trends south-west – north-east but swings to the north-west below Bran Sands before turning to the north-east south of the former Redcar Steelworks. The oldest rocks occur to the north-west and the youngest to the south-east. The Sherwood Sandstone Group is underlain by Permian marls and mudstones which include beds of halite (sodium chloride, NaCl) and anhydrite which have been exploited in the past by mining and in Brine Well Fields to the south-west of Wilton and near Billingham.

Permian Strata

- 10A.2.43 Permian strata underlies the whole Proposed Development Site at depth and comprise interbedded limestones, mudstones and evaporate deposits. These
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deposits are part of the thick evaporites laid down in Zechstein Sea during Middle to Late Permian times 250 million years ago. Exploitation of the evaporite deposits comprising mining of anhydrite at Billingham and brine pumping from locations scattered across the whole Proposed Development Site area but concentrated north of the River Tees, within this sequence led to the development of the chemical industry in Teesside. The 1:50,000 Stockton Sheet 33 geological map Sheet shows the halite deposit to extend below the eastern half of the study area. The BGS Lexicon of Named Units describes the formations as "*Dolostone, grey to buff grey, commonly oolitic or granular, with subordinate mudstone, dolomitic siltstone and sandstone*" and "*Mudstone, red-brown, with subordinate siltstone and sandstone, Dolostone and gypsum / anhydrite locally common.*"

Sherwood Sandstone Group

- 10A.2.44 The Sherwood Sandstone Group is described by the BGS Lexicon of Named Units as "*sandstone, red, yellow and brown, part pebbly; conglomeratic in lower part; pebbles generally extra formational quartz and quartzite, with some intraformational clasts; subordinate red mudstone and siltstone.*"
- 10A.2.45 Rocks of the Sherwood Sandstone Group underlie the entire Proposed Development Site subcropping along the western extent of the Hydrogen Pipeline Corridor. The BGS Baseline Series Report indicates that the sandstone comprises "*a thick sequence of fine to medium grained sandstones with common argillaceous beds varying in thickness from 250 to 450 m gently dipping ~1 - 2° to the east, in the Yorkshire and Cleveland area. The sandstones are of Triassic age.*"

Mercia Mudstone Group

- 10A.2.46 The Mercia Mudstone Group is described by the BGS Lexicon of Named Units as "*dominantly red, less commonly green-grey, mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas. Thin beds of gypsum/anhydrite are widespread; thin sandstones are also present.*"
- 10A.2.47 The rocks subcropping in the centre of the Proposed Development Site and underlying the Proposed Development Site to the east of this are early Triassic rocks of the Mercia Mudstone Group, described on the Sheet 34 legend as "*Red and green mudstone with gypsum and sandstone: halite in lower part.*" The BGS memoir of the country around Northallerton, an area underlain by a similar solid succession located to the south west of Teesside, reports based on the geological map sheet sections, the thickness of the formation ranges from 200 m (Sheet 33) and 200 to 215 m (Sheet 34). A bed of Halite is indicated to be present at the base of the succession on the Guisborough sheet; the evaporite is unnamed and occurs just above the unconformity between the Triassic and Permian strata. The Stockton sheet identifies the Seaton Carew Formation to form the base of the Mercia Mudstone Group; the BGS Lexicon describes these rocks as "*mudstone, red brown and grey green mottled, and sandstone, coarse-grained, sporadically pebbly, brown or grey-green. Sandstone occurs within convoluted soft injection structures and sandstone dykes.*"

Penarth Group

- 10A.2.48 The Penarth Group is described by the BGS Lexicon of Named Units as "*grey to black mudstones with subordinate limestones and sandstones; predominantly marine in origin.*" The BGS Lexicon of Named Units identifies the thickness of the group to vary between 0 and >12 m compared to 10 m and 11 m to 19 m approximately on geological map sheets 33 and 34, respectively. The rocks are of Triassic age forming the top of the succession.
- 10A.2.49 The subcrop of the Penarth Group occurs in a narrow band extending from South Bank towards the Container Terminal at Teesport before swinging towards the former SSI Redcar Steelworks.

Redcar Mudstone Formation

- 10A.2.50 The Redcar Mudstone Formation is described by the BGS Lexicon of Named Units as "*grey, fossiliferous, fissile mudstones and siltstones with subordinate thin beds of shelly limestone in lower part, and fine-grained carbonate-cemented sandstone in upper part; argillaceous limestone concretions occur throughout.*" Based on the geological map sheet sections, the thickness of the formation ranges from 230 to 275 m (Sheet 33) to around 275 m (Sheet 34).
- 10A.2.51 The BGS Memoir of the country around Northallerton reports that the formation has been divided into four units based on composition from logging of coastal exposures on the North Yorkshire coast, south of Saltburn by the Sea. The Calcareous Shale Member forms the base of the formation and comprises mudstone with numerous thin beds of shelly, argillaceous limestone, which tend to become sandier up-sequence. The overlying Siliceous Shale member, around 30 m thick on the coast, comprises silty mudstones with intercalations of strong calcareous siltstone and sandstone. The top of the formation has been divided into the Pyritous Shale Member consisting of mudstones with pyritic burrows and fossils, and the Ironstone Shale Member with hard sideritic ironstone nodules. It should be noted from this that only the two basal sub-divisions of this formation are expected to be encountered.

Structure

- 10A.2.52 Faults and Linear Features are presented on Figure 10-5 (ES Volume II, EN070009/APP/6.3).
- 10A.2.53 The 1:50,000 BGS geological mapping (Stockton 1:50,000 geological map Sheet 33) shows the strata to have a regional dip to the east cut by one fault through the southern half of the Hydrogen Pipeline Corridor, north of the River Tees. The fault is named the Saltholme Fault on 1:10,000 geological map Sheet NZ52SW, trending east to west approximately. The fault extends east towards the River Tees south of Seal Sands Industrial Estate. It is assumed that the fault has been traced in underground anhydrite workings and associated preliminary prospecting bores located north of the Tees and may extend further east across Teesport on the south of the estuary. The fault downthrows strata to the north but the throw is not recorded. Additional detail is provided on 1:10,000 geological map sheet NZ42SE

which reports a throw of ~30 m to the north in the Billingham Anhydrite, confirming how the presence of the fracture was discovered.

10A.2.54 The presence of bedrock at depth overlain by a considerable cover of Artificial Ground (Made Ground) and recent and drift superficial deposits masks the faulting pattern in the soil succession below the Proposed Development Site.

Agricultural Land Classification

10A.2.55 Information provided on Magic Maps for Agricultural Land Classification (ALC) as supplied by Defra, presented in two data sets, Provisional ALC and Post 1988 ALC maps. The Provisional ALC data covers the entire study area, whereas the Post 1988 ALC data shows a localised area in greater detail. The Agricultural Land Classification has been summarised into the individual Proposed Development Site areas in Table 10A-12. Figure 10-19a to 10-19g (ES Volume II, EN070009/APP/6.3) presents the site wide Provisional ALC data.

10A.2.56 The ALCs by Natural England summarise agricultural land into five grades with Grade One being the best quality land and Grade Five being the poorest, all other land is classified into Non-Agricultural or Urban. A summary of the ALC definitions is presented in Table 10A-13.

Table 10A-12: Agricultural Land Classification

SITE	AGRICULTURAL LAND CLASSIFICATION
Main Site	Urban and Non-Agricultural – Entirety of Main Site
CO ₂ Export Corridor	Urban and Non-Agricultural – Entirety of the CO ₂ Export Corridor
Natural Gas Connection Corridor	Urban and Non-Agricultural – Entirety of the Natural Gas Connection Corridor
Water Connection Corridor	Urban and Non-Agricultural – Entirety of the Water Connection Corridor
Electrical Connection Corridor	Urban and Non-Agricultural – Entirety of the Electrical Connection Corridor
Hydrogen Pipeline Corridor, North of River Tees	Urban – Adjacent to the River Tees up to the start of Greatham Creek and then followed south. Including the far west of the Hydrogen Pipeline Corridor from Cowpen Bewley Road, encompassing the CF Fertiliser Site and surrounding area. Urban also located north of Greatham Creek. Grade 5 – Adjacent to the end of the Urban Classification from the end of Greatham Creek and moving west to encompass, Swallow Fleet, Holme Fleet and Greatham Creek, and the surrounding land. Grade 4 – Adjacent to the Grade 5 Classification and encompassing Cowpen Bewley Wood and the A1185 Road.

SITE	AGRICULTURAL LAND CLASSIFICATION
	Grade 3 (not subgraded) – Parcel of land approximately 2ha in size for Cowpen Bewley Replacement Land. Assume worst case scenario Grade 3a. N.B – a small portion of the northern extent of the Hydrogen Pipeline Corridor falls within Grade 3 land adjacent to Billingham Cemetery, However, it is noted that this area of land comprises a road.
Hydrogen Pipeline Corridor, South of River Tees	Urban and Non-Agricultural – Entirety of the Hydrogen Pipeline Corridor N.B It is possible that Grade 2 ALC encroaches to the east of the southeastern extent at Lackenby industrial works area. However, it is considered that this is a mapping overlay area and the area itself already comprises a pipeline network.
Other Gases Connection Corridor	Urban and Non-Agricultural – Entirety of the Other Gases Connection Corridor

Table 10A-13: Agricultural Land Classification Definitions (Natural England, 2021).

ALC	DEFINITION
Urban Land	-
Non-Agricultural Land	-
Grade 5 – Very Poor Quality	<i>Land with very severe limitations that restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.</i>
Grade 4 – Poor Quality	<i>Land with severe limitations which significantly restrict the range of crops or level of yields. It is mainly suited to grass with occasional arable crops (for example cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties using the land. The grade also includes arable land that is very dry because of drought.</i>
Grade 3 – Good to Moderate Quality	<i>Land with moderate limitations that affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in grades 1 and 2.</i> <i>Subgrade 3a – Good quality agricultural land</i> <i>Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of crops</i> <i>Subgrade 3b – Moderate quality agricultural land</i> <i>Land capable of producing moderate yields of a narrow range of crops</i>

ALC	DEFINITION
Grade 2 – Very Good Quality	<i>Land with minor limitations that affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown. On some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops, such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than grade 1.</i>
Grade 1 – Excellent Quality	<i>Land with no or very minor limitations. A very wide range of agricultural and horticultural crops can be grown. Yields are high and less variable than on land of lower quality.</i>

10A.2.57 The Provisional ALC map indicates the Main Site, CO₂ Export Corridor, Natural Gas Connection Corridor, Water Connection Corridor, Electrical Connection Corridor, Hydrogen Pipeline Corridor – South of River Tees and Other Gases Connection Corridor to be underlain by Urban and Non-Agricultural soils giving the soils a negligible impact value.

10A.2.58 The Provisional ALC map indicates the Hydrogen Pipeline Corridor – North of River Tees is underlain by Urban, Grade 5, Grade 4 and Grade 3 soils. The Grade 3 soils have not been categorised into Grade 3a or 3b soils and are not present on the Post 1988 ALC map. Therefore, the majority of the Hydrogen Pipeline Corridor falls within a low impact value, with the Grade 3a and Grade 3b soils falling within a moderate to high impact value. A small portion of the northern extent of the Hydrogen Pipeline Corridor falls within Grade 3 land adjacent to Billingham Cemetery. However, it is noted that this area of land comprises a road. It is possible that Grade 2 ALC encroaches to the east of the southeastern extent at Lackenby industrial works area. However, it is considered that this is may be a mapping overlay error and the area itself already comprises a pipeline network.

BGS Boreholes

Main Site

10A.2.59 The BGS maintains an archive of historical exploratory hole records throughout the UK. Part of this desk study involved searching the database and those that are considered to provide useful information on the ground profile at the Main Site are presented in Table 10A-14.

10A.2.60 Also included in Table 10A-14 is borehole information from historical GIs that have been completed across the Main Site.

Table 10A-14: Main Site Geological Succession

BOREHOLE REFERENCE NATIONAL GRID REFERENCE (NGR) DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
S1-BH03 456495, 525299 On Site (Allied Explorations) November, 2017	Made Ground	Black sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular and includes slag, concrete, black and clinker	G.L.	+7.17	6.80
	Tidal Flat Deposits	Medium dense grey-brown sand.	6.80	+0.37	4.10
	Glacial Till	Becomes medium dense brown gravelly sand. Sand is fine to coarse. Gravel is fine to coarse rounded and includes sandstone at 10.40 m bgl.	10.90	-3.73	1.20
	Redcar Mudstone Formation	Firm to stiff red brown slightly sandy slightly gravelly clay. Sand is fine to medium. Gravel is fine to medium subangular and includes sandstone, mudstone, and coal.	12.10	-4.93	>0.90
S1-BH16	Made Ground	Black-grey-brown clayey sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular and includes slag, concrete, brick, and clinker	G.L.	6.93	7.00

BOREHOLE REFERENCE NATIONAL GRID REFERENCE (NGR) DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
456324, 525151 On Site (Allied Explorations) November, 2017	Tidal Flat Deposits	Dense brown clayey gravelly sand with fragments of shell. Sand is fine to coarse. Gravel is fine to coarse angular to rounded and includes sandstone.	7.00	-0.07	3.90
	Redcar Mudstone Formation	Extremely weak grey mudstone highly weathered.	10.90	-3.97	11.90
		Becomes distinctly weathered at weathered at 11.40 m below ground level (bgl).	22.80	-15.87	14.65
	Mercia Mudstone Formation	Extremely weak red brown mudstone distinctly weathered.	37.45	-30.52	>3.55
S1-BH17 456361, 524978 On Site (Allied Explorations)	Made ground	Black, brown sandy gravel and cobbles. Sand is fine to coarse. Gravel is fine to coarse subangular and includes concrete, slag, clinker, and brick. Cobbles are subangular to subrounded and include concrete and slag, Very dense at 2.00 m bgl. Slag inclusions are not present below 3.00 m bgl	G.L.	+6.95	6.00
	Tidal Flat Deposits	Medium dense grey-brown clayey slightly gravelly sand with occasional interbeds of gravel and fragments of	6.00	+0.95	6.00

BOREHOLE REFERENCE NATIONAL GRID REFERENCE (NGR) DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
October, 2017		shell. Sand is fine to coarse. Gravel is fine to medium rounded to angular and includes sandstone. 11.00 m bgl becomes less clay dominated.			
	Glacial Till	Soft to firm clayey silt with interbeds of slightly organic clay / very silty clay.	12.00	-5.05	6.00
	Redcar Mudstone Formation	Extremely weak grey mudstone distinctly Weathered	18.00	-11.05	>0.2
NZ52NE55 456627, 525778 September, 1972	Made Ground	Gravel and cobble sized slag and brick	G.L.	+6.87	4.50
	Tidal Flat Deposits	Brown-grey fine and medium sand with a trace of rounded fine gravel and occasional shell fragments.	4.50	+2.37	7.50
	Glacial Till (named Boulder Clay in the log)	Stiff brown and dark grey silty clay with a little subrounded and subangular fine and medium gravel	12.00	-5.13	2.00
	Glacio- lacustrine Deposits	Firm dark brown thinly laminated silty clay with light brown silt along partings	14.00	-7.13	1.00

BOREHOLE REFERENCE NATIONAL GRID REFERENCE (NGR) DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
	Glacial Till (named Boulder Clay in the log)	Red-brown silty clay with a trace of subrounded and subangular fine and medium gravel	15.00	-8.13	0.70
	Mercia Mudstone Formation (named Keuper Marl in the log)	Unweathered red brown very and grey-green moderately weak mudstone and silty mudstone.	15.70	-8.83	>23.30
NZ52NE56 456657, 525710 Onsite September, 1972	Made Ground	Sand to cobble sized slag	G.L.	+7.22	4.30
	Tidal Flat Deposits	Light brown fine and medium sand with a trace of rounded fine gravel and occasional shell fragments. Medium and coarse sand was located below 8.00 m bgl.	4.30	+2.92	7.90
	Glacial Till (named Boulder Clay in the log)	Stiff brown with a little pale grey mottled silty clay with a trace of subangular fine and medium gravel	12.20	-4.98	2.90
	Mercia Mudstone	Highly and moderately weathered, closely and moderately fractured red brown very weak mudstone	15.10	-7.88	27.50

BOREHOLE REFERENCE NATIONAL GRID REFERENCE (NGR) DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
	Formation (named Keuper Marl in the log)	with occasional bands of red-brown and green-grey weak silty mudstone.			
		Slightly weathered, moderately fractured brown, slightly gypsiferous weak mudstone	42.60	-35.38	>2.50
S1-BH01 456204, 525417 On Site (Allied Explorations) October, 2017	Made Ground	Black-grey clayey sandy gravel and cobbles. Sand is fine to coarse. Gravel is fine to coarse subangular and includes slag, brick, concrete and clinker. Cobbles are rounded and includes slag and concrete	G.L.	+6.55	6.00
	Tidal Flat Deposits	Medium dense brown slightly gravelly sand with shell fragments. Sand is fine to coarse. Gravel is fine subangular and includes sandstone.	6.00	+0.55	4.80
	Glacial Till	At 10.60 m bgl becomes gravelly and gravel is fine to coarse.	10.80	-4.25	6.50
	Mercia Mudstone Formation	Firm to stiff brown sandy gravelly clay. Sand is fine to coarse. Gravel is fine to medium angular to rounded and includes sandstone and	17.30	-10.75	>22.70
S1-BH10	Made ground	Black-grey sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular and includes slag, brick, concrete and clinker	GL	+6.70	5.00

BOREHOLE REFERENCE NATIONAL GRID REFERENCE (NGR) DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
456111, 525287	Tidal Flat Deposits	Dense brown slightly gravelly sand. Sand is fine to medium. Gravel is fine to coarse subrounded and includes sandstone.	5.00	+1.70	5.30
On Site (Allied Explorations) October, 2017	Mercia Mudstone Formation	Extremely weak grey mudstone distinctly weathered.	10.30	-3.60	>0.70
NZ52NE50	Made Ground	Gravel to boulder sized slag.	G.L.	+2.61	0.90
455919, 525410	Estuarine Deposits	Dark brown silty clay.	0.90	+1.71	0.70
Onsite	Tidal Flat Deposits	Light brown fine and medium, with some coarse sand and trace of rounded fine and medium gravel below 6 m and occasional shell fragment.	1.60	+1.01	12.50
September, 1972	Glacio- lacustrine Deposits	Firm grey-brown silty clay with light brown silt along the partings	14.10	-11.49	1.00

BOREHOLE REFERENCE NATIONAL GRID REFERENCE (NGR) DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
	Glacial Till (named Boulder Clay in the log)	Red-brown and brown slightly sandy silty clay with a trace of subrounded and subangular fine and medium gravel.	15.10	-12.49	0.90
	Mercia Mudstone Formation (named Keuper Marl in the log)	Highly and moderately weathered, closely and moderately fractured red brown, with a trace of pale green-grey, very weak and weak mudstone and silty mudstone.	16.00	-13.39	>15.60
NZ52NE51 456023, 525506 On Site September, 1972	Made Ground	Gravel and boulder sized slag.	G.L.	+5.50	6.20
	Tidal Flat Deposits	Light brown fine to coarse sand with occasional shell fragments.	6.20	-0.70	12.20
	Glacial Till (named Boulder Clay in the log)	Below 10.50 m bgl a little rounded fine gravel is present.	18.40	-12.90	2.10
	Mercia Mudstone Formation (named Keuper Marl in the log)	Stiff brown silty clay with a little subrounded and subangular fine and medium gravel.	20.50	-15.00	>12.50

BOREHOLE REFERENCE NATIONAL GRID REFERENCE (NGR) DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
S2-BHA01 456024, 526088 On Site (Allied Explorations) November, 2017	Made Ground	Black-brown very clayey sandy gravel with hydrocarbon/ creosote odour noted. Sand is fine to coarse. Gravel is fine to medium subangular and includes slag, concrete, brick and clinker	G.L.	+7.22	5.90
	Tidal Flat Deposits	Medium dense brown-grey slightly clayey sand with occasional interbeds of gravel and fragments of shell. Sand is fine to coarse. Gravel is fine to medium subrounded and includes sandstone.	5.90	+1.32	9.25
	Mercia Mudstone Formation	Weak red brown-green interbedded mudstone/marl partially weathered with frequent calcite veining. (Engineer notes calcite veins are 3mm-5mm in width with varying degrees of orientation).	15.15	-7.93	>28.85
S2-BHA03 456422, 526009	Made Ground	Black sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular and includes concrete, brick, and slag.	G.L.	+7.40	5.50
	Tidal Flat Deposits	Medium dense becoming dense brown sand. Sand is fine to coarse.	5.50	+1.90	8.00

BOREHOLE REFERENCE NATIONAL GRID REFERENCE (NGR) DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
On Site (Allied Explorations) November, 2017	Redcar Mudstone Formation	Moderately weak grey mudstone partially weathered.	13.50	-6.10	1.00
NZ52NE53 456207, 525750 On Site September, 1972	Made Ground	Gravel to boulder sized slag with bricks	G.L.	+7.14	5.20
	Tidal Flat Deposits	Light brown-grey fine and medium sand with a trace of rounded fine gravel and occasional shell fragments.	5.20	+1.94	10.40
	Glacial Till (named Boulder Clay in the log)	At 14.80 m bgl the deposit becomes predominantly gravels and cobbles.	15.60	-8.46	2.00
	Mercia Mudstone Formation (named Keuper Marl in the log)	Highly weathered closely fractured red-brown and green-grey very weak mudstone	17.60	-10.46	0.80
		Unweathered laminated and thinly laminated green-grey moderately gypsiferous weak to moderately weak siltstone and mudstone.	18.40	-11.26	>5.50

CO₂ Export Corridor and Natural Gas Connection Corridor

10A.2.61 One BGS borehole located within the CO₂ Export Corridor and Natural Gas Connection Corridor boundary and one offsite BGS borehole has been summarised in Table 10A-15 to gain an understanding of the possible geology underlying the Corridors.

Table 10A-15: CO₂ Export Corridor and Natural Gas Connection Corridor Geological Succession

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
NZ52SE51, Redcar Stage 2 3001 456991, 524582 Onsite (both corridors) 1972	Made Ground	Gravel to boulder sized slag with a trace of dark grey-brown silty clay. Fill.	GL	5.16	4.5
	Tidal Flat Deposits (Estuarine Deposit on log)	Dark brown-grey fine and medium sand with occasional shell fragments	4.5	0.66	0.5
		Dark grey clayey coarse silt and fine sand with occasional shell fragments	5.0	0.16	0.8
		Dark grey-brown clayey silty fine with a little medium sand with occasional shell fragments	5.8	-0.64	2.0
		Soft to firm dark grey-brown structureless silty clay flecked with black carbonaceous matter and occasional pockets of green fine sand	7.8	-2.46	1.9

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
	Glacial Till (Boulder Clay on log)	Firm to stiff dark brown and grey mottled sandy silty clay with a little subangular siltstone and coal gravel	9.7	-4.54	2.5
	Redcar Mudstone Formation (Lower Lias on log)	Poorly thinly laminated moderately jointed dark grey calcareous weak mudstone with 50 to 150 mm bands of silty moderately weak mudstone.	12.2	-7.04	5.9
		Dark grey calcareous moderately weak mudstone with occasional bands of impure shelly moderately strong limestone.	18.10	-12.94	>10.1
NZ52NE48, Redcar Stage II 3118 456638, 525588 Offsite 60 m west CO ₂ Export Corridor, Offsite 650 m north	Tidal Flat Deposits	Grey-brown fine and medium sand with a trace of fine gravel and occasional shell fragments	GL	4.46	7.30
	Tidal Flat Deposits	Grey-brown fine to coarse sand with some fine to coarse gravel and occasional shell fragments	7.3	-2.84	3.7
	Glacial Till (Boulder clay on log)	Stiff brown and grey mottled silty clay with a trace of subrounded and subangular fine and medium gravel	11.0	-6.54	3.2
	(Lacustrine deposits on log)	Firm grey-brown thinly laminated silty clay with light brown silt along partings	14.0	-9.74	0.2

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
Natural Gas Connection Corridor 1972	Glacial Till (Boulder clay on log)	Brown silty clay	14.4	-9.94	0.5
	Mercia Mudstone Formation (Coatham Beds on log)	Highly weathered grey very weak mudstone with occasional thin laminae of sandy siltstone	14.9	-10.44	2.0
	Westbury Beds on logs – interpreted as Mercia Mudstone Formation	Thinly laminated moderately fractured black weak silty mudstone with bands of weak to moderately weak siltstone, and occasional bands of irregular lenses of pyritous fine sandstone	16.9	-12.44	19.55
	Tea Green Marl on log – interpreted as Mercia Mudstone Formation	Poorly laminated moderately fractured grey-green calcareous weak to moderately weak silty mudstone and siltstone	23.0	-15.09	5.2
	Mercia Mudstone Formation (Keuper Marl on log)	Red-brown and grey weak to moderately weak silty mudstone with small gypsum content	27.80	-23.34	>0.9

Water Connection Corridor

10A.2.62 Seven off-site BGS boreholes within 500 m of the Water Connection Corridor have been summarised in Table 10A-16.

Table 10A-16: Water Connection Corridor Geological Succession

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
NZ52SE51, Redcar Stage 2 3001 456991, 524582 35 m south 1972	Made Ground	Gravel to boulder sized slag with a trace of dark grey-brown silty clay. Fill.	GL	5.16	4.5
	Tidal Flat Deposits (Estuarine Deposit on log)	Dark brown-grey fine and medium sand with occasional shell fragments	4.5	0.66	0.5
		Dark grey clayey coarse silt and fine sand with occasional shell fragments	5.0	0.16	0.8
		Dark grey-brown clayey silty fine with a little medium sand with occasional shell fragments	5.8	-0.64	2.0
		Soft to firm dark grey-brown structureless silty clay flecked with black carbonaceous matter and occasional pockets of green fine sand	7.8	-2.46	1.9
	Glacial Till (Boulder Clay on log)	Firm to stiff dark brown and grey mottled sandy silty clay with a little subangular siltstone and coal gravel	9.7	-4.54	2.5
		Poorly thinly laminated moderately jointed dark grey calcareous weak mudstone with 50	12.2	-7.04	5.9

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
	Redcar Mudstone Formation (Lower Lias on log)	to 150 mm bands of silty moderately weak mudstone.			
		Dark grey calcareous moderately weak mudstone with occasional bands of impure shelly moderately strong limestone.	18.10	-12.94	>10.1
NZ52NE48, Redcar Stage II 3118	Tidal Flat Deposits	Grey-brown fine and medium sand with a trace of fine gravel and occasional shell fragments	GL	4.46	7.30
456638, 525588	Tidal Flat Deposits	Grey-brown fine to coarse sand with some fine to coarse gravel and occasional shell fragments	7.3	-2.84	3.7
Offsite 60 m west 1972	Glacial Till (Boulder clay on log)	Stiff brown and grey mottled silty clay with a trace of subrounded and subangular fine and medium gravel	11.0	-6.54	3.2
	(Lacustrine deposits on log)	Firm grey-brown thinly laminated silty clay with light brown silt along partings	14.0	-9.74	0.2
	Glacial Till (Boulder clay on log)	Brown silty clay	14.4	-9.94	0.5
	Mercia Mudstone Formation (Coatham Beds on log)	Highly weathered grey very weak mudstone with occasional thin laminae of sandy siltstone	14.9	-10.44	2.0

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
	Westbury Beds on logs – interpreted as Mercia Mudstone Formation	Thinly laminated moderately fractured black weak silty mudstone with bands of weak to moderately weak siltstone, and occasional bands of irregular lenses of pyritous fine sandstone	16.9	-12.44	19.55
	Tea Green Marl on log – interpreted as Mercia Mudstone Formation	Poorly laminated moderately fractured grey-green calcareous weak to moderately weak silty mudstone and siltstone	23.0	-15.09	5.2
	Mercia Mudstone Formation (Keuper Marl on log)	Red-brown and grey weak to moderately weak silty mudstone with small gypsum content	27.80	-23.34	>0.9
NZ52SE13551/14, Lackenby Power Line 14 457224, 524376 200 m south-east	Made Ground	Slag	GL	-	3.0
	Tidal Flat Deposits/Blown Sand	Grey clayey soft silt with occasional layers of sand	3.0	-	7.8
	Glaciolacustrine?	Stiff brown silty stoney clay	10.8	-	>1.3
NZ52SE13551/13 Lackenby Power Line 13	Made Ground	Slag	GL	-	2.8
	Tidal Flat Deposits	Silty sand, soft grey clayey silt	2.8	-	0.8
	Blown Sand?	Brown sand	3.6	-	0.6

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
457141, 524237 295m SE	Tidal Flat Deposits	Soft brown clayey silt with traces of sand	4.2	-	4.5
	Glaciolacustrine?	Stiff brown silty stoney clay	8.7	-	>2.1
NZ52SE13551/12 Lackenby Power Line 12 457060, 524099 465 m south	Made Ground	Slag	GL	-	>3.2
NZ52SE13551/12A Lackenby Power Line 12A 457055, 524098 465 m south	Made Ground	Slag	GL	-	>2.8
NZ52SE13551/12B Lackenby Power Line 12B	Made Ground	Slag, firebricks	GL	-	5.6
	Tidal Flat Deposits	Soft grey sandy clayey silt	5.6	-	2.1
		Soft brown clayey silt occasional layers of sand	7.7	-	3.0

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
457065, 524101 465 m south	Glacial Till?	Stiff brown silty stoney clay	10.7	-	>1.4

Electrical Connection Corridor

10A.2.63 Six onsite BGS boreholes and two off-site BGS boreholes within 200 m of the Electrical Connection Corridor have been chosen and summarised in Table 10A-17.

Table 10A-17: Electrical Connection Corridor Geological Succession

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
NZ52SE51, Redcar Stage 2 3001 456991,	Made Ground	Gravel to boulder sized slag with a trace of dark grey-brown silty clay. Fill.	GL	5.16	4.5
		Dark brown-grey fine and medium sand with occasional shell fragments	4.5	0.66	0.5

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
524582 Onsite 1972	Tidal Flat Deposits (Estuarine Deposit on log)	Dark grey clayey coarse silt and fine sand with occasional shell fragments	5.0	0.16	0.8
		Dark grey-brown clayey silty fine with a little medium sand with occasional shell fragments	5.8	-0.64	2.0
		Soft to firm dark grey-brown structureless silty clay flecked with black carbonaceous matter and occasional pockets of green fine sand	7.8	-2.46	1.9
	Glacial Till (Boulder Clay on log)	Firm to stiff dark brown and grey mottled sandy silty clay with a little subangular siltstone and coal gravel	9.7	-4.54	2.5
	Redcar Mudstone Formation (Lower Lias on log)	Poorly thinly laminated moderately jointed dark grey calcareous weak mudstone with 50 to 150 mm bands of silty moderately weak mudstone.	12.2	-7.04	5.9
		Dark grey calcareous moderately weak mudstone with occasional bands of impure shelly moderately strong limestone.	18.10	-12.94	>10.1
	Made Ground	Slag	GL	-	3.0

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
NZ52SE13551/14 Lackenby Power Line 14 Onsite 457224 524376	Tidal Flat Deposits/Blown Sand	Grey clayey soft silt with occasional layers of sand	3.0	-	7.8
	Glaciolacustrine?	Stiff brown silty stoney clay	10.8	-	>1.3
NZ52SE13551/13 Lackenby Power Line 13 Onsite 457141, 524237	Made Ground	Slag	GL	-	2.8
	Tidal Flat Deposits	Silty sand, soft grey clayey silt	2.8	-	0.8
	Blown Sand?	Brown sand	3.6	-	0.6
	Tidal Flat Deposits	Soft brown clayey silt with traces of sand	4.2	-	4.5
	Glaciolacustrine?	Stiff brown silty stoney clay	8.7	-	>2.1
NZ52SE13551/12A Lackenby Power Line 12 Onsite 457060, 524099	Made Ground	Slag	GL	-	>3.2

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
NZ52SE13551/12A Lackenby Power Line 12A Onsite 457055, 524098	Made Ground	Slag	GL	-	>2.8
NZ52SE13551/12B Lackenby Power Line 12B Onsite 457065, 524101	Made Ground	Slag, firebricks	GL	-	5.6
	Tidal Flat Deposits	Soft grey sandy clayey silt	5.6	-	2.1
		Soft brown clayey silt occasional layers of sand	7.7	-	3.0
Glacial Till?	Stiff brown silty stoney clay	10.7	-	>1.4	
NZ52NE60 Redcar Stage II 3651 Onsite	Made Ground	Gravel and cobble sized slag (Fill)	GL	6.96	6.5
	Tidal Flat Deposits	Light brown fine and medium sad with occasional shell fragments	6.5	0.46	2.3
	Glacial Till (Boulder clay on log)	Brown silty clay with a trace of subrounded and subangular fine and medium gravel	8.8	-1.84	0.2

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
455905, 525053 1972	(Lower Lias on log)	Highly weathered dark grey very weak mudstone	9.0	-2.04	2.3
		Thinly laminated dark grey very weak mudstone with silt along partings and bands of calcareous moderately weak siltstone	11.3	-4.34	>3.18
NZ52SE13551/10 Lackenby Power Line 10 Directly S 456776, 523581	Made Ground	Limestone fragments	GL	-	0.1
		Sandy silty stony clay	0.1	-	6.8
	Glaciolacustrine Deposits	Mottled grey brown laminated clay	6.9	-	2.1
		Stiff brown silty stony clay	9.1	-	>3.0

Hydrogen Pipeline Corridor

10A.2.64 There are a significant number of borehole records across the Hydrogen Pipeline Corridor. Selected boreholes (based on quality of record, access to record, distance and professional judgement) for the corridor north of the River Tees and south of the River Tees are summarised in Table 10A-18 and Table 10A-19.

10A.2.65 NZ52SE51, NZ52SE13551/14, NZ52SE13551/13 and NZ52SE13551/12A and B encroach on the Hydrogen Connection Corridor (south of the River Tees), these are not repeated in Table 10A-18 and can be viewed in Table 10A-14 and Table 10A-15.

Table 10A-18: Hydrogen Pipeline Corridor, South of River Tees, Geological Succession

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
NZ52SE13624/875 Wilton I.C.I Project H1100875 300 m north 457900, 521160	Topsoil	Topsoil	GL	-	0.2
		Subsoil	0.2	-	0.1
	Glacial Till	Sandy yellow/brown clay with gravel	0.3	-	0.2
		Stiff weathered brown boulder clay	0.5	-	0.9
		Stiff brown boulder clay	1.4	-	1.5
		Silt	2.9	-	0.8
		Firm silty brown laminated clay	3.7	-	0.5
		Silt	4.2	-	0.2
		Firm silty brown laminated clay	4.4	-	1.05
		Stiff red brown boulder clay	5.45	-	3.25
		Stiff silt, brown clay, with gravel	8.1	-	3.4
		Stiff red/brown boulder clay	12.1	-	>0.25
NZ52SW242/C Wilton Tip Extension T260 Onsite Crossing Point 454898,	Made Ground	Sandy silt and pieces of slag	GL	-	3.0
	Tidal Flat Deposits	Silty sand	3.0	-	6.4
	Mercia Mudstone Group	Red and grey marl	9.4	-	>1.5

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
524847					
NZ52SE41 Teesport T120 40 m east, Tees Dock Road roundabout 455484, 522431	Made Ground	Burnt Slag	GL	-	0.6
	Alluvium / Tidal Flat Deposits	Fairly loose fine and medium brown sand	0.6	-	3.2
		Loose dark brown organic f.m sand	3.8	-	0.5
		Firm mottled blue and brown laminated varved clay becoming stiff	4.3	-	1.8
	Stiff brown clay with some fine gravel	6.1	-	5.0	
Mercia Mudstone Group	Hard blue-green and red-brow MARL	11.1	-	>3.0	

Table 10A-19: Hydrogen Pipeline Corridor, North of River Tees, Geological Succession

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
NZ52SW820 I.C.I North Tees 2 70 m north, North Pipeline crossing 1981 454304, 524885	Made Ground	Slag	GL	-	0.6
		Backfill clay with intrusions of sand.	0.6	-	3.7
	Tidal Flat Deposits	Soft black silt	4.3	-	2.1
		Dark silty sand	6.4	-	1.6
		Fine/medium brown sand with shell fragments	8.0	-	6.5
		Gravel	14.5	-	0.4
		Red/brown Boulder Clay	14.9	-	3.4
Mercia Mudstone Group	Firm red marl	18.3	-	19.0	
NZ52SW204/A New Jetty – N Tees. 75 m east, West of the River Tees 1964 453666, 523415	Tidal Flat Deposits/Glacial Till	Silty sand	GL	-	7.2
		Brown Boulder Clay	7.2	-	4.0
	Mercia Mudstone Group	Red and Green Marl	11.4	-	>2.7

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
NZ52SW499 Brinefields, ICI North Tees 74 65 m west from the central extent (west of the River Tees) 1997 451147, 524307	Made Ground	Made up ground – slag chippings over brick	GL	-	0.12
		Made up ground – crushed up white slag	0.12	-	0.38
	Tidal Flat Deposits	Grey silty sand with silty clay and shells	1.0	-	0.4
		Very soft to firm red brown, grey laminated clay with sand partings	1.4	-	9.5
		Brown laminated clay with wet sand partings	10.9	-	0.9
		Firm brown laminated clay with sand partings	11.8	-	>0.7
	NZ42SE224 Wolviston – Seal Sand Link Road 12 280 m east from the western extent (west of the River Tees) 1967 449181,	Topsoil	Topsoil	GL	-
Alluvium on logs		Soft mottled brown sandy and silty clay	0.2	-	1.0
		Soft grey clayey peat	1.0	-	0.8
		Firm red/brown silty clay with silt partings and some organic matter	1.8	-	0.8
Glaciolacustrine (Glacial on logs)		Firm mottled brown and grey laminated silty clay	2.6	-	2.0
		Fine gravel and clay	4.6	-	0.1

BOREHOLE REFERENCE NGR DISTANCE FROM THE SITE DATE	STRATUM	DESCRIPTION	DEPTH TO TOP OF STRATUM (m bgl)	LEVEL OF TOP OF STRATUM (m AOD)	THICKNESS (m)
524367		Soft to firm red/brown laminated very silty clay	4.7	-	0.6
		Stiff red/brown silty clay and stones	5.3	-	>4.0
NZ42SE13839/1670 Billingham C.F.P. Plant 1670 Onsite southwestern extent 1980 447540, 522440	Made Ground	Gravel, ash and stones, timber	GL	-	0.9
	Glaciolacustrine Deposits	Firm brown mottled silty clay	0.9	-	1.85
		Brown laminated clayey silt with sand partings	2.75	-	2.25
		Soft brown laminated silty clay with silt and sand partings	5.0	-	2.8
		Stiff brown silty stony clay	7.8	-	1.5
		Very stiff grey/brown sandy stony clay	9.3	-	1.6
		Stiff brown laminated silty clay	10.9	-	2.4
		Very stiff brown sandy stony clay	13.3	-	3.5
		Very dense red/brown clayey sand with bands of stiff brown stony clay	16.8	-	2.3
		Dense brown gravel	19.1	-	0.3
		Stiff grey stony clay	19.4	-	0.2
		Dense brown sand	19.6	-	>0.4

Other Gases Connection Corridor

10A.2.66 The BGS boreholes within the Oxygen and Nitrogen Connection Corridor are either confidential or illegible. Borehole NZ52E51 is located within the boundary of the Other Gases Connection Corridor, the borehole details are not repeated here and can be viewed in Table 10A-14 and Table 10A-15.

Mining

10A.2.67 Economic extraction of evaporite minerals including halite, gypsum and anhydrite and potash, have been of economic significance across Teesside since 1927. These minerals were precipitated during the evaporation of sea water which existed during the Permian age in North East England. As noted, these rocks occur at depth below the Triassic Sandstone and Mudstone which underlie most of Teesside. The drying cycles occurred on multiple occasions and resulted in the deposition of two mineral beds (the Billingham Anhydrite Formation and the Boulby Halite Formation) which have been extensively exploited across Teesside. CIRIA (2019) Abandoned Mine Workings Manual (CIRIA C758D) report states that *"salt deposits beneath Middlesbrough were discovered in the 1860s and were extracted by uncontrolled solution mining between 1874 and 1918 and during the latter part of the 20th Century."* CIRIA also report that *"anhydrite was also mined in the Billingham and Hartlepool area from the 1920s to 1971."*

10A.2.68 The BGS Durham and the Tees Valley Mineral Resources and Constraints Report indicated that *"the Billingham Anhydrite was extensively mined on Teesside between 1927 and 1971 as a source of sulphur for the manufacture of the fertiliser ammonium sulphate and sulphuric acid."* It was reported that *"the Boulby Halite formed the basis of the Teesside chemical industry and was still being worked by brine pumping in 2000."* The Report on Abandoned Mineral Workings and Possible Surface Instability Problems (Morris et al., 1982) indicates that the mine at Billingham (NZ478227) located within the Proposed Development Site was operational between 1926 and 1971. Mining ceased due to the decline in use of ammonia sulphate fertiliser and because the Anhydrite Process of sulphuric acid production became uncompetitive with alternative methods using elemental sulphur.

10A.2.69 It is noted that the Proposed Development Site falls outside of a Coal Authority Mining Reporting Area and CIRIA C758D indicates that it lies to the north of areas underlain by historic ironstone workings, these being located across the elevated topography of the North Yorkshire Moors.

Evaporite Minerals

Salt

10A.2.70 Halite or 'rock salt' occurs below large areas of Teesside and the chemical industry which developed in this area was initially based on exploitation of these extensive mineral deposits. The Boulby Halite Formation is up to 90 m thick close to the coast but thins west before thinning out sharply due to dissolution near its outcrop. The BGS Minerals Resources report states that *"salt was discovered in Permian strata in 1859-62 and commercial brine pumping began between 1876 and 1882, with the*

first recorded salt production in 1888." Early extraction was undertaken by allowing water from the overlying Sherwood Sandstone to flow down wells into the salt. The brine fluid which formed was then pumped up to the surface. According to the BGS, *"extraction resulted in subsidence around Haverton Hill and south of Saltholme. Brine was also pumped south of the Tees near Grangemouth."* The settlement was caused by uncontrolled lateral cavity extension caused by the lower density of freshwater in comparison to the brine.

- 10A.2.71 In 2000, the BGS reported that brine was still extracted north of Saltholme Farm at 300 m bgl. Initially controlled brine pumping took place on Saltholme and Cowpen Marshes, to the west of Seal Sands. Initially, extraction took place in the south but has progressively moved to the north. Salt extraction was also undertaken at the ICI Wilton complex (latterly by SABIC). According to BGS / Office of the Deputy Prime Minister Mineral Planning Factsheet, all Teesside brine extraction ceased in 2002.

Potash

- 10A.2.72 Potash is a generic term for potassium-bearing minerals and refined manufactured products. Potash is extracted from Boulby Mine near Loftus below the North Yorkshire coast and North Sea to the south of the mine. The minerals are not exploited across Teesside in the vicinity of the Proposed Development Site and is therefore not discussed further.

Gypsum / Anhydrite

- 10A.2.73 Gypsum and anhydrite are naturally occurring forms of calcium sulphate which are deposited beds or in nodular bodies. Their thickness is variable, but beds can typically be a few metres thick. Gypsum develops due to the hydration of anhydrite but tends to pass into anhydrite at depths below 100 m approximately. The BGS Minerals Resources Report notes that *"gypsum is highly soluble and dissolves rapidly at or near surface and may give risk to subsidence problems."* According to the BGS, gypsum has not been *"produced on any significant scale in the area"* but anhydrite was mined extensively from 1923 to 1955. The Permian strata dips gently to the east and the mineral beds slowly thicken in this direction. Anhydrite occurs at a number of horizons; from bottom to top, these are Hartlepool Anhydrite, the Permian Edlington Formation (formerly the Middle Marls), the Billingham Anhydrite and the Sherburn Anhydrite. According to the generalised vertical section on BGS Sheet 33, the Hartlepool Anhydrite is thickest, ~100 m thick, although the BGS Minerals Resources Report indicated it is up to 150 m thick. The Billingham Anhydrite and Sherburn Anhydrite are thinner but generally more consistent in extent and thickness. The former is indicated to be 80 m thick on the section, but the latter is not identified. The anhydrite in the Middle Marls is the thinnest mineral bed and although not shown on the generalised vertical section can reportedly be up over 20 m thick.
- 10A.2.74 The BGS report that the Billingham Anhydrite Mine was sunk to 260 m bgl to extract the Billingham Anhydrite Formation at around 220 m depth. The Report on Abandoned Mineral Workings and Possible Surface Instability Problems (Morris et

al, 1982) reports the 7m thick seam of the Main Anhydrite was mined. The mine closed in 1971. The BGS also state that the workings are flooded.

Tees Valley Joint Minerals and Waste Development Documents

- 10A.2.75 Tees Valley Joint Minerals and Waste Development Documents, Policies & Sites DPD was adopted in September 2011. The Tees Valley consists of five Boroughs: Darlington, Hartlepool, Middlesbrough, Redcar & Cleveland and Stockton-on-Tees. In the case of minerals and waste planning, the five authorities have joined together to prepare planning policies on minerals and waste. The local authorities decided to combine minerals and waste planning policies in one set of Development Plan Documents (DPDs) because minerals and waste operations have many planning issues in common. In addition, the Tees Valley has relatively few remaining minerals operations and the preparation of minerals-only DPDs would not be justifiable. The Joint Minerals and Waste DPDs cover the period from 2011 to 2026.
- 10A.2.76 Historically there has been mineral extraction of salt and gypsum around Billingham and the River Tees.
- 10A.2.77 The Tees Valley has a rich history of mineral extraction, the specialist nature of which supported the development of the chemical and steel making industries on the Tees. Historically there has been mineral extraction of salt and gypsum around Billingham and the River Tees. However, the range of current primary mineral extraction is limited to crushed rock and sand and gravel with some brine extraction at Seal Sands and small-scale clay extraction at Cowpen Bewley. The Tees Valley has relatively few remaining minerals operations.
- 10A.2.78 Conversely there are significant secondary and recycled materials (blast furnace slag; construction and demolition waste) and marine-dredged aggregates landed at wharves along the Tees which help provide the minerals resources needed and move minerals provision up the minerals hierarchy. The challenge is to ensure that the use of secondary and recycled materials is facilitated whilst making sufficient land available to provide an appropriate level of primary mineral resources to contribute to the identified local, regional and national need for minerals; safeguarding resources and ensuring the prudent use of these resources in line with sustainable development objectives.
- 10A.2.79 There is one brinefield currently active near Seal Sands (Stockton-on-Tees). Two further brinefields in the Seal Sands area have extant planning permissions. Information from the BGS indicates brine extraction has limited viability itself, but it is acknowledged that there may be future interest to create storage caverns for gas and certain fluids. Permission was granted in 2009 for the extraction of gas at Kirkleatham (Redcar and Cleveland). Permission also exists for the extraction of anhydrite from a deep mine at Billingham (Stockton-on-Tees) although the mine has not been worked since 1971.
- 10A.2.80 Ten dormant sites were identified in the Tees Valley, one of which has had new conditions approved for minerals extraction (the anhydrite mines at Billingham). Of the remaining nine it is now considered that seven of these sites are highly unlikely to ever resume extraction due to recent development, designations or proposed

allocations for other uses. Land at the remaining sites at Low Middlesfield Farm and Eaglescliffe Brickworks (Stockton-on- Tees) would require new conditions to be approved before they could be reopened.

Mining, Ground Workings and Natural Cavities Risk

- 10A.2.81 A summary of the mining, ground workings and natural cavities risk is presented in Table 10A-21. Mining features derived from Groundsure GIS Mapping are presented on Figure 10-20 to Figure 10-23 (ES Volume II, EN070009/APP/6.3) and in Table 10-12 (ES Volume I, EN070009/APP/6.2).
- 10A.2.82 The Groundsure Reports (Annex A) indicate that the Proposed Development Site is not within a Coal Mining Affected Area.
- 10A.2.83 The Groundsure Reports (Annex A) indicate that the Hydrogen Pipeline Corridor is in Non-Coal Mining Areas. These include the following:
- Haverton Hill and Saltholme: Salt-brine;
 - Saltholme Brinefield: Brine;
 - Billingham: Anhydrite; and
 - Cerebos Salt Brinewells: Salt – brine.
- 10A.2.84 The Groundsure Reports (Annex A) indicate there are no natural cavities located within the Proposed Development Site boundary or within 250 m.
- 10A.2.85 The Groundsure Reports (Annex A) indicate there are mining cavities within the Hydrogen Pipeline Corridor. These include the following:
- Billingham Mine (1, 4, 8, 29): Anhydrite;
 - Cassel Works: Brine, Rock Salt, Salt, Halite; and
 - Seal Sands Brine: Brine, Rock Salt, Salt, Halite.
- 10A.2.86 The Groundsure Reports (Annex A) incate that there are BritPits located within 250 m of the Hydrogen Pipeline Corridor and within 250 m of the Water Connection Corridor. These include the following:
- (Water Connection Corridor only) Wiley Bridge Plantation Clay Pit, Clay and Shale, surface mine working, ceased;
 - (Hydrogen Pipeline Corridor) Greatham Creek, Salt, surface mineral working, ceased;
 - (Hydrogen Pipeline Corridor) Billingham Anhydrite Mine: Anhydrite, wholly underground, ceased;
 - (Hydrogen Pipeline Corridor) Haverton Hill Brick Works: Clay and Shale, surface mineral working, ceased;
 - (Hydrogen Pipeline Corridor) Cowpen Brick and Tile Yard: Clay and Shale, surface mineral working, ceased;

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- (Hydrogen Pipeline Corridor) Saltholme Brinefield No 4 South: Salt, wholly underground, inactive; and
 - (Hydrogen Pipeline Corridor) Saltholme No 5 Brinefield: Salt, surface mineral working, inactive.
- 10A.2.87 The Groundsure Reports (Annex A) indicate there is one Underground Workings located across the River Tees. One tunnel is present along the proposed crossing point of the River Tees (1988 and 1992).
- 10A.2.88 The Groundsure Reports (Annex A) indicate there is one feature located within the Water Connection Corridor (Unspecified Workings, 1983) and one feature is located directly adjacent to the Water Connection Corridor, Electrical Connection Corridor, Natural Gas Corridor, Hydrogen Pipeline Corridor and Other Gases Connection Corridor (Iron Workings, 1893).
- 10A.2.89 The Groundsure Reports (Annex A) indicate that there are surface ground workings present at the Main Site and all associated Connection Corridors. A summary of the surface ground workings present at the Proposed Development Site is presented in Table 10A-22. Figure 10-22 (ES Volume II, EN070009/APP/6.3) presents the Groundsure GIS Mapping data.
- 10A.2.90 The Groundsure Reports (Annex A) indicate the Main Site and associated Connection Corridors are in or within 250 m of a Historical Mineral Planning Area. These include:
- Cassel Works: Salt (brine), surface mineral working, planning status: application, date not included;
 - Billingham Mine (Anhydrite), working wholly underground, valid until 22/12/2049;
 - Billingham Mine (Cement), surface mineral working, valid, date not included;
 - Greatham: Marl (sand and gravel) surface mineral working, planning status: application, date not included;
 - Greatham Creek (salt) surface mineral working, valid until 4/7/2066; and
 - Wilton Works, surface mineral working, valid, date not included.

Table 10A-20: Mining Risk

SITE	COAL MINING AFFECTED AREAS		NON-COAL MINING		NATURAL CAVITIES		MINING CAVITIES		BRIT PITS		UNDERGROUND WORKINGS	
	ON SITE	0 TO 250 m	ONSITE	0 TO 250 m	ONSITE	0 TO 250 m	ONSITE	0 TO 250 m	ONSITE	0 TO 250 m	ONSITE	0 TO 250 m
Main Site	No	N/A	No	No	None	None	None	None	None	None	None	None
CO ₂ Export Corridor	No	N/A	No	No	None	None	None	None	None	None	None	2
Natural Gas Connection Corridor	No	N/A	No	No	None	None	None	None	None	None	None	2
Water Connection Corridor	No	N/A	No	No	None	None	None	None	None	1	1	2
Electrical Connection Corridor	No	N/A	No	No	None	None	No	No	None	None	None	2
Hydrogen Pipeline Corridor	No	N/A	Yes	Yes	None	None	Yes	Yes	None	7	1	2
Other Gases Connection Corridor	No	N/A	No	No	None	None	None	None	None	None	None	2

Table 10A-21: Summary of Surface Ground Workings at the Main Site

TYPE OF WORKING	DATES MAPPED	OFFSITE APPROXIMATE DISTANCE AND DIRECTION
Main Site		
Refuse Heap	1940, 1969	12
Unspecified Ground Workings	1940, 1969, 1980	7
Unspecified Heap	1940	3
Sand Pit	1940	1
Unspecified Pit	1927	1
Reservoirs	1927, 1940, 1969	3
Ponds	1893, 1913, 1927, 1940, 1952, 1969, 1991	16

CO₂ Export Corridor

10A.2.91 There are a number of the following Surface Ground Workings dated between 1893 and 1991 present or within 250 m of the CO₂ Export Corridor: Ponds, Refuse Heaps, Reservoirs and Unspecified Workings.

Natural Gas Connection Corridor

10A.2.92 There are a number of the following Surface Ground Workings dated between 1893 and 1974 present or within 250 m of the Natural Gas Corridor: Ponds, Refuse Heaps, Reservoirs and Unspecified Workings.

Water Connection Corridor

10A.2.93 There are a number of the following Surface Ground Workings dated between 1893 and 1991 present or within 250 m of the Water Connection Corridor: Ponds, Refuse Heaps, Reservoirs, Unspecified Heaps, Cuttings, Sand Pits, Unspecified Ground Workings and Unspecified Workings.

Electrical Connection Corridor

10A.2.94 There are a number of the following Surface Ground Workings dated between 1893 and 1992 present or within 250 m of the Electric Connection Corridor: Ponds, Refuse Heaps, Reservoirs, Unspecified Heaps, Cuttings, Sand Pits, Unspecified Ground Workings, Old Clay Pits, Cooling Pond, Settling Pond, Slag Brick Workings, and Unspecified Workings.

Hydrogen Pipeline Corridor – North of River Tees

10A.2.95 There are a number of the following Surface Ground Workings dated between 1893 and 1994 present or within 250 m of the Hydrogen Pipeline Corridor – North of River Tees: Ponds, Refuse Heaps, Reservoirs, Cuttings, Sewage Workings, Old Clay Pits, Unspecified Pit and Unspecified Ground Workings.

Hydrogen Pipeline Corridor – South of River Tees

10A.2.96 There are a number of the following Surface Ground Workings dated between 1893 and 1994 present or within 250 m of the Hydrogen Pipeline Corridor – South of River Tees: Ponds, Refuse Heaps, Reservoirs, Cuttings, Unspecified Pits and Unspecified Ground Workings.

Other Gases Connection Corridor

10A.2.97 There are a number of the following Surface Ground Workings dated between 1893 and 1991 present or within 250 m of the Other Gases Connection Corridor: Ponds, Refuse Heaps, Reservoirs, Cuttings, Unspecified

Landfills

10A.2.98 Landfills present on and within 250 m of the Proposed Development Site have been identified from the Groundsure Reports and are included in Annex A.

10A.2.99 GIS data of the Groundsure Reports (Annex A) were provided in order to produce figures for significant features and hazards across the Proposed Development Site. Pertinent features have been presented in Figure 10-6 (ES Volume II, EN070009/APP/6.3).

10A.2.100A summary of the landfills located within 250 m of the Proposed Development Site is presented in Table 10A-22.

10A.2.101A summary of the types of landfill data presented in the Groundsure Reports (Annex A) is as follows:

- Active or recent landfills are active or recently closed landfill sites under Environment Agency or Natural Resource Wales regulation;
- Historical landfill (BGS records) are landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time;
- Historical landfill (LA/mapping records) are landfill sites from Local Authority records and high detail historical mapping;
- Historical landfill (EA/NRW records) are known historical (closed) landfill sites (e.g. site here there is no PPC permit of waste management license currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a license has been revoked, ceased to exist or surrendered and a certificate of completion has been issued;
- Historical waste sites are waste site records from Local Authority planning records and high detail historical mapping;
- Licensed waste sites are active or recently closed waste sites under Environment Agency/Natural Resource Wastes regulation; and
- Waste exemptions are activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Table 10A-22: Summary of Landfills within 250 m

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
Main Site						
Historical Waste Sites	15 m N	Ground Workings and Refuse Heap	-	-	-	Historic Mapping
Licensed Waste Sites	On-Site	Blast Furnace Plant, Bsc Redcar Works Complex	British Steel Corporation	1993 (Issued), 1996 (Expired)	Industrial Waste Landfill (Factory Curtilage)	Relates to 3 entries for one location. Annual tonnage: 75000
	50 m S	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued)	Metal Recycling Site (Mixed MRS's)	>= 25000 to <75000 tonnes.
	80 m S	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued), 2018 (Modified)	Metal Recycling Site (Mixed MRS's)	Relates to 2 entries for one location. <25000 tonnes and >= 75000 tonnes.
	145 m N	Land Adjacent To Redcar Blast Furnace, Redcar, Cleveland, TS10 5RD	British Steel - Teesside Division	13/04/1997 (Surrendered)	Landfill taking Non-Biodegradable Wastes	Relates to 4 No. entries at one location. >= 75000 tonnes.
Historical Landfilling (LA/Mapping Records)	105 m E	Refuse Tip	-	1952	-	-
	150 m E	Refuse Tip	-	1952	-	-

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
CO ₂ Export Corridor						
Historical Landfilling (LA/Mapping Records)	On Site	Refuse Tips	-	1952	-	Two historical refuse tips are located in the central area of the CO ₂ Export Corridor on site.
Licensed Waste Sites	80 m W	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued), 2018 (Modified)	Metal Recycling Site (Mixed MRS's)	Relates to 2 entries for one location. <25000 tonnes and >= 75000 tonnes.
	125 m W	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued)	Metal Recycling Site (Mixed MRS's)	>= 25000 to <75000 tonnes.
Natural Gas Connection Corridor						
Licensed Waste Sites	80 m W	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued), 2018 (Modified)	Metal Recycling Site (Mixed MRS's)	Relates to 2 entries for one location. <25000 tonnes and >= 75000 tonnes.
	95 m W	Waste Treatment Centre, Bran Sands, Redcar, Cleveland, TS6 6UE (Ref. EA/EPR/TP3490ZA/A001)	Northumbrian Water Ltd	12/09/1997 (Issued)	Biological Treatment Facility	Relates to 2 No. entries. >= 75000 tonnes.
	125 m W	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued)	Metal Recycling Site (Mixed MRS's)	>= 25000 to <75000 tonnes.

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
Waste Exemptions	95 m W	Bran Sands Tees Dock Road Middlesbrough Cleveland TS6 6UE (Ref. EPR/WF0706BG/A001)	-	-	Non-Agricultural Waste Only. Use of waste in construction.	Using waste exemption.
	95 m W	Bran Sands Tees Dock Road Middlesbrough, TS6 6UE (WEX182366, WEX315656, WEX182366)	-	-	Storage of waste in a secure place; storage of waste in secure containers; recovery of waste at a waste water treatment works; and use of waste in construction.	Relates to X4 No. entries for one location. Not on a farm. Storing waste exemption. Treating waste exemption. Using waste exemption.
	135 m W	Bran Sands Sewage Treatment Works Tees Dock Road Cleveland TS6 6UE (Ref. EPR/RE5458AG/A001)	-	-	Non-Agricultural Waste Only. Recovery of waste at a waste water treatment works	Treating waste exemption
Historical Landfilling (LA/Mapping Records)	145 m N	Refuse Tip	-	1952	-	-
Active or Recent Landfill	On Site	Land/ Premises At, Bran Sands, Redcar, Cleveland, TS6 6UE (Ref. EA/EPR/FB3601GS/V004)	York Potash Processing & Ports Limited	-	A02: Other Landfill Site taking Special Waste	-

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
Water Connection Corridor						
Active or Recent Landfill	5 m NE 10 m SW	Teesside Works, Steel House, Redcar, Cleveland, TS10 5QW (EA/EPR/KP3790ZE/V002)	Tata Steel U K Limited	-	A04: Household, Commercial & Industrial Waste Landfill	Closed Status.
Historical Landfilling (LA/Mapping Records)	On-Site	Refuse Tip	-	1952	-	Related to 2 No. entries located within the western area of the Water Connection Corridor.
	10 m S	Refuse Tip	-	1952	-	-
Licenced Waste Sites	80 m W	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued), 2018 (Modified)	Metal Recycling Site (Mixed MRS's)	Relates to 2 No. entries for one location. <25000 tonnes and >= 75000 tonnes.
	125 m W	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued)	Metal Recycling Site (Mixed MRS's)	>= 25000 to <75000 tonnes.
	230 m NW	Warrenby Depot, Tod Point Road, Redcar, Cleveland, TS10 5AW	Redcar & Cleveland Borough Council	2003 (Issued) 2010 (Modified)	Household Waste Amenity Site	>= 25000 tonnes to <75000 tonnes
	230 m NW	Warrenby Waste Transfer Station, Tod Point Road, Warrenby, Redcar, Cleveland, TS10 5AW	Redcar & Cleveland	2003 (Issued) 2017 (Modified)	Waste Transfer Station (HCI Waste and Asbestos)	Relates to 2 No. entries for one location.

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
			Borough Council			>= 25000 tonnes to <75000 tonnes
Historical Waste Sites	On Site	Ground Workings and Refuse Heap	-	-	-	-
	215 m NE	Recycling Depot, Tod Point Road, Warrenby, Redcar, Cleveland, TS10	-	2002	-	Historic planning application for demolition and construction of a new building, construction of new roads and alterations to an existing building.
	215 m NE	First Choice Skips, Tod Point Road, Warrenby, Redcar, Cleveland, TS10	-	2004	-	Planning application for a waste transfer facility.
	230 m NW	Ground Workings and Refuse Heap	-	-	-	-
Electrical Connection Corridor						
Active or Recent landfills	Onsite	Land/ Premises At, Bran Sands, Redcar, Cleveland, TS6 6UE (Ref. EA/EPR/FB3601GS/V004)	York Potash Processing & Ports Limited	-	A02: Other Landfill Site taking Special Waste	Modified Status.
	230 m SE	P O Box54, Wilton, Middlesbrough, Cleveland, TS10 4RE (EA/EPR/UP3090ZF/A001)	I C I Chemicals & Polymers Ltd	-	A07: Industrial Waste Landfill (Factory curtilage)	Relates to X3 No. entries. Closed Status

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
Historical Landfilling (LA/Mapping Records)	Onsite	Refuse Tip	-	1952	-	Relates to X2 No. entries located within the north-western extent of the Electrical Connection Corridor.
	5 m S	Refuse Tip	-	1952	-	-
Historical Waste Sites	Onsite	Ground Workings and Refuse Heap	-	-	-	Historic Mapping
	225 m NE	Ground Workings and Refuse Heap	-	-	-	Historic Mapping
Licenced Waste Sites	80 m W	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued), 2018 (Modified)	Metal Recycling Site (Mixed MRS's)	Relates to 2 No. entries for one location. <25000 tonnes and >= 75000 tonnes.
	90 m S	Land/ Premises At, Bran Sands, Redcar, Cleveland, TS6 6UE	York Potash Processing & Ports Limited	24/05/1977 (Issued), 02/07/2021 (Modified)	Other Landfill Site taking Special Waste	>= 75000 tonnes
		Land/ Premises At, Bran Sands, Redcar, Cleveland, TS6 6UE	I C I Chemicals & Polymers Ltd	24/05/1977 (Issued), 05/06/2002 (Modified)	Other Landfill Site taking Special Waste	< 25000 tonnes

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
		Land/ Premises At, Bran Sands, Redcar, Cleveland, TS6 6UE	York Potash Processing & Ports Limited	24/05/1977 (Issued), 23/05/2018 (Modified/ Closed)	Other Landfill Site taking Special Waste	< 25000 tonnes
	95 m W	Waste Treatment Centre, Bran Sands, Redcar, Cleveland, TS6 6UE (Ref. EA/EPR/TP3490ZA/A001)	Northumbrian Water Ltd	12/09/1997 (Issued)	Biological Treatment Facility	Relates to X2 No. entries. >= 75000 tonnes.
	125 m W	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued)	Metal Recycling Site (Mixed MRS's)	>= 25000 to <75000 tonnes.
Waste Exemption Sites	95 m W	Bran Sands Tees Dock Road Middlesbrough Cleveland TS6 6UE (WEX182366, WEX315656, WEX182366)	-	-	Storage of waste in a secure place; storage of waste in secure containers; recovery of waste at a waste water treatment works; and use of waste in construction.	Relates to X4 No. entries for one location. Not on a farm. Storing waste exemption. Treating waste exemption.
	100 m W	Bran Sands Tees Dock Road Middlesbrough Cleveland TS6 6UE (Ref. EPR/WF0706BG/A001)	-	-	Non-Agricultural Waste Only. Use of waste in construction.	Using waste exemption
	130 m W	Bran Sands STW, Tees Dock Road, Middlesbrough, TS6 6UE (Ref. WEX006326)	-	-	Recovery of waste at a waste water treatment works	Treating waste exemption. Not on a farm.

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
	130 m W	Bran Sands Sewage Treatment Works Tees Dock Road Cleveland TS6 6UE (Ref. EPR/RE5458AG/A001)	-	-	Non-Agricultural Waste Only. Recovery of waste at a waste water treatment works	Treating waste exemption
Hydrogen Pipeline Corridor – North of River Tees						
Active or Recent Landfill	180 m E	Cowpen Bewley Landfill Site, Cowpen Bewley, Stockton on Tees, TS23 4HS	Highfield Environmental Limited	-	WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Effective Status
Historical Waste Sites	Onsite	New Road, BILLINGHAM, Cleveland, TS23 1 (Ref. 07/2851/FUL)	-	-	Waste Transfer Station	Historic Planning Application. Scheme comprises creation of eco park including a waste transfer station, glass recycling plant, new access and associated landscaping. Planning permission was obtained.
	30 m NW	New Road, Haverton Hill Road, BILLINGHAM, Cleveland, TS23 1D (Ref. 93/1583/P)	-	-	Liquid Waste Centre	Historic Planning Application.

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
	115m W	Huntsman Drive, Port Clarence, Middlesbrough, Cleveland, TS2 1TT (Ref. 15/0333/EIS)	-	-	Energy From Waste Facility	Historic Planning Application. Scheme comprises development of a fuel handling Building adjacent to the Materials Recycling facility. The associated works include sewer systems, landscaping, infrastructure, enabling and access roads. The associated works include sewer systems, landscaping, infrastructure, enabling and access roads.
	205 m SE	Sadies Skips, Hilton Recycling Centre, Billingham Reach Indstl Est, BILLINGHAM, Cleveland, TS23 1PX	-	-	Recycling Centre	Historic Planning Application for raising level of land adjacent to a waste transfer station.
Licensed Waste Sites	10 m S	Reclamation Ponds Site, North Tees Access, Port Clarence, Middlesbrough, Cleveland, TS2 1TT	North Tees Waste Management	28/03/2012 (Issued), 09/06/2014 (Modified)	Physical Treatment Facility	Relates to X2 No. entries. >= 25000 tonnes < 75000 tonnes

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
			Limited (Most Recent)			
	30 m SE	ARROWBUILD & CIVIL ENGINEERING LIMITED, WHITEHOUSE INNOVATION PARK, NEW ROAD, BILLINGHAM, TS23 1LE	Arrowbuild & Civil Engineering Limited	16/12/2020 (Issued)	Treatment of waste to produce soil <75,000 tpy	-
	35 m NW	Land/ Premises At, New Road, Haverton Hill, Billingham, Cleveland, TS23 1LE (Most Recent Entry)	Whelans / Rapier Energy Ltd (Most Recent)	23/11/1994 (Issued) 26/02/2010 (Most Recent Effective)	Physio-Chemical Treatment Facility	< 25000 tonnes. Related to X2 no. entries.
	40 m E	Land/ Premises At, Seals Sands Road, Seal Sands, Middlesbrough, Cleveland, TS2 1UA	Tees Storage / Vopak Terminal Teesside Ltd	15/07/1991 (Issued)	In-House Storage Facility	Relates to X2 No. entries. < 25000 tonnes
	45 m E	Haverton Hill Road, Billingham Reach Ind Est, Billingham, Cleveland, TS23 1PX	Mason James	07/08/2012 (Issued), 09/10/2017 (Modified)	Deposit of waste to land as a recovery operation	Relates to X2 no. entries. >= 25000 tonnes < 75000 tonnes.
	75 m N	Seal Sands Storage Facility, Seal Sands, Middlesbrough, Cleveland, TS2 1UB	Exolum Seal Sands Ltd (most Recent)	02/02/1990 (Issued), 14/06/2021 (Most Recent Effective)	In-House Storage Facility	Relates to X5 No. entries. >= 75000 tonnes

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
	85 m N	Seal Sands Road, Seal Sands, Middlesbrough, TS1 1UB	Seal Sands Storage Ltd	02/02/1990 (Issued) 12/06/2003 (Modified)	In-House Storage Facility	-
	90 m W	Seal Sands Road, Seal Sands, Middlesbrough, Cleveland, TS2 1UB	Hexcel Chemical Products Ltd	01/10/1990 (Issued) 01/05/1994 (Expired)	In-House Storage Facility	Relates to X2 No. entries.
	140 m N	Belasis Avenue, Billingham, Cleveland, TS23 1QY	S N F Oil And Gas Ltd	06/07/2017 (Issued)	Use of waste in a deposit for recovery op	Relates to X2 No. entries. < 25000 tonnes
	140 m SE	Haverton Hill Road, Billingham, Cleveland, TS23 1PY	Sita Tees Valley Ltd	05/07/2012 (Issued), 08/11/2013 (Modified), 02/09/2014 (Effective), 16/05/2016 (Surrendered)	Physical Treatment Facility	Relates to X2 No. entries. <25000 tonnes to >=750000 tonnes
	140 m SE	C/o Sita Tees Valley, Haverton Hill Road, Billingham, Cleveland, Teeside, TS23 1PY	Ballast Phoenix Ltd	05/07/2012 (Issued), 08/11/2013 (Modified)	Physical Treatment Facility	>=750000 tonnes
	175 m E	Haverton Hill Road, Billingham Reach Ind Est, Billingham, Cleveland, TS23 1PX	Mason James	07/08/2012 (Issued)	Use of waste in construction <50,000 tps	< 25000 tonnes

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
	180 m E	Energy From Waste Plant, Haverton Hill Road, Billingham, Stockton On Tees, TS23 1PY	Cleveland Waste Management Ltd	28/06/2000 (Issued)	Household, Commercial and Industrial Waste Transfer Station	>= 25000 tonnes to <75000 tonnes
	240 m SE	Land/premises At, Haverton Hill Road, Haverton Hill, Billingham, Cleveland, TS23 1PY	Sita Tees Valley Ltd	02/03/2005 (Issued), 19/06/2006 (Modified), 25/01/2011 (Surrendered)	Composting Facility	<25000 tonnes
Waste Exemption Sites	25 m S	Address not specified (Ref. WEX299934)	-	-	Use of waste in construction.	Using waste exemption. Not on a Farm.
	45 m SE	Address not specified (Ref. WEX256085)	-	-	Screening and blending of waste.	Treating waste exemption. Not on a farm.
	60 m NE	No address specified (Ref. WEX288014)	-	-	Use of waste in construction.	Using waste exemption. Not on a farm.
	100 m N	Nelson Avenue, Billingham, TS23 4HA (Ref. WEX132897)	-	-	Use of sludge for the purposes of re-seeding a waste water treatment plant	Using waste exemption. Not on a farm.

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
	135 m SE	Rydberg Haverton Hill, Unit 3, Haverton hill road, Stockton on tees, TS23 1PS (Ref. WEX135054)	-	-	Storage of waste in secure containers.	Storing waste exemption. Not on a farm.
	140 m SE	Disused Pond at Hutnsman. Billingham Works Haverton Hill Road BILLINGHAM Cleveland TS23 1PS (Ref. EPR/AE5957YJ/A001)	-	-	Use of waste in construction.	Using waste exemption. Non-Agricultural Waste Only.
	155 m W	Seal Sands, Middlesbrough, TS2 1UB (Ref. WEX293508)	-	-	Use of waste in construction.	Using waste exemption. Not on a farm.
	240 m W	No address specified (Ref. WEX272051)	-	-	Burning waste in the open.	Disposing of waste exemption. Not on a farm.
	245 m NW	SNF Oil & Gas 40 Acre Site Belasis Avenue Billingham Teesside TS23 1LG (Ref. EPR/WF0637VX/A001)	-	-	Use of waste in construction.	Using waste exemption. Non-Agricultural waste only.
	250 m S	RSPB Saltholme Seaton Carew Road Middlesbrough Cleveland TS2 1TU (Ref. EPR/PF0901HP/A001)	-	-	Non-Agricultural Waste Only. Aerobic composting and associated prior treatment.	Treating waste exemption.
Hydrogen Pipeline Corridor – South of River Tees						
Active or Recent Landfill	On-Site	Land/ Premises At, Bran Sands, Redcar, Cleveland, TS6 6UE (Ref. EA/EPR/FB3601GS/V004)	York Potash Processing & Ports Limited	-	A02: Other Landfill Site taking Special Waste	Modified status.

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
	20 m SW 240 m SW	P O Box54, Wilton, Middlesbrough, Cleveland, TS10 4RE	I C I Chemicals & Polymers Ltd	-	A07: Industrial Waste Landfill (Factory curtilage)	Closed status. Relates to X2 No. entries.
	200 m NE	Teesside Works, Steel House, Redcar, Cleveland, TS10 5QW (EA/EPR/KP3790ZE/V002)	Tata Steel U K Limited	-	A04: Household, Commercial & Industrial Waste Landfill	Closed status.
Historical Waste Sites	On-Site	Ground Workings and Refuse Heap	-	-	-	-
	165 m E	Soil Treatment Facility	-	2021	-	Historic planning application for the development of a soil treatment area.
Historical Landfill (EA Records)	Onsite	Refuse Tip	-	1969	-	Relates to 2 No. entries.
	115 m S	Refuse Tip	-	1962	-	Relates to 2 No. entries.
	130 m N	Refuse Tip	-	1952	-	-
Licensed Waste Sites	Onsite	Land/ Premises At, Bran Sands, Redcar, Cleveland, TS6 6UE	York Potash Processing & Ports Limited	24/05/1977 (Issued), 02/07/2021 (Modified)	Other Landfill Site taking Special Waste	>= 75000 tonnes
		Land/ Premises At, Bran Sands, Redcar, Cleveland, TS6 6UE	I C I Chemicals & Polymers Ltd	24/05/1977 (Issued),	Other Landfill Site taking Special Waste	< 25000 tonnes

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
				05/06/2002 (Modified)		
		Land/ Premises At, Bran Sands, Redcar, Cleveland, TS6 6UE	York Potash Processing & Ports Limited	24/05/1977 (Issued), 23/05/2018 (Modified/Closed)	Other Landfill Site taking Special Waste	< 25000 tonnes
	35 m N	Waste Treatment Centre, Bran Sands, Redcar, Cleveland, TS6 6UE	Northumbrian Water Ltd	12/09/1997 (Issued)	Biological Treatment Facility	Relates to X2 No. entries. >= 75000 tonnes
	35 m E	Polymer Industries, Polythene Road, Wilton International, Redcar, Cleveland, TS10 4RG	Polymer Industries (U K) Ltd	31/03/2005 (Issued), 11/10/2017 (Expired)	Physical Treatment Facility	< 25000 tonnes
	55 m S	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued)	Metal Recycling Site (Mixed MRS's)	>= 25000 to <75000 tonnes.
	75 m S	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued), 2018 (Modified)	Metal Recycling Site (Mixed MRS's)	Relates to 2 No. entries for one location. <25000 tonnes and >= 75000 tonnes.
	135 m E	Biolite Treatment Centre, Stores Road, Wilton International Site,	Power Minerals Limited	20/05/2016 (Issued),	Physico-Chemical Treatment Facility	< 25000 tonnes

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
		Middlesbrough, Cleveland, TS10 4RD		26/11/2019 (Modified)		
	150 m S	Wilton, Middlesbrough, Cleveland, TS6 8JA	I C I Chemical & Polymers Ltd	04/06/1990 (Issued), 01/05/1994 (Expired),	In-House Storage Facility	Relates to X3 No. entries. < 25000 tonnes
	150 m N	Bran Sands, Wilton Works, Middlesbrough, Cleveland, TS6 6UE	Impetus Waste Management Ltd	28/12/2005 (Issued), 03/11/2008 (Surrendered)	Material Recycling Treatment Facility	Relates to X2 No. entries for one location. < 25000 tonnes.
	155 m S	Teesport Landfill, Off Teesport Road, Teesdock, Nr Grangetown, Middlesbrough, Cleveland, TS6 6UD	Hall Construction Services Ltd	28/11/2011 (Issued), 07/06/2016 (Surrendered)	Use of waste in construction <100,000 tps	< 25000 tonnes
	160 m W	Wilton International, Off Trunk Road, Middlesbrough, Cleveland, TS10 4YA	Hadfield Wood Recyclers Limited	06/09/2011 (Issued), 26/09/2017 (Surrendered)	Treatment of waste wood <75000 tps	< 25000 tonnes
	185 m N	-	I C I Chemicals & Polymers Ltd	24/05/1977 (Issued), 05/06/2002 (Modified)	Other Landfill Site taking Special Waste	>= 75000 tonnes

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
Waste Exemption Sites	10 m SE	Redcar Plastics Recycling Plastics Road Redcar Cleveland TS10 4RG (EPR/YE5245NV/A001)	-	-	Storage of waste in secure containers. Storage of waste in a secure place. Preparatory treatments (baling, sorting, shredding etc).	Non-Agricultural Waste Only. Storing waste exemption. Treating waste exemption.
	95 m W	Bran Sands Tees Dock Road Middlesbrough Cleveland TS6 6UE (Ref. EPR/WF0706BG/A001)	-	-	Use of waste in construction. Non-Agricultural Waste Only.	Using waste exemption
	95 m W	Bran Sands, Tees Dock Road, Middlesbrough, TS6 6UE (Ref. WEX182366 / WEX315656)	-	-	Storage of waste in a secure place. Storage of waste in secure containers. Use of waste in construction. Recovery of waste at a waste water treatment works.	Not on a farm. Storing waste exemption. Using waste exemption. Treating waste exemption.
	130 m W	Bran Sands STW, Tees Dock Road, Middlesbrough, TS6 6UE (Ref. EPR/RE5458AG/A001 / WEX006326)	-	-	Recovery of waste at a waste water treatment works	Not on a farm. Treating waste exemption.
	160 m W	XPO Bulk UK limited, Regional Office, Southway, Wilton International, Redcar, TS10 4RG (Ref. WEX073594)	-	-	Storage of waste in a secure place	Storing waste exemption.

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
	175 m SE	XPO Bulk UK limited, Regional Office, Southway, Wilton International, Redcar, TS10 4RG (Ref. WEX265911 / WEX234961 / WEX222715 / WEX218663)	-	-	Storage of waste in a secure place. Preparatory treatments (baling, sorting, shredding etc). Storage of waste in secure containers. Use of waste in construction.	Relates to 6 No. entries. Not on a farm. Storing waste exemption. Treating waste exemption. Using waste exemption.
	180 m SW	Units 1-4 Central Workshop REDCAR TS10 4RG (Ref. EPR/VE5683WX/A001)	-	-	Preparatory treatments (baling, sorting, shredding etc).	Treating waste exemption. Non-Agricultural Waste Only.
	185 m W	Wilton, Redcar, TS10 4RG (Ref. WEX150170 / WEX153401 / WEX172922)	-	-	Use of waste in construction. Treatment of waste aerosol cans. Storage of sludge.	Relates to 4 No. entries. Using waste exemption. Treating waste exemption. Treating waste exemption. Not on a farm.
	190 m SW	Alder & Allan Limited - Response House East Way TS10 4RG (Ref. EPR/YE5442CL/A001)	-	-	Storage of waste in a secure place.	Relates to 2 No. entries. Both agricultural and non-agricultural waste. Storing waste exemption.

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
	190 m SW	Speysearch Ltd as 'Revive Polymers' Bays 1 - 4 Central Workshops Wilton International TS10 4RG (EPR/VE5648CV/A001)	-	-	Preparatory treatments (baling, sorting, shredding etc).	Non-Agricultural Waste Only. Treating waste exemption.
	205 m E	Steel House, Redcar, Teesside, TS10 5QW	-	-	Crushing waste fluorescent tubes and recovery of scrap metal.	Treating waste exemption.
	215 m NW	Sembcorp UK Headquarters, Wilton, Cleveland, Middlesbrough, TS90 8WS (Ref. EPR/UF0301SM/A001)	-	-	Crushing waste fluorescent tubes.	Treating waste exemption.
		Bays 1-4 Central Workshops Wilton International Recar TS10 4RG (Ref. EPR/CE5942ZN/A001)	-	-	Preparatory treatments (baling, sorting, shredding etc).	Treating waste exemption.
		Response House, East Way, Wilton International, Middlesbrough, TS10 4RG (Ref. WEX128390)	-	-	Storage of waste in a secure place and in secure containers.	Storing waste exemption.
		Redcar Plastics Recycling, Plastics Road, Wilton Industrial Estate, Redcar, TS10 4RG (Ref. WEX145602)	-	-	Storage of waste in a secure place and in secure containers. Preparatory treatments (baling, sorting, shredding etc).	Storing waste exemption and treating waste exemption.

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
Other Gases Connection Corridor						
Active or Recent Landfill	On-Site	Land/ Premises At, Bran Sands, Redcar, Cleveland, TS6 6UE (Ref. EA/EPR/FB3601GS/V004)	York Potash Processing & Ports Limited	-	A02: Other Landfill Site taking Special Waste	-
Historical Landfilling (LA/Mapping Records)	130 m N	Refuse Tip	-	1952	-	-
	180 m NW	Refuse Tip	-	1962	-	Relates to 2 No. entries.
	240 m SE	Refuse Tip	-	1962	-	Relates to 2 No. entries.
Historical Waste Sites	110 m SE	Refuse Pit	-	-	-	Historic Mapping
	185 m E	Ground Workings and Refuse Heap	-	-	-	-
	190 m SE	Scrap Crushing Pit	-	-	-	Relates to 3 No. entries.
Licenced Waste Sites	90 m W	Waste Treatment Centre, Bran Sands, Redcar, Cleveland, TS6 6UE (Ref. EA/EPR/TP3490ZA/A001)	Northumbrian Water Ltd	12/09/1997 (Issued)	Biological Treatment Facility	Related to 2 No. entries for one location.
	80 m W	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued), 2018 (Modified)	Metal Recycling Site (Mixed MRS's)	Relates to 2 entries for one location. <25000 tonnes and >= 75000 tonnes.

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
	125 m W	Teesside Integrated Iron and Steelworks	Redcar Bulk Terminal Limited	2016 (Issued)	Metal Recycling Site (Mixed MRS's)	>= 25000 to <75000 tonnes.
	230 m SE	Land/ Premises At, Bran Sands, Redcar, Cleveland, TS6 6UE	York Potash Processing & Ports Limited	24/05/1977 (Issued), 02/07/2021 (Modified)	Other Landfill Site taking Special Waste	>= 75000 tonnes
Waste Exemptions	100 m W	Bran Sands Tees Dock Road Middlesbrough Cleveland TS6 6UE (Ref. EPR/WF0706BG/A001)	-	-	Non-Agricultural Waste Only. Use of waste in construction	Using waste exemption
	100 m W	BRAN SANDS, TEES DOCK ROAD, MIDDLESBROUGH, TS6 6UE (WEX182366, WEX315656, WEX182366)	-	-	Storage of waste in a secure place; storage of waste in secure containers; recovery of waste at a waste water treatment works; and use of waste in construction.	Relates to 4 No. entries for one location. Not on a farm. Storing waste exemption. Treating waste exemption. Using waste exemption.
	130 m W	Bran Sands STW, Tees Dock Road, Middlesbrough, TS6 6UE (Ref. Wex006326)	-	-	Recovery of waste at a waste water treatment works	Treating waste exemption. Not on a farm.
	130 m W	Bran Sands Sewage Treatment Works Tees Dock Road Cleveland	-	-	Non-Agricultural Waste Only. Recovery of waste	Treating waste exemption

TYPE	DISTANCE AND DIRECTION	NAME / ADDRESS	LATEST OPERATOR / LICENCE HOLDER	DATES	PERMITTED WASTES / TYPE OF SITE	DETAILS
		TS6 6UE (Ref. EPR/RE5458AG/A001)			at a waste water treatment works	

Natural Ground Hazards

10A.2.102 The Groundsure Reports (Annex A) present a summary of Natural Ground Hazards. Groundsure GIS data was used to present the Natural Ground Hazards for the Proposed Development on Figures 10-18a to 10-18Ff (ES Volume II, EN070009/APP/6.3). A summary of the Natural Ground Hazards at the Main Site and associated Connection Corridors is presented in Table 10A-23.

10A.2.103 A summary of the Natural Ground Hazards information reported by Groundsure is summarised here. The risk rating ranges from Negligible, Very Low, Low, Moderate to High. The criteria for each is determined by the BGS:

- Shrink swell clays - The potential hazard presented by soils that absorb water when wet (making them swell) and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).
- Running sands - The potential hazard presented by soils and rocks that can contain loosely packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage. Areas recorded with high potential for running sand are likely to be associated with watercourses, River Tees and/or coastline. It is noted that fluidisation of sand to form running sand is caused by a steep hydraulic gradient and thus, excess pore water pressure as a consequence of human intervention such as excavations, dewatering and borehole drilling. For the condition to exist therefore the sand must be below the water table, be subject to an increase in pore water pressure and be either exposed at the surface or in a borehole where the support provided by overlying strata is either inadequate or absent.
- Compressible deposits - The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.
- Collapsible Deposits - The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them, or they become saturated with water.
- Landslides - The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.
- Ground dissolution of soluble rocks - The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Table 10A-23: Summary of Natural Ground Hazards

HAZARD TYPE	HAZARD RATING	DETAILS
Main Site		
Shrink Swell Clays	Very Low.	Ground conditions predominantly low plastic.
Running Sands	Very Low. High in the north of the site	Running sand conditions are unlikely across the majority of the site. No identified constraints on land use due to running conditions unless water table rises rapidly. High potential in the north indicates that running sand conditions are almost certainly present. Constraints will apply to land uses involving excavation or the addition or removal of water.
Compressible Deposits	Very Low. Moderate in the north of the site.	In the areas of very low potential, compressibility and uneven settlement problems are not likely to be significant on the site for most land uses. In the north of the site compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site,
Collapsible Deposits	Negligible.	Deposits across the entirety of the site with potential to collapse when loaded and saturated are not believed to be present.
Landslides	Very Low.	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.
Ground Dissolution of Soluble Rocks	Negligible.	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.
CO ₂ Export Corridor		
Shrink Swell Clays	Very Low.	Ground conditions are predominantly low plasticity across the entirety of the Corridor.

HAZARD TYPE	HAZARD RATING	DETAILS
Running Sands	Very Low.	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.
Compressible Deposits	Very Low.	Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.
Collapsible Deposits	Negligible.	Deposits with potential to collapse when loaded and saturated are believed not to be present.
Landslides	Very Low.	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.
Ground Dissolution of Soluble Rocks	Negligible.	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.
Natural Gas Connection Corridor		
Shrink Swell Clays	Very Low	Ground conditions predominantly low plasticity.
Running Sands	Very Low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.
Compressible Deposits	Very Low	Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.
Collapsible Deposits	Negligible	Deposits with potential to collapse when loaded and saturated are believed not to be present.
Landslides	Very Low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.
Ground Dissolution of Soluble Rocks	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.

HAZARD TYPE	HAZARD RATING	DETAILS
Water Connection Corridor		
Shrink Swell Clays	Very Low across the majority of the Corridor. Negligible in the area of Blown Sand deposits.	Ground conditions predominantly low plasticity across the majority of the Corridor. Ground conditions predominantly non-plastic in the area of Blown Sand deposits.
Running Sands	High is northeast corner and far east extent Very Low across majority of Corridor Low in areas of Blown Sand.	In areas of High potential, running sand conditions are almost certainly present. Constraints will apply to land uses involving excavation or the addition or removal of water. In areas of Low potential, running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly. In areas of Very Low potential, running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.
Compressible Deposits	Very Low across majority of Corridor Moderate in far north and easter extents Negligible in areas of Blown Sands.	In areas of Very Low potential, compressibility and uneven settlement problems are not likely to be significant on the site for most land uses. In areas of Moderate potential, compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site. In areas of Negligible potential compressible strata are not thought to occur
Collapsible Deposits	Negligible.	Deposits with potential to collapse when loaded and saturated are believed not to be present.
Landslides	Very Low.	Slope instability problems are not likely to occur across the majority of the Corridor but consideration to potential problems of adjacent areas impacting on the site should always be considered.

HAZARD TYPE	HAZARD RATING	DETAILS
Ground Dissolution of Soluble Rocks	Negligible.	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.
Electrical Connection Corridor		
Shrink Swell Clays	Very Low in majority of Corridor. Negligible in the area of Blown Sands.	For the majority of the Corridor, ground conditions are predominantly low plasticity. In the area of Blown Sands, ground conditions are predominantly non-plastic.
Running Sands	Very Low across majority of the Corridor. High in the northern and southeastern extent of the Corridor. Low along the eastern edge and small southern portion of the Corridor. Negligible to in a small portion of the southeast corner	Across the majority of the Corridor running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly. In areas of High potential, running sand conditions are almost certainly present. Constraints will apply to land uses involving excavation or the addition or removal of water. In areas of Low potential, running sand conditions may be present and constraints may apply to land uses involving excavation or the addition or removal of water. Within Negligible areas, running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.
Compressible Deposits	Very Low across majority of the Corridor.	Within Very Low areas, compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.

HAZARD TYPE	HAZARD RATING	DETAILS
	<p>Moderate in the northern and southeastern extent of the Corridor.</p> <p>Negligible along the eastern edge and small southern portion of the Corridor.</p>	<p>Within Moderate areas, compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.</p> <p>Within Negligible areas, compressible strata are not thought to occur.</p>
Collapsible Deposits	<p>Negligible across majority of Corridor.</p> <p>Very Low in the southeast corner.</p>	<p>Within negligible areas, deposits with potential to collapse when loaded and saturated are believed not to be present.</p> <p>In Very Low areas, deposits with potential to collapse when loaded and saturated are unlikely to be present.</p>
Landslides	Low (very small portion in southeast) to Very Low across the entirety of the Corridor.	In areas of Very Low potential, slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered. In areas of Low potential, slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.
Ground Dissolution of Soluble Rocks	Negligible across the entirety of the Corridor.	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.
Shrink Swell Clays	<p>Very low in the north-west of the Corridor.</p> <p>Negligible in the area of Blown Sands.</p>	<p>In the north and north-west, ground conditions are predominantly low plasticity.</p> <p>In the area of Blown Sands, ground conditions are predominantly non-plastic.</p> <p>In the surrounding central areas, ground conditions are predominantly low plasticity.</p>

HAZARD TYPE	HAZARD RATING	DETAILS
Hydrogen Pipeline Corridor – North of River Tees		
Shrink Swell Clays	<p>Very Low to Low across the entirety of the Corridor north of the River Tees.</p> <p>Negligible at Saltholme Brine Reservoirs, where peat is present on BGS mapping and a small area to the far west.</p>	<p>Across the majority of the Corridor to the north of the river Tees, in areas of Very Low potential, ground conditions predominantly low plasticity. In areas of Low potential, ground conditions are predominantly medium plasticity.</p> <p>Where peat is anticipated and within the small area to the far west of the Corridor, ground conditions are predominantly non-plastic.</p> <p>Along the River Tees, there is a very low potential for Shrink Swell Clays.</p>
Running Sands	<p>Negligible in the majority of the far western extents.</p> <p>Very Low from the River Tees to Greatham Creek. Also includes Saltholme Brine Reservoirs and to the south of the CF Fertiliser site.</p> <p>Low to the west of Cowpen Bewley and a small area in the far western extent.</p> <p>Moderate from Greatham Creek to Cowpen Bewley Wood and to the south of the Corridor.</p> <p>Moderate along the River Tees.</p>	<p>In areas of Negligible potential, running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.</p> <p>In areas of Very Low potential, running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.</p> <p>In areas of Low potential, running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.</p> <p>In areas of Moderate potential, running sand conditions are probably present. Constraints may apply to land uses involving excavation or the addition or removal of water.</p> <p>Along the River Tees, there is a moderate potential for Running Sands.</p>
Compressible Deposits	Negligible in a small area to the far west of the Corridor.	Across the Corridor, there are various different hazard potentials. In areas of Negligible potential compressible strata are not thought to occur.

HAZARD TYPE	HAZARD RATING	DETAILS
	<p>Very Low, in areas to the far west and to Venator and to the south of the CF Fertiliser site. From the River Tees up to Greatham Creek and to the south.</p> <p>Moderate across the majority of the Corridor including the River Tees.</p>	<p>In areas of Very Low Potential, compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.</p> <p>In areas of Moderate potential, compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.</p> <p>Along the River Tees, there is a Moderate potential for Compressible Deposits.</p>
Collapsible Deposits	<p>Negligible across the majority of the Corridor from the east including the River Tees.</p> <p>Very Low across the far western extents of the Corridor including the CF Fertiliser site.</p>	<p>In the areas of Negligible potential, deposits with potential to collapse when loaded and saturated are believed not to be present.</p> <p>In the areas of Very Low potential, deposits with potential to collapse when loaded and saturated are unlikely to be present.</p> <p>In the areas of Moderate potential, along the River Tees, there is Negligible potential for Collapsible deposits.</p>
Landslides	<p>Low in localised areas.</p> <p>Very low across the entirety as the Corridor.</p>	<p>In areas of Negligible potential, deposits with potential to collapse when loaded and saturated are believed not to be present.</p> <p>In areas of Very Low potential deposits with potential to collapse when loaded and saturated are unlikely to be present. The River Tees is included in an area of Very Low potential.</p> <p>In areas of Low potential, slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.</p>
Ground Dissolution of Soluble Rocks	<p>Negligible across the entirety of the site.</p>	<p>Across the entirety of the Corridor to the north of the River Tees, including the River Tees, are within an area Negligible potential. Soluble rocks are either not</p>

HAZARD TYPE	HAZARD RATING	DETAILS
		thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.
Hydrogen Pipeline Corridor – South of River Tees		
Shrink Swell Clays	Negligible within the area of Blown Sand deposits. Very Low across the majority of the Corridor, in the north, north-east and west. Low in the south-east.	In areas of Negligible potential, ground conditions predominantly non-plastic. In areas of Very Low potential, ground conditions predominantly low plasticity. In areas of Low potential, ground conditions predominantly medium plasticity.
Running Sands	Negligible through central extent. Very Low majority of western and eastern extents. Low in a small area to the north and along the Blown Sand Deposits. Moderate along the Dabholm Gut. High to the far east of the Corridor and along the northern boundary.	In the areas of Negligible potential, running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions. In the areas of Very Low potential, running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly. In the areas of Low potential, running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water. In the areas of Moderate potential, running sand conditions are probably present. Constraints may apply to land uses involving excavation or the addition or removal of water. In the areas of High potential, running sand conditions are almost certainly present. Constraints will apply to land uses involving excavation or the addition or removal of water.

HAZARD TYPE	HAZARD RATING	DETAILS
Compressible Deposits	Negligible in the area of the Blown Sand Deposits and far southeastern section. Very Low, across western half of section. Moderate central section.	In the areas of Negligible potential, compressible strata are not thought to occur. In the areas of Very Low potential, compressibility and uneven settlement problems are not likely to be significant on the site for most land uses. In the areas of Moderate potential, compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.
Collapsible Deposits	Negligible across northern half Corridor. Very Low in southern half of Corridor.	Across the majority of the Corridor in the areas of Negligible potential, Deposits with potential to collapse when loaded and saturated are believed not to be present. Within the areas of Very Low potential, deposits with potential to collapse when loaded and saturated are unlikely to be present.
Landslides	Very Low across the entirety of the Corridor to the south of the River Tees.	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.
Ground Dissolution of Soluble Rocks	Negligible across the entirety of the Corridor to the south of the River Tees.	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.
Other Gases Connection Corridor		
Shrink Swell Clays	Very Low across the majority of the Corridor. Negligible in the area of Blow Sands.	Across the majority of the Corridor ground conditions are predominantly low plasticity. Within a small area to the east of the Corridor, with the area of anticipated Blow Sands, ground conditions are predominantly non-plastic.

HAZARD TYPE	HAZARD RATING	DETAILS
Running Sands	Very Low across the majority of the Corridor. Low in the area of Blow Sands.	Across the majority of the Corridor running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly. In the area of Blown Sands to the east, running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.
Compressible Deposits	Very Low across the majority of the Corridor, Negligible in the area of Blown Sands.	Across the majority of the Corridor, compressibility and uneven settlement problems are not likely to be significant on the site for most land uses. In the area of Blown Sands, compressible strata are not thought to occur.
Collapsible Deposits	Negligible across the entirety of the Corridor.	Deposits with potential to collapse when loaded and saturated are believed not to be present.
Landslides	Very Low across the entirety of the Corridor.	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.
Ground Dissolution of Soluble Rocks	Negligible across the entirety of the Corridor.	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.

Hydrology

10A.2.104 Full details of the hydrology at the Proposed Development Site is provided in Chapter 9 (ES Volume I, EN070009/APP/6.2).

Surface Water Features

10A.2.105 The Proposed Development Site falls within the Northumbria River Basin District, the Tees Management Catchment and the Tees Lower and Estuary Operational Catchment. The River Tees South Bank Water Body is present at all associated Connection Corridors.

10A.2.106 The following Water Framework Directive (WFD) Surface Water Body Catchments are present at the Proposed Development Site:

- The Tees Coastal Water surface water body catchment is present at the Proposed Development Site. It is not part of a river water body catchment.
- The River Tees South Bank surface water body catchment is present at all Connection Corridors and a small portion of the Main Site in the northeast and has a Moderate ecological classification, and a Fail for chemical status for Mercury and its Compounds and Polybrominated diphenyl ethers (PBDE).
- The Cowbridge Beck from Source to North Burn surface water body catchment is also located north of the River Tees within the Hydrogen Pipeline Corridor. It has a Moderate ecological status and a Fail for chemical status for Di(2-ethylhexyl)phthalate, Mercury and Its Compounds and PBDE.

10A.2.107 The following WFD Surface Water Bodies are present within 1 km of the Proposed Development Site:

- Tees Transitional Waterbody, Fail chemical rating, Moderate ecological rating, located within the River Tees.

10A.2.108 A summary of surface water bodies and associated designation of WFD waterbody downstream and within 1 km of the Proposed Development Site are presented in Table 10A-24.

Table 10A-24: Surface Waterbodies and Associated WFD Waterbody within 1 km of the Main Site and Connection Corridors

WATERBODY	WATERBODY TYPE	WFD DESIGNATION OR ASSOCIATED WFD WATERBODY (WHERE APPLICABLE)
Tees Bay	Coastal	Tees Coastal Water (GB650301500005)
River Tees	Watercourse (Main River)	TEES Transitional Waterbody (GB510302509900)
The Fleet	Watercourse (Ordinary)	River Tees (S Bank) (GB1030250723320)
Main's Dike	Watercourse (Ordinary)	Tributary of the Tees Transitional WFD Waterbody
Mill Race	Watercourse (Ordinary)	Tributary of the Tees Transitional WFD Waterbody
Dabholm Gut	Watercourse (Ordinary)	Designated under the TEES Transitional Waterbody (GB510302509900)
Dabholm Beck	Watercourse (Ordinary)	Tributary of the Tees Transitional WFD Waterbody
Kinkerdale Beck	Watercourse (Ordinary)	Tributary of the Tees Transitional WFD Waterbody
Knitting Wife Beck	Watercourse (Ordinary)	Tributary of the Tees Transitional WFD Waterbody
Holme Fleet	Watercourse (Ordinary)	Tributary of the Tees Transitional WFD Waterbody
Belasis Beck	Watercourse (Ordinary)	Tributary of Holme Fleet and therefore associated with the Tees Transitional WFD Waterbody
Cross Beck	Watercourse (Ordinary)	Tributary of the Tees Transitional WFD Waterbody
Greatham Creek	Watercourse (Main River)	Designated under the Tees Transitional WFD Waterbody
Mucky Fleet	Watercourse (Ordinary)	Tributary of the Tees Transitional WFD Waterbody
Swallow Fleet	Watercourse (Ordinary)	Tributary of the Tees Transitional WFD Waterbody
Cowbridge Beck	Watercourse (Main River)	Cowbridge Beck from Source to North Burn WFD Waterbody GB103025072380

WATERBODY	WATERBODY TYPE	WFD DESIGNATION OR ASSOCIATED WFD WATERBODY (WHERE APPLICABLE)
Castle Gill	Watercourse (Ordinary)	Tributary of the Tees Transitional WFD Waterbody
Saltholme Nature Reservoir Ponds, Brine Reservoirs, Brine Field, and refinery ponds	Stillwater	Catchment of Tees Transitional WFD Waterbody
Ponds at Billingham Technology Park	Stillwater	Catchment of Tees Transitional WFD Waterbody
Ponds within Coatham Dunes and Bran Sands	Stillwater	Catchment of Tees Transitional WFD Waterbody
Ponds at Coatham Marsh	Stillwater	Catchment of Tees Transitional WFD Waterbody
Numerous industrial ponds and artificial waterbodies across the area including Lazenby Reservoirs and Salhouse Brine Reservoirs	Stillwater	Catchment of Tees Transitional WFD Waterbody

Surface Water Flood Risk

10A.2.109 Flood risk details for the Proposed Development Site are presented in Chapter 9 (ES Volume I, EN070009/APP/6.2).

Licensed Surface Water Abstractions

10A.2.110 The Groundsure Report (Annex A) presents a summary of the Licensed Surface Water Abstractions and Potable Abstractions. These abstractions are presented on Figure 10-17 (ES Volume II, EN070009/APP/6.3).

- Licensed Surface Water Abstractions: Licensed surface water abstractions for sites extracting more than 20 m³ of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.
- Licensed Potable Abstractions: Licensed potable water abstractions for sites extracting more than 20 m³ of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

10A.2.111 The following Licensed Surface Water Abstractions are present within 1 km of the Proposed Development Site:

- 82 m west of Main Site – British Steel PLC, River Tees , Historical, Max daily volume: 722,828 m³, 454700, 525900;
- 502 m east of Hydrogen Pipeline Corridor – Royal Society for the Protection of Birds, NE/025/0001/008, Status: Active, Volumes not supplied, 449732, 522992; and
- 534 m south of Hydrogen Pipeline Corridor – Tees Bulk Handling LTD, River Tees, Historical, 1/25/04/123, Volumes not supplied, 454600, 523500.

10A.2.112 There are no Licensed Potable Abstractions within 1 km of the Proposed Development Site.

Hydrogeology

Groundwater Bodies

10A.2.113 The following WFD Groundwater Bodies are present at the Proposed Development Site:

- Tees Sherwood Sandstone, Good chemical rating and Good quantitative rating (2019); and
- Tees Mercia Mudstone, Poor chemical rating and Good quantitative rating (2019).

Aquifer Designations

10A.2.114 Figure 10-12a to 10-12g and Figure 10-13a to 10-13g (ES Volume II, EN070009/APP/6.3) present the designated superficial and bedrock aquifers below the Proposed Development Site, respectively. The designated aquifers have been defined by the Environment Agency (EA), as follows:

- Principal Aquifer: “layers of rock or drift deposits that have high intergranular and / or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and / or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.”
- Secondary Aquifer – A: “permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.”
- Secondary Aquifer – B: “predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.”
- Secondary Aquifer – Undifferentiated: “has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.”
- Unproductive Strata: “these are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.”

10A.2.115 The Environment Agency define a Groundwater Source Protection Zone (SPZs) as the sensitivity of an area around a potable abstraction site to contamination. The zones are defined by the Environment Agency, as follows:

- Inner Zone (SPZ1): “This zone is 50 day travel time of pollutant to source with a 50m default minimum radius.”
- Inner Zone (SPZ2): “This zone is 400 day travel time of pollutant to source. This has a 250 or 500 metres minimum radius around the source depending on the amount of water taken.”
- Total Catchment (SPZ3): “This is the area around a supply source within which all the groundwater ends up at the abstraction point. This is the point from where the water is taken. This could extend some distance from the source point.”
- Zone of special interest (SPZ4): “This zone is where local conditions require additional protection.”

10A.2.116 The Groundwater Vulnerability Maps show 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 Environment Agency have defined groundwater vulnerability for each aquifer type expressed from high to unproductive.

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- High: “areas that can easily transmit pollution to groundwater. They are characterised by high-leaching soils and the absence of low-permeability superficial deposits.”
 - Medium: “areas that offer some groundwater protection. Intermediate between high and low vulnerability.”
 - Low: “areas that provide the greatest protection to groundwater from pollution. They are likely to be characterised by low-leaching soils and/or the presence of low-permeability superficial deposits.”
 - Unproductive: “areas comprised of rocks that have negligible significance for water supply or baseflow to rivers, lakes and wetlands. They consist of bedrock or superficial deposits with a low permeability that naturally offer protection to any aquifers that may be present beneath.”

10A.2.117 The Groundsure Reports are included in Annex A. Details of hydrogeological features within the respective site areas are summarised in Table 10A-25.

Table 10A-25: Hydrogeology

RELEVANT FEATURE	DESIGNATION	STRATA
Main Site		
Superficial Aquifer	<ul style="list-style-type: none"> Secondary A and Secondary Undifferentiated Unproductive Secondary Undifferentiated 	<ul style="list-style-type: none"> Tidal Flat Deposits Glaciolacustrine Deposits Till
Bedrock Aquifer	<ul style="list-style-type: none"> Secondary B Secondary B Secondary Undifferentiated 	<ul style="list-style-type: none"> Mercia Mudstone Penarth Group Redcar Mudstone
Groundwater Vulnerability	High (Secondary Superficial)	-
Source Protection Zone	None within 1 km	-
CO ₂ Export Corridor		
Superficial Aquifer	<ul style="list-style-type: none"> Secondary A Secondary A Secondary Undifferentiated Unproductive 	<ul style="list-style-type: none"> Tidal Flat Deposits Blown Sand Till Glaciolacustrine Deposits
Bedrock Aquifer	<ul style="list-style-type: none"> Secondary B Secondary B Secondary Undifferentiated 	<ul style="list-style-type: none"> Mercia Mudstone Penarth Group Redcar Mudstone
Groundwater Vulnerability	High (Secondary Superficial)	-
Source Protection Zone	None within 1 km	-

RELEVANT FEATURE	DESIGNATION	STRATA
Natural Gas Connection Corridor		
Superficial Aquifer	<ul style="list-style-type: none"> • Secondary A • Secondary A • Secondary Undifferentiated • Unproductive 	<ul style="list-style-type: none"> • Tidal Flat Deposits • Blown Sand • Till • Glaciolacustrine Deposits
Bedrock Aquifer	<ul style="list-style-type: none"> • Secondary B • Secondary B • Secondary Undifferentiated 	<ul style="list-style-type: none"> • Mercia Mudstone • Penarth Group • Redcar Mudstone
Groundwater Vulnerability	High (Secondary Superficial)	-
Source Protection Zone	None within 1 km	-
Water Connection Corridor		
Superficial Aquifer	<ul style="list-style-type: none"> • Secondary A • Secondary A • Secondary Undifferentiated • Unproductive 	<ul style="list-style-type: none"> • Tidal Flat Deposits • Blown Sand • Till • Glaciolacustrine Deposits
Bedrock Aquifer	<ul style="list-style-type: none"> • Secondary B • Secondary B • Secondary Undifferentiated 	<ul style="list-style-type: none"> • Mercia Mudstone • Penarth Group • Redcar Mudstone
Groundwater Vulnerability	High (Secondary Superficial) Medium (Secondary Superficial)	-
Source Protection Zone	None within 1 km	-

RELEVANT FEATURE	DESIGNATION	STRATA
Electrical Connection Corridor		
Superficial Aquifer	<ul style="list-style-type: none"> • Secondary A • Secondary A • Secondary Undifferentiated • Unproductive 	<ul style="list-style-type: none"> • Tidal Flat Deposits • Blown Sand • Till • Glaciolacustrine Deposits
Bedrock Aquifer	<ul style="list-style-type: none"> • Secondary B • Secondary B • Secondary Undifferentiated 	<ul style="list-style-type: none"> • Mercia Mudstone • Penarth Group • Redcar Mudstone
Groundwater Vulnerability	High (Secondary Superficial) Medium (Secondary Superficial) Low (Secondary Bedrock)	-
Source Protection Zone	None within 1 km	-
Hydrogen Pipeline Corridor		
Superficial Aquifer	<ul style="list-style-type: none"> • Secondary A • Secondary A • Secondary Undifferentiated • Unproductive 	<ul style="list-style-type: none"> • Tidal Flat Deposits • Blown Sand • Till • Glaciolacustrine Deposits
Bedrock Aquifer	<ul style="list-style-type: none"> • Principal • Secondary B • Secondary B • Secondary Undifferentiated 	<ul style="list-style-type: none"> • Sherwood Sandstone Group • Mercia Mudstone • Penarth Group • Redcar Mudstone
Groundwater Vulnerability	High (Secondary Superficial)	-

RELEVANT FEATURE	DESIGNATION	STRATA
	Medium (Secondary Superficial) Low (Secondary Superficial) Medium (Secondary Bedrock) Low (Secondary Bedrock)	
Source Protection Zone	None within 1 km	-
Other Gases Connection Corridor		
Superficial Aquifer	<ul style="list-style-type: none"> ● Secondary A ● Secondary A 	<ul style="list-style-type: none"> ● Tidal Flat Deposits ● Blown Sand
Bedrock Aquifer	<ul style="list-style-type: none"> ● Secondary B ● Secondary B ● Secondary Undifferentiated 	<ul style="list-style-type: none"> ● Mercia Mudstone ● Penarth Group ● Redcar Mudstone
Groundwater Vulnerability	High (Secondary Superficial)	-
Source Protection Zone	None within 1 km	-

10A.2.118 The aquifer designations and inferred groundwater vulnerability risk may constitute an unusual or onerous constraint for development, particularly in relation to the historical slag / iron and steel works, infilled land and registered and historical landfills on the site. Ground investigation and installation of groundwater quality monitoring standpipes is proposed. Further groundwater risk assessment may be required.

10A.2.119 BGS Groundwater Flood Susceptibility (GFS) data is also provided in the Groundsure Report (Annex A). Details of the potential for groundwater flooding within 200 m of the Proposed Development Site are shown in Table 10A-26.

Table 10A-26: Risk of Flooding from Groundwater

LOCATION	ON-SITE GROUNDWATER FLOODING RISK
Main Site	Low to Negligible
CO ₂ Export Corridor	Low
Natural Gas Connection Corridor	Low
Water Connection Corridor	Low to Negligible
Electrical Connection Corridor	Low to Negligible
Hydrogen Pipeline Corridor, North of the River Tees, including the River Tees	High to Negligible Negligible within the River Tees
Hydrogen Pipeline Corridor, South of the River Tees	Low to Negligible
Other Gases Connection Corridor	Low to Negligible

Groundwater Abstractions

10A.2.120 Groundwater Abstraction locations are presented on Figure 10-16 (ES Volume II, EN070009/APP/6.3).

10A.2.121 Groundwater abstraction licenses are required if a site extracts more than 20 m³ of water a day and includes active and historical records.

10A.2.122 There are no groundwater abstractions licenses on or within 1 km of the Main Site, CO₂ Export Corridor, Natural Gas Connection Corridor, Water Connection Corridor, Electrical Connection Corridor, or Other Gases Connection Corridor.

10A.2.123 There are no groundwater abstraction licenses on or within 1 km of the Hydrogen Pipeline Corridor – South of the River Tees.

10A.2.124 There are 35 groundwater abstraction licenses within the Hydrogen Pipeline Corridor – North of the River Tees, the details are as follows:

- Two entries relate to one historical license (1/25/04/060) for general use relating to secondary category (medium loss) from groundwater within the Sherwood Sandstone Formation. 1966 – no end date. 449800, 526600.

- Two entries relate to one historical license (1/25/04/068) for general use relating to secondary category (medium loss) from groundwater within 'Triassic mudstones – seal sands'. 1966 – no end date. 450700, 522950.
- Two entities relate to one historical license (1/25/04/133) for general use relating to secondary category (medium loss) for groundwater within the Sherwood Sandstone. 1975 – no end date. 451140, 524100.
- 29 No. entries relate to one historical license (1/25/04/134) for general use relating to secondary category (medium loss) and (low loss), and make-up or top-up water for groundwaters within the Sherwood Sandstone. 1975 – no end date. 451230, 524700.

Historical Development

10A.2.125 The following Groundsure Reports / Envirocheck Reports were used to assess the history at the Proposed Development Site:

- Envirocheck Report 284970768_1_1 – 21/09/2021 (Main Site);
- Groundsure Report - GS-9167761 – 01/11/2022 (Main Site);
- Envirocheck Report - 233803971_1_1 – 10/02/2020 (Main Site and All Connection Corridors);
- Groundsure Report - GS-9167762 – 01/11/2022 (Main Site and All Connection Corridors);
- Groundsure Report - GS-9167694 – 01/11/2022 (Main Site and All Connection Corridors);
- Groundsure Report - GS-9366848 – 20/02/2023 (Main Site and Hydrogen Pipeline Corridor);
- Groundsure Report - GS-9167693 – 01/11/2022 (Hydrogen Pipeline Corridor);
- Groundsure Report - GS-9167761 – 01/11/2022 (Hydrogen Pipeline Corridor);
- Groundsure Report - GISP-2022-13154-11993 – 05/12/2022 (Hydrogen Pipeline Corridor);
- Groundsure Report - GISP-2023-13293-12624_A_1 to G_1 – 06/12/2022 (Hydrogen Pipeline Corridor);
- Groundsure Report - GS-9167787 – 01/11/2022 (Hydrogen Pipeline Corridor and Electrical Connection Corridor);
- Groundsure Report - GS-9167692 – 01/11/2022 (Hydrogen Pipeline Corridor);
- Groundsure Report - GS-9167765 - 01/11/2022 (Hydrogen Pipeline Corridor); and
- Groundsure Report - GS-9167696 01/11/2022 (Hydrogen Pipeline Corridor).

Main Site

10A.2.126A summary of the historical development at the Main Site and associated Connection Corridors is presented in Table 10A-27 to Table 10A-34.

Table 10A-27: Summary of Historical Development at the Main Site

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
Pre 1900s	(c. 1856 – 1857, 1:10,560) The Site is within Bran Sands. (c. 1893, 1:10,560). A pond is located in the north-east corner of the Site. There are two tramways that transect the northern portion of the Site. One originating from Redcar Jetty travelling northwest through the Site before curving along the northern boundary of the north-eastern portion of Site and exits the Site running towards the Iron Works approximately 850 m south-east. The second tramway crosses the first line and runs southeast towards the Iron Works. No development within the southern portion of the Site.	(c. 1893, 1:10,560) Coatham Sands is situated immediately north of the Site.
1910 – 1920	(c.1913, 1:10,560) No significant developments.	(c.1913, 1:10,560) No significant developments.
1920 – 1930	(c.1923 – 1927, 1:10,560) Railway sidings and a large industrial building associated with Redcar Iron and Steel Works are denoted in the north-east corner of the Main Site. One Sand Pit is labelled in the north-west corner.	(c. 1923 – 1927, 1:10,560, 1:2,500) Warrenby Slag Works denoted 250 m N. A Slag & Tarmacadam Works is shown approximately 105 m E and 450 m E. Significant industrial development immediately east of Site relating to Redcar Iron & Steel Works, including numerous tanks, sidings, rail lines, buildings, water towers and metre house.
1930 – 1940	(c.1938, 1:10,560) No significant developments.	(c.1938, 1:10,560) No significant developments.
1950 – 1960	(c.1953, 1:10,000) Salt Marsh situated along the eastern boundary. (c. 1952, 1:1,250) A Pumping Station is denoted in the north-east corner of the Site.	(c.1953, 1:10,560) No significant developments. (c.1952, 1:2,000) Tanks are denoted in the north-east corner of the Main Site. (c. 1952, 1:1,250) Numerous drains and ponds along the eastern boundary of Site within marsh land.

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
		(c.1953, 1:2,050) Two Slag Heaps identified within 500 m from the north-east corner.
1960 – 1970	(c.1969, 1:10,560) Numerous tracks have appeared along the northern portion of Site, splintering off Redcar Jetty. Refuse tips / slag heaps are denoted in the northern and central areas of the Main Site. Redcar Iron and Steel Works is now identified as a Works.	(c.1968, 1:2,500) Spoil Heap situated approximately 100 m NW of Site. (c.1969, 1:10,560) Warrenby Slag Works is no longer denoted.
1970 – 1980	(c. 1970 – 1976, 1:10,000) Fewer railway lines are denoted within the Main Site. (c. 1972, 1:1,250) The south portion of the Site is now referred to as South Teesside Works, Redcar. (c.1974, 1:10,000) No significant developments.	(c. 1972, 1:1,250) (c.1974, 1:10,000) There are also a series of railway lines with now run immediately parallel to the southern boundary of Site. Active Workings are shown 400 m SE. (c. 1976, 1:1,250) South Teesside Works extends outside of eastern Site boundary.
1980 – 1990	(c.1980 - 1983, 1:10,000, 1:1,250) Full Site now operational as Teesside Works, Redcar. Numerous buildings, tanks, conveyors, flare stacks, cooling towers, gasholders, chimneys, tracks and roadways now present across the whole Site.	(c.1980, 1:10,000) Immediately north of Site remains unchanged, Coatham Dunes. Immediately east of Site is an extension of Teesside Works, north-west of Site is undeveloped land. Southwest and south of Site is a continuation of South Tees Development Corporation (STDC) , mainly conveyors.
1990 – 2000	(c. 1994, 1:1,250) No significant changes.	(c. 1994, 1:1,250) No significant changes.
2000 – 2010	(c.2001, 1:10,560) No significant developments.	(c.2001, 1:10,560) Tip identified approximately 200 m N within Coatham Dunes. There are also 8 no. ponds of varying sizes in this area.
2010 – 2020	(c. 2010, 1:10,000) Two ponds are now present in the north of the Site.	(c. 2010, 1:10,000) No significant changes.

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
2020 – 2023	(c. 2022, 1:10,000) The pond within the north-western section is no longer present. Site infrastructure has significantly reduced on Site, particularly in the northwest corner.	(c. 2022, 1:10,000) No significant changes.

CO₂ Export Corridor

Table 10A-28: Summary of Historical Development at the CO₂ Export Corridor

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
Pre 1900s	<p>(c. 1853, 1:10,560) The Corridor is within Bran Sand.</p> <p>(c. 1893, 1:10,560) Large areas of sand are labelled within the northern and southern sections. A tramway runs north-west to south-east through the northern extent of the Corridor, along the South Gare Breakwater. Various ponds are located throughout the Corridor.</p>	<p>(c. 1856 – 1857, 1:10,560) The N.E.R. Darlington and Saltburn Branch Railway line is denoted approximately 10 m E. Coatham Marsh is denoted to the east of the railway line.</p> <p>(c. 1893, 1:10,560) An Iron Works is located approximately 130 m E and 220 m E.</p> <p>(c. 1894, 1:2,500) The Iron Works located 130 m E is now identified as Coatham Iron Works.</p>
1900 – 1910	Dates not mapped.	Dates not mapped.
1910 – 1920	<p>(c. 1913, 1:10,560) The Marshes is labelled within and surrounding the site sections.</p> <p>(c. 1913-1914, 1:10,560), (c. 1915, 1:2,500) A Tar Macadam Works encroaches on the eastern boundary of the Corridor.</p>	<p>(c. 1913-1914, 1:10,560) A Slag Wool Works is shown approximately 135 m E. A Slag Brick Works is denoted approximately 380 m E. The Iron Works located approximately 220 m E is now identified as Redcar Iron Works.</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
		(c. 1914 – 1915, 1:2,500) A further Slag Wool Works is denoted approximately 465 m E.
1920 – 1930	<p>(c. 1923 – 1927, 1:10,560) Significant industrial development associated with Redcar Iron and Steel Works is denoted throughout the Corridor including industrial buildings, railway sidings and tanks. Two Slag and Tar Macadam Works are denoted in the northern extent of the Corridor.</p> <p>(c. 1929, 1:2,500) Water Coolers, Meter Houses and a Reservoir are denoted within the western extent of the Corridor.</p>	<p>(c. 1923 – 1927, 1:10,560) Warrenby Slag Works are denoted approximately 430 m NW.</p> <p>(c. 1927, 1:10,560) The railway line identified as N.E.R. Darlington and Saltburn Branch is now denoted as London and North Eastern Railway.</p> <p>(c. 1929, 1:2,500) Water Coolers, Tanks. Travelling Cranes and Chimneys are denoted approximately 200 m E. The Slag Wool Works and Slag Brick Works are no longer denoted.</p>
1930 – 1940	(c.1938-1940, 1:10,560) No significant developments observed)	(c.1938-1940, 1:10,560) No significant developments observed)
1940 – 1950	Dates not mapped.	Dates not mapped.
1950 – 1960	(c. 1952-1954, 1:2,500), (c. 1952-1955, 1:10,560) The Slag and Tar Macadam Works are no longer denoted. A Cooling Tower encroaches on the western boundary.	(c. 1952-1954, 1:2,500), (c. 1952-1955, 1:10,560) No significant developments.
1960 – 1970	(c. 1969, 1:10,560) The Redcar Iron and Steelworks is now labelled as Works. Refuse heaps / slag heaps are denoted in the north-east corner.	(c. 1969, 1:10,560). Refuse / slag heaps are denoted within 500 m from the northern boundary. Warrenby Slag Works is no longer present.
1970 – 1980	(c. 1970 – 1976, 1:10,000; c. 1974, 1:10,000) Various railway tracks are shown to intersect through the southern half of the site in an east to west direction. Warrenby Station is located on the	(c. 1970 – 1976, 1:10,000; c. 1974, 1:10,000) Active Workings are denoted approximately 360 m S. The industrial development located to the east such as the

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	<p>eastern boundary.</p> <p>(c.1973 – 1983, 1:1,250) The Corridor is identified as South Teesside Works, Redcar. Embankments are denoted either side of the railway. The drains are no longer identified within the Natural Gas Corridor. Industrial development is denoted throughout the Corridor including Travelling Cranes, Tanks and Conveyors.</p> <p>NB. The old Redcar Iron and Steelworks was completely demolished in the 1970s and replaced by the new Redcar Steelworks.</p>	<p>overhead pipeline, pipe bridge and travelling cranes are no longer shown.</p> <p>(c.1973 – 1983, 1:1,250) The area to the east of the Corridor is also denoted as South Teesside Works, Redcar.</p>
1980 – 1990	<p>(c.1980 – 1983, 1:10,000) Industrial development has taken place across the site area and it is encompassed within the wider Teesside Works, Redcar. In the northern section, various industrial infrastructure is present including conveyors and roads intersecting the site. In the southern section, the railway tracks are still shown to be present, with a road and various industrial infrastructure including conveyors and a chimney. The refuse / slag heaps are no longer denoted.</p> <p>(c.1981-1983, 1:1,250) Conveyors are mapped in the southern section.</p> <p>(c. 1984 – 1988, 1:1,250) Tanks, Hoppers and Lighting Towers are denoted throughout the Corridor.</p>	<p>(c.1980– 1983, 1:10,000) Significant industrial development has occurred surrounding the Corridor as part of Teesside Works, Redcar. Within the surrounding area, there are various conveyors, tanks and other industrial infrastructure associated with the works. The active workings to the south are labelled as workings. The railway approximately 10 m E is labelled as dismantled. A small pond is observed approximately 100 m S from the Corridor.</p> <p>(c. 1988 – 1991, 1:10,000) The Workings to the south are no longer denoted and multiple ponds are denoted in the same location.</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
1990 – 2000	(c. 1991, 1:10,000; 1993, 1:1,250) No significant developments observed. (c.1999) The aerial image shows that there are several black to grey coloured material stockpiles throughout the north-western extent of the Natural Gas Connection Corridor.	(c. 1991, 1:10,000; 1993, 1:1,250) No significant developments observed.
2000 – 2010	(c. 2001, 1:10,000) No significant developments observed.	(c. 2000, 1:10,000) Circular structures, assumed to be tanks associated with the Sewage Works, are located approximately 400 m S.
2010 – 2020	(c. 2010, 1:10,000) No significant developments observed.	(c. 2010, 1:10,000) No significant developments observed.
2020 – 2023	(c. 2020, 1:10,000) Factories are denoted within the Water Connection Corridor. Fewer Conveyors are denoted throughout the Corridor.	(c. 2020, 1:10,000) Factories are denoted in the surrounding area to the north and west of the Water Connection Corridor.

Natural Gas Connection Corridor

Table 10A-29: Summary of Historical Development at the Natural Gas Connection Corridor

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
Pre 1900s	(c. 1853, 1:10,560) The Corridor is within Bran Sand. (c.1893, 1:10,560) A Tramway is denoted in the northern extent of the Corridor orientated north-west to south-east.	(c. 1856 – 1857, 1:10,560) A railway line is denoted approximately 115 m E orientated north-east to south-west. Coatham Marsh is denoted to the east of the railway line. (c.1893, 1:10,560) The railway line is identified as N.E.R. Darlington and Saltburn Branch. Further railway lines

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	(c. 1894 1:2,500) Areas of sand are denoted in the western area of the Natural Gas Corridor. The far western and eastern areas of the Corridor are denoted as marshland associated with The Marshes.	orientated east to west are denoted adjoining to the main branch approximately 160 m E. An Iron Works is denoted approximately 130 m E and 220 m E. (c. 1894, 1:2,500) The Iron Works located approximately 130 m E is now identified as Coatham Iron Works.
1900 – 1910	Dates not mapped.	Dates not mapped.
1910 – 1920	(c.1913, 1:10,560; 1914 – 1915, 1:2,500) A Tarmacadam Works encroaches on the northern boundary of the Corridor.	(c.1913, 1:10,560) The Iron Works located approximately 220 m E is now identified as Redcar Iron Works. (c. 1914 – 1915, 1:2,500) Coatham Iron Works is now denoted as a Slag Wool Works. A Slag Wool Works and a Slag Brick Works are denoted approximately 360 m N and 400 m E respectively. A further Slag Wool Works is denoted approximately 445 m E.
1920 – 1930	(c. 1923 – 1927, 1:10,560) Multiple railway sidings and industrial buildings associated with Redcar Iron and Steel Works are denoted in the northern extent of the Corridor.	(c. 1923 – 1927, 1:10,560) The Slag Wool Works and Slag Brick Works are no longer denoted and further railway lines are shown in a similar location. Multiple railway sidings are denoted immediately north and east of the Corridor. A Slag and Tarmacadam Works is denoted approximately 265 m NW. (c. 1927, 1:10,560) The railway line identified as N.E.R. Darlington and Saltburn Branch is now denoted as London and North Eastern Railway.

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
		(c. 1929, 1:2,500) Further industrial infrastructure is denoted approximately 200 m E including multiple buildings, Travelling Cranes, Tanks and Water Coolers. The Tar Macadam Works, Slag Wool Works and Slag Brick Works are no longer shown.
1930 – 1940	(c. 1938, 1:10,560) No significant developments observed.	(c. 1938, 1:10,560) No significant developments observed.
1940 – 1950	Dates not mapped.	Dates not mapped.
1950 – 1960	<p>(c. 1953, 1:10,000) No areas of sand are denoted within the Natural Gas Corridor boundary.</p> <p>(c.1953 – 1954, 1:1,250) Multiple drains are denoted throughout the Natural Gas Corridor orientated roughly north to south and east to west. An Overhead Pipe is shown orientated north-west to south-east.</p>	(c.1953 – 1954, 1:1,250) Multiple drains are denoted within 250 m from the Natural Gas Corridor orientated roughly north to south and east to west. A Pump House is denoted approximately 180 m E and a Pipe Bridge is shown approximately 255 m E.
1960 – 1970	<p>(c. 1964, 1:2,500) Pipelines are denoted in the southern area of the Other Gases Connection Corridor.</p> <p>(c. 1969, 1:10,560) Redcar Iron and Steel Works is now identified as a Works. NB. The old Redcar Iron and Steelworks was completely demolished in the 1970s and replaced by the new Redcar Steelworks.</p>	<p>(c. 1960 – 1963, 1:1,250) Further railway sidings / lines are denoted approximately 40 m S from the southern section of the Corridor.</p> <p>(c.1964, 1:2,500) A Refuse Tip is denoted approximately 270 m SE and 370 m SW from the southern extent of the Corridor.</p> <p>(c. 1969, 1:10,560) Refuse / slag heaps are denoted within 500 m from the northern boundary.</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
1970 – 1980	<p>(c. 1970 – 1976, 1:10,000) Fewer railway lines are denoted within the Natural Gas Corridor boundary. Railway lines are shown orientated west to east through the western extent of the Corridor.</p> <p>(c.1973 – 1983, 1:1,250) The Natural Gas Connection Corridor is identified as South Teesside Works, Redcar. Embankments are denoted either side of the railway. The drains are no longer identified within the Natural Gas Corridor. A Travelling Crane and Conveyors are denoted within the north-western extent of the Corridor. Warrenby Station is denoted on the eastern boundary.</p> <p>(c.1974, 1:10,000) Pipelines are denoted within the southern extent of the Corridor orientated east to west.</p>	<p>(c. 1970 – 1976, 1:10,000) Fewer railway lines and sidings are denoted to the east of the Natural Gas Corridor. Active Workings are shown adjacent to the western boundary. The Fleet is shown adjacent to the eastern boundary flowing towards the west. The industrial development to the east is no longer shown.</p> <p>(c.1974, 1:10,000) An Electric Sub Station is denoted approximately 295 m E from the southern extent of the Corridor. The Refuse Tip to the south-east is no longer shown and Active Workings are denoted in the same location. The Refuse Tip located to the south-west is no longer shown.</p> <p>(c.1973 – 1983, 1:1,250) Industrial development has occurred immediately north associated with Teesside Works, Redcar. The area to the east of the Natural Gas Connection Corridor is also denoted as South Teesside Works, Redcar.</p>
1980 – 1990	<p>(c.1980 – 1983, 1:10,000) Further industrial development has occurred associated with Teesside Works, Redcar. Conveyors are denoted orientated east to west and north to south. Chimneys are denoted in the northern extent of the Corridor.</p>	<p>(c.1980 – 1983, 1:10,000) Further Conveyors and industrial buildings are denoted to the north and west of the Natural Gas Corridor associated with Teesside Works, Redcar. A Dismantled Railway is identified adjacent to the eastern boundary of the Natural Gas Corridor. A pond is denoted approximately 105 m S. The Active Workings to the south-east of the Corridor are no longer shown.</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	(c.1984 – 1988, 1:1,250) Further railway lines are denoted in the southern area of the Natural Gas Corridor. Several Lighting Towers and an Electric Sub Station are denoted throughout the Corridor.	(c.1984 – 1988, 1:1,250) Industrial infrastructure is denoted up to 1 km N and W including hoppers, conveyors, tanks and chimneys. (c. 1988 – 1991, 1:10,000) The Workings to the south are no longer denoted and multiple ponds are denoted in the same location.
1990 – 2000	(c.1999) The aerial image shows that there are several black to grey coloured material stockpiles throughout the north-western extent of the Natural Gas Connection Corridor.	(c. 1991, 1:10,000; 1993, 1:1,250) No significant developments observed.
2000 – 2010	(c.2000, 1:10,000) No significant developments observed.	(c.2000, 1:10,000) A Sewage Works is denoted adjacent to the western boundary. (c. 2006. 1:10,000) Fewer conveyors are denoted approximately 200 m N.
2010 – 2020	(c.2010, 1:10,000) No significant developments observed.	(c.2010, 1:10,000) No significant developments observed.
2020 – 2023	(c.2020, 1:10,000) Factories are denoted within the Water Connection Corridor. Fewer Conveyors are denoted throughout the Corridor.	(c.2020, 1:10,000) Factories are denoted in the surrounding area to the north and west of the Corridor.

Water Connection Corridor

Table 10A-30: Summary of Historical Development at the Water Connection Corridor

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
Pre 1900s	<p>(c. 1856 – 1857, 1:10,560) The Water Connection Corridor is situated within Coatham Marsh. A railway line is denoted through the north-eastern area of the Water Connection Corridor.</p> <p>(c.1893, 1:10,560) The railway line is identified as N.E.R. Darlington and Saltburn Branch. A Tramway is denoted in the northern extent of the Corridor orientated north-west to south-east. An Iron Works encroaches on the north-east extent of the Corridor. The Fleet is denoted flowing in a westerly direction through the north-east extent of the Corridor.</p> <p>(c. 1894 1:2,500) Areas of sand are denoted in the western area of the Water Connection Corridor. The far western area of the Water Connection Corridor is denoted as marshland associated with The Marshes. The Iron Works are now identified as Coatham Iron Works. The Iron Works is now identified as Coatham Iron Works.</p> <p>(c.1895, 1:10,560) Mounds encroach on the north-eastern extent of the Corridor.</p>	<p>(c. 1856 – 1857, 1:10,560) Coatham Marsh extends to the east of the Water Connection Corridor.</p> <p>(c. 1893, 1:10,560) An Iron Works is denoted approximately 220 m E.</p>
1900 – 1910	Dates not mapped.	Dates not mapped.
1910 – 1920	(c.1913, 1:10,560, 1913 – 1914 1:10,560) A Tar Macadam Works encroaches on the northern boundary of the Water Connection Corridor.	(c. 1913 – 1914, 1:10,560) The Iron Works is now identified as Redcar Iron Works.

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	(c. 1914 – 1915, 1:2,500) Coatham Iron Works is now denoted as a Slag Wool Works. Tanks and Brick Kilns are denoted within the Corridor associated with the works.	(c. 1913 – 1914, 1:10,560) A Slag Wool Works is denoted approximately 140 m E from the Water Connection Corridor. A Slag Brick Works is denoted approximately 290 m S from the north-eastern extent of the Corridor. (c. 1914 – 1915, 1:2,500) A Slag Wool Works is denoted adjacent to the Slag Brick Works approximately 370 m E.
1920 – 1930	(C. 1923 – 1927, 1:10,560) Significant industrial development associated with Redcar Iron and Steel Works is denoted throughout the Corridor including industrial buildings, railway sidings and tanks. Two Slag and Tar Macadam Works are denoted in the northern extent of the Corridor. (c. 1927, 1:10,560) The railway line identified as N.E.R. Darlington and Saltburn Branch is now denoted as London and North Eastern Railway. (c. 1929, 1:2,500) A Meter House associated with Redcar Corporation Water Works encroaches on the north-eastern extent of the Corridor. Railway sidings are denoted in the north-eastern extent of the Corridor. NB. The old Redcar Iron and Steelworks was completely demolished in the 1970s and replaced by the new Redcar Steelworks.	(c. 1923 – 1927, 1:10,560) Warrenby Slag Works are denoted approximately 420 m NW. (c. 1929, 1:2,500) Further railway lines / sidings are shown immediately east from the Water Connection Corridor. The Slag Wool Works, Slag Brick Works and Tar Macadam Works are no longer denoted.
1930 – 1940	(c. 1938, 1:10,560) No significant developments observed.	(c. 1938, 1:10,560) No significant developments observed.
1940 – 1950	Dates not mapped.	Dates not mapped.

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
1950 – 1960	<p>(c. 1953, 1:10,000) No areas of sand are denoted within the Water Connection Corridor boundary.</p> <p>(c.1953 – 1954, 1:1,250) Multiple drains are denoted throughout the northern extent of the Water Connection Corridor orientated roughly north to south and east to west. An Overhead Pipeline is denoted orientated north-west to south-east and a Cooling Tower encroaches on the western boundary. Tanks, a Travelling Crane and a Water Tower are denoted in the northern extent of the Corridor.</p>	<p>(c.1953 – 1954, 1:1,250) Multiple drains are denoted within 250 m from the Water Connection Corridor orientated roughly north to south and east to west. The Slag Wool Works are no longer denoted. Ruins are shown approximately 130 m NE. A Pump House and a Pipe Bridge associated with an Overhead Pipeline are shown approximately 225 m E from the Water Connection Corridor.</p>
1960 – 1970	<p>(c. 1969, 1:10,560) The Redcar Iron and Steelworks is now labelled as Works. Refuse heaps / slag heaps are denoted in the north-east corner.</p>	<p>(c. 1969, 1:10,560). Refuse / slag heaps are denoted within 500 m from the northern boundary. Warrenby Slag Works is no longer present.</p>
1970 – 1980	<p>(c. 1970 – 1976, 1:10,000) Fewer railway lines are denoted within the Water Connection Corridor boundary. Redcar Iron and Steel Works is now denoted as Works. Railway lines are shown in the southern extent of the Corridor orientated west to east. A refuse / slag heap is denoted in the north-east corner which extends off-site to the north.</p> <p>(c.1973 – 1983, 1:1,250) The northern extent of the Water Connection Corridor is identified as South Teesside Works, Redcar. Embankments are denoted either side of the railway in the north-western extent of the Corridor. The drains are no longer identified within the Water Connection Corridor. Industrial development has occurred throughout the Corridor associated with South Teesside</p>	<p>(c. 1970 – 1976, 1:10,000). Active Workings are shown approximately 360 m S. A refuse / slag heap is denoted immediately north from the Corridor. The industrial development, including the Pump House, Pipe Bridge and Overhead Pipeline, to the east are no longer shown. A Water Cooler is denoted approximately 475 m W from the north-eastern extent of the Corridor.</p> <p>(c.1973 – 1983, 1:1,250) The area to the east of the Corridor is also denoted as South Teesside Works, Redcar.</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	<p>Works, Redcar including Conveyors, Traveling Cranes and an Electric Sub Station.</p> <p>NB. The old Redcar Iron and Steelworks was completely demolished in the 1970s and replaced by the new Redcar Steelworks.</p>	<p>(c. 1974, 1:10,000) An Industrial Estate is denoted approximately 65 m S from the north-eastern extent of the Corridor. Depots and a Factory are identified within the Industrial Estate. An Electric Sub Station is denoted approximately 165 m W from the north-eastern extent of the Corridor.</p>
<p>1980 – 1990</p>	<p>(c. 1980 – 1983, 1:10,000) The railway line orientated north to south is now identified as dismantled. A new railway line is identified in the north-east and central extent of the Corridor orientated north-east to south-west. Industrial development has taken place across the site area and it is encompassed within the wider Teesside Works, Redcar. In the northern section, various industrial infrastructure is present including conveyors and roads intersecting the site. In the southern section, the railway tracks are still shown to be present, with a road and various industrial infrastructure including conveyors and a chimney. Workings are denoted in the north-eastern extent of the Corridor. The refuse / slag heaps are no longer denoted.</p> <p>(c.1984 – 1988, 1:1,250) Tanks, Hoppers and Lighting Towers are denoted throughout the Corridor.</p>	<p>(c. 1980 – 1983, 1:10,000) Significant industrial development has occurred surrounding the Corridor as part of Teesside Works, Redcar. Within the surrounding area, there are various conveyors, tanks and other industrial infrastructure associated with the works. The active workings to the south are labelled as workings. The refuse / slag heap to the north of the Water Connection Corridor is no longer denoted. A pond is denoted approximately 100 m S. Steel House is denoted approximately 275 m W from the north-eastern extent of the Corridor.</p> <p>(c.1984 – 1988, 1:1,250) Industrial infrastructure is denoted adjacent to the western boundary including hoppers, conveyors, tanks and chimneys.</p> <p>(c. 1988 – 1991, 1:10,000) The Workings to the south are no longer denoted and multiple ponds are denoted in the same location.</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
1990 – 2000	<p>(c. 1991, 1:10,000) The Workings in the north-eastern extent are now identified as Disused Workings.</p> <p>(c.1999) The aerial image shows that there are several black to grey coloured material stockpiles throughout the northern extent of the Water Connection Corridor.</p>	(c. 1991, 1:10,000; 1993, 1:1,250) No significant developments observed.
2000 – 2010	(c.2000, 1:10,000; 2001, 1:10,000) The Disused Workings are no longer denoted.	<p>(c.2000, 1:10,000) Circular structures, assumed to be tanks associated with the Sewage Works, are located approximately 400 m S.</p> <p>(c. 2001, 1:10,000) A Depot is denoted approximately 240 m NE. The ponds located to the south are no longer denoted.</p> <p>(c. 2006, 1:10,000) Fewer conveyors are denoted approximately 40 m W from the north-western extent of the Corridor.</p>
2010 – 2020	(c.2010, 1:10,000) No significant developments observed.	(c.2010, 1:10,000) No significant developments observed.
2020 – 2023	(c.2020, 1:10,000) Factories are denoted within the Water Connection Corridor. Fewer Conveyors are denoted throughout the Corridor.	(c.2020, 1:10,000) Factories are denoted in the surrounding area to the north and west of the Water Connection Corridor.

Electrical Connection Corridor

Table 10A-31: Summary of Historical Development at the Electrical Connection Corridor

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
Pre 1900s	<p>(c. 1856 – 1857, 1:10,560) The Electrical Connection Corridor is situated within Coatham Marsh.</p> <p>(c.1893, 1:10,560) The railway line is identified as N.E.R. Darlington and Saltburn Branch. A Tramway is denoted in the northern extent of the Corridor orientated north-west to south-east. Dabholm Beck is denoted adjacent to the Electrical Connection Corridor flowing towards the west.</p> <p>(c. 1894 1:2,500) Areas of sand are denoted in the north-western area of the Electrical Connection Corridor. The far north-western area of the Corridor are denoted as marshland associated with The Marshes.</p>	<p>(c. 1856 – 1857, 1:10,560) A railway line is denoted approximately 75 m E from the northern extent of the Electrical Connection Corridor orientated north-east to south-west. Coatham Marsh extends to the east of the Electrical Connection Corridor.</p> <p>(c.1893, 1:10,560) An Iron Works is denoted approximately 85 m E and 200 m E.</p> <p>(c. 1894, 1:2,500) The Iron Works located 85 m E are now identified as Coatham Iron Works. The Tramway through the Corridor extends further north in a north-east to south-west direction. Multiple railway sidings are denoted adjacent to the eastern boundary in the northern extent of the Corridor. Middle Farm is denoted approximately 315 m SE from the Corridor.</p>
1900 – 1910	Dates not mapped.	Dates not mapped.
1910 – 1920	<p>(c.1913, 1:10,560) West Coatham Marsh is denoted within the southern area of the Electrical Connection Corridor. Unidentified water features are shown flowing to the north-east and south-west.</p>	<p>(c.1913, 1:10,560) The Iron Works located 200 m E are now identified as Redcar Iron Works.</p> <p>(c. 1913 – 1914, 1:10,560) A Slag Wool Works and a Slag Brick Works are denoted approximately 120 m E and 310 m E respectively.</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	<p>(c. 1913 – 1914, 1:10,560) A Tar Macadam Works encroaches on the northern boundary of the Corridor.</p> <p>(c. 1914 – 1915, 1:2,500) Brick Kilns are denoted adjacent to the Slag Wool Works.</p>	<p>(c. 1914 – 1915, 1:2,500) Coatham Iron Works is now denoted as a Slag Wool Works. A Slag Wool Works is denoted approximately 390 m E.</p>
1920 – 1930	<p>(c. 1923 – 1927, 1:10,560) Significant industrial development associated with Redcar Iron and Steel Works is denoted throughout the Corridor including industrial buildings, railway sidings and tanks. Two Slag and Tar Macadam Works are denoted in the northern extent of the Corridor.</p> <p>(c. 1927, 1:10,560) The railway line identified as N.E.R. Darlington and Saltburn Branch is now denoted as London and North Eastern Railway. The unidentified water feature flowing through the Electrical Connection Corridor is now identified as The Fleet.</p> <p>(c. 1929, 1:2,500) Multiple railway lines are denoted within the northern extent of the Electrical Connection Corridor associated with Redcar Iron and Steel Works. Further industrial infrastructure is denoted including multiple buildings, travelling cranes, water coolers, tanks and a chimney. The Slag Brick Works are no longer denoted.</p>	<p>(c. 1923 – 1927, 1:10,560) Warrenby Slag Works are denoted approximately 430 m NW.</p> <p>(c. 1929, 1:2,500) Further railway lines / sidings are shown immediately north and east from the Electrical Connection Corridor. The Slag Wool Works to the north and the Tar Macadam Works are no longer denoted. Further industrial infrastructure is denoted in a similar location associated with Redcar Iron and Steel Works. Tanks, Travelling Cranes and Water Coolers are denoted approximately 200 m E.</p>
1930 – 1940	(c. 1938, 1:10,560) No significant developments observed.	(c. 1938, 1:10,560) No significant developments observed.
1940 – 1950	Dates not mapped.	Dates not mapped.

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
1950 – 1960	<p>(1952, 1:1,250) Multiple pits are denoted in the western extent of the Electrical Connection Corridor.</p> <p>(c. 1953, 1:10,000) No areas of sand are denoted within the northern extent of the Electrical Connection Corridor boundary.</p> <p>(c.1953 – 1954, 1:1,250) Multiple drains are denoted throughout the northern extent and western of the Electrical Connection Corridor orientated roughly north to south and east to west. An Overhead Pipeline is denoted orientated north-west to south-east and a Cooling Tower encroaches on the western boundary. Tanks, a Travelling Crane and a Water Tower are denoted in the northern extent of the Corridor.</p>	<p>(c.1953 – 1954, 1:1,250) Multiple drains are denoted within 250 m from the Electrical Connection Corridor orientated roughly north to south and east to west. The Slag Wool Works are no longer denoted. Ruins are shown approximately 130 m NE. A Pump House and a Pipe Bridge associated with an Overhead Pipeline are shown approximately 225 m E from the Water Connection Corridor. Gantries are denoted adjacent to the Travelling Cranes located immediately east from the Corridor.</p>
1960 – 1970	<p>(c. 1969, 1:10,560) The Redcar Iron and Steelworks is now labelled as Works. Refuse heaps / slag heaps are denoted in the north-east corner.</p>	<p>(c. 1964 - 1965, 1:2,500) A Refuse Tip is denoted approximately 145 m S and 400 m SW from Corridor. Railway sidings are denoted adjacent to the Refuse Tips. Middle Farm is no longer denoted. Pipelines are denoted approximately 35 m S.</p> <p>(c. 1969, 1:10,560). Refuse / slag heaps are denoted within 500 m from the northern boundary. Warrenby Slag Works is no longer present.</p>
1970 – 1980	<p>(c. 1970 – 1976, 1:10,000) Fewer railway lines are denoted within the northern extent of the Electrical Connection Corridor. Multiple railway lines are denoted in the far north-western area of the</p>	<p>(c. 1970 – 1976, 1:10,000) Active Workings are shown approximately 330 m W. The industrial development to</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	<p>Electrical Connection Corridor orientated west to east. The Fleet is shown flowing towards the west in the northern extent of the Electrical Connection Corridor.</p> <p>(c.1973 – 1983, 1:1,250) The northern extent of the Electrical Connection Corridor site is identified as South Teesside Works, Redcar. Embankments are denoted either side of the railway in the north-western extent of the Corridor. The drains are no longer identified within the Electrical Connection Corridor. Warrenby Station along the railway line in the northern extent of the corridor. Industrial development has occurred Corridor associated with Teesside Works, Redcar including Travelling Cranes and Conveyors.</p> <p>(c.1974, 1:10,000) An Electric Sub Station is denoted in the southern area of the Electrical Connection Corridor. West Coatham Marsh is no longer denoted.</p> <p>(c. 1976 – 1980, 1:1,250) Teesside Works Redcar is identified in the northern area of the Corridor.</p> <p>NB. The old Redcar Iron and Steelworks was completely demolished in the 1970s and replaced by the new Redcar Steelworks.</p>	<p>the east is no longer shown. A Water Cooler is denoted approximately 395 m E.</p> <p>(c.1973 – 1983, 1:1,250) The area to the north-east of the Corridor is also denoted as South Teesside Works, Redcar. The industrial development including Overhead Pipelines and Travelling Cranes located to the east are no longer denoted.</p> <p>(1974, 1:10,000) The Refuse Tip to the south is no longer shown and Active Workings are denoted in the same location. The Refuse Tip located to the south-west is no longer shown. An Industrial Estate is denoted approximately 500 m E from the Corridor. Depots, an Electric Sub Station and a Factory are identified within the Industrial Estate.</p>
1980 – 1990	(c. 1980 – 1983, 1:10,000) The railway line orientated north to south is now identified as dismantled. A new railway line is	(c. 1980 – 1983, 1:10,000) Significant industrial development has occurred surrounding the Corridor as

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	<p>identified in the north-east extent of the Corridor orientated north-east to south-west. Dabholm Beck is now identified as Dabholm Gut. Industrial development has taken place across the site area and it is encompassed within the wider Teesside Works, Redcar. In the northern section, various industrial infrastructure is present including conveyors and roads intersecting the site. In the southern section, the railway tracks are still shown to be present, with a road and various industrial infrastructure including conveyors and a chimney. The refuse / slag heaps are no longer denoted.</p> <p>(c.1984 – 1988, 1:1,250) Tanks, Hoppers and Lighting Towers are denoted throughout the Corridor.</p>	<p>part of Teesside Works, Redcar. Within the surrounding area, there are various conveyors, tanks and other industrial infrastructure associated with the works. The active workings to the south are labelled as workings. A small pond is observed approximately 100 m S from the Corridor. Workings are denoted approximately 480 m E. Steel House is denoted approximately 355 m E from the Corridor.</p> <p>(c.1983, 1:10,000) The Active Workings located to the south are no longer denoted.</p> <p>(c.1984 – 1988, 1:1,250) Industrial infrastructure is denoted adjacent to the northern boundary of the Corridor up to approximately 760 m W including hoppers, conveyors, tanks and chimneys.</p> <p>(c. 1988 – 1991, 1:10,000) The Workings to the south are no longer denoted and multiple ponds are denoted in the same location.</p>
1990 – 2000	(c.1999) The aerial image shows that there are several black to grey coloured material stockpiles throughout the northern extent of the Corridor.	(c.1991, 1:10,000) Pipelines are denoted orientated west to east adjacent to the western boundary Corridor. The Workings located to the north-eastern extent are now identified as Disused Workings.
2000 – 2010	(c.2000, 1:10,000) No significant developments observed.	(c.2000, 1:10,000) Circular structures, assumed to be tanks, are located approximately 220 m W associated with

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
		<p>a Sewage Works adjacent to the western boundary. The Disused Workings are no longer denoted.</p> <p>(c. 2006, 1:10,000) Fewer conveyors are denoted immediately adjacent to the north-west boundary of the Corridor.</p>
2010 – 2020	(c.2010, 1:10,000) No significant developments observed.	(c.2010, 1:10,000) No significant developments observed.
2020 – 2023	(c.2020, 1:10,000) Factories are denoted within the northern area of the Electrical Connection Corridor. Fewer Conveyors are denoted throughout the Corridor.	(c.2020, 1:10,000) Factories are denoted in the surrounding area to the north and west of the Electrical Connection Corridor.

Hydrogen Pipeline Corridor

Table 10A-32: Summary of Historical Development at the Hydrogen Pipeline Corridor, North of River Tees

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
Pre 1900s	(c.1855 - 1856, 1:10,560;1:2,500) West Hartlepool Railway and Greatham Station are denoted within the north-west corner of the Hydrogen Pipeline Corridor. The railway is orientated north-east to south-west. Greatham Beck is denoted flowing towards the south through the north-west corner of the Corridor. The northern area of the Corridor is identified as The Slime. The eastern extent of the Hydrogen Pipeline Corridor to the north of the River Tees is denoted as Seal Sands.	<p>(c.1855 – 1856, 1:10,560) Cowpen village is denoted adjacent to the western extent of the Hydrogen Pipeline Corridor.</p> <p>(c.1897, 1:2,500) Brine Wells encroach on the northern extent of the Corridor adjacent to Greatham Creek.</p> <p>(c. 1897, 1:10,560) Tees Salt Works are denoted approximately 50 m E from the south-west corner of the</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	<p>(c.1856 – 1857, 1:10,560) The Hartlepool Railway Port Clarence Branch is denoted in the south-west corner of the Corridor orientated east to west. Sand and Mud are denoted within the south-east corner of the Corridor.</p> <p>(c. 1893, 1:10,560) The River Tees is denoted within the south-east corner of the Hydrogen Pipeline Corridor.</p> <p>(c.1896 - 1897 1:10,560) The northern area is no longer identified as The Slime. Cowpen Salt Works and associated Brine Wells encroach on the central extent of the Hydrogen Pipeline Corridor. An unidentified railway line is denoted adjacent to Cowpen Salt Works running north to south to the southern extent of the Corridor. West Channel is denoted flowing through Seal Sands. Port Clarence Rifle Range encroaches on the southern boundary of the Corridor. A Wagonway is denoted orientated north to south throughout the southern extent of the Hydrogen Pipeline Corridor.</p>	<p>Corridor. A Tramway is denoted adjacent to Tees Salt Works orientated north-east to south-west.</p>
1900 - 1910	Dates not mapped.	Dates not mapped.
1910 – 1920	<p>(c.1913 - 1914, 1:10,560) The West Hartlepool Railway is now identified as N.E.R. Leeds Northern. Cowpen Salt Works is identified as disused. The railway line adjacent to Cowpen Salt Works is identified as N.E.R Greatham Creek Branch which extends to the southern extent of the The N.E.R Billingham Beck Branch railway encroaches on the south-west corner of the</p>	<p>(c. 1913, 1:10,560) An Old Clay Pit is denoted adjacent to Tees Salt Works.</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	Hydrogen Pipeline Corridor, orientated north to south. The Wagonway is no longer denoted.	
1920 – 1930	(c.1923, 1:10,560) No significant developments observed.	(c.1923, 1:10,560) Haverton Hill Brick Works are denoted approximately 70 m E from the south-west corner of the Corridor. An Engineering Works are denoted approximately 165 m E from the south-west corner of the Corridor.
1930 – 1940	(c.1939 – 1940, 1:2,500) Further Brine Wells are denoted in the northern extent of the Corridor.	(c. 1938, 1:10,560) A Fire Station is denoted adjacent to the west of the south-west corner of the Corridor. Residential development is shown approximately 120 m N from the south-west corner of the Corridor.
1940 - 1950	(c. 1940, 1:10,560) Greatham Creek is denoted flowing through the eastern extent of the Hydrogen Pipeline Corridor within Seal Sands. Sand and Mud is denoted adjacent to the West Channel in the eastern extent of the Corridor. The Greatham Creek Branch is now identified as a Dismantled Railway.	(c. 1940, 1:10,560) No significant developments observed.
1950 – 1960	(c. 1950, 1:10,560) The Disused Cowpen Salt Works and Brine Wells are no longer denoted. Significant industrial development is shown within the south-west corner of the Hydrogen Pipeline Corridor including various unspecified buildings and railway sidings.N.E.R. Greatham Creek Branch and Port Clarence Rifle Range are no longer shown. Sand and Mud are no longer denoted in the south-east corner of the Corridor.	(1950 - 1954, 1:10,560) An Oxygen Works and a Pigment Factory are located adjacent to the south-west corner of the Corridor. Tees Salt Works, Haverton Hill Brick Works and the Engineering Works is no longer identified on the mapping. The industrial development within the south-west corner of the Corridor extends off-site. Lakes are shown immediately adjacent to the south-east corner of the Corridor.

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
1960 – 1970	<p>(c. 1967 – 1968, 1:2,500) A Brine Reservoir is denoted adjacent to West Channel within Seal Sands.</p> <p>(c.1969, 1:2,500) A Storage Depot is denoted within the central area of the Corridor, with multiple tanks located to the south of this. A Gas Holder Station is denoted in the central area of the corridor immediately adjacent to the A178 Road and to the north of the Storage Depot.</p>	<p>(c.1968 – 1972, 1:2,500) The Saltholme Clayfield is denoted to the south of the central area of the Corridor. Saltholme Brine Reservoirs are denoted approximately 70 m N from the central extent of the Corridor.</p> <p>(c.1969, 1:2,500) Approximately 300 m east of the southern extent of the Corridor, a Brine Pumping Station and Electrical Sub Stations are denoted. Pipelines, Electrical Substations, Jetties and Tanks are denoted within the south-east corner of the Corridor.</p>
1970 – 1980	<p>(c. 1970 – 1976, 1:10,000) Fewer railway lines are denoted within the Corridor boundary. Railway lines are shown orientated west to east through the western extent of the Corridor.</p> <p>(c.1973 – 1974, 1:10,000) A Works is identified within the far south-west of the Corridor. A Pipeline is denoted orientated north-east to south-west in the south-west corner of the Corridor. Pipelines are denoted orientated east to west in the southern extent of the Corridor.</p> <p>(c. 1974, 1:1,250) Chemical Works and North Tees Works are denoted in the south-east corner of the Corridor.</p>	<p>(c.1973, 1:10,000) The Fire Station is no longer denoted. Fewer residential properties are denoted within 250 m of the south-west corner of the Corridor. The Oxygen Works and Pigment Factory are now identified as Works. Cooling Towers are identified within the south-west corner of the Corridor</p> <p>(c. 1974, 1:1,250) North Tees Works extends further south.</p> <p>(c.1978 – 1983, 1:2,500) No significant changes observed.</p> <p>(c. 1976 - 1980, 1:1,250) An Oil Terminal and multiple Jetties are denoted within the eastern extent of the Corridor. A Chemical and Oil Storage Depot is also shown in the eastern extent of the Corridor.</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
1980 – 1990	<p>(c.1981, 1:10,000) West Channel and Sand and Mud are no longer identified in the eastern extent of the Corridor.</p> <p>(c. 1983, 1:2,500) A Sheep Dip and multiple Drains are denoted in the western extent of the Corridor.</p> <p>(c.1983 – 1986, 1:1,250) The Chemical Works in the south-east corner have expanded further west and are now identified as Seal Sands Works.</p> <p>(c.1984, 1:10,000; 1:2,500) A Works is present in the south-eastern corner of the Corridor.</p> <p>(c. 1984 – 1988, 1:10,000) Pipelines orientated east to west and north to south are denoted in the southern extent of the Corridor. Tanks are denoted in the south-east corner of the Corridor.</p> <p>(c.1985, 1:2,500) The Brine Reservoir within Seal Sand in the eastern extent of the Corridor is no longer denoted. Pipelines and Tanks are denoted in the central area of the Corridor adjacent to the dismantled railway. The Gasholder Station located adjacent to the A178 Road is now identified as a Gas Handling Station.</p>	<p>(c.1980 – 1981, 1:10,000) The Oil Storage Depot extends further to the north. The Oil Refinery and Tanks within Seal Sands extend off-site further south to approximately 520 m S.</p> <p>(c. 1980 – 1984, 1:10,000) The Brine Wells within the northern extent of the Corridor are now identified as a Brine Field.</p> <p>(c.1981, 1:10,000) An Oil Refinery with Tanks, Cooling Towers and Chimneys is located in the eastern extent of the Corridor within Seal Sands.</p> <p>(c.1982 - 1985, 1:2,500) An Electric Switch House is denoted within the central extent of the Corridor.</p> <p>(c. 1983 – 1988, 1:10,000) A Depot and Tanks are denoted in the south-east corner of the Corridor adjacent to the River Tees.</p> <p>(c.1984, 1:10,000; 1:2,500) A Cooling Tower associated with the on-site Works Tanks are denoted immediately west of the Pipeline in the south-west corner of the Corridor. The Tanks within the south-east corner are associated with North Tees Works (Oil Refinery).</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	<p>(1985 – 1988, 1:2,500; 1988, 1:10,000) The Salt Works are now identified as a Works. Rough grassland and ponds are denoted throughout the eastern extent of the Corridor within Seal Sands. Pipelines and an Electrical Sub Station are denoted in the eastern extent of the Corridor. North Tees Works (Oil Refinery) extends within the Corridor and Pipelines and a Pipe Tunnel are denoted in the south-east corner of the Corridor. A large lake is denoted in the south-east corner of the Corridor.</p> <p>(c.1988 – 1991, 1:10,000) A Pipe Tunnel is denoted in the eastern extent of the Corridor.</p> <p>(1988 – 1992, 1:10,000) Pipelines orientated north to south and east to west are denoted within the central area of the Corridor.</p>	<p>(c. 1983 – 1988, 1:10,000) Works are denoted immediately adjacent to the south-east extent of the Corridor.</p> <p>(c. 1984 – 1988, 1:10,000) A Fire Station is denoted adjacent to the southern boundary of the Corridor. Large ponds / lakes are denoted within 250 m of the southern boundary.</p> <p>(1985 – 1988, 1:2,500; 1988, 1:10,000) Works are denoted in the eastern extent of the Corridor adjacent to the River Tees.</p> <p>(c.1988 – 1991, 1:10,000) Further Works are denoted within Seal Sands. Various lakes are denoted approximately 150 m E of the south-eastern corner.</p>
<p>1990 – 2000</p>	<p>(c. 1992 – 1993, 1:2,500) No significant changes observed.</p> <p>(c.1993 – 1994, 1:2,500) Rough grassland is no longer denoted within the eastern extent of the Corridor.</p>	<p>(c.1992 – 1994, 1:2,500) A Laboratory is denoted within the eastern extent of the Corridor. The Electric Switch House is now identified as an Electrical Sub Station.</p> <p>(c.1993 – 1994, 1:2,500) The Works within Seal Sands extend further north.</p> <p>(1994, 1:10,000) No significant changes observed.</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
2000 – 2010	(c.2001, 1:10,000) No significant developments observed.	(c.2001, 1:10,000). Some of the industrial buildings located to the west from the south-west corner of the Corridor have been demolished.
2010 – 2020	(c. 2010, 10,000) No significant developments observed.	(c.2010, 1:10,000) No significant changes observed.
2020 – 2023	(c. 2010, 1:10,000) A Pipeline is denoted running north-south through the far eastern extent. (c. 2022, 1:10,000) The large lake in the south-east corner of the Corridor has reduced in size.	(c. 2022, 1:10,000) No significant changes observed.

Table 10A-33: Summary of Historical Development at the Hydrogen Pipeline Corridor, South of River Tees

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
Pre 1900s	(c. 1854 – 1857, 1:10,560) The north-west area of the Hydrogen Pipeline Corridor is denoted as Bran Sand. The north-east area is denoted as Coatham Marsh and West Coatham Marsh. (c. 1865 – 1857, 1:10,560) A railway line is denoted through the northern extent of the Hydrogen Pipeline Corridor orientated north-east to south-west. (c.1893, 1:10,560) The railway line is identified as N.E.R. Darlington and Saltburn Branch. Dabholm Beck is denoted within the northern extent of the Hydrogen Pipeline Corridor flowing towards the west. An area of marshland is denoted in	(c. 1865 – 1857, 1:10,560) Coatham Marsh and West Coatham Marsh extend to the east of the Hydrogen Pipeline Corridor. (c.1893, 1:10,560) An Iron Works is denoted approximately 365 m N and 180 m NE. A Tramway is identified approximately 150 m N from the northern area of the Hydrogen Pipeline Corridor orientated north-west to south-east. (c. 1894, 1:2,500) The Iron Works to the north are now identified as Coatham Iron Works. The Tramway through

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	the northern extent of the Corridor associated with The Marshes. Middle Farm is denoted in the central extent of the Corridor.	the Corridor extends further north in a north-east to south-west direction. Multiple railway sidings are located adjacent to the eastern boundary in the northern extent of the Corridor.
1900 – 1910	Dates not mapped.	Dates not mapped.
1910 – 1920	(c.1913, 1:10,560) Unidentified water features are shown flowing to the north-east and south-west within the northern extent of the Corridor. East Farm is denoted adjacent to Middle Farm. Mains Dike is denoted flowing in a north-west direction through the eastern extent of the Corridor.	(c.1913, 1:10,560) The Iron Works located 180 m NE are now identified as Redcar Iron Works. (c. 1913 – 1914, 1:10,560) A Slag Wool Works is denoted adjacent to Coatham Iron Works. A Slag Brick Works and a Slag Wool Works are denoted approximately 370 m NE and 400 m NE respectively. (c. 1914 – 1915, 1:2,500) Coatham Iron Works is now denoted as a Slag Wool Works.
1920 – 1930	(c. 1923 – 1927, 1:10,560) Railway sidings associated with Redcar Iron and Steel Works encroach on the northern extent of the Corridor. (c. 1927, 1:10,560) The railway line identified as N.E.R. Darlington and Saltburn Branch is now denoted as London and North Eastern Railway. The unidentified water feature flowing through the northern extent of the Hydrogen Pipeline Corridor is now identified as The Fleet.	(c. 1923 – 1927, 1:10,560) Significant industrial development is denoted within 500 m of the Corridor associated with Redcar Iron and Steel Works. (c. 1929, 1:2,500) Further railway lines / sidings are shown immediately north and east from the Hydrogen Pipeline Corridor. The Slag Wool Works to the north and the Tar Macadam Works are no longer denoted. Further industrial infrastructure is denoted in a similar location associated with Redcar Iron and Steel Works. Further industrial

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
		infrastructure is denoted including multiple buildings, travelling cranes, water coolers, tanks and a chimney. The Slag Brick Works are no longer denoted.
1930 – 1940	(c. 1938, 1:10,560) No significant developments observed.	(c. 1938, 1:10,560) No significant developments observed.
1940 – 1950	Dates not mapped.	Dates not mapped.
1950 – 1960	<p>(1952, 1:1,250; c. 1952, 1:10,560) Multiple pits are denoted within the central extent of the Hydrogen Pipeline Corridor. Wilton Works is denoted within the eastern and southern extents of the Hydrogen Pipeline Corridor.</p> <p>(c. 1953, 1:10,000) No areas of sand are denoted within the northern extent of the Hydrogen Pipeline Corridor.</p> <p>(c.1953 – 1954, 1:1,250) Multiple drains are denoted throughout the northern extent and western of the Hydrogen Pipeline Corridor orientated roughly north to south and east to west. Small ponds are identified in the north-west extent of the Hydrogen Pipeline Corridor.</p>	<p>(c. 1952, 1:10,560). Further infrastructure associated with Wilton Works is denoted adjacent to the eastern extent of the Hydrogen Pipeline Corridor. Railway sidings associated with Wilton Works are located approximately 65 m W.</p> <p>(c.1953 – 1954, 1:1,250) Multiple drains and ponds are denoted within 250 m from the Hydrogen Pipeline Corridor orientated roughly north to south and east to west. Gantries are denoted adjacent to the Travelling Cranes adjacent to the northern extent of the Hydrogen Pipeline Corridor. Pump House and a Pipe Bridge associated with an Overhead Pipeline are shown approximately 190 m E from the Corridor. The Slag and Wool Works are no longer denoted.</p>
1960 – 1970	<p>(c. 1960 – 1963, 1:1,1250 and 1:2,500) Wilton Works (Chemical Works) has expanded within the eastern extent of the Corridor.</p> <p>(c. 1961, 1:1,250) Railway lines / sidings are denoted in the eastern extent of the Hydrogen Connection Corridor leading to Wilton Works.</p>	(c. 1961, 1:1,250) Industrial buildings and infrastructure such as Tanks, Cooling Towers, Travelling Cranes and Electric Sub Stations are denoted adjacent to the Hydrogen Pipeline Corridor associated with Wilton Works.

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	<p>(c. 1964 - 1965, 1:2,500) A Refuse Tip is denoted in the central extent of the Hydrogen Pipeline Corridor. Multiple railway lines / sidings are denoted adjacent to the Refuse Tip. Pipelines are denoted in the central area of the Hydrogen Pipeline Corridor orientated north to south. Middle Farm and East Farm are no longer denoted. A Slag Heap is identified encroaching on the central extent of the Corridor.</p>	<p>(c. 1963, 1:1,250) Multiple railway lines / sidings are denoted immediately south from the central extent of the Corridor.</p> <p>(c. 1964 - 1965, 1:2,500) A Refuse Tip is denoted approximately 290 m S from the central extent of the Hydrogen Pipeline Corridor.</p>
<p>1970 – 1980</p>	<p>(c. 1970 – 1976, 1:10,000) Bran Sands is no longer denoted. Fewer railway lines are denoted within the northern extent of the Hydrogen Pipeline Corridor. Multiple railway lines are denoted in the far north-western area of the Corridor orientated west to east. Redcar Iron and Steel Works is now denoted as Works. The Fleet is shown flowing towards the west in the northern extent of the Hydrogen Pipeline Corridor. Active Workings are identified encroaching on the northern extent of the Hydrogen Pipeline Corridor.</p> <p>(c. 1971 – 1974, 1:1,250) A Refuse Tip encroaches on the western extent of the Corridor.</p> <p>(c.1973 – 1983, 1:1,250) The northern extent of the Hydrogen Pipeline Corridor site is identified as South Teesside Works, Redcar. Embankments are denoted either side of the railway in the north-western extent of the Corridor. The drains are no longer identified within the Hydrogen Pipeline Corridor.</p>	<p>(c. 1970 – 1976, 1:10,000) A Water Cooler is approximately 295 m NE from the northern extent of the Hydrogen Pipeline Corridor. Warrenby Station is identified approximately 225 m N from the northern extent of the Corridor.</p> <p>(c. 1971 – 1974, 1:1,250) The railway lines and industrial buildings located south of the central of the Corridor are associated with South Teesside Works, Lackenby. A Travelling Crane is denoted within the South Teesside Works, Lackenby site. Works, Cooling Towers and Tanks are denoted within the surrounding area to the Hydrogen Pipeline Corridor. Tanks and Electric Sub Stations are denoted within the eastern extent of the Corridor associated with Wilton Works.</p> <p>(c.1973 – 1983, 1:1,250) Industrial development has occurred immediately north from the Hydrogen Pipeline Corridor associated with Teesside Works, Redcar. The area</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	<p>(c.1974, 1:10,000) Pipelines and an Electric Sub Station are denoted in the northern extent of the Corridor. West Coatham Marsh is no longer denoted. Pipelines are denoted in the far eastern extent of the Corridor associated with Wilton Works. The Refuse Tip is no longer shown. Active Workings encroach on the Corridor boundary in the central area of the Hydrogen Pipeline.</p> <p>(c. 1976 – 1980, 1:1,250) Teesside Works Redcar is identified in the central area of the Corridor. Pipe Gentries and Tanks are denoted associated with Teesside Works Redcar and Wilton Works.</p>	<p>to the north-east of the Corridor is also denoted as South Teesside Works, Redcar. The Overhead Pipeline, Travelling Cranes, Tanks and Chimneys located to the north-east are no longer shown.</p> <p>(1974, 1:10,000) An Industrial Estate and Depots are denoted approximately 250 m NE from the northern extent of the Corridor. Further industrial infrastructure is denoted within Wilton Works including Tanks, Chimneys, Cooling Towers and Electric Sub Stations. Extensive industrial development is shown approximately 390 m NW from the south-western extent of the Corridor associated with South Teesside Works Lackenby. Electric Sub Stations, Tanks, Pipelines and Travelling Cranes are denoted associated with the works. Teesport Refinery is denoted approximately 120 m S with multiple Tanks, Chimneys and an Electric Sub Station. The Refuse Tip located to the south is no longer shown. An Electric Sub Station is denoted approximately 425 m E from the central extent of the Corridor.</p>
1980 – 1990	<p>(c. 1980 – 1983, 1:10,000) The railway line orientated north to south is now identified as dismantled. A new railway line is identified in the north-east extent of the Corridor orientated north-east to south-west. Dabholm Beck is now identified as Dabholm Gut. Several Pipelines are denoted parallel to Dabholm Gut. Travelling Cranes and Conveyors encroach on the northern boundary of the Hydrogen Pipeline Corridor. Industrial</p>	<p>(c. 1980 – 1983, 1:10,000) Significant industrial development has occurred surrounding the Corridor as part of Teesside Works, Redcar. Within the surrounding area of the northern Corridor, there are various conveyors, tanks and other industrial infrastructure associated with the works. A pond is located approximately 100 m S from the north-western extent of the Corridor. The industrial</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	<p>development has taken place across the northern extent and it is encompassed within the wider Teesside Works, Redcar including Conveyors and Chimneys. The Refuse Tip which encroached on the western extent of the Corridor is no longer denoted.</p> <p>(c. 1983, 1:10,000) The Active Workings encroaching on the central area of the Hydrogen Pipeline Corridor are no longer shown.</p> <p>(c.1983 – 1989, 1:10,000) A Pipe Tunnel is denoted across the River Tees.</p> <p>(c.1984 – 1988, 1:1,250) Several Lighting Towers are denoted throughout the north-western extent of the Corridor.</p> <p>(c.1989 – 1993, 1:1,250) Pipe Gantries and Lighting Towers are denoted adjacent to Dabholm Cut.</p>	<p>estate located approximately 250 m NE is identified as Dormanstown Industrial Estate. Workings are denoted approximately 250 m NE from the northern extent of the Corridor.</p> <p>(c. 1981 – 1983, 1:1,250) Further railway sidings and Travelling Cranes are denoted at Teesside Works Lackenby.</p> <p>(c.1983, 1:10,000) A Warehouse is denoted approximately 60 m E from the eastern extent of the Corridor.</p> <p>(c.1984 – 1988, 1:1,250) Industrial infrastructure is denoted adjacent to the northern boundary of the Corridor up to approximately 1 km N including hoppers, conveyors, tanks and chimneys.</p> <p>(c. 1988 – 1991, 1:10,000) The Workings to the south of the northern extent are no longer denoted and multiple ponds are denoted in the same location.</p> <p>(c. 1989 – 1993, 1:1,250) An Electric Sub Station and Tanks are denoted approximately 235 m S.</p>
1990 – 2000	(c.1999) The aerial image shows that there are several black to grey coloured material stockpiles throughout the northern extent of the Other Gases Connection Corridor.	(c.1991, 1:10,000) The Warehouse denoted approximately 60 m E is no longer shown. The Workings located to the north-east are now identified as Disused Workings. Depots

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
		are denoted in the same location as the former Teesport Refinery.
2000 – 2010	(c. 2006, 1:10,000) Fewer conveyors are denoted in the north-west extent of the Corridor.	(c.2000, 1:10,000) Circular structures, assumed to be tanks, are located approximately 15 m N from the northern extent of the Corridor associated with a Sewage Works. The Disused Workings are no longer identified.
2010 – 2020	(c.2010, 1:10,000) No significant developments observed.	(c.2010, 1:10,000) No significant developments observed.
2020 – 2023	<p>(c.2020, 1:10,000) Factories are denoted within the northern area of the Hydrogen Pipeline Corridor. Fewer Conveyors are denoted throughout the northern extent of the Corridor.</p> <p>(c. 2021, 1:10,000) A Power Station and Factories are denoted with the eastern extent of the Hydrogen Pipeline Corridor.</p> <p>(c.2022, 1:10,000) Wilton Works are no longer denoted. Fewer railway sidings / lines are shown.</p>	<p>(c.2020, 1:10,000) Factories are denoted in the surrounding area to the north and west of the Hydrogen Pipeline Corridor.</p> <p>(c.2022, 1:10,000) Two large-scale buildings associated with a Port are denoted approximately 205 m S from the northern extent of the Corridor.</p>

Other Gases Connection Corridor

Table 10A-34: Summary of Historical Development at the Other Gases Connection Corridor

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
Pre 1900s	(c. 1856 – 1857, 1:10,560) The Other Gases Connection Corridor is situated within Bran Sand, West Coatham Marsh and Coatham Marsh. A railway line is denoted through the Other Gases Connection Corridor.	(c. 1856 – 1857, 1:10,560) Coatham Marsh extends to the east of the Other Gases Connection Corridor. Bran Sand extends further west from the Other Gases Connection Corridor.

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	<p>(c.1893, 1:10,560) The railway line is identified as N.E.R. Darlington and Saltburn Branch. Dabholm Beck is denoted adjacent to the Other Gases Connection Corridor flowing towards the west.</p> <p>(c. 1894 1:2,500) Areas of sand are denoted in the western area of the Other Gases Connection Corridor. The far western area of the Other Gases Connection Corridor is denoted as rough pasture and marshland associated with The Marshes.</p>	<p>(c.1893, 1:10,560) An Iron Works is denoted approximately 365 m N and 240 m NE. A Tramway is identified approximately 150 m N from the northern area of the Corridor orientated north-west to south-east.</p> <p>(c. 1894, 1:2,500) The Iron Works are now identified as Coatham Iron Works. Multiple railway sidings are located adjacent to the north-eastern area of the Corridor.</p>
1900 – 1910	Dates not mapped.	Dates not mapped.
1910 – 1920	(c.1913, 1:10,560) West Coatham Marsh is denoted within the southern area of the Corridor. Unidentified water features are shown flowing to the south-west.	<p>(c. 1913 – 1914, 1:10,560) The Iron Works located 240 m NE are now identified as Redcar Iron Works. A Slag Wool Works and a Slag Brick Works are denoted approximately 375 m NE and 410 m NE respectively.</p> <p>(c. 1914 – 1915, 1:2,500) Coatham Iron Works is now denoted as a Slag Wool Works. A Slag Wool Works is denoted approximately 415 m E.</p>
1920 – 1930	<p>(c. 1923 – 1927, 1:10,560) Railway sidings associated with Redcar Iron and Steel Works encroach on the northern extent of the Corridor.</p> <p>(c. 1927, 1:10,560) The railway line identified as N.E.R. Darlington and Saltburn Branch is now denoted as London and North Eastern Railway. The unidentified water feature flowing</p>	<p>(c. 1923 – 1927, 1:10,560) Significant industrial development is denoted within 500 m of the Corridor associated with Redcar Iron and Steel Works.</p> <p>(c. 1929, 1:2,500) The Slag Wool Works, Slag Brick Works and Tar Macadam Works are no longer denoted. Further industrial infrastructure is denoted including multiple</p>

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	through the Other Gases Connection Corridor is now identified as The Fleet.	buildings, a travelling crane, water coolers, tanks and a chimney approximately 200 m E.
1930 – 1940	(c. 1938, 1:10,560) No significant developments observed.	(c. 1938, 1:10,560) No significant developments observed.
1940 – 1950	Dates not mapped.	Dates not mapped.
1950 – 1960	<p>(c. 1953, 1:10,000) No areas of sand are denoted within the Other Gases Connection Corridor boundary.</p> <p>(c.1953 – 1954, 1:1,250) Multiple drains and small ponds are denoted throughout the northern extent of the Other Gases Connection Corridor orientated roughly north to south and east to west.</p>	<p>(c.1953 – 1954, 1:1,250) A Pump House and a Pipe Bridge associated with an Overhead Pipeline are shown between approximately 200 m E from the northern area of the Other Gases Connection Corridor. Multiple drains and ponds are denoted within 250 m from the Other Gases Connection Corridor orientated roughly north to south and east to west. The Slag and Wool Works are no longer denoted.</p>
1960 – 1970	<p>(c. 1964, 1:2,500) Pipelines are denoted in the southern area of the Other Gases Connection Corridor.</p> <p>(c. 1969, 1:10,560) The Redcar Iron and Steelworks is now labelled as Works.</p>	<p>(c. 1960 – 1963, 1:1,250) Further railway sidings / lines are denoted approximately 40 m S and 50 m E from the southern section of the Corridor. Industrial buildings are denoted approximately 255 m E from the southern extent of the Corridor.</p> <p>(c.1964, 1:2,500) A Refuse Tip is denoted approximately 265 m SE and 310 m SW from the southern extent of the Corridor.</p>
1970 – 1980	(c. 1970 – 1976, 1:10,000) Fewer railway lines are denoted within the north-east extent of the Other Gases Connection Corridor boundary. The Fleet is shown flowing towards the west in the southern extent of the Other Gases Connection Corridor.	(c. 1970 – 1976, 1:10,000) Active Workings are denoted adjacent to the western boundary of the Corridor. The industrial development to the east is no longer shown. Warrenby Station is denoted approximately 225 m NE.

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	<p>Railway lines encroach on the northern extent of the Corridor orientated east to west.</p> <p>(c. 1971 – 1974, 1:1,250) Works encroach on the south-west corner of the Corridor. The southern extent of the Corridor is situated within South Teesside Works, Lackenby.</p> <p>(c.1973 – 1983, 1:1,250) The northern extent of the Other Gases Connection Corridor is identified as South Teesside Works, Redcar. Embankments are denoted either side of the railway in the north-western extent of the Corridor. The drains are no longer identified within the Other Gases Connection Corridor.</p> <p>(c.1974, 1:10,000) West Coatham Marsh is no longer denoted. Railway sidings are denoted within the southern extent of the Corridor associated with South Teesside Works Lackenby. Pipelines are denoted within the southern extent of the Corridor orientated east to west. Railway sidings are denoted in the southern extent leading to South Teesside Works, Lackenby.</p>	<p>(c.1973 – 1983, 1:1,250) Industrial development has occurred immediately north associated with Teesside Works, Redcar. A Travelling Crane and Conveyors are denoted approximately 125 m N. The area to the east of the Corridor is also denoted as South Teesside Works, Redcar. The Overhead Pipeline, Travelling Cranes, Tanks and Chimney located to the east are no longer shown.</p> <p>(c.1974, 1:10,000) An Electric Sub Station is denoted approximately 305 m E from the southern extent of the Corridor. The Refuse Tip to the south-east is no longer shown and Active Workings are denoted in the same location. The Refuse Tip located to the south-west is no longer shown. Railway sidings and Teesport Refinery are located approximately 500 m W from the southern extent of the Corridor.</p> <p>(c. 1976 – 1980, 1:1,250) Teesside Works Redcar is identified to the east of the southern section of the Corridor.</p>
1980 – 1990	(c. 1980 – 1983, 1:10,000) The railway line orientated north to south is now identified as dismantled. A new railway line is identified in the southern extent of the Corridor orientated north-east to south-west. Industrial development has taken place across the north-western extent of the Corridor and it is	(c. 1980 – 1983, 1:10,000) Significant industrial development has occurred surrounding the Corridor as part of Teesside Works, Redcar. Within the surrounding area, there are various conveyors, tanks and other industrial infrastructure associated with the works. The Active Workings adjacent to the western site boundary are

DATE/S	KEY FEATURES ON SITE	KEY FEATURES OFFSITE
	<p>encompassed within the wider Teesside Works including Conveyors and a Chimney.</p> <p>(c.1984 – 1988, 1:1,250) Further railway lines orientated east to west encroach on the Other Gases Connection Corridor. Several Lighting Towers are denoted throughout the northern extent of the Corridor.</p> <p>(c.1989 – 1993, 1:1,250) Pipelines are denoted in the southern extent of the Corridor orientated north-east to south-west.</p>	<p>identified as Workings. A pond is denoted approximately 100 m S. The Active Workings to the south of the Corridor are no longer shown.</p> <p>(c.1984 – 1988, 1:1,250) Industrial infrastructure is denoted up to 1 km N including hoppers, conveyors, tanks and chimneys.</p> <p>(c. 1988 – 1991, 1:10,000) The Workings to the south are no longer denoted and multiple ponds are denoted in the same location.</p>
1990 – 2000	(c.1999) The aerial image shows that there are several black to grey coloured material stockpiles throughout the northern extent of the Other Gases Connection Corridor.	(c.1991 – 1992, 1:10,000) Teesport Refinery is no longer denoted and Depots are denoted in the same location.
2000 – 2010	(c.2000, 1:10,000) No significant developments observed.	<p>(c.2000, 1:10,000) Circular structures, assumed to be tanks associated with the Sewage Works adjacent to the western boundary, are located approximately 220 m W.</p> <p>(c. 2006, 1:10,000) Fewer conveyors are denoted approximately 150 m N from the northern extent of the Corridor.</p>
2010 – 2020	(c.2010, 1:10,000) No significant developments observed.	(c.2010, 1:10,000) No significant developments observed.
2020 – 2023	(c.2020, 1:10,000) A Factory is denoted within the northern area of the Other Gases Connection Corridor. Fewer Conveyors are denoted throughout the Corridor.	(c.2020, 1:10,000) Factories are denoted in the surrounding area to the north and west of the Other Gases Connection Corridor.

Land Use

10A.2.127 The following past land uses have been summarised from the Groundsure Reports (Annex A).

Historical Industrial Land Uses

10A.2.128 The Groundsure Reports (Annex A) include potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale. Past industrial land uses are present and widespread across the Main Site and associated Connection Corridors. Figure 10-8 (ES Volume II, EN070009/APP/6.3) presents the historical land uses across the Proposed Development Site.

10A.2.129 There are a total of 46 historical industrial land uses within the Main Site boundary and a further 23 within 250 m. A summary of the historical land uses within the Main Site is presented in Table 10A-35.

Table 10A-35: Summary of Historical Industrial Land Uses at the Main Site

LOCATION	LAND USE	DATES PRESENT
Onsite, 192 m north, 207 m north-east	Unspecified Heap	1940
Onsite 61 m east 239 m north	Tramway Sidings	1893
Onsite 92 m east	Unspecified Tanks	1980
Onsite, 14 m north, 29 m north-east, 103 m north-east, and 127 m west	Refuse Heaps ¹	1940, 1969
Onsite 119 m north-east	Unspecified Works	1940, 1969, 1980
Onsite	Slag and Tar Macadam Works	1927
Onsite 143 m east	Railway Sidings	1927, 1940, 1969, 1980, 1983, 1974 - 1991
Onsite	Unspecified Commercial/Industrial	1983
Onsite	Sand Pits	1940
Onsite, 33 m north-east, 74 m north, 167 m north, 190 m north-east, 230 m north	Unspecified Ground Workings	1969, 1969 – 1980, 1940

¹ The OS map legend for refuse and spoil heaps use the same ornamentation.

LOCATION	LAND USE	DATES PRESENT
Onsite 90 m east	Unspecified Tanks	1927, 1980
Onsite	Iron and Steel Works	1927
22 m south 42 m south	Railway Building	1991, 1974 - 1991
67 m north-east	Slag Works	1940
68m east	Iron works	1927
77 m east	Pumping Station	1927 - 1940
91 m east	Unspecified Pit	1927

10A.2.130 There are over 500 historical industrial land uses within the associated Connection Corridors.

10A.2.131 In addition to the land uses noted in Table 10A-36, the additional types noted at the Connection Corridors were as follows:

- Oxygen Works;
- Unspecified Warehouses;
- Corporation Yards;
- Unspecified Factories;
- Chimneys;
- Old Clay Pits;
- Cuttings;
- Brick Works;
- Electricity Substations;
- Salt Works;
- Power Station;
- Engine Shed;
- Fire Station,
- Mortuary;
- Disused Brine Wells;
- Oil Storage Depot;
- Cemetery;
- Smithy;
- Bedding Works;

-
- Rifle Ranges;
 - Telephone Exchange;
 - Electricity Switch House;
 - Gas Handling Station;
 - Tunnel;
 - Oil Refinery;
 - Oil Terminal;
 - Oil Supply Terminal;
 - Slag Wool Works;
 - Dock;
 - Transit Shed; and
 - Terminal.

Historical Tanks

10A.2.132 Tank features digitised from historical Ordnance Survey mapping are provided in the Groundsure Reports (Annex A). Figure 10-9 (ES Volume II, EN070009/APP/6.3) presents the Historical Tanks located at the Proposed Development Site and within 250 m.

10A.2.133 A total of 93 historical tanks (unspecified) have been recorded at the Main Site and a further 14 within 250 m of the Main Site.

10A.2.134 Over 700 historical tanks (unspecified) have been recorded within the associated Connection Corridors.

Historical Energy Features

10A.2.135 Historical energy features digitised from historical Ordnance Survey mapping are provided in the Groundsure Reports (Annex A). A summary of the features is presented here:

10A.2.136 There are a total of four records within the Main Site, there are three Gas Holders and are present between 1980 and 1993. There is one Electricity Substation record 141 m east of the Main Site.

10A.2.137 There over 80 historical energy features within associated Connection Corridors comprising Electricity Substations, Electricity Transformer Stations, Electric Generating Stations, Gas Works, Gas Holders, Gas Holder Station, Power Stations and Gasometers.

Historical Petrol Stations

10A.2.138 There are no historical petrol stations located onsite or within 250 m of the Main Site or associated Connection Corridors.

Historical Garages

10A.2.139 There are no historical garages located onsite or within 250 m of the Main Site or associated Connection Corridors.

Historical Military Land

10A.2.140 There is no historical military land located onsite or within 250 m of the Main Site or associated Connection Corridors.

Current Industrial Land Use

Recent Industrial Land Uses

10A.2.141 The Groundsure Reports (Annex A) present the current potentially contaminative industrial sites within 250 m.

10A.2.142 There are over 100 recent industrial land uses at the Main Site and a further 19 within 250 m. A summary of the recent industrial land uses within the Main Site is presented in Table 10A-36.

Table 10A-36: Summary of Recent Industrial Land Uses at the Main Site

LOCATION	LAND USE	ACTIVITY
Onsite 17 m west, 20 m east, 26 m east, 27 m east, 32 m south, 95 m west, 107 m east, 129 m south	Pylon	Electrical Features
Onsite, 230 m east	Hopper	Hoppers and Silo
Onsite 6 m east, 76 m east, 152 m south	Tanks	Tanks (Generic)
Onsite	Gas Distribution	Gas Features
Onsite	Gas Holder	Gas Features
Onsite, 170 m east, 181 m east	Chimney	Chimneys
Onsite	Cooling Tower	Chimneys
Onsite, 40 m east, 114 m east	Travelling Crane	Travelling Cranes and Gantries
235 m east	Electricity Substation	Electrical Features

10A.2.143 There are over 500 recent industrial land uses present within the associated Connection Corridors. The following land uses were present in addition to those in Table 10A-37:

- Works;

-
- Flare Stack;
 - Sunbelt Rentals Ltd;
 - Mast (Telecommunication);
 - Power Station;
 - Cooling Tower;
 - Sewage Works;
 - Gantry;
 - Mooring Post;
 - Exolum Seal Sands Ltd;
 - Outfall;
 - Redcar Wharf;
 - Jetty;
 - Travelling Crane;
 - Pipe Gantry;
 - BOC Industrial Gases;
 - P D Ports Tees Port;
 - Settling Tanks;
 - Gas Governor;
 - Workings; and
 - Tarmac.

Electricity Cables

10A.2.144 The Groundsure (Annex A) reports provide information on High Voltage underground electricity transmission cables present at the Proposed Development Site from National Grid. There are 2 located within the Hydrogen Connection Corridor. Cable Sets SGT1 and SGT2 132KV Cables for Saltholme 275KV S/S made from Pirelli 132 KV A/C and installed in 1980.

Gas Pipelines

10A.2.145 Groundsure (Annex A) reports on High Pressure underground gas transmission pipelines at the Proposed Development Site from National Grid. There are a total of 3 high pressure underground gas transmission pipelines within the Hydrogen Pipeline Corridor. The details are summarised here:

- Cowpen Bewley to Teesside, 900 mm thick, National Grid;
- Little Burden to Billingham – 600 mm, National Grid; and
- Billingham to Enron – 450 mm, National Grid.

Sites Determined as Contaminated Land

10A.2.146 The Groundsure Reports (Annex A) contain records of Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990. The findings of the Groundsure Report (Annex A) indicate that there are no sites determined as Contaminated Land within the Main Site, associated Connection Corridors, or within 500 m.

Utility Searches

10A.2.147 A public utility services search has not been undertaken as part of this Report. A review of public utility services will need to be undertaken prior to ground investigation works in accordance with the requirements of the Construction Design Management (CDM) Regulations 2015. Prior to any intrusive works service clearance work required at each investigation location is to be undertaken in accordance with the Health and Safety Executive (HSE) guidance note HSG/47 (Third Edition) publication – Avoiding Danger from Underground Services.

Regulatory Information

10A.2.148 Table 10A-37 summarises the regulatory information within 250m of the Main Site and associated Connection Corridors. Figure 10-7: Hazardous Sites (ES Volume II, EN070009/APP/6.3) presents a summary of the hazardous sites located within the Proposed Development Site including Control of Major Accident Hazards Regulations (COMAH) sites.

Table 10A-37: Summary of Regulatory Information

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
Main Site		
Control of Major Accident Hazards (COMAH)	<p>Current Name: South Tees Site Company Limited Location: South Tees Site Company Limited, Redcar, Steel House, Trunk Road, Redcar, Cleveland, TS10 5QW Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Historical Name: Sahaviriya Steel Industries Uk Limited Location: Sahaviriya Steel Industries Uk Limited, Steel House, Redcar, Cleveland, TS10 5QW Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: British Steel Corporation Ltd (bsc) Location: British Steel Corporation Ltd (bsc), Redcar Works, Redcar Hazardous Substance: Unknown Date: - Tier: Historical NIHHS Site</p>	-

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
<p>Hazardous Substance Storage / Usage</p>	<p>Reference: No Details Location: South Tees Site Company Limited, Trunk Road, Redcar, Cleveland, England, TS10 5QW Date: - Application Status: Approved Details: -</p> <p>Reference: R/2011/0211/HD Location: Sahaviriya Steel Industries UK Ltd, Redcar Blast Furnace and Coke Ovens, Trunk Road, Redcar, TS10 5QW Date: 13/04/2011 Application Status: Withdrawn Details: Change of Ownership.</p> <p>Reference: R/2011/0210/HD Location: Sahaviriya Steel Industries UK Ltd, Redcar Blast Furnace and Coke Ovens, Trunk Road, Redcar, TS10 5QW Date: 13/04/2011 Application Status: Historical Consent. Details: Consent for new inventory</p>	<p>Distance: 15 m E Reference: L/1992/0971/HD Location: British Steel PLC, BSC Redcar Works, Redcar, TS10 4RF Date: 30/11/1992 Application Status: Historical Consent Details: -</p>
<p>Historical Licensed Industrial Activities (ICP)</p>	<p>-</p>	<p>-</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
<p>Licensed Industrial Activities (Part A(1))</p>	<p>1 No.: Operator: South Tees Site Company Limited Installation Name: South Tees Site EPR/LP3502BG Date: 04/03/2021 (Effective) Status: Effective Activity: New Medium Combustion Plant</p> <p>2 No.: Operator: British Steel Limited Installation Name: Teesside Integrated Iron & Steelworks EPR/VP3839DA and Teesside Beam Mill EPR/VP3839DA Date: 19/12/2018 (most Recent Effective) Status: Superseded Activity: Associated Processes</p> <p>1 No.: Operator: Multiserv (Asr) Ltd Installation Name: - Date: 01/04/2004 (Effective) Status (Superseded) Activity: Other Mineral Activities; Screening Etc Coal Etc (Unless Exempt Location)</p>	<p>3 No.: Distance: 80 m W Operator: Redcar Bulk Terminal Ltd Installation Name: Teesside Integrated Iron & Steelworks EPR/QP3338HU Date: 28/08/2018 (Effective All) Status: Effective (All) Activity: Other Mineral Activities; Loading Etc Coal Etc (Except On Retail Sale) (Unless Exempt Location); Other Mineral Activities; Screening Etc Coal Etc (Unless Exempt Location; Ferrous Metals; Handling Etc >500,000 Tonnes/12 Months</p>
<p>Pollution Incidents</p>	<p>Incident ID: 721753 Date: 03/10/2009</p>	<p>Distance: 170 m NW Date: 02/12/2002</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Air Category: 2 (Significant) Land Category: 3 (Minor) Water Category: 4 (No Impact) Pollutant Type: Atmospheric Pollutants and Effects Pollutant: Dust</p>	<p>Incident ID: 124998 Air Category: 4 (No Impact) Land Category: 3 (Minor) Water Category: 4 (No Impact) Pollutant Type: General Biodegradable Minerals and Wastes Pollutant: Other General Biodegradable Material or Waste</p> <p>Distance: 170 m NW Date: 17/08/2002 Incident ID: 24833 Air Category: 4 (No Impact) Land Category: 3 (Minor) Water Category: 3 (Minor) Pollutant Type: Specific Waste Materials Pollutant: Tyres</p> <p>Distance: 205 m E Date: 24/09/2002 Incident ID: 32506 Air Category: 4 (No Impact) Land Category: 3 (Minor) Water Category: 4 (No Impact) Pollutant Type: Specific Waste Materials Pollutant: Tyres</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
Pollution Inventory Substances	-	3 No.: Distance: 65 m S Operator: Redcar Bulk Terminal Ltd Location: Teesside Integrated Iron and Steelworks Cleveland, TS10 5QW Activity: FERROUS METALS; HANDLING ETC >500,000 TONNES/12 MONTHS Regulated Industry Sector/Sub Sector: Ferrous Metals
Pollution Inventory Waste Transfer	-	Distance: 65 m S Operator: Redcar Bulk Terminal Ltd Location: Teesside Integrated Iron and Steelworks Cleveland, TS10 5QW Activity: FERROUS METALS; HANDLING ETC >500,000 TONNES/12 MONTHS Regulated Industry Sector/Sub Sector: Ferrous Metals
CO ₂ Export Corridor		
Control of Major Accident Hazards (COMAH)	Current Name: South Tees Site Company Limited Location: South Tees Site Company Limited, Redcar, Steel House, Trunk Road, Redcar, Cleveland, TS10 5QW Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator Historical Name: Sahaviriya Steel Industries Uk Limited Location: Sahaviriya Steel Industries Uk Limited,	-

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Steel House, Redcar, Cleveland, TS10 5QW Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: British Steel Corporation Ltd(bsc) Location: British Steel Corporation Ltd (bsc), Redcar Works, Redcar Hazardous Substance: Unknown Date: - Tier: Historical NIHHS Site</p>	
<p>Hazardous Substance Storage / Usage</p>	<p>Reference: L/1992/0971/HD Location: British Steel PLC, BSC Redcar Works, Redcar, TS10 4RF Date: 30/11/1992 Application Status: Historical Consent Details: -</p>	<p>Distance: 225 m W Reference: No Details Location: South Tees Site Company Limited, Trunk Road, Redcar, Cleveland, England, TS10 5QW Date: - Application Status: Approved Details: -</p> <p>Reference: R/2011/0211/HD Location: Sahaviriya Steel Industries UK Ltd, Redcar Blast Furnace and Coke Ovens, Trunk Road, Redcar, TS10 5QW Date: 13/04/2011 Application Status: Withdrawn Details: Change of Ownership.</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Reference: R/2011/0210/HD Location: Sahaviriya Steel Industries UK Ltd, Redcar Blast Furnace and Coke Ovens, Trunk Road, Redcar, TS10 5QW Date: 13/04/2011 Application Status: Historical Consent. Details: Consent for new inventory</p>
<p>Licensed Industrial Activities (Part A(1))</p>	<p>-</p>	<p>1 No.: Distance: 50 m W Operator: Multiserv (Asr) Ltd Installation Name: - Date: 01/04/2004 (Effective) Status (Superseded) Activity: Other Mineral Activities; Screening Etc Coal Etc (Unless Exempt Location)</p> <p>2 No.: Distance: 215 m N Operator: British Steel Limited Installation Name: Teesside Integrated Iron & Steelworks EPR/VP3839DA and Teesside Beam Mill EPR/VP3839DA Date: 19/12/2018 (most Recent Effective) Status: Superseded Activity: Associated Processes</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>3 No.:</p> <p>Distance: 80 m W</p> <p>Operator: Redcar Bulk Terminal Ltd</p> <p>Installation Name: Teesside Integrated Iron & Steelworks EPR/QP3338HU</p> <p>Date: 28/08/2018 (Effective All)</p> <p>Status: Effective (All)</p> <p>Activity: Other Mineral Activities; Loading Etc Coal Etc (Except On Retail Sale) (Unless Exempt Location); Other Mineral Activities; Screening Etc Coal Etc (Unless Exempt Location; Ferrous Metals; Handling Etc >500,000 Tonnes/12 Months</p>
Pollution Incidents	<p>Date: 24/09/2002</p> <p>Incident ID: 32506</p> <p>Air Category: 4 (No Impact)</p> <p>Land Category: 3 (Minor)</p> <p>Water Category: 4 (No Impact)</p> <p>Pollutant Type: Specific Waste Materials</p> <p>Pollutant: Tyres</p>	-
Pollution Inventory Waste Transfer	-	<p>Distance: 85 m W</p> <p>Operator: Redcar Bulk Terminal Ltd</p> <p>Location: Teesside Integrated Iron and Steelworks Cleveland, TS10 5QW</p> <p>Activity: FERROUS METALS; HANDLING ETC >500,000 TONNES/12 MONTHS</p> <p>Regulated Industry Sector/Sub Sector: Ferrous Metals</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
Natural Gas Connection Corridor		
Control of Major Accident Hazards (COMAH)	<p>Current</p> <p>Name: South Tees Site Company Limited Location: South Tees Site Company Limited, Redcar, Steel House, Trunk Road, Redcar, Cleveland, TS10 5QW Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Historical</p> <p>Name: Sahaviriya Steel Industries Uk Limited Location: Sahaviriya Steel Industries Uk Limited, Steel House, Redcar, Cleveland, TS10 5QW Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: British Steel CorporationLtd(bsc) Location: British Steel Corporation Ltd (bsc), Redcar Works, Redcar Hazardous Substance: Unknown Date: - Tier: Historical NIHHS Site</p>	-
Licensed Industrial Activities (Part A(1))	-	<p>2 No.:</p> <p>Distance: 220 m N</p> <p>Operator: British Steel Limited</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Installation Name: Teesside Integrated Iron & Steelworks EPR/VP3839DA and Teesside Beam Mill EPR/VP3839DA Date: 19/12/2018 (most Recent Effective) Status: Superseded Activity: Associated Processes</p> <p>3 No.:</p> <p>Distance: 80 m W Operator: Redcar Bulk Terminal Ltd Installation Name: Teesside Integrated Iron & Steelworks EPR/QP3338HU Date: 28/08/2018 (Effective All) Status: Effective (All) Activity: Other Mineral Activities; Loading Etc Coal Etc (Except On Retail Sale) (Unless Exempt Location); Other Mineral Activities; Screening Etc Coal Etc (Unless Exempt Location; Ferrous Metals; Handling Etc >500,000 Tonnes/12 Months</p> <p>4 No. Effective (18No. Superseded) Distance: 20 m W Operator: Northumbrian Water Ltd Installation Name: Industrial Effluent Treatment Works Date: 30/01/2020 Status: Effective Activities: (Effective Only): Disposal Of > 50 T/D Non-Hazardous Waste (> 100 T/D If Only Ad) Involving Biological Treatment; Disposal Or Recovery</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Of Hazardous Waste With A Capacity Exceeding 10 Tonnes Per Day Involving Biological Treatment; Temporary Storage Of Haz Waste; Disposal Of > 50 T/D Non-Hazardous Waste (> 100 T/D If Only Ad) Involving Biological Treatment.</p> <p>1 No.: Distance: 100 m W Operator: Northumbrian Water Ltd Installation Name: Bran Sands Regional Sludge Treatment Centre Date: 08/05/2006 (Effective) Status: Superseded Activity: Fuel From Waste; Making Solid Fuel From Waste by Using Heat (Except Charcoal)</p> <p>2 No.: Distance: 100 m W Operator: Northumbrian Water Ltd Installation Name: Bran Sands Effluent Treatment Works Date: 29/09/2006 (Effective) Status: Superseded Activity: Other Waste Disposal; Hazardous Waste >10t/D; Combustion; Waste Derived Fuel =>3mw But <50mw</p>
Licenced Discharges to Controlled Waters	-	<p>3 No.: Distance: 100 m W</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Permit Number: 25/04/1646 Location: ESTON PUMPING STATION, ADJACENT TO BRAN SANDS STW, TEES DOCK ROAD, MIDDLESBROUGH Receiving Water: DABHOLM GUT Date: 29/05/2007 (Effective) Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Details: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY</p> <p>Distance: 220m NW Permit Number: 254/1462 Location: BRAN SANDS TREATMENT PLANT, WILTON SITE CABINS, TEESSIDE Receiving Water: DABHOLM GUT Date: 29/03/2001 (Revoked) Status: Revoked Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY</p>
Pollution Incidents	-	<p>Distance: 90 m W Incident ID: 1256199 Date: 15/07/2014 Air Category: 4 (No Impact) Land Category: 4 (No impact) Water Category: 2 (Significant) Pollutant Type: Sewage Materials Pollutant: Crude Sewage</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 175 m W Incident ID: 1639506 Date: 01/08/2018 Air Category: 2 (Significant) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Atmospheric Pollutants and Effects Pollutant: Other Odour</p> <p>2 No.:</p> <p>Distance: 175 m W Incident ID: 1638541 Date: 30/07/2018 Air Category: 2 (Significant) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Atmospheric Pollutants and Effects Pollutant: Chemical Odour</p>
Pollution Inventory Substances and Waste Transfer	-	<p>Distance: 85 m W Operator: Redcar Bulk Terminal Ltd Location: Teesside Integrated Iron and Steelworks Cleveland, TS10 5QW Activity: FERROUS METALS; HANDLING ETC >500,000 TONNES/12 MONTHS Regulated Industry Sector/Sub Sector: Ferrous Metals</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
Water Connection Corridor		
Control of Major Accident Hazards (COMAH)	<p>Current Name: South Tees Site Company Limited Location: South Tees Site Company Limited, Redcar, Steel House, Trunk Road, Redcar, Cleveland, TS10 5QW Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Historical Name: Sahaviriya Steel Industries Uk Limited Location: Sahaviriya Steel Industries Uk Limited, Steel House, Redcar, Cleveland, TS10 5QW Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: British Steel Corporation Ltd (bsc) Location: British Steel Corporation Ltd (bsc), Redcar Works, Redcar Hazardous Substance: Unknown Date: - Tier: Historical NIHHS Site</p>	-
Hazardous Substance Storage / Usage	Reference: L/1992/0971/HD Location: British Steel PLC, BSC Redcar Works, Redcar, TS10 4RF	Distance: 220 m W Reference: No Details

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Date: 30/11/1992 Application Status: Historical Consent Details: -</p>	<p>Location: South Tees Site Company Limited, Trunk Road, Redcar, Cleveland, England, TS10 5QW Date: - Application Status: Approved Details: -</p> <p>Distance: 220 m W Reference: R/2011/0211/HD Location: Sahaviriya Steel Industries UK Ltd, Redcar Blast Furnace and Coke Ovens, Trunk Road, Redcar, TS10 5QW Date: 13/04/2011 Application Status: Withdrawn Details: Change of Ownership.</p> <p>Distance: 220 m W Reference: R/2011/0210/HD Location: Sahaviriya Steel Industries UK Ltd, Redcar Blast Furnace and Coke Ovens, Trunk Road, Redcar, TS10 5QW Date: 13/04/2011 Application Status: Historical Consent. Details: Consent for new inventory</p>
Historical Licensed Industrial Activities (ICP)	-	-

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
Licensed Industrial activities (Part A(1))	-	<p>1 No.:</p> <p>Distance: 50 m W</p> <p>Operator: Multiserv (Asr) Ltd</p> <p>Installation Name: -</p> <p>Date: 01/04/2004 (Effective)</p> <p>Status (Superseded)</p> <p>Activity: Other Mineral Activities; Screening Etc Coal Etc (Unless Exempt Location)</p> <p>2 No.:</p> <p>Distance: 205 m N</p> <p>Operator: British Steel Limited</p> <p>Installation Name: Teesside Integrated Iron & Steelworks EPR/VP3839DA and Teesside Beam Mill EPR/VP3839DA</p> <p>Date: 19/12/2018 (most Recent Effective)</p> <p>Status: Superseded</p> <p>Activity: Associated Processes</p> <p>3 No.:</p> <p>Distance: 80 m W</p> <p>Operator: Redcar Bulk Terminal Ltd</p> <p>Installation Name: Teesside Integrated Iron & Steelworks EPR/QP3338HU</p> <p>Date: 28/08/2018 (Effective All)</p> <p>Status: Effective (All)</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		Activity: Other Mineral Activities; Loading Etc Coal Etc (Except On Retail Sale) (Unless Exempt Location); Other Mineral Activities; Screening Etc Coal Etc (Unless Exempt Location; Ferrous Metals; Handling Etc >500,000 Tonnes/12 Months)
Licensed Discharges to Controlled Waters	-	Distance: 250 m E Permit Number: 254/0805 Location: Coatham Marsh 1 SSO, Dormanstown Receiving Water: Fleet Beck Date: 27/03/2001 (Revoked) Status: Revoked Details: Sewage discharges (sewer storm overflow – water company)
List 2 Dangerous Substances	-	-
List 2 Dangerous Substances	-	Distance: 100 m S Name: Isotank Services Limited Receiving Water: Unknown Substances: Zinc, Toluene, Xylene Status: Not Active
Pollution Incidents	Date: 24/09/2002 Incident ID: 32506 Air Category: 4 (No Impact) Land Category: 3 (Minor) Water Category: 4 (No Impact) Pollutant Type: Specific Waste Materials	Distance: 180 m NE Incident ID: 37793 Date: 19/10/2001 Air Category: 4 (No Impact) Land Category: 3 (Minor) Water Category: 4 (No Impact) Pollutant Type: Specific Waste Materials

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	Pollutant: Tyres	<p>Pollutant: Tyres</p> <p>Distance: 55 m NE Incident ID: 38554 Date: 23/10/2001 Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 2 (Significant) Pollutant Type: Not Identified Pollutant: Not Identified</p> <p>Distance: 95 m E Incident ID: 39648 Date: 29/10/2001 Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Not Identified Pollutant: Not Identified</p> <p>Distance: 195 m SW Incident ID: 190632 Date: 17/09/2003 Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 3 (Minor) Pollutant Type: Oils and Fuel</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Pollutant: Unidentified Oil</p> <p>Distance: 215 m SW Incident ID: 1405228 Date: 22/01/2016 Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 2 (Significant) Pollutant Type: Oils and Fuel Pollutant: Diesel</p> <p>Distance: 220 m SW Incident ID: 155029 Date: 30/04/2003 Air Category: 4 (No Impact) Land Category: 3 (Minor) Water Category: 2 (Significant) Pollutant Type: Oils and Fuel Pollutant: Gas and Fuel Oils</p>
Pollution Inventory Substances and Waste Transfer	-	<p>3 No.:</p> <p>Distance: 85 m W Operator: Redcar Bulk Terminal Ltd Location: Teesside Integrated Iron and Steelworks Cleveland, TS10 5QW Activity: FERROUS METALS; HANDLING ETC >500,000 TONNES/12 MONTHS Regulated Industry Sector/Sub Sector: Ferrous Metals</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
Radioactive Substance Authorisations	-	-
Electrical Connection Corridor		
Control of Major Accident Hazards (COMAH)	<p>Current</p> <p>Name: South Tees Site Company Limited Location: South Tees Site Company Limited, Redcar, Steel House, Trunk Road, Redcar, Cleveland, TS10 5QW Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Historical</p> <p>Name: Sahaviriya Steel Industries Uk Limited Location: Sahaviriya Steel Industries Uk Limited, Steel House, Redcar, Cleveland, TS10 5QW Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: British Steel CorporationLtd(bsc) Location: British Steel Corporation Ltd (bsc), Redcar Works, Redcar Hazardous Substance: Unknown</p>	-

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Date: - Tier: Historical NIHHS Site</p>	
<p>Hazardous Substance Storage / Usage</p>	<p>Reference: L/1992/0971/HD Location: British Steel PLC, BSC Redcar Works, Redcar, TS10 4RF Date: 30/11/1992 Application Status: Historical Consent Details: -</p>	<p>Distance: 225 m W Reference: R/2011/0211/HD Location: Sahaviriya Steel Industries UK Ltd, Redcar Blast Furnace and Coke Ovens, Trunk Road, Redcar, TS10 5QW Date: 13/04/2011 Application Status: Withdrawn Details: Change of Ownership.</p> <p>Distance: 225 m W Reference: R/2011/0210/HD Location: Sahaviriya Steel Industries UK Ltd, Redcar Blast Furnace and Coke Ovens, Trunk Road, Redcar, TS10 5QW Date: 13/04/2011 Application Status: Historical Consent. Details: Consent for new inventory</p> <p>Distance: 225 m W Reference: No Details Location: South Tees Site Company Limited, Trunk Road, Redcar, Cleveland, England, TS10 5QW Date: - Application Status: Approved</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		Details: -
Historical Licensed Industrial Activities (ICP)	-	-
Licensed industrial activities (Part A(1))	-	<p>1 No.:</p> <p>Distance: 45 m W</p> <p>Operator: Multiserv (Asr) Ltd</p> <p>Installation Name: -</p> <p>Date: 01/04/2004 (Effective)</p> <p>Status (Superseded)</p> <p>Activity: Other Mineral Activities; Screening Etc Coal Etc (Unless Exempt Location)</p> <p>2 No.:</p> <p>Distance: 215 m N</p> <p>Operator: British Steel Limited</p> <p>Installation Name: Teesside Integrated Iron & Steelworks EPR/VP3839DA and Teesside Beam Mill EPR/VP3839DA</p> <p>Date: 19/12/2018 (most Recent Effective)</p> <p>Status: Superceded</p> <p>Activity: Associated Processes</p> <p>3 No.:</p> <p>Distance: 80 m W</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Operator: Redcar Bulk Terminal Ltd Installation Name: Teesside Integrated Iron & Steelworks EPR/QP3338HU Date: 28/08/2018 (Effective All) Status: Effective (All) Activity: Other Mineral Activities; Loading Etc Coal Etc (Except On Retail Sale) (Unless Exempt Location); Other Mineral Activities; Screening Etc Coal Etc (Unless Exempt Location; Ferrous Metals; Handling Etc >500,000 Tonnes/12 Months</p> <p>4 No. Effective (18No. Superseded) Distance: 20 m W Operator: Northumbrian Water Ltd Installation Name: Industrial Effluent Treatment Works Date: 30/01/2020 Status: Effective Activities: (Effective Only): Disposal Of > 50 T/D Non-Hazardous Waste (> 100 T/D If Only Ad) Involving Biological Treatment; Disposal Or Recovery Of Hazardous Waste With A Capacity Exceeding 10 Tonnes Per Day Involving Biological Treatment; Temporary Storage Of Haz Waste; Disposal Of > 50 T/D Non-Hazardous Waste (> 100 T/D If Only Ad) Involving Biological Treatment.</p> <p>2 No.: Distance: 100 m W Operator: Northumbrian Water Ltd</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Installation Name: Bran Sands Effluent Treatment Works Date: 29/09/2006 (Effective) Status: Superseded Activity: Other Waste Disposal; Hazardous Waste >10t/D; Combustion; Waste Derived Fuel =>3mw But <50mw</p> <p>1 No.: Distance: 100 m W Operator: Northumbrian Water Ltd Installation Name: Bran Sands Regional Sludge Treatment Centre Date: 08/05/2006 (Effective) Status: Superseded Activity: Fuel From Waste; Making Solid Fuel From Waste by Using Heat (Except Charcoal</p>
Licensed Pollutant Release (Part A(2)/B)	-	-
Licensed Discharges to Controlled Waters	<p>Permit Number: 25/04/1799 Location: TOD POINT 275KV SUBSTATION, TRUNK ROAD (WEST OF), REDCAR, CLEVELAND, TS10 5BW Receiving Water: SOAKAWAY - GROUNDWATER Date: 25/03/2011 (Revoked) Status: SURRENDERED UNDER EPR 2010 Details: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY</p>	<p>3 No. Distance: 100 m W Permit Number: 25/04/1646 Location: ESTON PUMPING STATION, ADJACENT TO BRAN SANDS STW, TEES DOCK ROAD, MIDDLESBROUGH Receiving Water: DABHOLM GUT Date: 29/05/2007 (Most Recent Effective) Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Details: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 245 m W Permit Number: 254/1462 Location: BRAN SANDS TREATMENT PLANT, WILTON SITE CABINS, TEESSIDE Receiving Water: DABHOLM GUT Date: 29/03/2001 (Revoked) Status: Revoked Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY</p>
List 1 Dangerous Substances	-	-
List 2 Dangerous Substances	-	-
Pollution Incidents	<p>Date: 24/09/2002 Incident ID: 32506 Air Category: 4 (No Impact) Land Category: 3 (Minor) Water Category: 4 (No Impact) Pollutant Type: Specific Waste Materials Pollutant: Tyres</p>	<p>Distance: 90 m W Incident ID: 1256199 Date: 15/07/2014 Air Category: 4 (No Impact) Land Category: 4 (No impact) Water Category: 2 (Significant) Pollutant Type: Sewage Materials Pollutant: Crude Sewage</p> <p>Distance: 170 m W Incident ID: 1639506 Date: 01/08/2018</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Air Category: 2 (Significant) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Atmospheric Pollutants and Effects Pollutant: Other Odour</p> <p>Distance: 170 m W Incident ID: 1638541 Date: 30/07/2018 Air Category: 2 (Significant) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Atmospheric Pollutants and Effects Pollutant: Chemical Odour</p>
Pollution Inventory Substances	-	<p>X3 No.: Distance: 85 m W Operator: Redcar Bulk Terminal Ltd Location: Teesside Integrated Iron and Steelworks Cleveland, TS10 5QW Activity: FERROUS METALS; HANDLING ETC >500,000 TONNES/12 MONTHS Regulated Industry Sector/Sub Sector: Ferrous Metals</p>
Pollution Inventory Waste Transfer	-	<p>Distance: 85 m W Operator: Redcar Bulk Terminal Ltd Location: Teesside Integrated Iron and Steelworks Cleveland, TS10 5QW</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		Activity: FERROUS METALS; HANDLING ETC >500,000 TONNES/12 MONTHS Regulated Industry Sector/Sub Sector: Ferrous Metals
Radioactive Substance Authorisations	-	-
Hydrogen Pipeline Corridor - North of the River Tees		
Control of Major Accident Hazards (COMAH)	<p>Current</p> <p>Name: Chemoxy International Limited Location: Chemoxy International Limited, Billingham, Billingham Process Park, Belasis Avenue, Billingham, Cleveland, TS23 1LB Hazardous Substance: Unknown Date:- Tier: Upper Tier Operator</p> <p>Name: CF Fertilisers UK Limited Location: CF Fertilisers UK Limited, Billingham, PO Box 81, Billingham, Teesside, TS23 1XT Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p>	<p>Current</p> <p>Distance: 25 m S Name: Mitsubishi Chemical UK Limited Location: Mitsubishi Chemical UK Limited, Cassel Works Billingham, Cassel Works, New Road, Billingham, Cleveland, TS23 1LE Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Distance: 215 m W Name: Exolum Seal Sands Limited Location: Exolum Seal Sands Limited, North Terminal, Middlesbrough, Middlesbrough, Cleveland, TS2 1UB Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>2 No.:</p> <p>Name: ConocoPhillips (U.K.) Teesside Operator Limited</p> <p>Location: ConocoPhillips (U.K.) Teesside Operator Limited, Seal Sands Terminal, Teesside Operations, Middlesbrough, Cleveland, TS2 1UH</p> <p>Hazardous Substance: Unknown</p> <p>Date: -</p> <p>Tier: Upper Tier Operator</p> <p>Name: Wood Group PSN Limited</p> <p>Location: Wood Group PSN Limited, Seal Sands Terminal - Central Area Transmission System (CATS), Seal Sands Road, Seal Sands, Middlesbrough, Cleveland, TS2 1UB</p> <p>Hazardous Substance: Unknown</p> <p>Date: -</p> <p>Tier: Upper Tier Operator</p> <p>Name: Fine Organics Limited</p> <p>Location: Fine Organics Limited, Lianhetech Seal Sands, Middlesbrough, Cleveland, TS2 1UB</p> <p>Hazardous Substance: Unknown</p> <p>Date: -</p> <p>Tier: Upper Tier Operator</p>	<p>Historical</p> <p>4 No.:</p> <p>Distance: 195 m N</p> <p>Name: Vertellus Specialities UK Limited</p> <p>Location: Vertellus Specialities UK Limited, Middlesbrough, Seal Sands Road, Middlesbrough, Cleveland, TS2 1UB</p> <p>Hazardous Substance: Unknown</p> <p>Date: -</p> <p>Tier: Upper Tier Operator</p> <p>Distance: 85 m N</p> <p>Name: px (TGPP) Limited</p> <p>Location: px (TGPP) Limited, Teesside Gas Processing Plant, Seal Sands, Teesside Gas Processing Plant, Stockton on Tees, Cleveland, TS2 1UB</p> <p>Hazardous Substance: Unknown</p> <p>Date: -</p> <p>Tier: Upper Tier Operator</p> <p>Distance: 95 m W</p> <p>Name: ConocoPhillips (U.K.) Teesside Operator Limited</p> <p>Location: ConocoPhillips (U.K.) Teesside Operator Limited, Middlesbrough, Greatham Storage, Middlesbrough, Cleveland, TS2 1UH</p> <p>Hazardous Substance: Unknown</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Name: Venator Materials UK Limited Address: Venator Materials UK Limited, Hartlepool - Greatham Site, Greatham Site, Tees Road, Hartlepool, Cleveland, TS25 2DD Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: Navigator Terminals Seal Sands Limited Location: Navigator Terminals Seal Sands Limited, Stockton on Tees, Seal Sands, Stockton on Tees, Cleveland, TS2 1UA Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: Air Products (BR) Limited Location: Air Products (BR) Limited, Middlesbrough, Huntsman Drive, Middlesbrough, Cleveland, TS2 1SD Hazardous Substance: Unknown Date: - Tier: Lower Tier Operator</p> <p>Name: CF Fertilisers UK Limited Location: CF Fertilisers UK Limited, North Tees,</p>	<p>Date: - Tier: Upper Tier</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Huntsman Drive, Port Clarence, Middlesbrough, Cleveland, TS2 1TT Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: SABIC UK Petrochemicals Limited Location: SABIC UK Petrochemicals Limited, North Tees, North Tees Site, Seaton Road, Port Clarence, Cleveland, TS2 1TT Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Historical Name: Growhow Uk Ltd Location: Growhow Uk Ltd, Billingham, Po Box 81, Billingham, Teesside, TS23 1XT Hazardous Substance: Unknown Date: - Tier: Historical NIHHS Site</p> <p>Name: Huntsman Pigments and Additives UK Limited</p>	

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Location: Huntsman Pigments and Additives UK Limited, Greatham Works, Hartlepool, Greatham Works, Tees Road, Hartlepool, Cleveland, TS25 2DD Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: Fine Organics Limited Location: Fine Organics Limited, Seal Sands, Middlesbrough, Cleveland, TS2 1UB Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: Vopak Terminal Teesside Limited Location: Vopak Terminal Teesside Limited, Stockton On Tees, Seal Sands, Stockton On Tees, Cleveland, TS2 1UA Hazardous Substance: Unknown Date: - Tier: Historical NIHHS Site</p> <p>Name: Growhow Uk Ltd Location: Growhow Uk Ltd, North Tees, Huntsman Drive, Port Clarence, Middlesbrough, Cleveland, TS2 1TT</p>	

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Hazardous Substance: Unknown Date: - Tier: Historical NIHHS Site</p> <p>Name: INEOS Nitriles (UK) Limited Location: INEOS Nitriles (UK) Limited, Seal Sands Chemical Works, PO Box 62, Middlesbrough, Cleveland, TS2 1TX Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: Greenergy Terminals Limited Location: Greenergy Terminals Limited, North Tees, North Tees Oil Refinery & Road Rail Terminal, Seaton Road, Port Clarence, Middlesbrough, Cleveland, TS2 1TT Hazardous Substance: Unknown Date: - Tier: Historical NIHHS Site</p> <p>Name: British Gas Location: British Gas, Seal Sands Cavity Storage & Pressure Reduction Station, Teesroad, Seals Sand, Middlesbrough, TS2 IUB Hazardous Substance: Unknown</p>	

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Date: - Tier: Historical COMAH Site</p>	
<p>Hazardous Substance Storage / Usage</p>	<p>Reference: 93/2043/H Location: Ici Chemicals And Polymers, Billingham, Cleveland, TS23 1LB Date: 01/10/1993 (Application) Application Status: Historical Consent Details: Storage of ammonium nitrate-based products. No Enforcements Notified.</p> <p>Reference: 99/1110/H Location: Basf, Seal Sands, Billingham, TS2 1TX Date: 13/07/1999 (Application) Application Status: Historical Consent Details: Purification and storage of acetonitrile. No Enforcements Notified.</p> <p>Reference: 92/2068/H Location: Northern Gas Networks Limited, Seal Sands Cavity Storage, Tees Road, Seal Sands, Middlesbrough, Stockton on Tees Borough Council, England, TS2 1UB Date: 16/10/1992 (Application) Application Status: Approved</p>	<p>Distance: 25 m E Reference: 94/0468/P Location: Ici Chemicals And Polymers, Billingham, Cleveland, TS23 1LB Date: 11/03/1994 (Application) Application Status: Historical Consent Details: Following a change in land ownership, application for continuation of consent. Increase of storage of flammable substances held above boiling point from 69 to 2484 tonnes. No Enforcements Notified.</p> <p>Distance: 60 m E Reference: No Details Location: CF Fertilisers UK Ltd, Portrack Site, PO Box 81, Billingham, Stockton on Tees Borough Council, England, TS18 2RF Date: - Application Status: Approved Details: -</p> <p>Distance: 135 m N Reference: HZ/S/1979/92</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Details: Storage of 6300 tonnes of natural gas. No Enforcements Notified.</p>	<p>Location: Seal Sands Storage, Seal Sands, Stockton, Middlesbrough, Cleveland, TS2 1UB Date: 25/11/1992 (Application) Application Status: Historical Consent Details: Storage of up to 3939 tonnes of butane, 5105 tonnes of acetone cyanohydrin, 122244 tonnes of propylene oxide and 141453 tonnes of acrylonitrile. No Enforcements Notified.</p> <p>Distance: 135 m N Reference: 92/1689/H Location: Seal Sands Storage, Seal Sands Road, Seal Sands, Middlesbrough, TS2 1UA Date: 25/08/1992 (Application) Application Status: Historical Consent Details: Storage of up to 7820 tonnes of propylene, 9548 tonnes of vinyl chloride monomer, 234120 tonnes of highly flammable liquids, 2000 tonnes of aqueous ammonia and 4093.5 tonnes of acetone cyanohydrin. No Enforcements Notified.</p> <p>Distance: 135 m N Reference: 96/1535/H Location: Seal Sands Storage, Seal Sands, Billingham, TS2 1UB Date: 16/09/1996 (Application) Application Status: Historical Consent</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Details: Storage of up to 30611 tonnes of flammable liquids. No Enforcements Notified.</p> <p>Distance: 60 m W Reference: 99/1651/H Location: Vertellus Specialities UK Ltd, Seal Sands Road, Seal Sands, Middlesbrough, Stockton on Tees Borough Council, England, TS2 1UB Date: No Details Application Status: Historical Consent Details: No Details</p> <p>Details: 210 m S Reference: 01/0126/H Location: Vopak, Seal Sands, Billingham, TS2 1UA Date: 24/01/2001 (Application) Application Status: Historical Consent Details: Storage of up to 15000 tonnes of acetone cyanohydrin</p> <p>Details: 210 m S Reference: 01/0418/H Location: Vopak, Seal Sands, Billingham, TS2 1UA Date: 11/07/2001 (Application) Application Status: Historical Consent</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Details: Storage of up to 25000 tonnes of methanol. No Enforcements Notified.</p> <p>Distance: 55 m SE Reference: No Details Location: Navigator Terminals Seals Sands Ltd, Seal Sands, Seal Sands, Stockton-on-Tees, Stockton on Tees Borough Council, England, TS2 1UA Date: No Details Application Status: Historical Consent Details: No Details</p> <p>Distance: 135 m E Reference: 93/0903/H Location: Inter Terminals Seal Sands Limited (South Terminal), South Terminal, Seal Sands, Middlesbrough, Stockton on Tees Borough Council, England, TS2 1UA Date: 04/05/1993 (Application) Application Status: Approved Details: Storage and handling of up to 120000 tonnes of crylonitrile. No Enforcements Notified.</p> <p>Distance: 125 m E Reference: 99/0795/H</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Location: Seal Sands Storage, formerly Tees Storage Company, (North Terminal) Seal Sands, Middlesbrough, TS2 1UA Date: 28/05/1999 (Application) Application Status: Historical Consent Details: Storage of up to 2500 tonnes of acetonitrile in an above-ground tank. No Enforcements Notified.</p> <p>Distance: 130 m SE Reference: 92/2012/H</p> <p>Location: Tees Storage Company, Seal Sands, Stockton, TS17 6BF Date: 08/10/1992 (Application) Application Status: Historical Consent Details: Storage of 1.2 dibromoethane and entry Nos. 69 and 71. No Enforcements Notified</p> <p>Details: 75 m SE Reference: No Details</p> <p>Location: Exolum Riverside Ltd, Billingham Reach, Haverton Hill Road, Billingham, Stockton on Tees Borough Council, England, TS23 1PX Date: 26/05/2009 (Application) Application Status: Approved Details: Storage of up to 100000 tonnes of petrol and other petroleum spirits No Enforcements Notified</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 165 m W Reference: 01/0138/H Location: INEOS Nitriles (BASF Plc), Seal Sands, Middlesbrough, TS2 1UB Date: 26/01/2001 (Application) Application Status: Historical Consent Details: Storage of up to 150 tonnes of acetone cyanohydrin. No Enforcements Notified.</p> <p>Distance: 60 m NW Reference: 13/0060/HAZ Location: SABIC UK Petrochemicals Ltd, North Tees Site, Seaton Road, Port Clarence, Stockton on Tees Borough Council, England, TS2 1TT Date: 18/06/2014 (Application) Application Status: Approved Details: Hazardous Substance consent for the storage plus ancillary processing of ethane liquid and ethane vapour.</p> <p>Distance: 200 m NE Reference: H/HSC/0555/99 Location: Tioxide Europe Ltd, Greatham Works, Tees Road, Hartlepool, Hartlepool Borough Council, England, TS25 2DD Date: No Details. Application Status: Approved</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Details: Application for deemed hazardous substance consent for the presence of hazardous materials identified under the Planning (COMAH) Regulations 1999. No Enforcements Notified.</p> <p>Distance: 200 m NE Reference: H/HSC/0485/92 Location: Tioxide Europe Ltd, Tees Road, Hartlepool, TS25 2DD Date: 12/11/1992 (Application) Application Status: Historical Consent</p> <p>Details: Application for deemed hazardous substance consent for the storage of chlorine</p> <p>Distance: 200 m NE Reference: H/HSC/0486/92 Location: Tioxide Europe Ltd, Tees Road, Hartlepool, TS25 2DD Date: 12/11/1992 (Application) Application Status: Historical Consent</p> <p>Details: Application for deemed hazardous substance consent for the storage of liquid petroleum gas. No Enforcements Notified.</p> <p>Distance: 200 m NE Reference: H/HSC/0601/01 Location: Tioxide Europe Ltd, Tees Road, Hartlepool, TS25 2DD Date: 04/02/2002 (Application)</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Application Status: Historical Consent Details: Storage of anhydrous ammonia. No Enforcements Notified.</p> <p>Distance: 200 m NE Reference: H/HSC/0522/96 Location: Tioxide Europe Ltd, Tees Road, Hartlepool, TS25 2DD Date: 18/12/1996 (Application) Application Status: Historical Consent Details: Variation of hazardous substance consent for the reduction of capacity for storage of chlorine and LPG. No Enforcement Notified.</p> <p>Distance: 185 m N Reference: 12/2124/HAZ Location: SNF Oil and Gas Ltd, Belasis Avenue, Billingham, Stockton on Tees Borough Council, England, TS23 1LG Date: 04/09/2012 (Application) Application Status: Approved Details: New Hazardous Substance Consent application in connection with the New Polyacrylamide Emulsion Plant. No Enforcements Notified.</p> <p>Distance: 60 m S Reference: 01/0398/H Location: CF Fertilisers UK Ltd, Cassel Site, PO Box 81, Billingham, Stockton on Tees Borough Council, England, TS23 1QZ</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Date: 31/05/2001 (Application) Application Status: Approved Details: Continuation of existing consent following change in ownership. No Enforcements Notified.</p> <p>Distance: 60 m S Reference: 94/0469/P Location: Ici Chemicals And Polymers, Billingham, Cleveland, TS23 1LB Date: 11/03/1994 (Application) Application Status: Details: Following a change in land ownership, application for continuation of consent. No Enforcements Notified.</p> <p>Distance: 240 m SW Reference: 11/3130/HAZ Location: Chemoxy International Limited, Billingham Process Park, Belasis Avenue, Haverton Hill, Billingham, Stockton on Tees Borough Council, England, TS23 1LE Date: 13/12/2011 (Application) Application Status: Approved Details: Addition of 15 tonnes of acrylonitrile, 205 tonnes of petroleum products and 1 tonne oxidizing substances to existing consent. No Enforcements Notified.</p> <p>Distance: 240 m SW</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Reference: 92/2269/H Location: ICI, Billingham Site, Billingham, TS23 1LB Date: 20/11/1992 (Application) Application Status: Historical Consent Details: Variation of deemed consent relating to vessel storage areas and movable container storage areas, for substances 16, 40 and 71. No Enforcements Notified.</p> <p>Distance: 210 m SW</p> <p>Reference: 03/1098/H Location: Huntsman Petrochemicals UK Limited, North Tees Site, Huntsman Drive, Port Clarence, TS10 1TT Date: 02/07/2003 Application Status: Historical Consent Details: Variation of existing consent for the continued use of acquired inventories of hydrogen, LPG, flammable gases and liquids. No Enforcements Notified.</p> <p>Distance: 210 m SW</p> <p>Reference: 05/0166/HAZ Location: Huntsman Petrochemicals UK Limited, Huntsman Drive, Seal Sands, Middlesbrough, TS2 1TT Date: 17/01/2005 Application Status: Historical Consent</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Details: Variation of existing consent for one new vessel on the Aromatics complex containing flammable substances held above the boiling point, changes of duty of some tanks storing petroleum products and a change in classification of a petroleum substance. No Enforcements Notified.</p> <p>Distance: 220 m N Reference: H/2011/0527 Location: EDF Energy Nuclear Generation Ltd, Hartlepool Power Station, Tees Road, Hartlepool, Hartlepool Borough Council, England, TS25 2BZ Date: 14/10/2011 Application Status: Approved</p> <p>Details: Hazardous substances consent for the storage of hydrazine and sodium hypochlorite for use in water treatment to minimise corrosion and marine growth. No Enforcement Notified.</p>
Historical Licensed Industrial Activities (ICP)	-	<p>2 No.:</p> <p>Distance: 105 m S Name: Tioxide Specialities Ltd Location: Haverton Hill Road, Billingham, Cleveland, TS23 1PS Date: 20-8-1993 (Most Recent Effective) Status: Surrendered Details: Inorganic Chemical Processes</p> <p>3 No.:</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 55 m S Name: Air Products (chemicals) Teesside Ltd Location: Ammonia Production Area, PO Box 1, Billingham, Cleveland, TS23 1LE Date: 30-11-1998 (Most Recent Effective) Status: Revoked Details: Manufacture And Use Of Organic Chemicals</p> <p>10 No.: Distance: 55 m S Name: Terra Nitrogen (UK) Ltd Location: Ammonia Production Area, PO Box 1, Billingham, Cleveland, TS23 1LE Date: 24-3-2003 (Most Recent Effective) Status: Revoked (Now IPPC) Details: Inorganic Chemical Processes</p> <p>4 No.: Distance: 85 m W Name: Ici Chemicals and Polymers Ltd Location: Billingham Packaged Boilers, Billingham, Cleveland, TS23 1LE Date: 30-11-1998 (Most Recent Effective) Status: Revoked Details: Combustion Processes</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>2 No.:</p> <p>Distance: 85 m W</p> <p>Name: Air Products (chemicals) Teesside Ltd</p> <p>Location: Chemical Products Area, PO Box 1, Billingham, Cleveland, TS23 1LE</p> <p>Date: 30-11-1998 (most Recent Effective)</p> <p>Status: Revoked</p> <p>Details: Manufacture And Use Of Organic Chemicals</p> <p>8 No.:</p> <p>Distance: 140 m SW</p> <p>Name: Air Products (chemicals) Teesside Ltd</p> <p>Location: Air Products Production Area, PO Box 1, Billingham, Cleveland, TS23 1LE</p> <p>Date: 27-3-2000 (Most Recent Effective)</p> <p>Status: Revoked (Now IPPC)</p> <p>Details: Manufacture And Use Of Organic Chemicals</p> <p>1 No.:</p> <p>Distance: 140 m SW</p> <p>Name: Imperial Chemical Industries Plc</p> <p>Location: Cassel Works, PO Box 8, Billingham, Cleveland, TS23 1PR</p> <p>Date: 1-8-1994 (Effective)</p> <p>Status: Revoked</p> <p>Details: Manufacture And Use Of Organic Chemicals</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>46 No.: Distance: 140 m SW Name: Lucite International UK Ltd Location: Cassell Works, PO Box 8, Billingham, Cleveland, TS23 1PR Date: 1-4-2003 (Most Recent Effective) Status: Revoked (Now IPPC) Details: Manufacture And Use Of Organic Chemicals</p> <p>9 No.: Distance: 220 m E Name: Viking Power Ltd Location: Seal Sands Bulk Supply Point Substation, Seal Sands, Stockton-on-tees, Cleveland, TS2 2NR Date: 5-11-2004 (Most recent Effective) Status: Revoked (Now IPPC) Details: Combustion Processes</p> <p>X10 No.: Distance: 80 m S Name: Terra Nitrogen (UK) Ltd Location: Nitric Acid Plant, PO Box 81, Billingham, Cleveland, TS23 1XT Date: 13-8-2001 (Most Recent Effective) Status: Revoked (Now IPPC) Details: Acid Processes</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>1 No.: Distance: 80 m S Name: Dalkia Utilities Services Plc Location: Ammonia Production Area, PO Box 81, Billingham, Cleveland, TS23 1XT Date: 1-2-1999 (Most Recent Effective) Status: Revoked (Now IPPC) Details: Combustion Processes</p> <p>1 No. Distance: 5 m S Name: Vopak Terminal Teesside Ltd Location: Seal Sands, Middlesbrough, Cleveland, TS2 1UA Date: 1-10-1993 (Most Recent Effective) Status: Referred To LA Details: The Storage Of Chemicals In Bulk</p> <p>5 No.: Distance: 90 m NW Name: Ici Chemicals and Polymers Ltd Location: Methanol Plant, Billingham, Cleveland, TS23 4HN Date: 30-11-1998 (Most Recent Effective) Status: Revoked Details: Gasification And Associated Processes</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>32 No.: Distance: 180 m NE Name: Tioxide Europe Ltd Location: Greatham Works, Tees Road, Hartlepool, Cleveland, TS25 2DD Date: 24-3-2006 (Most Recent Effective) Status: Revoked (Now IPPC) Details: Processes Involving Halogens</p> <p>2 No.: Distance: 200 m W Name: Seal Sands Chemicals Ltd Location: Seal Sands, Middlesbrough, Cleveland, TS2 1UB Date: 5-9-2003 (Most Recent Effective) Status: Revoked (Now IPPC) Details: Manufacture And Use Of Organic Chemicals</p> <p>38 No. Distance: 200 m E Name: Petroplus Refining Teesside Ltd Location: North Tees Site, Seaton Road, Port Clarence, Middlesbrough, TS2 1TT Date: 29/09/2006 (Most Recent Effective) Status: Revoked – Now IPCC Details: Petroleum Processes</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
<p>Licensed industrial activities (Part A(1))</p>	<p>5 No. Operator: Air Products PLC Permit No.: UP3434EP Installation Name: Tees Valley Renewable Energy Facility EPR/ PP3037J Date: 06/12/2013 (Most Recent Effective) Status: Superseded Activity: Associated Processes</p> <p>Operator: Millenium EFW Limited Permit No.: CP3734QP Installation Name: Tees Valley Renewable Energy Facility EPR/ PP3037J Date: 10/08/2022 (Most Recent Effective) Status: Effective Activity: Associated Processes</p> <p>Operator: Terra Nitrogen UK Ltd Permit No.: BX3287IK Installation Name: Billingham Fertiliser Works Date: - Status: Determination Activity: Combustion; Any Fuel =>50MW</p>	<p>Distance: 205 m W Operator: Vertellus Specialities UK Limited Permit No.: HP3100SK Installation Name: VERTELLUS SPECIALITIES UK LIMITED EPR/BU0311IX Date: 17/06/2020 (Most Recent Effective) Status: Effective Activity: Organic Chemicals; Halogen Containing Compounds e.g. Halocarbons</p> <p>7 No. Distance: 185 m NW Operator: Greenergy Biofuels Teesside Limited Permit No.: EP3334AS Installation Name: SEAL SANDS TERMINAL (SOUTH SITE) EPR/EP3334AS/T001 Date: 11/05/2022 (Most Recent Effective) Status: Effective Activity: Organic Chemicals; Oxygen Containing Compounds e.g. Alcohols</p> <p>8 No. Distance: 185 m NW Operator: Biofuels Corporation Trading Limited Permit No.: UP3431KP Installation Name: SEAL SANDS BIODIESEL / GLYCERINE PLANT</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Date: 03/12/2009 Status: Superseded Activity: Organic Chemicals; Oxygen Containing Compounds e.g. Alcohols</p> <p>8 No. Distance: 185 m NW Operator: Harvest Energy Limited Permit No.: RP3032VS Installation Name: Harvest Energy Limited Date: 02/09/2014 Status: Superseded Activity: Organic Chemicals; Oxygen Containing Compounds e.g. Alcohols</p> <p>11 No. Distance: 180 m N Operator: BASF Public Limited Company Permit No.: GP3739XY Installation Name: Seal Sands BASF Date: 17/12/2007 (Most Recent Effective) Status: Superseded Activity: Organic Chemicals; Nitrogen Containing Compounds e.g. Amines</p> <p>4 No.</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 180 m N Operator: NPOWER COGEN LIMITED Permit No.: KP3239BW Installation Name: Seal Sands BASF Date: 05/11/2004 (Most Recent Effective) Status: Superseded Activity: Organic Chemicals; Nitrogen Containing Compounds e.g. Amines</p> <p>6 No. Distance: 180 m N Operator: Ineos Nitriles UK Ltd Permit No.: FP3435GZ Installation Name: SEAL SANDS ACRYLONITRILE PRODUCTION EPR/FP3435GZ Date: 19/12/2008 Status: Superseded Activity: Inorganic Chemicals; Salts e.g. Ammonium Chloride</p> <p>8 No. Distance: 200 m N Operator: PX (TGPP) LTD Permit No.: HP3731RP Installation Name: TEESSIDE GAS PROCESSING PLANT EPR/NP3133LV</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Date: 23/03/2018 (Most Recent Effective) Status: Superseded Activity: Combustion; Any Fuel =>20MW but <50MW (Unless 1.1 A(1)B)</p> <p>15 No. Distance: 175 m N Operator: BASF Public Limited Company Permit No.: QP3232SS Installation Name: Seal Sands BASF Date: 03/11/2005 (Most Recent Effective) Status: Superseded Activity: Inorganic Chemicals; Salts e.g. Ammonium Chloride</p> <p>4 No. Distance: 85 m NE Operator: Sabic UK Petrochemicals Limited Permit No.: ZP3330QG Installation Name: SABIC NORTH TEES STORAGE - EPR/LP3335RM Date: 14/02/2019 (Most Recent Effective) Status: Effective Activity: Combustion; Any Fuel =>50MW</p> <p>Distance: 195 m E Operator: Anglian Water Services Limited</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Permit No.: FP3234QW Installation Name: North Tees Aromatics Date: 06/03/2019 (Effective) Status: Surrender Effective Activity: Associated Processes</p> <p>3 No. Distance: 200 m E Operator: BOC Limited Permit No.: LP3534DV Installation Name: BOC HYDROGEN PLANT - EPR/BJ7522IJ Date: 04/01/2017 Status: Effective Activity: Inorganic Chemicals; Gases e.g. Ammonia</p> <p>4 No. Distance: Operator: Sabic UK Petrochemicals Permit No.: TP3439BX Installation Name: NORTH TEES AROMATICS EPR/BU4503IW Date: 05/11/2004 (Most Recent Effective) Status: Superseded Activity: Combustion; Any Fuel =>50MW</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>5 No. Distance: Operator: Greenergy Terminals Limited Permit No.: YP3031CC Installation Name: NORTH TEES OIL REFINERY & ROAD RAIL TERMINAL EPR/YP3031CC Date: 01/10/2013 (Most Recent Effective) Status: Superseded Activity: Gasification, Liquefaction and Refining; Blending Odorant for Natural Gas / LPG</p> <p>12 No. Distance: Operator: Petroplus Refining Teesside Ltd Permit No.: HP3839FX Installation Name: NORTH TEES OIL REFINERY & ROAD RAIL TERMINAL EPR/NP3733LM Date: 15/08/2011 (Most Recent Effective) Status: Superseded Activity: Refining Mineral Oils</p> <p>2 No.: Distance: Operator: Huntsman Petrochemicals (UK) Ltd</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Permit No.: BU4503 Installation Name: - Date: 23/02/2004 Status: Superseded by PAS Activity: Combustion; Any Fuel =>50MW</p> <p>4 No. Distance: Operator: Navigator Terminals North Tees Limited Permit No.: XP3601LU Installation Name: NORTH TEES OIL REFINERY & ROAD/RAIL TERMINAL - EPR/FP3433DX Date: 01/09/2021 (Most Recent Effective) Status: Effective Activity: Gasification, Liquefaction and Refining; Blending Odorant for Natural Gas / LPG</p> <p>2 No.: Distance: 215 m E Operator: VIKING POWER LTD Permit No.: GP3830XU/ FP3738LX Installation Name: SEAL SANDS OCGT POWER STATION Date: 22/01/2008 (Most Recent Effective) Status: Superseded</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Activity: COMBUSTION; ANY FUEL =>50MW</p> <p>12 No. Distance: 230 m NE Operator: Augean North Limited Permit No.: BP3531QZ Installation Name: PORT CLARENCE NON-HAZARDOUS LANDFILL SITE - EPR/BV1402IC Date: 29/12/2020 (Most Recent Effective) Status: Effective Activity: Combustion; Waste Derived Fuel =>3MW but <50MW</p> <p>2 No. Distance: 230 m NE Operator: Zero Waste Limited Permit No.: BV1399 Installation Name:- Date: 27/02/2004 Status: Superseded by PAS Activity: Waste Landfilling; >10 T/D With Capacity >25,000T Excluding Inert Waste</p> <p>Distance: 120 m E Operator: Sabic UK Petrochemicals</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Permit No.: PP3038NM Installation Name: TEESSIDE CAVITY STORAGE EPR/HP3230LX Date: 28/05/2013 (Most Recent Effective) Status: Effective Activity: Stabilised Crude Petroleum</p> <p>5 No. Distance: 120 m NE Operator: Anglian Water Services Ltd Permit No.: KP3538SN Installation Name: GREATHAM TITANIUM DIOXIDE - EPR/KP3538SN Date: 16/06/2006 Status: Effective Activity: Combustion; Any Fuel =>50MW</p> <p>21 No. Distance: 180 m N Operator: Tioxide Europe Limited Permit No.: JP3334EF Installation Name: GREATHAM WORKS EPR/TP3532PK Date: 17/12/2013 Status: Superseded Activity: Associated Processes</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>8 No. Distance: 180 m N Operator: Venator Materials UK Limited Permit No.: FP3309PB Installation Name: GREATHAM WORKS EPR/TP3532PK Date: 10/12/2019 (Most Recent Effective) Status: Effective Activity: Associated Processes</p> <p>4 No. Distance: 180 m N Operator: Huntsman P&A UK Limited Permit No.: BP3738AE Installation Name: GREATHAM WORKS EPR/TP3532PK Date: 01/01/2016 (Most Recent Effective) Status: Superseded Activity: Disposal of >50 T/D Non-Hazardous Waste (>100 T/D If Only AD) Involving Physio-Chemical Treatment</p> <p>Distance: 160 m NW Operator: Saltholme South Power Limited Permit No.: XP3106PT Installation Name: SALTHOLME SOUTH POWER EPR/XP3106PT Date: 15/04/2021</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Status: Effective Activity: Combustion; Any Fuel =>50MW</p> <p>Distance: 80 m W Operator: SALTHOLME NORTH POWER LIMITED Permit No.: LP3300PZ Installation Name: SALTHOLME NORTH POWER EPR/LP3300PZ Date: 15/04/2021 (Effective) Status: Effective Activity: COMBUSTION; ANY FUEL =>50MW</p> <p>7 No. Distance: 145 m S Operator: Impetus Waste Management Ltd Permit No.: VP3434NH Installation Name: Cowpen Bewley Landfill Site Date: 30/05/2013 (Most Recent Effective) Status: Effective Activity: Created by IED – Disposal of >50 T/D Non-Hazardous Waste (>100 T/D if only AD) involving biological treatment</p> <p>2 No. Distance: 130 m NW Operator: Avecia Ltd</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Permit No.: VP3530BV Installation Name: Belasis East Site Date: 30/09/2005 Status: Superseded Activity: Pharmaceuticals; Producing pharmaceuticals using chemical / biological processes</p> <p>7 No. Distance: 130 m NW Operator: Marlow Foods Ltd Permit No.: CP3236JF Installation Name: Belasis East Site - EPR/BW9247IK Date: 10/09/2018 (Most Recent Effective) Status: Effective Activity: Disposal of >50 T/D Non-Hazardous Waste (>100 T/D if only AD) involving biological treatment</p> <p>2 No. Distance: 130 m NW Operator: Premier Foods PLC Permit No.: ZP3430LM Installation Name: Belasis East Site Date: 25/10/2006 Status: Superseded</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Activity: Carbon Disulphide or Ammonia; Ammonia release to air (any chemical manufacture not reffridgerant use)</p> <p>5 No. Distance: 90 m N Operator: Marlow Foods Ltd Permit No.: CP3236JF Installation Name: Belasis East Site - EPR/BW92471K Date: 10/09/2018 (Most Recent Effective) Status: Effective Activity: Carbon Disulphide or Ammonia; Ammonia release to air (any chemical manufacture not reffridgerant use)</p> <p>16 No. Distance: 40 m NW Operator: Frutarom UK Ltd Permit No.: ZP3933GE Installation Name: BILLINGHAM SPECIALITY INGREDIENTS FACILITY EPR/BX4399IV Date: 05/04/2010 (Most Recent Effective) Status: Effective Activity: Organic chemicals; sulphur containing compounds e.g., sulphides</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>3 No. Distance: 35 m E Operator: PX LTD Permit No.: BV1224 Installation Name: Date: - Status: Superseded by PAS Activity: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS</p> <p>Distance: 55 m W Operator: HARTREE PARTNERS POWER & GAS COMPANY (UK) LIMITED. Permit No.: NP3031QE Installation Name: HAVERTON HILL Date: 14/08/2019 (Effective) Status: Superseded Activity: EXISTING MEDIUM COMBUSTION PLANT</p> <p>6 No.: Distance: 65 m W Operator: DALKIA UTILITIES SERVICES PLC Permit No.: BX3295IU Installation Name: BILLINGHAM FERTILISER WORKS EPR/BX3295IU Date: 31/08/2005 (Effective)</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Status: Superceded Activity: Chemical Fertilisers; Producing Etc Phosphorous, Nitrogen Or Potassium Based Fertilisers Etc; Inorganic Chemicals; Gases Eg Ammonia; Combustion; Any Fuel =>50mw; Inorganic Chemicals; Acids Eg Chromic Acid; The Storage Of Chemicals In Bulk; And Combustion; Any Fuel =>50mw</p> <p>Distance: 65 m W Operator: DALKIA UTILITIES SERVICES PLC Permit No.: BX3295IU Installation Name: BILLINGHAM FERTILISER WORKS Date: - Statis: Determination Activity: COMBUSTION; ANY FUEL =>50MW</p> <p>5 No.: Distance: 65 m W Operator: DALKIA UTILITIES SERVICES PLC Permit No.: HP3534XK Installation Name: BILLINGHAM FERTILISER WORKS EPR/BX3295IU Date: 01/05/2008 (Effective) Status: Superceded Activity: Inorganic Chemicals; Acids Eg Chromic Acid; Chemical Fertilisers; Producing Etc Phosphorous, Nitrogen Or Potassium Based Fertilisers Etc;</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Inorganic Chemicals; Gases Eg Ammonia; Combustion; Any Fuel =>50mw; And The Storage Of Chemicals In Bulk</p> <p>5 No.:</p> <p>Distance: 65 m W</p> <p>Operator: VEOLIA ENERGY & UTILITY SERVICES UK PLC</p> <p>Permit No.: RP3231WU</p> <p>Installation Name: BILLINGHAM FERTILISER WORKS EPR/BX3295IU</p> <p>Date: 28/01/2015 (Effective)</p> <p>Status: Superseded</p> <p>Activity: The Storage Of Chemicals In Bulk; Chemical Fertilisers; Producing Etc Phosphorous, Nitrogen Or Potassium Based Fertilisers Etc; Inorganic Chemicals; Gases Eg Ammonia; Inorganic Chemicals; Acids Eg Chromic Acid; Combustion; Any Fuel =>50mw</p> <p>6 No.:</p> <p>Distance: 65 m W</p> <p>Operator: VEOLIA ENERGY & UTILITY SERVICES UK PLC</p> <p>Permit No.: UP3333RT</p> <p>Installation Name: BILLINGHAM FERTILISER WORKS EPR/BX3295IU</p> <p>Date: 01/01/2016 (Effective)</p> <p>Status: Effective</p> <p>Activity: Combustion; Any Fuel =>50mw; Inorganic Chemicals; Acids Eg Chromic Acid; The Storage Of Chemicals In Bulk; Inorganic Chemicals;</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Gases Eg Ammonia; Combustion; Any Fuel =>50mw; Chemical Fertilisers; Producing Etc Phosphorous, Nitrogen Or Potassium Based Fertilisers Etc</p> <p>X3 No.:</p> <p>Distance: 40 m NW Operator: RAPIER ENERGY LTD Permit No.: CP3537EN Installation Name: Billingham Treatment Plant Epr/Pp3137ml Date: 30/01/2014 (Effective) Status: Superseded Activity: Associated Process; Disposal Or Recovery Of Hazardous Waste With A Capacity Exceeding 10 Tonnes Per Day Involving Physico-Chemical Treatment; And Temporary Storage Of Haz Waste Not Under S 5.2 Pending Activities Listed In S 5.1, 5.2, 5.3 And Paragraph (B) Of This Section With A Total Capacity > 50 Tonnes, Excl Temp Storage Where Generated</p> <p>Distance: 40 m NW Operator: RAPIER ENERGY LTD Permit No.: DP3537TX Installation Name: BILLINGHAM TREATMENT PLANT EPR/PP3137ML Date: 18/01/2011 (Effective) Status: Superseded Activity: OTHER WASTE DISPOSAL; WASTE OILS >10 T/D</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 40 m NW Operator: RAPIER ENERGY LTD Permit No.: PP3137ML Installation Name: BILLINGHAM TREATMENT PLANT EPR/PP3137ML Date: 19/10/2007 (Effective) Status: Status Activity: OTHER WASTE DISPOSAL; WASTE OILS >10 T/D</p> <p>3 No.: Distance: 40 m NW Operator: RAPIER ENERGY LTD Permit No.: QP3138WV Installation Name: BILLINGHAM TREATMENT PLANT EPR/PP3137ML Date: 17/12/2014 (Effective) Status: Superseded Activity: Temporary Storage Of Haz Waste Not Under S 5.2 Pending Activities Listed In S 5.1, 5.2, 5.3 And Paragraph (B) Of This Section With A Total Capacity > 50 Tonnes, Excl Temp Storage Where Generated; Associated Process; And Disposal Or Recovery Of Hazardous Waste With A Capacity Exceeding 10 Tonnes Per Day Involving Physico-Chemical Treatment</p> <p>3 No.:</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 40 m NW Operator: RAPIER ENERGY LTD Permit No.: QP3239AJ Installation Name: BILLINGHAM TREATMENT PLANT EPR/PP3137ML Date: 15/06/2015 (Effective) Status: Effective Activity: Disposal Or Recovery Of Hazardous Waste With A Capacity Exceeding 10 Tonnes Per Day Involving Physico-Chemical Treatment; Temporary Storage Of Haz Waste Not Under S 5.2 Pending Activities Listed In S 5.1, 5.2, 5.3 And Paragraph (B) Of This Section With A Total Capacity > 50 Tonnes, Excl Temp Storage Where Generated; And Associated Process</p> <p>Distance: 40 m NW Operator: RAPIER ENERGY LTD Permit No.: WP3934CH Installation Name: BILLINGHAM TREATMENT PLANT EPR/PP3137ML Date: 01/06/2012 Status: Superceded Activity: OTHER WASTE DISPOSAL; WASTE OILS >10 T/D</p> <p>DISTANCE: 140 m SE Operator: HARTREE PARTNERS POWER & GAS COMPANY (UK) LIMITED. Permit No.: QP3608SR</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Installation Name: HAVERTON HILL Date: 07/10/2020 (Effective) Status: Effective Activity: NEW MEDIUM COMBUSTION PLANT 7 No. Distance: 105 m SW Operator: Mitsubishi Chemicals UK Ltd Permit No.: NP3704LL</p> <p>Installation Name: Cassel Works EPR/BR7992IU Date: 07/12/2020 (Most Recent Effective) Status: Effective Activity: Gasification, liquefaction and refining; refining gas => 1000 TE/12 months 35 No. Distance: 105 m SW Operator: Lucite International UK Limited Permit No.: VP3134YE</p> <p>Installation Name: Cassel Works EPR/BR7992IU Date: 03/05/2017 (Most Recent Effective) Status: Superseded Activity: Organic Chemicals; Oxygen Containing Compounds e.g. Alcohols 41 No.</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: Operator: Lucite International UK Limited Permit No.: VP3933NA Installation Name: Cassel Site EPR/BR7992IU Date: 24/05/2013 (Most Recent Effective) Status: Superseded Activity: Inorganic Chemicals; Salts e.g. Ammonium Chloride</p>
<p>Licensed Pollutant Release (Part A(2)/B)</p>	<p>-</p>	<p>Distance: 160 m N Location: Simon Storage Ltd, Seal Sands Road, Seal Sands, Stockton-On-Tees, TS2 1UB Status: Historical Permit Process: Unloading of Petrol into Storage at Terminals Permit Type: Part B Enforcements: No Enforcements Notified</p> <p>Distance: 10 m E Location: Vopak Terminal Teesside Ltd, Seal Sands Road, Seal Sands, Stockton-On-Tees, TS2 1UB Status: Historical Permit Process: Chemical and Acid Processes Permit Type: Part B Enforcements: No Enforcements Notified</p> <p>Distance: 55 m E</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Location: Tees Storage Company Ltd, Seal Sands, TS2 1UA Status: Historical Permit Process: Chemical and Acid Processes Permit Type: Part B Enforcements: No Enforcements Notified</p> <p>Distance: 145 m SE Location: Vopak Terminal Teesside Ltd, Seal Sands Road, Port Clarence, Middlesbrough, TS2 1UA Status: Historical Permit Process: Unloading of Petrol into Storage at Terminals Permit Type: Part B Enforcements: No Enforcements Notified</p> <p>Distance: 65 m NW Location: Transco Land At ICI Billingham, Billingham, TS23 4AZ Status: Historical Permit Process: Gas Processes Permit Type: Part B Enforcements: No Enforcements Notified</p> <p>Distance: 130 m SE Location: Northern Area Networks, ICI Site, Haverton Hill Road, Billingham, Stockton-on-Tees, TS23 1PY</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Status: Historical Permit Process: Odourising Natural Gas Processes Permit Type: Part B Enforcements: No Enforcements Notified</p>
Radioactive Substance Authorisations	-	<p>Distance: 145 m N Operator Name: Inter Terminals Seal Sands Limited Permission Number: PB3735DJ Status: Issued Date: 01/04/2018</p> <p>7 No. Distance: 200 m E Operator Name: Sabic UK Petrochemicals Limited Permission Number: CB1575 Status: Issued Date: 3/9/2007 Definition: Disposal Of Radioactive Waste, Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).</p> <p>3 No. Distance: 205 m E Operator Name: Petroplus Refining Teesside Ltd Permission Number: BL8147</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Status: Revoked/cancelled Date: 1/1/2004 Details: Disposal Of Radioactive Waste (was Rsa60 Section 6). Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).</p> <p>2 No. Distance: 205 m E Operator Name: Imperial Chemical Industries Plc Permission Number: AZ1132 Status: Revoked/cancelled Date: 22/09/1997 Details: Disposal Of Radioactive Waste (was Rsa60 Section 6).</p> <p>Distance: 175 m N Operator Name: Tioxide Europe Ltd Permission Number: CE1911 Status: Effective Date: 22/03/2010 Details: Disposal Of Radioactive Waste (was Rsa60 Section 6).</p> <p>Distance: 175 m N Operator Name: Tioxide Europe Ltd Permission Number: AC4953 Status: Revoked/cancelled</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Date: 31/03/1991 Details: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).</p> <p>Operator Name: Venator Materials UK Limited Permission Number: MB3339DR Status: Issued Date: 01/04/2018 Details:-</p> <p>3 No. Distance: 115 m NW Operator Name: Tracerco Limited Permission Number: TB3394DJ Status: Issued Date: 02/05/2017 Details:-</p> <p>Distance: 115 m NW Operator Name: Johnson Matthey Plc Permission Number: BZ5329 Status: Valid Date: 10/03/2005 Details: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>5 No. Distance: 55 m SE Operator Name: Lucite International UK Limited Permission Number: BW4962 Status: Issued Date: 01/12/2003 (Most Recent Effective) Details: Disposal Of Radioactive Waste (was Rsa60 Section 6). Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).</p> <p>Distance: 75 m S Operator Name: Growhow Uk (east) Ltd Permission Number: BC3021 Status: Superseded By Variation Date: 06/02/1999 Details: Disposal Of Radioactive Waste (was Rsa60 Section 6).</p> <p>Distance: 140 m SW Operator Name: Ici Chemicals And Polymers Ltd Permission Number: AY9316 Status: Revoked/cancelled Date: 14/11/1997 Details: Disposal Of Radioactive Waste (was Rsa60 Section 6).</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
<p>Licensed Discharges to Controlled Waters</p>	<p>Permit: 254/E/0381 Location: SETTLING LAGOON SEABANKS FIELD, WEST CHANNEL, SEAL SANDS, REDCAR & CLEVELAND Receiving Water: North Sea Status: TRANSFERRED FROM R(PP)A 1951-1961 Date: 28/09/1962 (Effective) Details: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY</p> <p>2 No.:</p> <p>Permit: 254/0289 Location: FINE ORGANICS LTD, TEESSIDE SITE, SEAL SANDS MIDDLESBROUGH Receiving Water: Tees Status: TRANSFERRED FROM COPA 1974 Date: 11/01/1994 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Permit: 254/1530 Location: SHANKS & MCEWAN, MIDDLESBROUGH Receiving Water: THE RIVER TEES Status: Revoked - Unspecified Date: 03/08/2004 (Revoked)</p>	<p>Distance: 90 m N Permit: 254/0459 Location: DTBA LTD - SEAL SANDS SITE, SEAL SANDS, MIDDLESBROUGH, CLEVELAND Receiving Water: Tees Status: REVOKED - UNSPECIFIED Date: 25/05/1994 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Distance: 100 m S Permit: 254/0231 Location: FINE ORGANICS LTD, MIDDLESBROUGH Receiving Water: Tees Status: REVOKED - UNSPECIFIED Date: 06/08/2004 (Revoked)</p> <p>Distance: 200 m E Permit: 254/B/0197 Location: TEESSIDE OIL FACILITY, GREATHAM Receiving Water: GREATHAM CREEK Status: REVOKED - UNSPECIFIED Date: 26/06/1983 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>4 No.</p> <p>Permit: 254/1530</p> <p>Location: SHANKS & MCEWAN, MIDDLESBROUGH</p> <p>Receiving Water: The River Tees</p> <p>Status: Revoked - Unspecified</p> <p>Date: 03/08/2004 (Revoked)</p> <p>Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Permit: 254/0921</p> <p>Location: SEAL SANDS CHEMICAL COMPANY LTD, SEAL SANDS MIDDLESBROUGH</p> <p>Receiving Water: Tees</p> <p>Status: REVOKED - UNSPECIFIED</p> <p>Date: 26/07/1994 (Revoked)</p> <p>Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Permit: 25/04/1794</p> <p>Location: SALTHOLME 275KV SUBSTATION, SALTHOLME, COWPEN BEWLEY</p> <p>Receiving Water: HOLME FLEET TEES TRIB</p> <p>Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995)</p>	<p>Distance: 200 m E</p> <p>Permit: 254/B/0297</p> <p>Location: TEESSIDE OIL FACILITY, GREATHAM</p> <p>Receiving Water: GREATHAM CREEK</p> <p>Status: REVOKED - UNSPECIFIED</p> <p>Date: 10/05/1993 (Revoked)</p> <p>Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Distance: 245 m S</p> <p>Permit: 254/B/0316</p> <p>Location: SEAL SANDS STORAGE LTD, SEAL SANDS MIDDLESBROUGH</p> <p>Receiving Water: Tees</p> <p>Status: REVOKED - UNSPECIFIED</p> <p>Date: 26/07/1994 (Revoked)</p> <p>Details: Trade Discharges - Process Effluent - Not Water Company</p> <p>Distance: 70 m W</p> <p>Permit: 254/B/0119</p> <p>Location: ACRYLONITRILE PLANT, SEAL SANDS TEESSIDE</p> <p>Receiving Water: Tees</p> <p>Status: REVOKED - UNSPECIFIED</p> <p>Date: 30/08/1990 (Revoked)</p> <p>Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Distance: 70 m W</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Date: 03/08/2004 (Effective) Details: MISCELLANEOUS DISCHARGES - SURFACE WATER; and SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY</p> <p>Permit: 254/1519 Location: SALTHOLME 275KV SUBSTATION, SALTHOLME, COWPEN BEWLEY Receiving Water: HOLME FLEET Status: REVOKED NEW CONSENT ISSUED (WATER ACT 1989 SECTION 113) Date: 03/08/2004 (Revoked) Details: Unspecified</p>	<p>Permit: 254/B/0118 Location: Acrylonitrile Plant, Seal Sands Teesside Receiving Water: Tees Status: REVOKED - UNSPECIFIED Date: 30/08/1990 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Distance: 70 m W Permit: 254/B/0117 Location: ACRYLONITRILE PLANT, SEAL SANDS TEESSIDE Receiving Water: Tees Status: REVOKED - UNSPECIFIED Date: 30/08/1990 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Distance: 75 m N Permit: 25/04/1785 Location: COWPEN BEWLEY SPS, SEAL SANDS LINK ROAD, BILLINGHAM, COWPEN BEWLEY, STOCKTON ON TEES, TS23 3NF Receiving Water: COWBRIDGE BECK Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 24/11/2019 (Revoked)</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Details: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY; and SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY</p> <p>Distance: 75 m N Permit: 25/04/1785 Location: COWPEN BEWLEY SPS, SEAL SANDS LINK ROAD, BILLINGHAM, COWPEN BEWLEY, STOCKTON ON TEES, TS23 3NF Receiving Water: TRIB OF COWBRIDGE BECK Status: VARIED UNDER EPR 2010 Date: 25/11/2019 (Effective)</p> <p>Details: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY; and SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY</p> <p>Distance: 80 m N Permit: 254/0936 Location: COWPEN BEWLEY P.S, COWPEN BEWLEY Receiving Water: COWBRIDGE BECK Status: REVOKED - UNSPECIFIED Date: 30/06/1995 (Revoked)</p> <p>Details: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY</p> <p>Distance: 160 m SE Permit: EPRPB3938AU</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Location: TEES VALLEY EFW PLANT, HAVERTON HILL ROAD, BILLINGHAM, CLEVELAND, TS23 1PY Receiving Water: Groundwater via infiltration system Status: NEW ISSUED UNDER EPR 2010 Date: 16/04/2013 (Effective) Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY</p> <p>2 No. Distance: 215 m SE Permit: 254/1897</p> <p>Location: SITA ENERGY FROM WASTE SEPTIC TANK, HAVERTON HILL ROAD, BILLINGHAM, TEESSIDE, TS23 1PY Receiving Water: Land – River Tees Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 26/07/2012 (Effective) Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY</p> <p>Distance: 225 m NW Permit: QC.25/04/1581</p> <p>Location: COWPEN BEWLEY VISITOR CENTRE, COWPEN BEWLEY, STOCKTON ON TEES Receiving Water: UNNAMED TRIB OF COWBRIDGE BECK</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 17/05/1999 (Effective) Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY</p> <p>Distance: 160 m NE Permit: 254/0451 Location: TIOXIDE UK LTD, THE ICON PROJECT, T, HARTLEPOOL Receiving Water: SEATON CHANNEL, TRIBUTARY OF</p> <p>Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 08/05/2002 (Revoked) Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY</p> <p>3 No. Distance: 15 m E Permit: QR.25/04/1588 Location: TERRA NITROGEN LTD, BILLINGHAM Receiving Water: Tees</p> <p>Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 12/05/2004 (Effective)</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Details: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY</p> <p>Distance: 35 m S Permit: 254/D/0256 Location: BILLINGHAM FIRE STATION, BILLINGHAM Receiving Water: GREATHAM CREEK, TRIBUTARY OF Status: REVOKED - UNSPECIFIED Date: 14/07/1992 (Revoked)</p> <p>Details: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY</p> <p>Distance: 35 m S Permit: 254/D/0250 Location: BILLINGHAM FIRE STATION, BILLINGHAM Receiving Water: GREATHAM CREEK, TRIBUTARY OF Status: REVOKED - UNSPECIFIED Date: 14/07/1992 (Revoked)</p> <p>Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY</p> <p>Distance: 40 m W Permit: 254/H/38 Location: CAVITY 98/99, SALTHOLME BRINEFIELD, BILLINGHAM</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Receiving Water: UNDERGROUND STRATA Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 28/02/1991 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>2 No.:</p> <p>Distance: 40 m N Permit: 254/0289 Location: FINE ORGANICS LTD, TEESSIDE SITE, SEAL SANDS MIDDLESBROUGH Receiving Water: Tees Status: TRANSFERRED FROM COPA 1974 Date: 24/05/1989 (Revoked) Details: TRADE DISCHARGES – UNSPECIFIED</p> <p>Distance: 140 m W Permit: 254/H/37 Location: CAVITY 97, SALTHOLME BRINEFIELD, BILLINGHAM Receiving Water: UNDERGROUND STRATA Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 28/02/1991 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 165 m SE Permit: 254/1118 Location: NORTH TEES WORKS JETTY NO 4, MIDDLESBROUGH Receiving Water: River Tees Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 04/07/2001 (Revoked) Details: SEWAGE DISCHARGES - UNSPECIFIED - NOT WATER COMPANY</p> <p>Distance: 45 m W Permit: 254/H/40 Location: CAVITY 132, SALTHOLME BRINEFIELD, BILLINGHAM Receiving Water: UNDERGROUND STRATA Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 28/02/1991 (Revoked) Details: TRADE DISCHARGES – UNSPECIFIED</p> <p>Distance: 145 m W Permit: 254/H/35 Location: CAVITY 82, SALTHOLME BRINEFIELD, BILLINGHAM Receiving Water: UNDERGROUND STRATA</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 28/02/1991 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Distance: 160 m SE Permit: 25/04/1686 Location: NORTH TEES WORKS JETTY NO 4, MIDDLESBROUGH Receiving Water: RIVER TEES (SALINE ESTUARY)</p> <p>Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 30/01/2006 (Revoked) Details: SEWAGE DISCHARGES - UNSPECIFIED - NOT WATER COMPANY</p> <p>Distance: 150 m W Permit: 254/H/34 Location: CAVITY 73, SALTHOLME BRINEFIELD, BILLINGHAM Receiving Water: UNDERGROUND STRATA</p> <p>Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 28/02/1991 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Distance: 160 m SE</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Permit: 254/X/0617 Location: NORTH TEES WORKS JETTY NO 4, MIDDLESBROUGH Receiving Water: River Tees Status: TRANSFERRED FROM COPA 1974 Date: 05/10/1992 (Revoked) Details: Unspecified</p> <p>Distance: 80 m SE Permit: 254/B/0289 Location: NORTH TEES WORKS, AMMONIA STORAGE A, BILLINGHAM Receiving Water: Tees Status: REVOKED - UNSPECIFIED Date: 10/02/1995 (Revoked) Details: SEWAGE & TRADE COMBINED – UNSPECIFIED</p> <p>2 No.: Distance: 140 m SE Permit: 254/1117 Location: NORTH TEES WORKS JETTY NO 3, MIDDLESBROUGH Receiving Water: River Tees Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Date: 01/02/2006 (Revoked) Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Permit: 254/X/0616 Distance: 140 m SE Location: NORTH TEES WORKS JETTY NO 3, MIDDLESBROUGH Receiving Water: River Tees Status: TRANSFERRED FROM COPA 1974 Date: 05/10/1992 (Revoked) Details: UNSPECIFIED</p> <p>Distance: 95 m SE Permit: 254/B/0290 Location: NORTH TEES OIL REFINERY, PORT CLARENCE Receiving Water: Tees Status: REVOKED - UNSPECIFIED Date: 30/06/1993 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>2 No.: Distance: 35 m S Permit: 254/D/0044 Location: PHILLIPS - IMPERIAL PETROLEUM LTD, SALTHOLME PORT CLARENCE Receiving Water: HOLME FLEET, TRIBUTARY OF Status: REVOKED - UNSPECIFIED</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Date: 22/04/1983 (Revoked) Details: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY; and SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY</p> <p>Distance: 35 m S Permit: 254/C/0211 Location: SALTHOLME FARM, PORT CLARENCE Receiving Water: TEES, TRIBUTARY OF Status: REVOKED - UNSPECIFIED</p> <p>Date: 02/04/1993 (Revoked) Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY</p> <p>2 No.: Distance: 120 m SW Permit: 254/A/0583 Location: NO 3 BRINEFIELD SITE, SALTHOLME Receiving Water: TEES, TRIBUTARY OF Status: TRANSFERRED FROM R(PP)A 1951-1961 Date: 04/01/1980 (Effective) Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY; SEWAGE & TRADE COMBINED - UNSPECIFIED</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 125 m SW Permit: 254/A/0582 Location: NO 4 BRINEFIELD SITE, SALTHOLME Receiving Water: GREATHAM CREEK, TRIBUTARY OF Status: TRANSFERRED FROM R(PP)A 1951-1961 Date: 21/11/1979 (Effective) Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY</p> <p>Distance: 200 m E Permit: 254/B/0212 Location: AMMONIA STORAGE AREA, NORTH TEES WO, BILLINGHAM Receiving Water: TEES Status: REVOKED - UNSPECIFIED Date: 21/04/1983 (Revoked) Details: SEWAGE & TRADE COMBINED - UNSPECIFIED</p> <p>Distance: 200 m S Permit: 254/X/0615 Location: NORTH TEES WORKS JETTY NO 2, MIDDLESBROUGH Receiving Water: River Tees Status: TRANSFERRED FROM COPA 1974 Date: 05/10/1992 (Revoked) Details: UNSPECIFIED</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 200 m S Permit: 25/04/1685 Location: NORTH TEES WORKS JETTY NO 2, MIDDLESBROUGH Receiving Water: RIVER TEES (SALINE ESTUARY) Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 30/01/2006 (Revoked) Details: SEWAGE DISCHARGES - UNSPECIFIED - NOT WATER COMPANY</p> <p>2 No.:</p> <p>Distance: 200 m S Permit: 254/1116 Location: NORTH TEES WORKS JETTY NO 2, MIDDLESBROUGH Receiving Water: River Tees Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Date: 04/07/2001 (Most Recent Revoked) Details: SEWAGE DISCHARGES - UNSPECIFIED - NOT WATER COMPANY</p> <p>Distance: 245 m S Permit: 254/E/0376 Location: OIL DISTILLATION PLANT, NORTH TEES, STOCKTON Receiving Water: Tees</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 30/01/1997 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Distance: 245 m W Permit: 254/H/28 Location: CAVITY 74/85, SALTHOLME BRINEFIELD, BILLINGHAM Receiving Water: Underground Strata</p> <p>Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 28/02/1991 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Distance: 245 m W Permit: 254/H/27 Location: CAVITY 74/85, SALTHOLME BRINEFIELD, BILLINGHAM Receiving Water: Underground Strata</p> <p>Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 28/02/1991 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Distance: 245 m SE</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Permit: 254/0987 Location: VINYL CHLORIDE HANDLING & STORAGE F, SEAL SANDS MIDDLESBROUGH Receiving Water: River Tees Status: REVOKED - UNSPECIFIED Date: 04/09/1992 (Revoked) Details: TRADE DISCHARGES - SITE DRAINAGE</p> <p>Distance: 245 m SE Permit: 254/1141 Location: VINYL CHLORIDE HANDLING & STORAGE F, SEAL SANDS MIDDLESBROUGH Receiving Water: River Tees Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Date: 04/09/1992 (Effective) Details: TRADE DISCHARGES - SITE DRAINAGE</p> <p>2 No.: Distance: 235 m SE Permit: 25/04/1597 Location: VOPAK, HARTLEPOOL Receiving Water: THE RIVER TEES</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995); and MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995)</p> <p>Date: 09/05/2003 (Revoked for Modified Status); and 31/03/2003 (Revoked for New Consent Status)</p> <p>Details: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY</p> <p>5 No.:</p> <p>Distance: 235 m SE</p> <p>Permit: 254/1365</p> <p>Location: VOPAK, HARTLEPOOL</p> <p>Receiving Water: River Tees</p> <p>Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88)</p> <p>Date: 14/02/2000 (Most Recent Revoked)</p> <p>Details: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY</p> <p>Distance: 245 m SE</p> <p>Permit: 25/04/1597</p> <p>Location: Vopak, Hartlepool</p> <p>Receiving Water: River Tees</p> <p>Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995)</p> <p>Date: 31/03/2003 (Revoked)</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Details: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY</p> <p>Distance: 235 m SE Permit: 254/0394 Location: TEES STORAGE COMPANY LTD, SEAL SAND, SEAL SANDS MIDDLESBROUGH Receiving Water: TEES Status: REVOKED – UNSPECIFIED Date: 28/04/1994 (Revoked) Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Distance: 235 m SE Permit: 254/B/0141 Location: TEES STORAGE COMPANY LTD, SEAL SAND, SEAL SANDS MIDDLESBROUGH Receiving Water: TEES Status: REVOKED – UNSPECIFIED Date: 18/08/1987 (Revoked) Details: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY</p> <p>62 No.: Distance: 215 m NW Permit: 25/04/1630</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Location: BRAN SANDS TREATMENT WORKS, WILTON, REDCAR & CLEVELAND Receiving Water: The Dabholm Gut Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995); MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995); and VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Date: 20/02/2002 (Most Recent New Consent Effective); 12/03/2002 (Most Recent Modified Effective); and 08/07/2002 (Most Recent Varied Effective) Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY 8 No.:</p> <p>Distance: 215 m NE Permit: QR.25/04/1553 Location: BRAN SANDS TREATMENT PLANT, BRAN SANDS Receiving Water: The Dabholm Gut Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Date: 25/08/2000 (Most Recent Revoked) Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY; and TRADE DISCHARGES - UNSPECIFIED</p>
List 1 Dangerous Substances	<p>Location: Shanks And Mcewan Receiving Water: River Tees Substances: Mercury (other), Cadmium, 1,2-dichloroethane, Trichlorobenzene</p>	<p>Distance: 195 m E Location: Huntsmen Petrochemicals (uk) Ltd North Tees Seaton Rd Receiving Water: River Tees Substances: Mercury (other), Cadmium</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Status: Not Active</p> <p>Location: Lundbeck Pharmaceuticals Ltd, Middlesborough</p> <p>Receiving Water: River Tees</p> <p>Substances: -</p> <p>Status: Active</p>	<p>Status: Active</p> <p>Distance: 220 m NE</p> <p>Location: Bran Sands Stw</p> <p>Receiving Water: River Tees</p> <p>Substances: -</p> <p>Status: Not Active</p> <p>Distance: 60 m NE</p> <p>Location: Tioxide Europe Ltd, Greatham Creek, Hartlepool, TS25 2DD</p> <p>Receiving Water: Greatham Creek, River Tees</p> <p>Substances: Mercury (other), Cadmium, Hexachlorobenzene, 1,2-dichloroethane</p> <p>Status: Not Active</p> <p>Distance: 180 m NE</p> <p>Location: Tioxide Europe Ltd Greatham Works TS25 2DD</p> <p>Receiving Water: Greatham Creek, River Tees</p> <p>Substances: Mercury (other), Cadmium, Hexachlorobenzene, 1,2-dichloroethane</p> <p>Status: Active</p> <p>Distance: 140 m SW</p> <p>Location: Johnson Matthey Plc, TS23 1PS</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Receiving Water: River Tees Substances: Mercury (other), Cadmium Status: Not Active</p> <p>Distance: 150 m SW Location: Lucite International Uk Ltd Billingham TS23 1PR Receiving Water: River Tees Substances: Mercury (other) Status: Active</p>
List 2 Dangerous Substances	<p>Location: Shanks And Mcewan At Seal Sands Chemicals Receiving Water: North Sea Substances: Benzene, Toluene Status: Not Active</p> <p>Location: Dow Chemical Company Ltd, TS2 1UD Receiving Water: North Sea Substances: Cyanide Status: Active</p>	<p>Distance: 220 m SE Location: Tees Storage Co Seal Sands Receiving Water: River Tees Substances: Cyanide, Xylene Status: Not Active</p> <p>Distance: 70 m NE Location: Tioxide Europe Ltd, TS25 2DD Receiving Water: North Sea Substances: Iron, Nickel, Vanadium Status: Active</p> <p>Distance: 190 m NE Location: Tioxide Europe Ltd Greatham Works TS25 2DD Receiving Water: Greatham Creek</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Substances: Arsenic, Copper, Iron, Lead, Nickel, Vanadium, Zinc Status: Active</p> <p>Distance: 15 m N Location: Mdh Tanker Cleaning Services Ltd Receiving Water: Unknown Substances: Zinc, Benzene, Toluene, Xylene Status: Not Active</p> <p>Distance: 55 m NW Location: Mdh Tank Cleaning Service (uk) Ltd Receiving Water: Unknown Substances: Zinc, Benzene, Toluene, Xylene Status: Not Active</p>
Pollutant Release to Public Sewer	-	<p>Distance: 40 m NW Permission Number: BH0160 Location: ONYX TOTAL WASTE MANAGEMENT, NEW ROAD, NEW ROAD, BILLINGHAM, STOCKTON ON TEES, TS23 1QP Date: 01/01/2018 Status: Received</p> <p>Distance: 145 m S Permission Number: AH7798</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Location: CLEVELAND COUNTY COUNCIL, COWPEN BEWLEY LANDFILL SITE, SEAL SANDS RELIEF ROAD, COWPEN BEWLEY, BILLINGHAM, CLEVELAND, TS23 4HS Date: 01/01/2018 Status: Dead (Application)</p>
<p>Pollutant Release to Surface Waters Red List</p>	<p>Permit Number: 254/1530 Location: SHANKS & MCEWAN (SOUTHERN WASTE), SEAL SANDS CHEMICALS LTD, MIDDLESBROUGH Description: Basic Industrial Chemicals Organic Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995)</p>	<p>-</p>
<p>Pollution Incidents</p>	<p>-</p>	<p>Distance: 80 m N Incident ID: 65730 Date: 21/03/2002 Air Category: 3 (Minor) Land Category: 4 (No Impact) Water Category: 3 (Minor) Pollutant Type: Organic Chemicals/Products Pollutant: Firefighting Run Off: Hydrocarbons</p> <p>Distance: 30 m W Incident ID: 188412 Date: 08/09/2003</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Inorganic Chemicals/Products Pollutant: Acids</p> <p>Distance: 25 m NW Incident ID: 19243 Date: 26/07/2001 Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 3 (Minor) Pollutant Type: Other Pollutant Pollutant: Other</p> <p>Distance: 235 m NW Incident ID: 35436 Date: 09/10/2001 Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 4 (No impact) Pollutant Type: Inorganic Chemicals/Products Pollutant: Ammonia Solutions</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 30 m E Incident ID: 42764 Date: 14/11/2001 Air Category: 3 (Minor) Land Category: 2 (Significant) Water Category: 3 (Minor) Pollutant Type: Organic Chemicals/Products Pollutant: Other Organic Chemical or Product</p> <p>Distance: 100 m N Incident ID: 93183 Date: 20/07/2002 Air Category: 4 (No Impact) Land Category: 3 (Minor) Water Category: 3 (Minor) Pollutant Type: Inorganic Chemicals/Products Pollutant: Other Inorganic Chemical or Product</p> <p>Distance: 245 m W Incident ID: 1559290 Date: 04/10/2017 Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 2 (Significant)</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Pollutant Type: Oils and Fuel Pollutant: Mixed/Waste Oils</p> <p>Distance: 125 m SW Incident ID: 148238 Date: 03/04/2003 Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 3 (Minor) Pollutant Type: Oils and Fuel Pollutant: Diesel</p> <p>Distance: 85 m N Incident ID: 179921 Date: 07/08/2003 Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Sewage Materials Pollutant: Crude Sewage</p> <p>Distance: 70 m NW Incident ID: 16520 Date: 15/07/2001</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 3 (Minor) Pollutant Type: Inorganic Chemicals/Products Pollutant: Acids</p> <p>Distance: 225 m E Incident ID: 49197 Date: 20/12/2001 Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 3 (Minor) Pollutant Type: Inorganic Chemicals/Products Pollutant: Acids</p>
Pollution Inventory Substances	-	<p>3 No. Distance: 210 m W Operator: Vertellus Specialities UK Limited Location: Seal Sands Road Seal Sands Cleveland Activity: Organic Chemicals; Hydrocarbons e.g. Aromatics Regulated Industry Sector/Sub Sector: Chemicals</p> <p>2 No. Distance: 190 m NW Operator: Greenergy Biofuels Teesside Limited</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Location: Seal Sands Terminal (South Site) Seal Sands Cleveland Activity: Organic Chemicals; Oxygen Containing Compounds e.g. Alcohols Regulated Industry Sector/Sub Sector: Chemicals</p> <p>2 No. Distance: 95 m NE Operator: Navigator Terminals North Tees Limited</p> <p>Location: Sabic North Tees Storage North Tees Site Seaton Road Port Clarence Cleveland Activity: Loading / Storage / Treatment etc of Crude Oil Regulated Industry Sector/Sub Sector: Refineries & Fuel</p> <p>5 No. Distance: 95 m NE Operator: Sabic UK Petrochemicals Limited</p> <p>Location: Sabic North Tees Storage North Tees Site Seaton Road Port Clarence Cleveland Activity: Combustion; Any Fuel =>50MW. Organic Chemicals; Hydrocarbons e.g. Aromatics Regulated Industry Sector/Sub Sector: Chemicals</p> <p>Distance: 210 m E Operator: BOC Limited</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Location: NORTH TEES WORKS PORT CLARENCE BOC Hydrogen Plant CLEVELAND Activity: Inorganic Chemicals; Gases e.g. Ammonia Regulated Industry Sector/Sub Sector:</p> <p>5 No. Distance: 230 m NE Operator: Augean North Limited</p> <p>Location: Port Clarence Non-Hazardous Landfill Site Huntsman Drive Stockton on Tees Cleveland Activity: Waste Landfilling; >10 T/D with capacity >25,000T excluding inert waste Regulated Industry Sector/Sub Sector: Non Hazardous Landfill</p> <p>Distance: 125 m E Operator: Sabic UK Petrochemicals</p> <p>Location: Teesside Cavity Storage c/o Huntsman North Tees Huntsman Drive Port Clarence Cleveland Activity: Loading / Treatment / Storage of Crude Oil Regulated Industry Sector/Sub Sector: Refineries & Fuel</p> <p>11 No. Distance: 180 m NE Operator: Venator Materials UK Limited</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Location: Greatham Works Tees Road Activity: Inorganic Chemicals; Non-Metals e.g. Calcium Carbide Regulated Industry Sector/Sub Sector: Chemicals</p> <p>1 No. Distance: 180 m NE Operator: Anglian Water Services Ltd Location: Greatham Works Tees Road Activity: Inorganic Chemicals; Non-Metals e.g. Calcium Carbide Regulated Industry Sector/Sub Sector: Chemicals</p> <p>3 No. Distance: 90 m N Operator: Marlow Foods Ltd Location: Marlow Foods Limited Belasis East Site Nelson Avenue Cleveland Activity: Disposal of >50 T/D Non-Hazardous Waste (>100 T/D If Only AD) Involving Biological Treatment Regulated Industry Sector/Sub Sector: Chemicals</p> <p>Distance: 70 m W Operator: Veolia Energy and Utility Services UK Plc Location: Billingham Fertiliser Works Terra Production Centre Billingham Stockton County Durham</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Activity: Combustion; Any Fuel =>50MW Regulated Industry Sector/Sub Sector: Chemicals</p> <p>17 No. Distance: 110 m SW Operator: Mitsubishi Chemicals UK Ltd Location: Cassel Works New Road Cleveland Activity: Organic Chemicals; Oxygen Containing Compounds e.g. Alcohols Regulated Industry Sector/Sub Sector: Chemicals</p>
<p>Pollution Inventory Waste Transfer</p>	<p>-</p>	<p>Distance: 210 m W Operator: Vertellus Specialities UK Limited Location: Seal Sands Road Seal Sands Cleveland Activity: Organic Chemicals; Hydrocarbons e.g. Aromatics Regulated Industry Sector/Sub Sector: Chemicals</p> <p>Distance: 190 m NW Operator: Greenergy Biofuels Teesside Limited Location: Seal Sands Terminal (South Site) Seal Sands Cleveland Activity: Organic Chemicals; Oxygen Containing Compounds e.g. Alcohols Regulated Industry Sector/Sub Sector: Chemicals</p> <p>3 No. Distance: 95 m NE Operator: Sabic UK Petrochemicals Limited</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Location: Sabic North Tees Storage North Tees Site Seaton Road Port Clarence Cleveland</p> <p>Activity: Combustion; Any Fuel =>50MW. Organic Chemicals; Hydrocarbons e.g. Aromatics. Loading / Storage / Treatment of Crude Oil.</p> <p>Regulated Industry Sector/Sub Sector: Chemicals</p> <p>Distance: 210 m E</p> <p>Operator: BOC Limited</p> <p>Location: NORTH TEES WORKS PORT CLARENCE BOC Hydrogen Plant CLEVELAND</p> <p>Activity: Inorganic Chemicals; Gases e.g. Ammonia</p> <p>Regulated Industry Sector/Sub Sector:</p> <p>Distance: 230 m NE</p> <p>Operator: Augean North Limited</p> <p>Location: Port Clarence Non-Hazardous Landfill Site Huntsman Drive Stockton on Tees Cleveland</p> <p>Activity: Waste Landfilling; >10 T/D with capacity >25,000T excluding inert waste</p> <p>Regulated Industry Sector/Sub Sector: Non Hazardous Landfill</p> <p>Distance: 125 m E</p> <p>Operator: Sabic UK Petrochemicals</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Location: Teesside Cavity Storage c/o Huntsman North Tees Huntsman Drive Port Clarence Cleveland Activity: Loading / Treatment / Storage of Crude Oil Regulated Industry Sector/Sub Sector: Refineries & Fuel</p> <p>Distance: 180 m NE Operator: Venator Materials UK Limited Location: Greatham Works Tees Road Activity: Inorganic Chemicals; Non-Metals e.g. Calcium Carbide Regulated Industry Sector/Sub Sector: Chemicals</p> <p>Distance: 90 m N Operator: Marlow Foods Ltd Location: Marlow Foods Limited Belasis East Site Nelson Avenue Cleveland Activity: Disposal of >50 T/D Non-Hazardous Waste (>100 T/D If Only AD) Involving Biological Treatment Regulated Industry Sector/Sub Sector: Chemicals</p> <p>Distance: 70 m W Operator: Veolia Energy and Utility Services UK Plc Location: Billingham Fertiliser Works Terra Production Centre Billingham Stockton County Durham Activity: Combustion; Any Fuel =>50MW</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Regulated Industry Sector/Sub Sector: Chemicals</p> <p>Distance: Operator: Rapier Energy Limited Location: Billingham Treatment Plant New Road Billingham Cleveland Activity: Disposal or Recovery of Hazardous Waste with a Capacity Exceeding 10 Tonnes Per Day Involving Physio-Chemical Treatment Regulated Industry Sector/Sub Sector: Hazardous Waste</p> <p>Distance: 110 m SW Operator: Mitsubishi Chemicals UK Ltd Location: Cassel Works New Road Cleveland Activity: Organic Chemicals; Oxygen Containing Compounds e.g. Alcohols Regulated Industry Sector/Sub Sector: Chemicals</p>
Hydrogen Pipeline Corridor – South of River Tees		
Control of Major Accident Hazards (COMAH)	<p>Current Name: South Tees Site Company Limited Location: South Tees Site Company Limited, Redcar, Steel House, Trunk Road, Redcar, Cleveland, TS10 5QW Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p>	-

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Name: Ensus UK Limited Location: Ensus UK Limited, Wilton, Middleway, Wilton International, Middlesbrough, Cleveland, TS10 4WS Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: Huntsman Polyurethanes (UK) Limited Location: Huntsman Polyurethanes (UK) Limited, Polyurethanes Area, PO Box 54, Middlesbrough, Cleveland, TS90 8JA Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: SABIC UK Petrochemicals Limited Location: SABIC UK Petrochemicals Limited, Olefins Manufacturing, Olefins Offices, PO Box 99, Redcar, Cleveland, TS10 4RG Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Historical Name: Sahaviriya Steel Industries Uk Limited Location: Sahaviriya Steel Industries Uk Limited, Steel House, Redcar, Cleveland, TS10 5QW</p>	

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: British Steel CorporationLtd(bsc) Location: British Steel Corporation Ltd (bsc), Redcar Works, Redcar Hazardous Substance: Unknown Date: - Tier: Historical NIHHS Site</p> <p>Name: Sabic Uk Petrochemicals Limited Location: Sabic Uk Petrochemicals Limited, Teesport, Grangetown, Teesport Storage, Middlesbrough, Cleveland, TS6 6UE Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: Sabic Uk Petrochemicals Limited Location: Sabic Uk Petrochemicals Limited, Low Density Polyethylene, Po Box 99, Redcar, Cleveland, TS10 4YA Hazardous Substance: Unknown Date: - Tier: Historical NIHHS Site</p>	

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
<p>Hazardous Substance Storage / Usage</p>	<p>-</p>	<p>Distance: 220 m NW Reference: No Details Location: Dow (Wilton) Ltd, PO Box 1990, Wilton, Redcar, Redcar and Cleveland Borough Council, England, TS10 4RG Date: - Application Status: Approved Details: No Details</p> <p>Distance: 230 m E Reference: R/1999/0746/HD Location: British Steel Ltd, Teesside Site, Steel House, Redcar, TS10 5QW Date: 20/10/1999 Application Status: Historical Consent Details: Hazardous Substances application. No Enforcements Notified.</p> <p>Distance: 30 m SE Reference: R/2014/0440/HD Location: Sabic UK Petrochemicals, Central Control, Wilton International, Redcar, TS10 4RF Date: 09/07/2014 Application Status: Historical Consent Details: Hazardous Substances Consent application for the storage of butadiene.</p> <p>Distance: 200 m E</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Reference: R/2011/0798/HD Location: SABIC UK Petrochemicals, Olefins Offices, PO Box 99, Wilton, Redcar, Redcar and Cleveland Borough Council, England, TS10 4RG Date: 04/11/2011 Application Status: Approved Details: Paraxylene storage. No Enforcements Notified.</p> <p>Distance: 45 m W Reference: R/2009/0606/HD Location: Air Products plc c/o Invista Nylon Site, Wilton International, Middlesbrough, Redcar and Cleveland Borough Council, England, TS6 7SD Date: 16/09/2009 Application Status: Approved Details: Storage of hydrogen. No Enforcements Notified.</p>
Historical Licensed Industrial Activities (ICP)	-	<p>11 No.: Distance: 65 m N Name: Sembcorp Utilities (UK) Ltd Location: SutI Power Station, PO Box 1985, Wilton, Middlesbrough, Cleveland, TS90 8WS Date: 5-11-2004 (Most Recent Effective) Status: Revoked (Now IPPC) Details: Combustion Processes</p> <p>6 No.:</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 140 m W Name: Ineos Chlor Ltd Location: Edc Plant, Bain Offices, PO Box 54, Middlesbrough, Cleveland, TS90 8JA Date: 17-7-2000 (most Recent Effective) Status: Revoked Details: Petrochemical Processes</p> <p>12 No.: Distance: 135 m N Name: Artenius UK Ltd Location: Pta Plant, Davies Office, Wilton Site, Middlesbrough, Cleveland, TS90 8JW Date: 12-6-2000 (Most Recent Effective) Status: Revoked (Now IPPC) Details: Manufacture And Use Of Organic Chemicals</p> <p>11 No.: Distance: 120 m SE Name: Sabic UK Petrochemicals Location: Olefins, PO Box 99, Wilton Site, Redcar, TS10 4YA Date: 11-2-2002 (Most Recent Effective) Status: Revoked (Now IPPC) Details: Petrochemical Processes</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>1 No.:</p> <p>Distance: 25 m S</p> <p>Name: Ici Chemicals and Polymers Ltd</p> <p>Location: Inters 2, Nylon Production Area, Wilton Site, Middlesbrough, Cleveland, TS6 8JA</p> <p>Date: 17-7-1992 (Effective)</p> <p>Status: Surrendered</p> <p>Details: Inorganic Chemical Processes</p> <p>10 No.:</p> <p>Distance: 105 m NW</p> <p>Name: Dow (wilton) Ltd</p> <p>Location: Eo Plant, PO Box 1990, Wilton, Redcar, TS10 4YF</p> <p>Date: 1-12-1999 (Most Recent Effective)</p> <p>Status: Revoked (Now IPPC)</p> <p>Details: Petrochemical Processes</p> <p>8 No.</p> <p>Distance: 205 m SW</p> <p>Name: Dow (wilton) Ltd</p> <p>Location: PO Box 1990, Wilton, Redcar, TS10 4YF</p> <p>Date: 30-11-1998 (Most Recent Effective)</p> <p>Status: Revoked</p> <p>Details: Petrochemical Processes</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>5 No. Distance: 115 m SE Name: Huntsman Polyurethanes (UK) Ltd Location: Nitrobenzene Plant, PO Box 99, Wilton Site, Middlesbrough, Cleveland, TS10 4YA Date: 31-1-2003 (Most Recent Effective) Status: Revoked (Now IPPC) Details: Acid Processes</p> <p>5 No. Distance: 200 m E Name: Corus UK Ltd Location: General Steels, Teesside Works, Steel House, Redcar, Cleveland, TS10 5QW Date: 22/11/1994 (Most Recent Effective) Status: Revoked Details: Combustion Processes</p> <p>36 No. Distance: 200 m E Name: Corus UK Ltd Location: Redcar Sinter Plant, Steel House, Redcar, Cleveland, TS10 5QW Date: 09/03/2004 (Most Recent Effective) Status: Revoked – Now IPCC Details: Carbonisation And Associated Processes</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>24 No. Distance: 200 m E Name: Corus UK Ltd Location: Teesside Works, Redcar, Cleveland, TS10 5QW Date: 27/04/2004 (Most Recent Effective) Status: Revoked – Now IPCC Details: Iron And Steel</p> <p>8 No. Distance: 200 m SE Name: Sabic UK Petrochemicals Location: Aromatics Business (paraxylene), Wilton Site, Middlesbrough, TS90 8JE Date: 20/12/1999 (Most Recent Effective) Status: Revoked – Now IPCC Details: Petroleum Processes</p>
Historical Licensed Industrial Activities (Part A1)	-	<p>3 No.: Distance: 80 m W Operator: REDCAR BULK TERMINAL LTD Installation Name: TEESIDE INTEGRATED IRON & STEELWORKS EPR/QP3338HU Date: 28/08/2018 (All Activities Effective) Status: Effective (All)</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Activity: Other Mineral Activities; Loading Etc Coal Etc (Except On Retail Sale) (Unless Exempt Location); Other Mineral Activities; Screening Etc Coal Etc (Unless Exempt Location); Ferrous Metals; Handling Etc >500,000 Tonnes/12 Months</p> <p>3 No. Distance: 100 m W Operator: Northumbrian Water Ltd Installation Name: BRAN SANDS REGIONAL SLUDGE TREATMENT CENTRE Date: 29/09/2006 (Effective) Status: Superseded</p> <p>Activities: FUEL FROM WASTE; MAKING SOLID FUEL FROM WASTE BY USING HEAT (EXCEPT CHARCOAL) / OTHER WASTE DISPOSAL; HAZARDOUS WASTE >10T/D / COMBUSTION; WASTE DERIVED FUEL =>3MW BUT <50MW</p> <p>2 No.: Distance: 120 m N Operator: British Steel Limited Installation Name: Teesside Integrated Iron & Steelworks EPR/VP3839DA and Teesside Beam Mill EPR/VP3839DA Date: 19/12/2018 (most Recent Effective) Status: Superseded Activity: Associated Processes</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>15 No. Distance: 65 m NW Operator: SEMBCORP UTILITIES (UK) LTD Installation Name: WILTON POWER STATION EPR/NP3438LK Date: 21/05/2020 (Most Recent Effective) Status: Effective Activities: Combustion; Any Fuel =>50mw / Associated Process / Other Mineral Activities; Loading, Unloading, Or Storing Pulverised Fuel Ash In Bulk Prior To Further Transportation In Bulk</p> <p>4 No. Effective (18No. Superseded) Distance: 20 m W Operator: Northumbrian Water Ltd Installation Name: Industrial Effluent Treatment Works Date: 30/01/2020 Status: Effective Activities: (Effective Only): Disposal Of > 50 T/D Non-Hazardous Waste (> 100 T/D If Only Ad) Involving Biological Treatment; Disposal Or Recovery Of Hazardous Waste With A Capacity Exceeding 10 Tonnes Per Day Involving Biological Treatment; Temporary Storage Of Haz Waste; Disposal Of > 50 T/D Non-Hazardous Waste (> 100 T/D If Only Ad) Involving Biological Treatment.</p> <p>2 No. Distance: 35 m W</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Operator: AIR PRODUCTS PLC Installation Name: WILTON HYDROGEN PLANT Date: 09/05/2013 (Most Recent Effective) Status: SURRENDER EFFECTIVE Activities: GASIFICATION, LIQUIFAC. AND REFINING; REFORMING NATURAL GAS</p> <p>Distance: 75 m W Operator: RENEW WILTON LIMITED Installation Name: WILTON HYDROTHERMAL UPGRADING FACILITY EPR/XP3703PE Date: 25/11/2020 (Effective) Status: Effective Activities: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS</p> <p>8 No. Distance: 140 m N Operator: NORTHUMBRIAN WATER LTD Installation Name: BRAN SANDS EFFLUENT TREATMENT WORKS Date: 12/01/2016 (Most Recent Effective) Status: Effective Activity: Disposal Or Recovery Of Hazardous Waste With A Capacity Exceeding 10 Tonnes Per Day Involving Biological Treatment / Created By led – Disposal Of > 50 T/D Non-Hazardous Waste (> 100 T/D If Only Ad) Involving Biological Treatment / Created By led - Disposal Or Recovery Of</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Hazardous Waste With A Capacity Exceeding 10 Tonnes Per Day Involving Biological Treatment</p> <p>161 No. Distance: 135 m E Operator: Harsco Metals Group Ltd Installation Name: TEESIDE INTEGRATED IRON & STEELWORKS EPR/PP3338MT Date: 08/11/2021 (Most Recent Effective) Status: Surrender Effective Activity: Associated Processes</p> <p>43 No. Distance: 135 m E Operator: Sahaviriya Steel Industries UK Limited Installation Name: TEESIDE INTEGRATED IRON & STEELWORKS EPR/JP3638HM Date: 16/09/2020 (Most Recent Effective) Status: Revoked Activity: Other Mineral Activities; Loading etc, coal etc (except on retail sale unless exempt location)</p> <p>10 No. Distance: 25 m SE Operator: SEMBCORP UTILITIES (UK) LTD</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Installation Name: WILTON NO 2 GAS TURBINE EPR/XP3839XV Date: 27/05/2020 (Most Recent Effective) Status: Effective (Most Recent) Activities: COMBUSTION; ANY FUEL =>50MW / ASSOCIATED PROCESS</p> <p>37 No. Distance: 140 m NW Operator: SEMBCORP UTILITIES (UK) LTD Installation Name: WILTON 10 POWER STATION / WILTON 10 POWER STATION EPR/NP3838LV / WILTON 11 EFW EPR/XP3436WB / WILTON WASTE TREATMENT PLANT - EPR/MP3136HW Date: 23/12/2015 (Most Recent Effective) Status: Effective Activities: Combustion; Any Fuel =>50mw / The Incineration Of Non-Hazardous Waste In An Incineration Or Co-Incineration Plant With A Capacity Exceeding 3 Tonnes Per Hour / Other Mineral Activities; Loading, Unloading, Or Storing Pulverised Fuel Ash In Bulk Prior To Further Transportation In Bulk (Most Recent)</p> <p>Distance: 200 m W Operator: DOW (WILTON) LTD Installation Name: - Date: - Status: Superseded by PAS Activity: Organic Chemicals; Oxygen Containing Compounds Eg Alcohols</p> <p>3 No.</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 195 m NW Operator: DOW (WILTON) LTD Installation Name: Wilton Ethylene Oxide and Glycol Date: 21/11/2012 (Most Recent Effective) Status: Surrender Effective Activity: Organic Chemicals; Oxygen Containing Compounds e.g. Alcohols</p> <p>Distance: 75 m W Operator: HUNTSMAN POLYURETHANES (UK) LTD Installation Name: - Date: - Status: SUPERSEDED BY PAS Activities: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS</p> <p>9 No. Distance: 15 m E Operator: HUNTSMAN POLYURETHANES (UK) LTD Installation Name: WILTON POLYURETHANES Date: 18/10/2016 (Most Recent Effective) Status: Effective (Most Recent) Activities: ORGANIC CHEMICALS; NITROGEN CONTAINING COMPOUNDS EG AMINES</p> <p>3 No. Distance 35 m NE</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Operator: ENGIE SERVICES LIMITED Installation Name: Date: 31/07/2017 (Effective) Status: Effective Activities: ASSOCIATED PROCESS / ORGANIC CHEMICALS; NITROGEN CONTAINING COMPOUNDS EG AMINES</p> <p>2 No. Distance: 30 m E Operator: ITI POWER (WILTON) LTD Installation Name: WILTON GASIFICATION PLANT EPR/UP3736US Date: 22/11/2016 (Most Recent Effective) Status: Revoked Activities: THE INCINERATION OF NON-HAZARDOUS WASTE IN AN INCINERATION OR CO-INCINERATION PLANT WITH A CAPACITY EXCEEDING 3 TONNES PER HOUR.</p> <p>20 No. Distance: 125 m SE Operator: SABIC UK PETROCHEMICALS LIMITED Installation Name: WILTON OLEFINS INSTALLATION EPR/BS3590IE Date: 18/01/2022 (Most Recent Effective) Status: Effective Activities: COMBUSTION; ANY FUEL =>50MW / ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 150 m NW Operator: ARTENIUS UK LTD Installation Name: WILTON TERAPHALIC ACID/MELINAR PLANT Date: 30/09/2004 (Effective) Status: Superseded Activities: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS</p> <p>Distance: 150 m E Operator: POWER MINERALS LIMITED Installation Name: BIOLITE TREATMENT CENTRE EPR/DB3606TQ Date: 26/11/2019 Status: Effective Activities: CHEMICAL FERTILISERS; PRODUCING ETC PHOSPHOROUS, NITROGEN OR POTASSIUM BASED FERTILISERS ETC</p> <p>26 No. Distance: 235 m SW Operator: INVISTA TEXTILES (UK) LTD Installation Name: WILTON NYLON WORKS Date: 08/07/2011 (Most Recent Effective) Status: SURRENDER EFFECTIVE Activities: ORGANIC CHEMICALS; PLASTIC MATERIALS EG POLYMERS / ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>ALCOHOLS / ORGANIC CHEMICALS; NITROGEN CONTAINING COMPOUNDS EG AMINES</p> <p>14 No. Distance: 210 m SW Operator: ENSUS UK LTD Installation Name: WILTON BIOETHANOL PLANT - EPR/VP3831XJ Date: 16/02/2022 (Most Recent Effective) Status: Effective Activities: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS / ASSOCIATED PROCESS / ANIMAL VEGETABLE AND FOOD; TREATING ETC VEGETABLE RAW MATERIALS FOR FOOD >300T/D</p> <p>4 No. Distance: 90 m SE Operator: Sembcorp Utilities UK Ltd Installation Name: Date: 26/05/2020 (Most Recent Effective) Status: Effective Activities: Combustion; Any Fuel =>50MW</p> <p>5 No. Distance: 250 m SE Operator: Sabic UK Petrochemicals Installation Name:</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Date: 01/10/2007 (Most Recent Effective) Status: Effective Activities: Organic Chemicals; Hydrocarbons e.g. Aromatics</p>
<p>Licensed Pollutant Release (Part A(2)/B)</p>	<p>-</p>	<p>Distance: 220 m NW Location: M&G Solid Fuels LLP, M&G Compound, Steel Works, Redcar, TS6 6UG Status: Current Permit Process: Coal & Coke Permit Type: Part B Enforcements: No Enforcements Notified</p>
<p>Licensed Discharges to Controlled Waters</p>	<p>Permit Number: 254/E/0286 Location: ESTON TRUNK SEWER OUTFALL, ESTON Receiving Water: TEES Date: 17/01/2002 (Revoked) Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY</p> <p>Permit Number: 254/1106 Location: Amoco-Cats Project, Tees Tunnel, Ic, Middlesbrough Receiving Water: Tees (Saline)</p>	<p>3 No. Distance: 15 m S Permit Number: 25/04/1646 Location: ESTON PUMPING STATION, ADJACENT TO BRAN SANDS STW, TEES DOCK ROAD, MIDDLESBROUGH Receiving Water: DABHOLM GUT Date: 29/05/2007 (Most Recent Effective) Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Details: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY</p> <p>Distance: 50 m N Permit Number: 254/1462</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Date: 30/09/1992 (Revoked) Status: Revoked - Unspecified Details: Miscellaneous Discharges - Mine/Groundwater As Raised</p> <p>Permit Number: 25/04/1799 Location: TOD POINT 275KV SUBSTATION, TRUNK ROAD (WEST OF), REDCAR, CLEVELAND, TS10 5BW Receiving Water: SOAKAWAY - GROUNDWATER Date: 25/03/2011 (Revoked) Status: SURRENDERED UNDER EPR 2010 Details: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY</p> <p>Permit Number: 25/04/1799 Location: TOD POINT 275KV SUBSTATION, TRUNK ROAD (WEST OF), REDCAR, CLEVELAND, TS10 5BW Receiving Water: SOAKAWAY - GROUNDWATER Date: 25/03/2011 (Revoked) Status: SURRENDERED UNDER EPR 2010 Details: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY</p>	<p>Location: BRAN SANDS TREATMENT PLANT, WILTON SITE CABINS, TEESSIDE Receiving Water: DABHOLM GUT Date: 29/03/2001 (Revoked) Status: REVOKED - UNSPECIFIED Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY</p> <p>X4 No. Distance: 10 m SW Permit No.: 254/1528 Address: Sembcorp Utilities Teesside Ltd, Sembcorp - Wilton, Teesside Operations, Wilton, Middlesbrough, Cleveland Status: New Consent (Wra 91, S88 & Sched 10 As Amended By Env Act 1995) Type: Making of Chemicals + Chemical Products / Basic Ind. Chemicals Organic Effluent: Trade Discharges - Process Effluent - Not Water Company / Trade Discharges - Unspecified Catchment Name: Tees (Lower), Leven, Tame</p> <p>13 No. Distance: 45 m SW Permit Number: 254/1528 (Most Recent)</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Location: SEMBCORP - WILTON, TEESIDE OPERATIONS, WILTON, MIDDLESBROUGH, CLEVELAND Receiving Water: Dabholm Gut Date: 31/12/1999 (Revoked) Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Details: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY</p> <p>Distance: 120 m S Permit Number: 254/A/0460</p> <p>Location: IMPERIAL CHEMICAL INDUSTRIES LTD, WILTON WORKS MIDDLESBROUGH Receiving Water: MAINS DIKE Date: 05/10/1990 (Revoked) Status: REVOKED - UNSPECIFIED Details: Unspecified</p> <p>Distance: 45 m S Permit Number: 254/E/0667</p> <p>Location: WILTON WORKS, WILTON Receiving Water: MAINS DIKE Date: 17/11/1976 (Revoked) Status: REVOKED - UNSPECIFIED</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Distance: 200 m SE Permit Number: 254/H/30 Location: CAVITIES WS7/WS8/WS9, WILTON WORKS, CLEVELAND Receiving Water: UNDERGROUND STRATA Date: 28/02/1991 (Revoked) Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995)</p> <p>Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>Distance: 40 m E Permit Number: 254/H/33 Location: CAVITIES WS10/WS11, WILTON WORKS, CLEVELAND Receiving Water: UNDERGROUND STRATA Date: 28/02/1991 (Revoked) Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995)</p> <p>Details: TRADE DISCHARGES - UNSPECIFIED</p> <p>90 No. Distance: 25 m S Permit Number: 25/04/1630 (Most Recent Revoked) Location: Bran Sands Treatment Works, Wilton, Redcar & Cleveland</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Receiving Water: Date: 31/03/2006 (Most Recent Revoked) Status: Varied By Application - (Wra 91 Sched 10 - As Amended By Env Act 1995) (Most Recent) Details: Sewage Discharges - Final/Treated Effluent - Water Company</p> <p>Distance: 75 m SW Permit Number: 25/04/1646 Location: ESTON PUMPING STATION, ADJACENT TO BRAN SANDS STW, TEES DOCK ROAD, MIDDLESBROUGH Receiving Water: DABHOLM GUT Date: 28/05/2007 (Revoked) Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Details: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY</p> <p>59 No. Distance: 20 m SW Permit Number: 254/1920 Location: BRAN SANDS TREATMENT WORKS, WILTON, REDCAR & CLEVELAND Receiving Water: Dabholm Gut Date: 01/09/2011 (Most Recent Effective) Status: VARIED UNDER EPR 2010</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Details: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company / Sewage Discharges - Pumping Station - Water Company / Sewage Discharges - Final/Treated Effluent - Water Company</p> <p>Distance: 25 m S Permit Number: 254/0169 Location: ICI PLC, WILTON, WILTON MIDDLESBOROUGH Receiving Water: TEES Date: 02/01/1992 (Revoked) Status: TRANSFERRED FROM COPA 1974 Details: TRADE DISCHARGES – PROCESS EFFLUENT – NOT WATER COMPANY</p> <p>Distance: 60 m S Permit Number: 254/B/0095 Location: RECLAMATION WORKS AT BRAN SANDS, WILTON Receiving Water: DABHOLM GUT Date: 05/10/1990 (Revoked) Status: REVOKED - UNSPECIFIED Details: TRADE DISCHARGES - BOILER BLOWDOWN EFFLUENT</p> <p>Distance: 85 m SW Permit Number: 254/B/0082 Location: Reclamation Works At Bran Sands, Wilton</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Receiving Water: Dabholm Gut Date: 21/09/1967 (Revoked) Status: Revoked - Unspecified Details: Trade Discharges - Boiler Blowdown Effluent</p> <p>2 No. Distance: 70 m SW Permit Number: 254/0988 Location: HODGSON SPECIALITIES LTD, MIDDLESBROUGH Receiving Water: DABHOLME GUT Date: 15/06/1994 (Revoked) Status: REVOKED - UNSPECIFIED Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY</p>
List 1 Dangerous Substances	-	<p>Distance: 35 m SW Location: Sembcorb Utilities Teesside Ltd, TS6 8JA Receiving Water: River Tees Substances: Mercury (other), Cadmium Status: Active</p> <p>Distance: 140 m N Location: Northumbrian Water Ltd Receiving Water: River Tees Substances: Mercury (other), Cadmium</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Status: Active</p> <p>Distance: 135 m S Location: Ici Wilton Complex Main Effluent Receiving Water: River Tees Substances: Mercury (other), Cadmium, Chloroform, 1,2-dichloroethane Status: Active</p> <p>Distance: 210 m SW Location: Dow Wilton Ltd Redcar TS10 4YF Receiving Water: River Tees Substances: Mercury (other), Cadmium Status: Active</p> <p>Distance: 15 m E Location: Huntsman Polyurethanes Uk Ltd Wilton TS10 4YA Receiving Water: River Tees Substances: Mercury (other), Cadmium Status: Active</p> <p>Distance: 90 m SE Location: Sembcorp Utilities (UK) Ltd, Wilton, Middlesborough, TS90 8WS Receiving Water: Any</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Substances: Mercury (other), Cadmium Status: Active</p> <p>Distance: 75 m NW Location: Sembcorp Utilities UK Ltd TS90 8WS Receiving Water: River Tees Substances: Mercury (other), Cadmium Status: Active</p> <p>Distance: 230 m SW Location: Invista (uk) Ltd Wilton Site TS6 8JJ Receiving Water: River Tees Substances: Mercury (other), Cadmium Status: Active</p> <p>Distance: 110 m S Location: Huntsmen Petrochemicals UK Ltd Wilton TS10 4YA Receiving Water: River Tees Substances: Mercury (other), Cadmium, 1,2-dichloroethane Status: Active</p>
List 2 Dangerous Substances	-	<p>Distance: 30 m NE Location: Bulkhaul Limited Receiving Water: - Substances: Chromium, Nickel, Zinc</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Status: Active</p> <p>Distance: 30 m NE Location: Uk Tank Cleaning Services Ltd Receiving Water: - Substances: Toluene Status: Not Active</p> <p>Distance: 30 m NE Location: Bran Sands Treatment Works Combined Receiving Water: River Tees Substances: Copper Status: Not Active</p> <p>Distance: 30 m NE Location: Terra Vac Uk Ltd Receiving Water: Unknown Substances: Benzene, Toluene, Xylene Status: Not Active</p> <p>Distance: 30 m NE Location: Tj Thomson & Son Stockton Receiving Water: - Substances: Chromium, Copper, Lead, Zinc</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Status: Active</p> <p>Distance: 30 m NE Location: Cleanaway Ltd, Choppington Receiving Water: - Substances: Xylene (m+p) Status: Active</p> <p>Distance: : 25 m S Location: Bran Sands Outfall Receiving Water: River Tees Substances: Chromium, Copper, Lead, Nickel, Vanadium, Zinc, Benzene, Toluene, Xylene Status: Active</p> <p>Distance: 25 m S Location: Bran Sands Treatment Works Receiving Water: None Substances: pH Status: Active</p> <p>Distance: 25 m S Location: Sembcorp Wilton Receiving Water: River Tees</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Substances: Chromium, Copper, Cyanide, Zinc, Benzene, Toluene, Xylene Status: Active</p> <p>Distance: 150 m NE Location: Northumbrian Water Ltd Receiving Water: River Tees Substances: Copper Status: Active</p> <p>Distance: 15 m E Location: Huntsmen Polyurethanes Uk Ltd Wilton TS10 4YA Receiving Water: Unknown Substances: Benzene Status: Not Active</p> <p>Distance: 230 m SW Location: Invista (UK) Ltd Wilton Site TS6 8JJ Receiving Water: River Tees Substances: Copper Status: Active</p> <p>Distance: 230 m SW Location: Wilton Nylon Works TS6 8JJ Receiving Water:</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Substances: Copper Status: Not Active</p> <p>2 No. Distance: 115 m SE Location: Huntsmen Petrochemicals Uk Ltd Wilton TS10 4YA Receiving Water: River Tees Substances: Zinc, Benzene, Toluene, Xylene Status: Active</p> <p>Distance: 115 m SE Location: Huntsmen Petrochemicals Middlesborough TS2 1TT Receiving Water: North Sea Substances: Benzene, Toluene, Xylene Status: Active</p> <p>Distance: 200 m E Location: Corus UK Ltd Redcar TS10 5QW Receiving Water: North Sea Substances: Cyanide Status: Active</p>
Pollutant Release to Surface Waters	-	<p>Distance: 50 m SW Permit Number: 254/1528 Location: SEMBCORP UTILITIES UK LTD, SEMBCORP - WILTON, TEESIDE</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>OPERATIONS, WILTON, MIDDLESBROUGH, CLEVELAND Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Type: Basic Ind. Chemicals Organic Effluent Type: TRADE DISCHARGES – UNSPECIFIED Catchment: Not Specified</p> <p>3 No. Distance: 10 m SW Permit Number: 254/1528 Location: SEMBCORP UTILITIES TEESSIDE LTD, SEMBCORP - WILTON, TEESSIDE OPERATIONS, WILTON, MIDDLESBROUGH, CLEVELAND Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Type: Making of Chemicals + Chemical Products / Basic Ind. Chemicals Organic Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Catchment: Not Specified</p>
Pollution Incidents	Incident ID: 160665 Date: 25/05/2003 Air Category: 3 (No Impact) Land Category: 4 (No Impact) Water Category: 3 (Minor)	Distance: 185 m NE Incident ID: 721753 Date: 03/10/2009 Air Category: 2 (Significant) Land Category: 3 (Minor) Water Category: 4 (No Impact)

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Pollutant Type: Organic Chemicals/Products Pollutant: Other Organic Chemical or Product</p> <p>Incident ID: 106544 Date: 09/09/2002 Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Sewage Materials Pollutant: Other Sewage Material</p>	<p>Pollutant Type: Atmospheric Pollutants and Effects Pollutant: Dust</p> <p>Distance: 40 m NE Incident ID: 1256199 Date: 15/07/2014 Air Category: 4 (No Impact) Land Category: 4 (No impact) Water Category: 2 (Significant) Pollutant Type: Sewage Materials Pollutant: Crude Sewage</p> <p>Distance: 20 m SW Incident ID: 495387 Date: 16/05/2007 Air Category: 3 (Minor) Land Category: 44 (No Impact) Water Category: 2 (Significant) Pollutant Type: Organic Chemicals / Products Pollutant: Other Organic Chemicals or Product</p> <p>Distance: 50 m N Incident ID: 1639506 Date: 01/08/2018</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Air Category: 2 (Significant) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Atmospheric Pollutants and Effects Pollutant: Other Odour</p> <p>2 No. Distance: 50 m N Incident ID: 1638541 Date: 30/07/2018 Air Category: 2 (Significant) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Atmospheric Pollutants and Effects Pollutant: Chemical Odour</p> <p>Distance: 60 m N Incident ID: 23011 Date: 09/08/2001 Air Category: 4 (No Impact) land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Pollutant Not Identified Pollutant: Not Identified</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 110 m NE Incident ID: 156749 Date: 5/8/2003 Air Category: 4 (No Impact) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Sewage Materials Pollutant: Final Effluent</p> <p>2 No. Distance: 130 m W Incident ID: 83574 Date: 07/06/2002 Air Category: 3 (Minor) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Atmospheric Pollutants and Effects Pollutant: Other Atmospheric Pollutant or Effect</p> <p>Distance: 240 m SW Incident ID: 114797 Date: 15/10/2002 Air Category: 4 (No Impact) Land Category: 4 (No Impact)</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Water Category: 2 (Significant) Pollutant Type: Organic Chemicals/Products Pollutant: Other Organic Chemical or Product</p> <p>Distance: 185 m N Incident ID: 1517389 Date: 21/04/2017 Air Category: 4 (No Impact) Land Category: 2 (Significant) Water Category: 4 (No Impact) Pollutant Type: Specific Waste Materials Pollutant: Other Specific Waste Material</p>
Pollution Inventory Substances	-	<p>3 No.: Distance: 80 m W Operator: Redcar Bulk Terminal Ltd Location: Teesside Integrated Iron and Steelworks Cleveland, TS10 5QW Activity: FERROUS METALS; HANDLING ETC >500,000 TONNES/12 MONTHS Regulated Industry Sector/Sub Sector: Ferrous Metals</p> <p>36 No. Permit ID: 254/1920 and LP3439LK Distance: 125 m N Operator: NORTHUMBRIAN WATER LTD Location: Industrial Effluent Treatment Works, Bran Sands Tees Dock</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Road Cleveland Regulated Industry Sector / Sub Sector: Water Industry</p> <p>Distance: 15 m E Permit ID: BS8656IX Operator: HUNTSMAN POLYURETHANES (UK) LTD Location: Wilton Polyurethanes Polyurethanes Building PO Box 99 Wilton Cleveland Activity: ORGANIC CHEMICALS; NITROGEN CONTAINING COMPOUNDS EG AMINES Regulated Industry Sector/Sub Sector: Chemicals</p> <p>13 No. Distance: 140 m NW Permit ID: XP3436WB / NP3838LV / Operator: Suez Recycling And Recovery Uk Ltd Location: Wilton 11 EfW Wilton International Redcar and Cleveland Activity: Disposal Or Recovery Of Hazardous Waste With A Capacity Exceeding 10 Tonnes Per Day Involving Physico-Chemical Treatment / Combustion; Any Fuel =>50mw / Incineration, Other Than In Course Of Burning Landfill Gas, Solid Or Liquid Waste, Of Any Gaseous Compound Containing Halogens In A Plant Which Is Not An Incineration Or A Co-Incineration Plant. Regulated Industry Sector/Sub Sector: Efw</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 20 m SE Permit ID: XP3839XV Operator: SEMBCORP UTILITIES (UK) LTD Location: Wilton No 2 Gas Turbine SembCorp UK Headquarters PO Box 1985 Wilton International Middlesbrough North Yorkshire Activity: COMBUSTION; ANY FUEL =>50MW Regulated Industry Sector/Sub Sector: Power / Combustion</p> <p>14 No. Distance: 115 m W Permit ID: BS3590IE Operator: Sabic UK Petrochemicals Limited Location: Wilton Olefins Installation Olefins Offices Wilton International Redcar and Cleveland Activity: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS Regulated Industry Sector/Sub Sector: Chemicals</p> <p>Distance: 200 m SW Permit ID: VP3831XJ Operator: Ensus Ltd Location: Wilton Bioethanol Plant Middleway Middlesbrough Redcar and Cleveland Activity: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS Regulated Industry Sector/Sub Sector: Chemicals</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>4 No. Distance: 245 m N Permit ID: MP3533TG / BX5379IE Operator: Alpek Polyester UK Ltd / NORTHUMBRIAN WATER LTD Location: Wilton Teraphalic Acid/Melinar Plant Tees Dock Road Middlesbrough / Wilton Polyester Manufacturing, Davies Offices Wilton International Wilton Redcar and Cleveland Activity: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS / ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS Regulated Industry Sector/Sub Sector: Chemicals</p> <p>3 No. Distance: 210 m E Permit ID: RP3434HP Operator: Sahaviriya Steel Industries UK Limited Location: Teesside Integrated Iron & Steelworks, Steel House Cleveland Activity: Waste Landfilling; >10 T/D with capacity >25,000T excluding inert waste Regulated Industry Sector/Sub Sector: Non Hazardous Landfill</p> <p>Distance: 90 m SE Permit ID: LP3531UL Operator: SEMBCORP UTILITIES (UK) LTD Location: Package Boiler Island Sembcorp UK Headquarters Wilton International Cleveland</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Activity: COMBUSTION; ANY FUEL =>50MW Regulated Industry Sector/Sub Sector: Power Combustion</p> <p>Distance: 65 m NW Permit ID: NP3438LK Operator: SEMBCORP UTILITIES (UK) LTD Location: Wilton No. 1 Gas Turbine Wilton International Cleveland Activity: COMBUSTION; ANY FUEL =>50MW Regulated Industry Sector/Sub Sector: Power / Combustion</p> <p>2 No. Distance: 250 m SE Permit ID: BU4520IZ Operator: Sabic UK Petrochemicals Location: Wilton Paraxylene, PARAXYLENE PLANT LITTLEBECK OFFICES PO BOX 99 CLEVELAND Activity: Organic Chemicals; Hydrocarbons e.g. Aromatics Regulated Industry Sector/Sub Sector: Chemicals</p>
Pollution Inventory Waste Transfer	-	<p>Distance: 80 m W Operator: Redcar Bulk Terminal Ltd Location: Teesside Integrated Iron and Steelworks Cleveland, TS10 5QW Activity: FERROUS METALS; HANDLING ETC >500,000 TONNES/12 MONTHS Regulated Industry Sector/Sub Sector: Ferrous Metals</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 70 m NW Operator: SEMBCORP UTILITIES (UK) LTD Location: Wilton No. 1 Gas Turbine Wilton International Cleveland Activity: COMBUSTION; ANY FUEL =>50MW Regulated Industry Sector/Sub Sector: Combustion / Power</p> <p>Distance: 210 m E Permit ID: RP3434HP Operator: Sahaviriya Steel Industries UK Limited Location: Teesside Integrated Iron & Steelworks, Steel House Cleveland Activity: Waste Landfilling; >10 T/D with capacity >25,000T excluding inert waste Regulated Industry Sector/Sub Sector: Non Hazardous Landfill</p> <p>Distance: 210 m E Permit ID: PP3338MT Operator: Harsco Metals Group Ltd Location: Teesside Integrated Iron & Steelworks, Steel House Cleveland Activity: Associated Processes Regulated Industry Sector/Sub Sector: Ferrous Metals</p> <p>2 No.</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 155 m N Operator: NORTHUMBRIAN WATER LTD Location: Industrial Effluent Treatment Works, Bran Sands Tees Dock Road Cleveland Activity: Disposal Of > 50 T/D Non-Hazardous Waste (> 100 T/D If Only Ad) Involving Biological Treatment Regulated Industry Sector / Sub Sector</p> <p>3 No. Distance: 145 m NW Operator: SEMBCORP UTILITIES (UK) LTD / Suez Recycling And Recovery Uk Ltd / CLEANSING SERVICE GROUP LTD Location: Wilton 10 Power Station Wilton / Wilton 11 Efw Wilton International Redcar And Cleveland / (Cleansing Service Group Limited) Wilton Waste Treatment Plant Wilton Waste Treatment Plant Boundary Road West Wilton International Cleveland Activity: INCINERATION, OTHER THAN IN COURSE OF BURNING LANDFILL GAS, SOLID OR LIQUID WASTE, OF ANY GASEOUS COMPOUND CONTAINING HALOGENS IN A PLANT WHICH IS NOT AN INCINERATION OR A CO-INCINERATION PLANT. / COMBUSTION; ANY FUEL =>50MW / DISPOSAL OR RECOVERY OF HAZARDOUS WASTE WITH A CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING PHYSICO-CHEMICAL TREATMENT Regulated Industry Sector / Sub Sector: EfW and Hazardous Waste</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Distance: 20 m SE Operator: SEMBCORP UTILITIES (UK) LTD Location: Wilton No 2 Gas Turbine SembCorp UK Headquarters PO Box 1985 Wilton International Middlesbrough North Yorkshire Activity: COMBUSTION; ANY FUEL =>50MW Regulated Industry Sector / Sub Sector: Combustion / Power</p> <p>Distance: 15 m E Operator: HUNTSMAN POLYURETHANES (UK) LTD Location: Wilton Polyurethanes Polyurethanes Building PO Box 99 Wilton Cleveland Activity: ORGANIC CHEMICALS; NITROGEN CONTAINING COMPOUNDS EG AMINES Regulated Industry Sector / Sub Sector: Chemicals</p> <p>Distance: 245 m NW Operator: Alpek Polyester UK Ltd Location: Wilton Polyester Manufacturing, Davies Offices Wilton International Wilton Redcar and Cleveland Activity: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS Regulated Industry Sector / Sub Sector: Chemical</p> <p>Distance: 120 m SE Operator: Sabic UK Petrochemicals Limited Location: Wilton Olefins Installation Olefins Offices Wilton International</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Redcar and Cleveland Activity: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS Regulated Industry Sector / Sub Sector: Chemicals</p> <p>Distance: 200 m SW Operator: Ensus Ltd Location: Wilton Bioethanol Plant Middleway Middlesbrough Redcar and Cleveland Activity: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS Regulated Industry Sector / Sub Sector: Chemicals</p>
Other Gases Connection Corridor		
Control of Major Accident Hazards (COMAH)	<p>Current Name: South Tees Site Company Limited Location: South Tees Site Company Limited, Redcar, Steel House, Trunk Road, Redcar, Cleveland, TS10 5QW Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: BOC Limited Location: BOC Limited, Middlesbrough Tees Dock Road, Tees Dock Road, Middlesbrough, Cleveland, TS6 7RT Hazardous Substance: Unknown</p>	<p>250 m W: Name: Tees Hartlepool Port Authority Location: Tees & Hartlepool Port Authority, Tees Dock, Lackenby, Middlesbrough Hazardous Substance: Unknown Date: - Tier: Historical NIHHS Site</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
	<p>Date: - Tier: Upper Tier Operator</p> <p>Historical Name: Sahaviriya Steel Industries Uk Limited Location: Sahaviriya Steel Industries Uk Limited, Steel House, Redcar, Cleveland, TS10 5QW Hazardous Substance: Unknown Date: - Tier: Upper Tier Operator</p> <p>Name: British Steel CorporationLtd(bsc) Location: British Steel Corporation Ltd (bsc), Redcar Works, Redcar Hazardous Substance: Unknown Date: - Tier: Historical NIHHS Site</p>	
Hazardous Substance Storage	-	-
Licensed Industrial Activities Part A1	-	<p>2 No.:</p> <p>Distance: 220 m N</p> <p>Operator: British Steel Limited</p> <p>Installation Name: Teesside Integrated Iron & Steelworks EPR/VP3839DA and Teesside Beam Mill EPR/VP3839DA</p> <p>Date: 19/12/2018 (most Recent Effective)</p> <p>Status: Superseded</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Activity: Associated Processes</p> <p>3 No.:</p> <p>Distance: 80 m W</p> <p>Operator: Redcar Bulk Terminal Ltd</p> <p>Installation Name: Teesside Integrated Iron & Steelworks EPR/QP3338HU</p> <p>Date: 28/08/2018 (Effective All)</p> <p>Status: Effective (All)</p> <p>Activity: Other Mineral Activities; Loading Etc Coal Etc (Except On Retail Sale) (Unless Exempt Location); Other Mineral Activities; Screening Etc Coal Etc (Unless Exempt Location; Ferrous Metals; Handling Etc >500,000 Tonnes/12 Months</p> <p>4 No. Effective (18No. Superseded)</p> <p>Distance: 20 m W</p> <p>Operator: Northumbrian Water Ltd</p> <p>Installation Name: Industrial Effluent Treatment Works</p> <p>Date: 30/01/2020</p> <p>Status: Effective</p> <p>Activities: (Effective Only): Disposal Of > 50 T/D Non-Hazardous Waste (> 100 T/D If Only Ad) Involving Biological Treatment; Disposal Or Recovery Of Hazardous Waste With A Capacity Exceeding 10 Tonnes Per Day Involving Biological Treatment; Temporary Storage Of Haz Waste; Disposal Of > 50 T/D Non-Hazardous Waste (> 100 T/D If Only Ad) Involving Biological Treatment.</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>1 No.: Distance: 100 m W Operator: Northumbrian Water Ltd Installation Name: Bran Sands Regional Sludge Treatment Centre Date: 08/05/2006 (Effective) Status: Superseded Activity: Fuel From Waste; Making Solid Fuel From Waste by Using Heat (Except Charcoal)</p> <p>2 No.: Distance: 100 m W Operator: Northumbrian Water Ltd Installation Name: Bran Sands Effluent Treatment Works Date: 29/09/2006 (Effective) Status: Superseded Activity: Other Waste Disposal; Hazardous Waste >10t/D; Combustion; Waste Derived Fuel =>3mw But <50mw</p>
Licensed Discharges to Controlled Waters	-	<p>Distance: 155 m SW 2 No.: Permit Number: 254/1423 Location: BOC LIMITED, TEES DOCK ROAD MIDDLESBOROUGH Receiving Water: Land Date: 26/07/2012 (Most Recent Effective) Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>ACT 1995) Details: TRADE DISCHARGES - COOLING WATER</p> <p>Distance: 95 m W 3 No. Permit Number: 25/04/1646 Location: ESTON PUMPING STATION, ADJACENT TO BRAN SANDS STW, TEES DOCK ROAD, MIDDLESBROUGH Receiving Water: DABHOLM GUT Date: 29/05/2007 (Effective) Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Details: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY</p> <p>Distance: 220 m W Permit Number: 254/1462 Location: BRAN SANDS TREATMENT PLANT, WILTON SITE CABINS, TEESSIDE Receiving Water: DABHOLM GUT Date: 29/03/2001 (Revoked) Status: Revoked Details: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY</p> <p>2 No.: Distance: 220 m SE Permit Number: 254/E/0045</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Location: Lackenby Steel Works, Hydraulic Pump, Lackenby Receiving Water: Dabholme Beck Date: 30/09/1996 (Revoked) Status: Transferred from R(PP)A 1951-1961 Details: Sewage Discharges (Final / Treated Effluent – Not Water Company)</p> <p>Distance: 225 m SE Permit Number: 254/E/0051 Location: Lackenby Steel Works, Lackenby, Grangetown, Middlesbrough Receiving Water: Dabholme Beck Date: 12/01/2014 (Revoked) Status: Revoked</p>
List 2 Dangerous Substances	-	<p>Distance: 125 m SE Location: Walon Ltd T/a Walon Uk Receiving Water: Unknown Substances: Benzene, Toluene, Xylene Status: Not Active</p>
Pollution Incidents	-	<p>Distance: 90 m W Incident ID: 1256199 Date: 15/07/2014 Air Category: 4 (No Impact) Land Category: 4 (No impact) Water Category: 2 (Significant) Pollutant Type: Sewage Materials</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		<p>Pollutant: Crude Sewage</p> <p>2 No.:</p> <p>Distance: 175 m W Incident ID: 1638541 Date: 30/07/2018 Air Category: 2 (Significant) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Atmospheric Pollutants and Effects Pollutant: Chemical Odour</p> <p>Distance: 175 m W Incident ID: 1639506 Date: 01/08/2018 Air Category: 2 (Significant) Land Category: 4 (No Impact) Water Category: 4 (No Impact) Pollutant Type: Atmospheric Pollutants and Effects Pollutant: Other Odour</p>
Pollution Inventory Substances	-	<p>Distance: 85 m W Operator: Redcar Bulk Terminal Ltd Location: Teesside Integrated Iron and Steelworks Cleveland, TS10 5QW Activity: FERROUS METALS; HANDLING ETC >500,000 TONNES/12 MONTHS</p>

RELEVANT FEATURE	ONSITE	OFFSITE (<250 m)
		Regulated Industry Sector/Sub Sector: Ferrous Metals
Pollution Inventory Waste Transfer	-	Distance: 85 m W Operator: Redcar Bulk Terminal Ltd Location: Teesside Integrated Iron and Steelworks Cleveland, TS10 5QW Activity: FERROUS METALS; HANDLING ETC >500,000 TONNES/12 MONTHS Regulated Industry Sector/Sub Sector: Ferrous Metals

Sensitive Land Use

Sites of Special Scientific Interest

10A.2.149SSSIs provide statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. A summary of the SSSIs within 1 km of the Main Site and associated Connection Corridors is presented in Table 10A-38.

Table 10A-38: Summary of Sites of Special Scientific Interest within 1 km

SSSI SITE	APPROXIMATE DISTANCE/DIRECTION TO SITE
Teemouth and Cleveland Coast	Main Site – Directly north CO ₂ Export Corridor – Directly north Natural Gas Connection Corridor – Directly north Water Connection Corridor – Directly north Electrical Connection Corridor – Directly north Hydrogen Pipeline Corridor – onsite Other Gases – onsite

Ramsar Sites

10A.2.150Ramsar sites are designated under the Convention on Wetlands of International Importance. A summary of Ramsar sites within 1 km of the Main Site and associated Connection Corridors is presented in Table 10A-39.

Table 10A-39: Summary of Ramsar Sites within 1 km

RAMSAR SITE	APPROXIMATE DISTANCE/DIRECTION TO SITE
Teemouth and Cleveland Coast	Main Site – 150 m north Carbon Dioxide Export Corridor – 280 m north Natural Gas Connection Corridor – 570 m north Water Connection Corridor – 280 m north Electrical Connection Corridor – 280 m north Hydrogen Pipeline Corridor – on site

Nitrate Vulnerable Zones

10A.2.151The Environment Agency defines Nitrate Vulnerable Zones (NVZs) as areas designated as being at risk from agricultural nitrate pollution.

10A.2.152The majority of the Proposed Development Site is not located within an NVZ.

10A.2.153The very western area of the Hydrogen Pipeline Corridor is located within an NVZ. The area is located along Haverton Hill Road and surrounding area.

Radon

10A.2.154A summary of the radon potential at the Main Site and associated Connection Corridors is presented in Table 10A-40.

Table 10A-40: Radon Potential

LOCATION	RADON POTENTIAL
Main Site	The Main Site lies mostly within an area where between 1 and 3 % of homes are at or above the Action Level for radon. Radon protection measures are likely required under this scenario.
CO ₂ Export Corridor	<p>Mostly within an area where between 1 and 3 % of homes are at or above the Action Level for radon. Radon protection measures are likely required under this scenario.</p> <p>A small proportion of the CO₂ Export Corridor in the south-eastern corner lies within an area where less than 1 % of homes are at or above the Action Level.</p>
Natural Gas Connection Corridor	<p>Majority lies within an area where less than 1 % of homes are at or above the Action Level for radon.</p> <p>A small proportion of the Natural Gas Connection Corridor, in the north and north-western corner, lies within an area of elevated radon potential where the maximum radon potential is between 1 and 3 %.</p> <p>Radon protective measures are likely to be required in areas of elevated radon.</p>
Water Connection Corridor	<p>Majority lies within an area where less than 1 % of homes are at or above the Action Level for radon.</p> <p>A small proportion of the Water Connection Corridor to the north and west lie within an area where between 1 and 3 % of homes are at or above the Action Level. Radon protective measures are likely to be required within the areas of elevated radon.</p>
Electrical Connection Corridor	<p>Mostly within an area where between 1 and 3 % of homes are at or above the Action Level for radon. Radon protection measures are likely required under this scenario.</p> <p>The southern proportion of the Electrical Connection Corridor in the south-eastern corner lies within an area where less than 1 % of homes are at or above the Action Level.</p>
Hydrogen Pipeline Corridor	The area of the Hydrogen Pipeline Corridor to the north of the River Tees, lies within an area where less than 1 % of homes are at or below the action level for radon. Elevated areas of radon (1% and 3%) are present from the boundary of the south of the River Tees to and encompassing the central area of Trunk Road. Radon protective measures are likely to be required in areas of elevated radon.
Other Gases Connection Corridor	<p>The north of the Other Gases Connection Corridor within the South Tees Development Corporation (STDC) site is within an area where less than 1 % of homes are at or above the Action Level.</p> <p>To the south of the Other Gases Connection Corridor, the maximum radon potential is 1 to 3 %. Radon protective measures are likely to be required in the areas of elevated radon.</p>

UXO

Main Site

10A.2.155 According to the Zetica Unexploded Ordnance (UXO) Risk Maps (Zetica, n.d.), the Main Site is considered to be in an area of Low risk. Mapping shows an area to the east of the Main Site was a historical Luftwaffe Target, therefore there may be a possibility of UXO being present.

10A.2.156 A Detailed Unexploded Ordnance (UXO) Desktop Survey (Annex D) was obtained for the Main Site and is summarised here:

- the Redcar Iron Works (located partially on-Site) was a primary Luftwaffe target;
- historical records identify significant bombing within the area and on-Site, with bomb damage recorded to the iron furnaces, mill boilers and a gas cleaning plant within the Redcar Iron Works; and
- it is considered highly likely munitions may have been stored, located and/or fired from the Site.

10A.2.157 The report concluded with given that extensive WWII bombing was recorded potentially on-site and/or in the immediate vicinity of the Main Site, combined with the extensive military installations and minefields located on-site and the possibility that the proposed intrusive works will encounter previously undisturbed ground below ground level in areas of the Main Site, a combination of the following was required:

- UXO Emergency Response Plan;
- UXO Safety and Awareness Briefing;
- Explosive Ordnance Disposal Engineer Watching Brief – for Open Intrusive Works; and
- Intrusive Magnetometer Survey – for Closed Intrusive Works.

CO₂ Export Corridor

10A.2.158 According to the Zetica UXO Risk Maps (Zetica, n.d.), the CO₂ Export Corridor is considered to be in an area of Low risk. Mapping shows a historical Luftwaffe Target located in the northern extent of the Corridor, therefore there may be a possibility of UXO being present at the corridor.

Natural Gas Connection Corridor

10A.2.159 According to the Zetica UXO Risk Maps (Zetica, n.d.), the Natural Gas Connection Corridor is considered to be in an area of Low risk. Mapping shows an area to the west of Corridor was a historical Luftwaffe Target (approximately 85 m W), therefore there may be a possibility of UXO being present at the corridor.

Water Connection Corridor

10A.2.160 According to the Zetica UXO Risk Maps (Zetica, n.d.), the Water Connection Corridor is considered to be in an area of Low risk. Mapping shows an area in the north-east

extent of the Corridor was a historical Luftwaffe Target, therefore there may be a possibility of UXO being present at the corridor.

Electrical Connection Corridor

10A.2.161 According to the Zetica UXO Risk Maps (Zetica, n.d.), the Electrical Connection Corridor is considered to be in an area of Low risk. Mapping shows there was a historical Luftwaffe Target located in the north-east area of the Corridor, therefore there may be a possibility of UXO being present at the corridor.

Hydrogen Pipeline Corridor

Due to the size of the Hydrogen Pipeline Corridor, the information regarding UXO at the Hydrogen Pipeline Corridor is summarised as to the north and south of the River Tees as follows:

North of the River Tees

10A.2.162 The majority of the Corridor is within an area of *Moderate* risk. A small area to the north of Greatham Creek is located within an area of *Low* risk.

10A.2.163 There are 3 No Decoy Sites Targets located within the Corridor boundary as summarised here:

- located approximately 125 m south from the Corridor near Seaton Carew Road;
- approximately 285 m south-west from the Corridor along Tees Road; and
- approximately 120 m east from the Corridor, along the A1185 Road.

10A.2.164 There are several Strategic Targets located within the vicinity of the boundary:

- 4 No. Luftwaffe Targets all located to the far south-west at approximately 115 m west, 395 m south-east, 500 m south-east and 605 m south-east.

South of the River Tees

10A.2.165 The majority of the Corridor to the south of the River Tees is located within an area of Low risk with a small area to the south-west within an area of Moderate risk.

10A.2.166 There are several Strategic Targets located within the vicinity of the boundary:

- 2 No. Decoy Sites, one located approximately 155 m south from the south-west area of the Corridor, and the other is located to the south of the Dabholme Gut, approximately 800 m west of the Corridor; and
- 2 No. Luftwaffe Targets located approximately 125 m east from the south-west extent of the Corridor and approximately 545 m north from the northern extent of the Corridor.

Other Gases Connection Corridor

10A.2.167 The Other Gases Connection Corridor is located within an area of Low risk. To southern half of the Other Gases Connection Corridor is located within an area of Moderate risk.

10A.2.168 There are two Strategic Targets located within the vicinity of the Other Gases Connection Corridor:

- Decoy Site (approximately 480 m west); and
- A Luftwaffe Target located approximately 700 m north.

Geoenvironmental and Possible Contaminative Land

10A.2.169 The geoenvironmental and possible contaminative land features associated with the Main Site and associated Connection Corridors are discussed within Appendix 10B and Appendix 10C (ES Volume III, EN070009/APP/6.4).

10A.3 Ground Conditions

Soils Anticipated

Main Site

Artificial Ground (Made Ground)

10A.3.1 Artificial Ground (Made Ground) has been mapped across the entirety of the Main Site, except for the north-east extent of the Main Site. This is displayed in the 1:10,000 mapping displayed in the Groundsure report (Annex A).

10A.3.2 Based on previous GIs completed across the Main Site and in the neighbouring sites, extensive Artificial Ground (Made Ground) deposits can be expected. These deposits are predominantly composed of Slag, a stony waste matter separated from metals during the smelting or refining of ore – in this case from iron ore, and other waste materials that are derived as waste products from the long industrial history of the Main Site.

10A.3.3 Information derived from an array of historical boreholes and previous GIs completed onsite, the Artificial Ground (Made Ground) is described as a black sandy gravel. Sand is fine to coarse. Gravel is fine to coarse subangular and includes slag, concrete, black and clinker. S2-BHA01 also noted a hydrocarbon / creosote odour. NZ52NE53 describes the Made Ground more simply as gravel and cobble sized SLAG and brick.

10A.3.4 All exploratory holes analysed for this Report recorded the presence of Artificial Ground (Made Ground), outlining its abundance across the Main Site. S1-BH16 recorded the greatest thickness of Artificial Ground (Made Ground) at 7.00 m with NZ52NE50 only recording 0.90 m of the material. Typically, however, the depths of this Artificial Ground (Made Ground) can be expected to be 4 m to 5 m in thickness.

Blown Sands

10A.3.5 Though not encountered in the exploratory logs examined in this report, Blown Sands have been mapped to be present in close proximity to the north of the Main Site. The Blown Sands are described in the literature as deposits of sand that have been blown by the wind, thus are likely to be fine grained deposits overlying the coarser grained deposits of the Tidal Flat Deposits if encountered.

Tidal Flat Deposits

- 10A.3.6 The Tidal Flat Deposits have been mapped extensively across the wider Teesside region, and therefore are expected to be present across the entirety of the Main Site. This is displayed in the 1:10,000 mapping in the Groundsure report (Annex A).
- 10A.3.7 Historical BGS data and information obtained in previous GIs completed onsite confirm the mapped presence of the Tidal Flat Deposits.
- 10A.3.8 All exploratory holes analysed as part of this report encountered notable thicknesses of the Tidal Flat Deposits. S1-BH16 recorded the smallest thickness of 3.90m with NZ52NE50 recording a thickness of 12.50 m.

Glacial Till and Glaciolacustrine Deposits

- 10A.3.9 The Glacial Till is not displayed on the 1:10,000 mapping provided in the Groundsure report (Annex A). However, from BGS historical borehole records and previously completed GIs, Glacial Till is expected to be abundant underlying the soft cohesive layers of the Tidal Flat Deposits. As it is underlying the Tidal Flat Deposits, it was not captured by the surface mapping. Within the Glacial Till, Glaciolacustrine Deposits are also often encountered.
- 10A.3.10 It should be noted that the Glaciolacustrine Deposits layers have been infrequently observed with only NZ52NE55 and NZ52NE50 referencing them. It should also be noted that a couple of exploratory holes – S2-BHA01 and S2-BHA03 – did not observe the Glacial Till. Therefore, it could be inferred that the Glacial Till thins towards the north-west.

Redcar Mudstone Formation

- 10A.3.11 The Redcar Mudstone Formation has been identified, in the BGS 1:10,000 in the geological map, as being mostly present in the southwest of the Main Site. The top of the formation is anticipated, based on the mapping of the area, to traverse the Main Site in a northeast-southwest orientation, where the formation is overlain, stratigraphically, by the Penarth Group, though this formation has not been encountered by historical borehole records.
- 10A.3.12 Historical BGS data and information gathered from previous GIs describe the Redcar Mudstone Formation as an extremely weak to weak grey mudstone. The weathering is typically high close to the top of stratum, becoming moderate with depth. The formation can become sandy and sometimes fossiliferous with depth. The formation has been noted to be only partially weathered at 24.00 m bgl in S1-BH16.
- 10A.3.13 As alluded to in the in the 1:10,000 mapping provided in the Groundsure report (Annex A), the Redcar Mudstone Formation was predominantly encountered in the in S1-BH03 and S1-BH16. This formation was also encountered in S2-BHA03 area of the Main Site, outlining the assumption that the formation may be present across the wider Main Site.
- 10A.3.14 The base of the Redcar Mudstone was only encountered in S1-BH16, providing a confirmed thickness of 26.55 m. Based on this, it is assumed that this formation

thins rapidly towards the north-west where it disappears from the geological stratigraphy of the Main Site.

Penarth Group

- 10A.3.15 Though not encountered in exploratory holes analysed in this Report, the 1:10,000 geological mapping highlights the potential presence of this formation as a thin layer, overlying the Redcar Formation. As with the Redcar Mudstone Formation, the Penarth Group is oriented north-east to south-west.
- 10A.3.16 The BGS Lexicon of Named Units describes the Penarth Group as a *grey to black mudstones with subordinate limestones and sandstones*.

Mercia Mudstone Formation

- 10A.3.17 BGS Mapping outlines that the Mercia Mudstone Formation is present, directly underlying the superficial deposits, in the north-west of the Proposed Development Site. Therefore, it should be expected that the Mercia Mudstone Formation underlays the Glacial Till or Tidal Flat Deposits across the majority Main Site. Where the Redcar Mudstone Formation and Penarth Group are present, the Mercia Mudstone Formation underlies the overlying bedrock formations.
- 10A.3.18 BGS historical borehole records and previously completed GIs describe the Mercia Mudstone Formation as an extremely weak to weak red brown and grey-green mudstone with distinct to slight weathering close to the top of the formation. As highlighted in the historical boreholes, the mudstone typically becomes unweathered, but moderately to highly gypsiferous below 30.00 m bgl, with unweathered fractures becoming infilled with gypsum. It is understood that larger thicknesses of gypsiferous deposits may lead to dissolution features. Owing to the depth of the of the gypsiferous mudstone, it is considered that the gypsum shall be permanently submerged below a largely static water table, hence is likely to be stable.
- 10A.3.19 Exploratory holes, except for S2-BHA03, within the boundaries of the Main Site observed the Mercia Mudstone directly underlying the superficial deposits confirming the assessments provided in the mapping of the Groundsure report (Annex A). S1-BH16 encountered the Mercia Mudstone underlying the Redcar Mudstone Formation south-east of the Main Site, confirming the stratigraphical assumption that the Mercia Mudstone underlies the Redcar Mudstone. It should be noted that the Penarth Group was not recorded in between these two formations.
- 10A.3.20 The base of the Mercia Mudstone has not been confirmed by any borehole records analysed throughout this report but was observed to a maximum depth of 45.10 m bgl.

Connection Corridors

- 10A.3.21 The geology anticipated across the Connection Corridors comprises of Artificial Ground (Made Ground), varied complex Superficial Deposits and bedrock of the Mercia Mudstone Group, Penarth Group, Redcar Mudstone Formation and Sherwood Sandstone (outcropping north of the River Tees). A summary of the

geology anticipated and previous BGS boreholes is presented in Section 10A.2 and is not repeated here.

Engineering Properties

10A.3.22 None available for the Proposed Development Site. GI will be undertaken.

Significance of Geological Formations

10A.1.1 The Proposed Development Site is known to be underlain by a variable complex sequence of Artificial Ground (Made Ground) and Superficial Deposits. The Artificial Ground (Made Ground) is expected to be variable in composition and depth and possible contamination from past land uses with which it is associated with the underlying bedrock is concealed beneath the Proposed Development Site varying from predominantly water bearing sandstones of the Triassic Sherwood Sandstone in the west to mainly mudrocks of the Mercia Mudstone Group, Penarth Group and Redcar Mudstone in the east. The strata are known to dip gently to the east. There are few known faults, the one notable feature is the Saltholme Fault, identified in anhydrite workings from the mothballed mine near Billingham. Other faults are likely to be present.

Groundwater Conditions

Main Site

10A.3.23 At the Main Site there are three historical boreholes, NZ52NE55, NZ52NE56 and S1-BH01, which recorded groundwater strikes at 4.80 m bgl, 4.45 m bgl (Tidal Flat Deposits) and 4.00 m bgl (Made Ground), respectively.

10A.3.24 As part of monitoring in the 2017 GI (Allied Explorations), a seven-day period of continuous monitoring was undertaken within S2-BHA01 and S2-BHA03 to analyse the tidal effects in the Groundwater regime of the Main Site. It was observed that there was limited tidal influence on the groundwater.

10A.3.25 Owing to the proximity of the Main Site to the River Tees, it is anticipated that the groundwater flow will have a gradient in the direction of the river to the west / north-west. Though it should be noted that this shall be reliant on river levels, with higher river levels typically resulting in the flow regime reversing away from the river towards the east / south-east.

10A.3.26 This data should be caveated by the age of the results with groundwater levels potentially changing with time.

Connection Corridors

10A.3.27 Groundwater levels are unknown across the Connection Corridors and GI is required. It is anticipated that groundwater may be shallow and tidally influenced in some areas of the Connection Corridors.

10A.4 Preliminary Engineering Assessment

General

- 10A.4.1 A preliminary geotechnical risk register is given in Appendix 10D (ES Volume III, EN070009/APP/6.4) which describes the main ground related hazards for the Proposed Development Site (excluding ground contamination) and mitigation measures which may be implemented to eliminate or reduce the risk by means of further investigation or during the design.
- 10A.4.2 A preliminary engineering assessment has been undertaken and is presented in the following sections. The preliminary assessment suggests that shallow foundations, including shallow pad foundations, may be considered for the Proposed Development subject to the following provisos. Given the thickness of Artificial Ground (Made Ground) deposits, shallow foundations would need to bear directly on the Artificial Ground (Made Ground) deposits. As such, they would only be suitable for light loaded, settlement tolerant structures. Piled foundations shall be required where larger local bearing pressures and / or structures with tight settlement tolerance are anticipated. A detailed engineering assessment will be undertaken following interpretation of the site-specific confirmatory ground investigation data.

Foundations

- 10A.4.3 Shallow foundations, particularly large raft foundations should be considered where appropriate. Raft foundations have the advantage of being able to spread the loads over a larger area resulting in lower bearing pressures and lower settlements. Furthermore, the rigidity of the raft minimises differential settlement across the slab. However, this form of construction is likely only to be suitable for lightly to moderately loaded structures.
- 10A.4.4 Piled foundations should be considered to support structures with a high loading intensity and those that are most sensitive to settlement. Given the nature of the Artificial Ground (Made Ground) and superficial deposits, it is likely that piles will need to be driven, augured, or bored into underlying competent bedrock, though shall only be viable with the removal of existing obstructions or Artificial Ground (Made Ground). It is considered likely that, across the Main Site, an initial phase of site preparation earthworks will be performed involving the excavation, processing, replacement, and compaction in layers of the Artificial Ground (Made Ground) to make it more appropriate to be used as a load bearing material. The depth of Artificial Ground (Made Ground) excavation is yet to be confirmed, though where this occurs below the groundwater level, some mitigatory measures shall be required. This activity would be expected to remove most of the existing man-made obstructions in the ground.
- 10A.4.5 Therefore, issues with pile driving / augering / boring because of the obstructions onsite are considered unlikely post removal processing and replacement of this Artificial Ground (Made Ground).
- 10A.4.6 Based on experience with the types of material anticipated, given the potential of unpredictable heave and / or settlement occurring over the lifetime of the Proposed
-

Development, structure floor slabs and connecting services / infrastructure may need to be suspended (with or without the use of heave protection layers beneath the slab) or piled to reduce differential movements, particularly for settlement sensitive structures with onerous serviceability limit requirements. Considerations of heave acting onto the underside of the pile caps must also be examined to determine the extent to which the potentially expansive Artificial Ground (Made Ground) requires removing, remediating and replacing to prevent this.

- 10A.4.7 Groundwater is anticipated to be shallow across the Main Site. Temporary casings are likely to be required to support the pile bores within potentially unstable thick granular (coarse) Artificial Ground (Made Ground) and Tidal Flat Deposits below groundwater level. It should be noted that temporary casings will also be required above the water level in these soil types, to prevent collapse of the pile bore. Rotary pile bores will need to be filled with water or drilling mud to balance external water pressures and avoid base disturbance / softening during construction. Allowance should also be made for placing concrete by tremie.
- 10A.4.8 The presence of thick deposits of slag may have potential to generate ground displacements (heave and / or lateral expansion) because of chemical changes and / or variations in groundwater level. Potentially expansive ferrous slag could result in unpredictable additional uplift and lateral loading on piles after installation. Piled foundations will need to be designed to accommodate additional loading or could be sleeved over the expected zone of swelling. However, this form of construction would be more expensive than conventional piled foundations and should be allowed for in the geotechnical and construction risk registers. Consideration may be given to fully cased bored piles, under-reamed or extended pile rock sockets to resist uplift resulting from expansion of slag dominant Artificial Ground (Made Ground).
- 10A.4.9 Generally, slag will have a high acid neutralisation capacity (ANC) and acid corrosion due to sulphate or sulphide (usually calcium sulphide) content is unlikely to be a problem. However, the possible impact of brackish water and high chloride content on steel also needs to be considered, especially if ground movement (vertical heave and / or lateral expansion) could lead to cracks forming in steel reinforced concrete.
- 10A.4.10 The possible presence of unexploded ordnance (UXO) will also impact piling during construction. Probing shall be required at each pile position before the start of pile construction to prove the absence of UXO buried in natural soils below the more recent deep cover of Artificial Ground (Made Ground). Pre-construction clearance may require the use of a deep intrusive magnetometer survey. It should be noted that the presence of significant thickness of metalliferous material within the Artificial Ground (Made Ground) may impact the effectiveness of intrusive and non-intrusive survey techniques (i.e., magnetometer) that may be used to identify potential UXO at the Proposed Development Site.

Filled and Artificial Ground (Made Ground)

- 10A.4.11 Filled and Artificial Ground (Made Ground) can be highly variable meaning that the geotechnical properties of the soil may also be highly variable. This can cause

complications for foundation design. Additionally, Artificial Ground (Made Ground) may not be very stable if left as an unsupported excavation.

- 10A.4.12 Across the whole of the Main Site, it has been proven that, typically 4 m to 5 m, sometimes extending to 7 m of Made Ground containing large thicknesses of slag is present. Therefore, this could cause problems such as differential settlement based on experience with the type of material.
- 10A.4.13 A confirmatory GI will be undertaken to confirm the full extent of the Made Ground across this Proposed Development Site and to what amount the slag makes up the Made Ground.

Lateral Changes in Ground Conditions

- 10A.4.14 Lateral changes within the geology are also known to be present as highlighted below:
- different thicknesses and lateral extent of the Artificial Ground (Made Ground);
 - different thicknesses and lateral extent of the soft cohesive layer within the Tidal Flat Deposits;
 - the potential for the Glacial Till deposits not being present;
 - the infrequent presence of the Glaciolacustrine Deposits; and
 - the different bedrock geologies present across the Proposed Development Site that underlie the superficial deposits.

- 10A.4.15 Therefore, these lateral changes in ground conditions could affect engineering design. A confirmatory GI will be undertaken to confirm how the lateral changes in the ground conditions may affect the development at the Proposed Development Site, and what engineering requirements are needed to mitigate this.

Expansive ferrous slag deposits within the slag deposits and heave and shrinking in the clay soils of the Artificial Ground (Made Ground) (Main Site)

- 10A.4.16 Based on experience with the type of material, the presence of expansive slag dominant Artificial Ground (Made Ground) poses a risk of heave during Proposed Development Site construction and subsequent Proposed Development operation.
- 10A.4.17 Therefore, the confirmatory GI to be undertaken across the Main Site should aim to confirm the potential extent of the heave and lateral expansion hazard and should provide the basis to recommend how to mitigate against the consequences of risk of heave and / or expansion. As proposed for the adjacent NZT Site, the removal and remediation of the slag dominated Artificial Ground (Made Ground) may be required.
- 10A.4.18 Clay soils may be susceptible to shrink / swell in response to changes in moisture content within the cohesive Artificial Ground (Made Ground).

Inadequate Bearing Capacity

- 10A.4.19 The Main Site is anticipated to be underlain by a variable thickness of Artificial Ground (Made Ground) and layers of soft clay and loose to medium dense granular

Tidal Flat deposits. The Artificial Ground (Made Ground) is anticipated to be highly variable comprising cohesive, granular, slag dominant materials and hydraulic fill. These materials are likely to exhibit poor strength and compressibility.

- 10A.4.20 Conventional pad or shallow strip foundations are generally suitable only for lightly loaded, settlement-tolerant structures. Shallow raft foundations spanning the entire footprint of a structure are potentially suitable for lightly loaded and moderately loaded structures. Raft foundations bearing in Slag Dominant Artificial Ground (Made Ground) may provide a suitable option for some of the proposed structures, although there is a potential for differential movement with heave occurring below one area of the raft and settlement across other areas.
- 10A.4.21 Shallow foundations should not be underlain by unsuitable/unprocessed cohesive Artificial Ground (Made Ground) materials, which are commonly characterised by variable shear strength and compressibility.
- 10A.4.22 It is also recommended that static maintained load tests are undertaken on bearing soils for each structure supported by shallow foundations. Large plate load testing across the development footprint should also be considered to properly assess the performance of the near surface soils for shallow pad or raft foundations.
- 10A.4.23 Piles to transmit heavy loads to more competent soils and bedrock may comprise driven cast-in-situ concrete piles, driven steel piles, continuous flight auger (CFA) or bored piles. The first two piling techniques may be considered unsuitable owing to the ground conditions and potential obstructions unless the obstructions and Artificial Ground (Made Ground) is removed, processed, and placed back. Permanent sleeving may be used to mitigate heave effects. Further work is recommended to assess the preferred piling solution and to determine pile performance.
- 10A.4.24 However, it should be noted that due to the potential presence of the weathered upper mudstone, there may be poor end bearing capacity at the base of the piles. As a result, piles shall be designed to extend sufficiently deep to support safely the proposed loads. Similarly, during construction, it would be important to inspect the base of the piles to confirm they are clean of debris / loose material before pouring the concrete for the case of rotary bored piles.
- 10A.4.25 Where combinations of shallow and piled foundations are used, it is important to consider the impact of differential settlement that may result from the combined foundation techniques. Therefore, adequate design shall be required to mitigate against this differential movement.

Settlement

- 10A.4.26 Previous GIs proved soft, variable, compressible and saturated soils including the presence of poorly sorted and compacted Artificial Ground (Made Ground) and a significant thickness of normally consolidated Tidal Flat Deposits (soft clays and loose sands). The Tidal Flat Deposits pose a risk of long-term settlement due to a change in loading and changes to the groundwater regime. Where voids exist within the Made Ground, collapse settlement shall be of potential concern.

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- 10A.4.27 Owing to the presence of the softer cohesive material, any change in current stresses is likely to result in consolidation settlements in the long-term conditions, which in turn may lead to potential negative skin friction (NSF) on piled foundations.
- 10A.4.28 Therefore, pile design of proposed structures shall allow for potential NSF arising from settling ground.
- 10A.4.29 It is recommended that a detailed ground investigation is undertaken at the Main Site as well as adoption of appropriate foundation solutions to transfer loads to soils or bedrock of adequate strength.

Groundwater

- 10A.4.30 High groundwater levels may result in uplift of buried structures such as basements and foundations. However, it should be noted that the impact of groundwater levels on new buried structures will depend on the finished ground elevations that are selected for the Proposed Development Site. Ideally, finished ground elevations should be sufficiently high above the groundwater table to ensure that excavations required for construction of shallow foundations, pile caps and buried pipes and cables can be carried out in dry conditions above the water table.
- 10A.4.31 Other risks posed by the high groundwater level include flooding of deep excavations that extend below the water table, difficulty in compacting soil layers that are underlain at shallow depth by the groundwater table, and ground water ingress into bored pile shafts during construction.
- 10A.4.32 Therefore, groundwater monitoring shall be required to ascertain the groundwater levels across the Proposed Development Site.

Excavations

- 10A.4.33 Temporary excavations within the Artificial Ground (Made Ground) and superficial deposits will be required. Superficial deposits may be loose and variable in nature, are likely to be unstable and, dependent upon depth, may require continuous support. Alternatively, temporary excavation faces will have to be battered back to a safe angle as determined onsite or require continuous support.
- 10A.4.34 Excavations extending below ground level are likely to encounter groundwater inflows particularly from coarse soils or water bearing granular layers within fine (clay, silt) and after prolonged periods of wet weather. Such materials will require continuous support. For shallow excavation below groundwater, pumping from sumps in the base of excavations may be feasible.
- 10A.4.35 At the Main Site, shallow excavations are anticipated to be stable in the short term within unsaturated slag and cohesive layers of the Artificial Ground (Made Ground). However, for excavations below the water table in granular Tidal Flats Deposits, running sand conditions would be expected, leading to rapid and progressive collapse of the excavation sides. Therefore, where required in excavations, especially when saturated or loaded from the sides, prior dewatering, retaining structures, or battering back shall be required.

10A.4.36 Construction within historical landfills should be avoided / limited in order to minimise ground disturbance and inflows of potentially contaminated groundwater into excavations and the need to handle / dispose of potentially contaminated material.

Ground Improvement

10A.4.37 It is considered likely that an initial phase of site preparation earthworks will be performed involving the excavation, processing, replacement, and compaction of the Artificial Ground (Made Ground). This is likely to be required across the Main Site where large obstructions are encountered or where expansive materials are identified. Excavation of Artificial Ground (Made Ground) above the groundwater table should be straight forward but excavation below may be complicated and require de-watering and / or stabilisation, both of which can add significant costs to construction.

10A.4.38 An added complication is the possibility that groundwater may be subject to tidal fluctuations due to the proximity of the Main Site to the River Tees and Tees Bay. Significant changes in water levels due to tidal fluctuations could hinder construction. However, preliminary continuous tidal monitoring undertaken during the 2017 GI (Allied Explorations) observed limited tidal influence. It is noted that monitoring well screens straddled across the Made Ground and Tidal Flat Deposits and as a result may mask trends within the different geological units.

10A.4.39 In-situ ground improvement such as dynamic compaction and high energy impact compaction may help to solve some of the likely settlement issues associated with the Artificial Ground (Made Ground) but will not solve other problems such as the presence of obstructions and may not be feasible due to adverse environmental impact from the noise and vibration generated and the presence of sensitive services that may be present near to or onsite. Typical depths of influence for dynamic compaction in loose course (cohesionless) soils or unsaturated fine (cohesive) soils may be between 7 m and 12 m. The depth of influence is largely dependent on the contractor proprietary equipment mobilised as well as the hammer weight, drop height that can be achieved and the depth to the water table. However, the depth of influence is likely to be further influenced by the variable density and depth of the Artificial Ground (Made Ground) anticipated across the Main Site and may not be suitable where saturated cohesive soils have been proved below the made ground.

10A.4.40 Feasibility of this option could be further assessed in conjunction with input from specialist priority ground improvement contractors as part of further phases of the Proposed Development design. In-situ ground treatment such as lime stabilisation or lime cement columns is not considered appropriate as the anticipated elevated sulphate and chloride concentrations within the soils and groundwater may result in postconstruction heave of treated soils, over and above the heave anticipated from expansive slag materials across the Main Site. In addition, the construction of this form of ground treatment is likely to be restricted by obstructions within the Made Ground present on Main Site.

10A.4.41 It is understood that STDC will complete remediation works required to create a suitable development area before the Applicant's commencement of the construction of the Proposed Development.

Earthworks, Obstructions and Voids

10A.4.42 Information on proposed levels and hence requirements for cut and fill activities are not known at this stage. It is considered likely that the Proposed Development will actively work towards achieving an earthworks balance. Any remediation works and removal of obstructions will need to be overseen by a qualified engineer. A requirement for import of additional quantities of engineered fill where required for purposes of raising Main elevations may emerge if a cut to fill balance cannot be achieved. The suitability of excavated materials (namely the anticipated slag dominated Made Ground) for re-use will be assessed as part of the confirmatory GI works. All earthworks' operations will need to be undertaken in accordance with BS6031:2009 'Code of Practice for Earthworks' and a design specification based on a recognised national standard such as National Highways (NH) guidelines included in their Manual for Contract Documents for Highway Works (MCHW) Series 600 'Earthworks'. Ground investigation is required to determine the geotechnical properties of materials which may be re-used in earthworks constructed onsite.

10A.4.43 It is important that a plan for the legitimate engineering re-use of the site won material is developed, where possible, such that the material is not surplus to the requirements of the development whereby it would be classified as waste. The designation of surplus materials as waste would have a significant impact on material disposal cost and the environmental impact of the Proposed Development. GI and testing followed by a Quantitative Risk Assessment in accordance with the Environment Agency's Land Contamination Risk Management guidance and BS10175:2011 + A2:2017 should be carried out. It is currently anticipated that STDC will complete remediation works required to create a suitable development area before the construction of the Proposed Development. The scope of STDCs remedial works will include mitigation of any identified risks to controlled waters and / or human health, with STDC to obtain all necessary consents and permits for the works. By this means it is anticipated that re-use of site won materials can be confirmed as valid.

10A.4.44 To adequately control the re-use of materials such as soils and crushed concrete, suitable controls will be in place and developed and implemented as specified in a Final Construction Environmental Management Plan(s) (CEMP), a Final Site Waste Management Plan (SWMP), Materials Management Plan (MMP) and an Asbestos Management Plan (AMP). A Framework CEMP (EN070009/APP/5.12)) has been submitted with the DCO Application. The Final CEMP(s) will be produced prior to construction and will be produced in accordance with the Framework CEMP, secured via Requirement of the Draft DCO (EN070009/APP/4.1).

10A.4.45 Ground obstructions from the former Redcar Steelworks and the Redcar Iron and Steel Works are likely to be abundant across the Main Site. Obstructions shall likely result from gravel, cobble and boulder sized pieces of slag, very dense material, relict buried foundations, walls, ground slabs, tunnels and possibly pile foundations

from former infrastructure. Identification of obstructions and time for removal and/or coring through encountered obstructions will need to be considered during future project stages.

Services

- 10A.4.46 Widespread services are likely to be abundant across the Proposed Development Site owing to the historical industrial development. Therefore, prior to any works being completed on the Proposed Development Site, in engagement with asset owners/landowners, a full PAS128 types D to B survey shall be required; with a PAS128 type A survey required where work is required, and the location of the service cannot be fully confirmed.
- 10A.4.47 Existing services could be affected by the development depending upon their location. In engagement with asset owners / landowners, the location of any services should be determined prior to design development and confirmed before undertaking ground investigation in accordance with the requirements of CDM Regulations 2015. Prior to any intrusive works service clearance work required at each investigation location is to be undertaken in accordance with HSE guidance note HSG47 (Third edition) publication – Avoiding Danger from Underground Services.
- 10A.4.48 Where groundwater is encountered, service excavations may need to be battered back to a safe angle as determined onsite or require dewatering and / or continuous support as described above.
- 10A.4.49 Proposed services could be affected by Artificial Ground (Made Ground) that may contain high concentrations of PAHs. Where high PAHs are present appropriate measures should be taken and services will need to be laid in trenches, infilled with clean inert bedding materials, where appropriate separated by suitable geotextiles and protected.
- 10A.4.50 Consideration should be given to the use wrapped steel, wrapped ductile iron, copper and PE barrier pipe with an aluminium barrier layer (PE-AI-PE) for services and water supplies in contaminated soils.

UXO

- 10A.4.51 According to the Detailed Unexploded Ordnance Desktop Survey (Annex D) completed for the Main Site, Luftwaffe aerial reconnaissance photography identified the Redcar Iron Works (located partially on-site) as a primary bombing target.
- 10A.4.52 Historical records identified evidence of significant bombing within Redcar and the surrounding area. Notably, multiple high explosive bomb strikes were recorded impacting in the vicinity of Redcar Iron Works (located on-site and in the vicinity) in 1941/1942, with at least seven known to have directly impacted the works. In addition, supplementary research identified numerous high explosive bomb strikes in the vicinity of the Site, the closest being on and around Bran Sands Bombing Decoy (located 200m south-west).

- 10A.4.53 Historical records identified bomb damage to the iron furnaces, mill boilers and a gas cleaning plant within the Redcar Iron Works, due to the bomb strikes. Extensive military activity has also been documented on-site previously. For example, numerous anti-invasion installations were built within the Site including four minefields, five pillboxes and AAA (Anti-Aircraft Artillery) gun batteries. As a result, it is considered highly likely that munitions may have been stored, located and/or fired from this site during WWII.
- 10A.4.54 Given that extensive WWII bombing was recorded potentially on-site and/or in the immediate vicinity of the Site, combined with the extensive military installations and minefields located on-site and the possibility that the proposed intrusive works will encounter previously undisturbed ground below ground level in areas of the Site, a combination of the following shall be required:
- UXO Emergency Response Plan;
 - UXO Safety and Awareness Briefing;
 - Explosive Ordnance Disposal Engineer Watching Brief – for Open Intrusive Works; and
 - Intrusive Magnetometer Survey – for Closed Intrusive Works.

Adverse Ground Chemistry

- 10A.4.55 The presence of the chemical weathering of sulphides to sulphates can react with substructure concrete causing significant degradation.
- 10A.4.56 Therefore, the Aggressive Chemical Environment for Concrete (ACEC) Classification shall be required for the Proposed Development Site, allowing for the correct concrete mix to be determined.
- 10A.4.57 Proposed services could be affected by Made Ground with potentially high concentrations of Polycyclic Aromatic Hydrocarbons (PAHs). Where high PAHs are present appropriate measures should be taken and services will need to be laid in trenches, infilled with clean inert bedding materials, where appropriate separated by suitable geotextiles and protected.
- 10A.4.58 Consideration should be given to the use of wrapped steel or ductile iron, copper, and polyethylene (PE) barrier pipe with an aluminium barrier layer (PE-Al-PE) for services and water supplies in contaminated soils.
- 10A.4.59 Chemically aggressive ground also impacts the durability of the proposed structures. Concrete design needs to consider the chemical nature of the ground and an appropriate chemical classification to ensure it does not impact over the duration of the Proposed Development.

Frost Susceptibility

- 10A.4.60 Frost susceptibility issues may arise where silty lithologies are present. The California Bearing Ratio (CBR) values and frost susceptibility of the sub-grade soils and groundwater conditions will need to be further assessed by means of intrusive ground investigations and laboratory testing. A confirmatory GI will be undertaken

prior to the design and construction of the Proposed Development, refer to Section 10.5 of Chapter 10: Geology, Hydrogeology and Contaminated Land (ES Volume I, EN070009/APP/6.2) for further details.

Gas Exclusion

- 10A.4.61 Potentially harmful gases may be generated by Made Ground and could cause harm to ground workers during construction. Gas monitoring in the Made Ground suitable to assess the potential risk to ground workers during excavation / construction is proposed as part of future GI works. Containment areas shall be required at the Proposed Development Site compound in case of a toxic gas release onsite.
- 10A.4.62 Following the gas monitoring programme proposed as part of future GI works it may be that ground gas protection measures may be required for the structures onsite to mitigate risks to human health and the development dependent upon the results.

Embankments

- 10A.4.63 It is not known whether permanent earthworks embankments are to be formed as part of the Proposed Development. However, low height landscaping / noise mitigation bunds may be expected to be formed to screen the Main Site. In addition, local cut and fill bulk earthworks to create level development platform areas is likely to be required. Details will be finalised during detailed design. Preliminary geotechnical risks identified with this activity are discussed in Appendix 10D (ES Volume III, EN070009/APP/6.4).

Subgrade

- 10A.4.64 The following broad guidance for preliminary pavement road foundation design is provided. This is based on guidance with CD 225 2020:
- In-situ Cohesive Material – likely to comprise a mixture of Cohesive Made Ground, fine grained Tidal Flat Deposits and Glacial Till (with inclusions of Glaciolacustrine Deposits). Material behaviour will be controlled by plasticity and undrained shear strength when exposed onsite. However, a CBR value of <2.5 % is considered likely. Improvement by modification using cement and/or lime or through excavation and replacement with granular material may be necessary.
 - Imported General Cohesive Material – likely to be controlled by material plasticity and undrained shear strength onsite. A CBR value of 2.5 % can be assumed at this stage.
 - 500 to 1000 mm of imported General Granular or Selected Granular Material – where this is proposed to form the subgrade, the upper limit on design surface modulus for areas of improvement of the subgrade shall be 50 MPa.
- 10A.4.65 CBR values will require confirmation and ground investigation is recommended to assess the ground conditions and determine CBR values below proposed pavements.

10A.4.66 Where expansive ferrous slag is proved below proposed pavements there is a risk that this may cause heave resulting in rough, undulating or cracked pavement surfaces. GI to determine the mechanical properties of slag to evaluate its swelling behaviour is recommended. The removal of this material may be required where ground conditions are determined to be too poor for subgrade to be satisfactorily constructed. As also mentioned above, an assessment of the cohesive layers in the Tidal Flat deposits is also required. This is to understand the long-term consolidation and settlement effects of the material under the paved areas and plant roads.

Structures

10A.4.67 Piled foundations are likely to be required for heavily loaded structures on the Main Site, or those that are sensitive to movement for example rotating equipment. Given the nature of the Made Ground and superficial deposits, it is likely that piles will need to be augured or bored into underlying competent bedrock. There is a risk to the progress of pile bore augering because of the obstructions on Main Site. In order to further anticipate the extent of this risk, consideration may be given to probing ahead of piling operations. Methods of construction which can overcome extensive obstructions include rotary drilling and / or pre-boring in advance of the full pile bore commencement.

10A.4.68 Structure floor slabs and connecting services / infrastructure may also need to be piled to reduce differential movements, particularly for settlement sensitive structures with tight serviceability limit requirements.

10A.4.69 Groundwater is anticipated to be relatively shallow across the Main Site although ground investigation data (including post site works monitoring) is minimal. Temporary casing would be required to support the pile bores within thick granular (coarse) Artificial Ground (Made Ground) and Tidal Flat Deposits below groundwater level and pile bores would therefore need to be filled with water or drilling mud to balance external water pressures to avoid base disturbance during drilling. Allowance should also be made for placing concrete by tremie.

10A.4.70 The presence of thick deposits of slag at the Main Site may have potential to generate ground displacements (heave and / or lateral expansion) as a result of chemical changes and / or variations in groundwater level. Expansion of ferrous slag could result in unpredictable additional uplift and lateral loading on piles after installation. Piled foundations will need to be designed to accommodate additional loading or could be sleeved over the expected zone of swelling. However, this form of construction would be more expensive than conventional piled foundations and should be allowed for in the geotechnical and construction risk registers.

10A.4.71 Generally, slag will have a high acid neutralisation capacity, and acid corrosion due to sulphate or sulphide (usually calcium sulphide) content is unlikely to be a problem. However, the possible impact of brackish water and high chloride content on steel also needs to be considered, especially if ground movement (vertical heave and / or lateral expansion) could lead to cracks forming in steel reinforced concrete.

10A.4.72 The possible presence of UXO will also impact piling during construction. Probing will be required at each pile position before the start of pile construction to prove

the absence of UXO buried in natural soils below the more recent deep cover of Made Ground. Pre-construction clearance will likely require the use of a deep intrusive magnetometer survey.

- 10A.4.73 Shallow foundations, particularly large raft foundations should be considered where appropriate for lightly to moderately loaded structures. Raft foundations have the advantage of being relatively settlement tolerant due to their rigidity relative to their applied bearing pressures and are therefore able to accommodate differential settlements / heave without significant structural distress. Tying adjacent individual foundations together could also be considered as a means of reducing the likelihood of differential settlement occurring between adjacent structures. However, this form of construction is likely only to be suitable for lightly to moderately loaded structures where serviceability limits are not critical.

Contaminated Land

- 10A.4.74 Contaminated land that may have a detrimental effect on the structural integrity of construction materials, such as concrete and steel that is used for the shallow and piled foundation, may have to be removed. Therefore, an assessment of this material, most likely to be present within the Made Ground, shall be required. Where there are no suitable options for onsite reuse or remediation, removal of the material may be required. Added cost shall be incurred where the material is to be taken to licensed landfill or where remedial processing is required. A full contaminated land risk assessment has been undertaken and is provided at Appendix 10C (ES Volume III, EN070009/APP/6.4).

10A.5 Annex A: Groundsure / Envirocheck Reports

Envirocheck - 284970768_1_1 – 21/09/2021 (Main Site);

Envirocheck - 233803971_1_1 – 10/02/2020 (Main Site and All Connection Corridors);

GISP-2022-13154-11993 – 05/12/2022 (Hydrogen Pipeline Corridor);

GSIP-2023-13293-12624_A_1 to G_1 – 06/12/2022 (Hydrogen Pipeline Corridor);

GS-9167762 – 01/11/2022 (Main Site and All Connection Corridors);

GS-9167693 – 01/11/2022 (Hydrogen Pipeline Corridor);

GS-9167761 – 01/11/2022 (Main Site) GS-9167761 – 01/11/2022 (Hydrogen Pipeline Corridor);

GS-9167787 – 01/11/2022 (Hydrogen Pipeline Corridor and Electrical Connection Corridor);

GS-9167692 – 01/11/2022 (Hydrogen Pipeline Corridor);

GS-9167765 - 01/11/2022 (Hydrogen Pipeline Corridor);

GS-9167694 – 01/11/2022 (Main Site and All Connection Corridors); and

GS-9366848 – 20/02/2023 (The Main Site and Hydrogen Pipeline Corridor)

GS-9167696 01/11/2022 (Hydrogen Pipeline Corridor).

10A.6 Annex B: Site Walkover Summary

Main Site

10A.6.1 Information pertaining to the Main Site has been summarised from the site walkover conducted on 17 November 2022. During the time of the walkover, the Main Site in the north was undergoing a phase of demolition and it is understood that this is now complete, information from the visit is summarised as follows:

- boreholes from previous phases of intrusive investigation were observed across the Main Site and surrounded by pedestrian barriers;
- the north of the Main Site was in the process of demolition related to the power station, coking plant, and by-product plant;
- hardstanding groundcover was observed to remain in some areas following previous demolition, and standing water was observed across the Main Site;
- the topography of the Main Site was relatively flat apart from bunds which were noted to separate the northwest area from the rest of the Main Site and some raised areas of ground;
- substations in fibreglass housing were noted across the area;
- ecological receptors were noted to be present and pheasants were observed;
- in the centre, a Propane Compound was noted adjacent to the power station building; and
- a service corridor was present with a high voltage electrical cable.

10A.6.2 Associated infrastructure from the former steelworks was observed including a blast furnace – understood to now be demolished (circa November 2022) by blasting. The area was observed to be relatively flat with some areas of soft standing, and areas of hardstanding remained in the footprints of former buildings.

- within the southern section of the Main Site, a railway line was observed running east to west adjacent to the southern boundary;
- to the north-west of the southern section, a large area was being used as storage for soil and rubble from the demolition in the north, and a liquid waste storage area, IBC and 205L metal drums were observed;
- in the south-west was a bulk materials vendor operating onsite and offsite to the west, substations were also noted within this area;
- some demolition was noted having taken place in the south-west with a pile of bricks present and the corner of a building remaining with a valve;
- a presumed active fire hydrant was observed in the south-west in the area of former buildings; and
- ecological receptors were observed including a barn owl and multiple hares.

10A.7 Annex C: Previous Reports Summary

Desk Studies

CH2M (2017), SSI1 Redcar Works – Phase 1 Geo-Environmental Desk Study, Report Reference: 678079_SSI1_001.

10A.7.1 This Desk Study report focuses predominantly on the southern half of the Main Site, however, does include additional land 300 m south and 700 m east of the plot within the scope.

10A.7.2 In total, 31 trial pits and two boreholes (cable percussive) were undertaken in the Sahaviriya Steel Industries 1 (SSI1) site.

10A.7.3 CH2M noted that exploratory holes located within SSI1 from the 2004 Enviros Ground Investigation, returned the following results:

- soil pH was alkaline to highly alkaline (up to 12.7);
- acid Soluble Sulphate (1,000 mg/kg) and Water-Soluble Sulphate as SO₄ (1,200 mg/kg) returned exceedances of the 'Tier 1 Soil Screening Criteria' for the majority of samples;
- zinc (720 mg/kg), PAH Total EPA16 (40 mg/kg), Boron (3 mg/kg), Lead (750 mg/kg) returned exceedances of the 'Tier 1 Soil Screening Criteria' for several samples;
- groundwater pH returned values between 7.8 and 10; and
- no surface water testing was conducted within SSI1.

CH2M (2017), SSI2 Redcar Works – Phase 1 Geo-Environmental Desk Study, Report Reference: 678079_SSI2_001.

10A.7.4 This Desk Study report focuses predominantly on the northern half of the Main Site, however, does include additional land up to 700 m east of the plot within the scope.

10A.7.5 In total, 58 trial pits and nine boreholes (cable percussive) were undertaken within the Sahaviriya Steel Industries 2 (SSI2) site.

10A.7.6 CH2M noted that exploratory holes located within SSI2 from the 2004 Enviros Ground Investigation, returned the following results:

- widespread exceedances of Sulphate, Cyanide and isolated exceedances of Heavy Metals within groundwater;
- Redcar and Cleveland Borough Council provided information relating to notable exceedances in 2016 of Environmental Quality Standards (EQS) for Benzo(a)pyrene and Fluoranthene and general exceedances of ammoniacal nitrogen various metals, inorganic compounds dioxins; and
- asbestos (Chrysotile and Amosite) found onsite.

Arcadis (2018), Site Condition Report, Report No. Redcar Steelworks-AUK-XX-XX-RP-GE-0001-02-SSI1_SSI2A_GI_SCR.

- 10A.7.7 This Desk Study report covers the entirety of the Main Site, which includes the areas covered by the CO₂ Export Corridor and Natural Gas Connection Corridor. The northern extents of the Water Connections Corridor, Electrical Connection Corridor, Hydrogen Pipeline Corridor and Other Gases Connection Corridor are included within the report boundary. The Site Condition Report reviewed the data provided by AEG and developed a Conceptual Site Model (CSM) which would form the basis of future risk assessments by undertaking a detailed assessment of the information available including the historical site use and ground investigation information.
- 10A.7.8 The report highlights risk from the Made Ground from asbestos, metals and inorganics, polyaromatic hydrocarbons, total petroleum hydrocarbons. The report notes that concentrations of metals within the natural deposits and hydraulic fill are *“generally consistent within the same order of magnitude with each other and with the Hydraulic Fill.”*
- 10A.7.9 Within the groundwater, exceedances of metal, inorganic ions and petroleum hydrocarbons are recorded at levels presenting a concern although no significant sources of volatile organic compounds, semi-volatile organic compounds or phenols were identified.
- 10A.7.10 The CSM goes on to identify pathways which may allow contaminants to interact with receptors. These were identified to be:
- inhalation of dust;
 - inhalation of vapours;
 - migration of ground gases;
 - direct contact with contaminated material;
 - leaching of contaminants from Made Ground to the superficial deposits;
 - migration of contaminants to the bedrock;
 - migration of groundwater;
 - leaching of contaminants from Made Ground to surface water runoff; and
 - migration of surface water runoff.
- 10A.7.11 This assessment presents the same ground model as the Geotechnical Risk Assessment, though provides further detail with respect to the likely groundwater regime, stating that previous investigations have indicated that groundwater is present at elevations of between 4.5 m AOD and 1.5 m AOD. Table 10A-41 outlines in more detail the groundwater levels expected from the respective strata.

Table 10A-41: Ground Levels for the Strata Encountered at the Main Site

STRATA	RANGE IN DEPTH TO GROUNDWATER (m bgl)	RANGE IN GROUNDWATER ELEVATION (m AOD)
Made Ground and Superficial Deposits	1.60 to 4.90	2.29 to 5.48
Mercia Mudstone	4.40 to 5.20	2.42 to 1.35

[Arcadis \(2022a\) Phase 1 Environmental Assessment, Land West of Warrenby, Teesworks](#)

10A.7.12 A Desk Study was undertaken by Arcadis (2022a) for a parcel of land within the South Tees Development Corporation (STDC) site, which includes the area of the adjacent NZT site and a small parcel of land within the Connection Corridors.

10A.7.13 Within the Desk Study, a number of previous reports were reviewed which identified the following:

- A GI undertaken by Enviros in 2004 identified Made Ground up to 7 m thick. Exceedances of the screening values for pH and sulphate were recorded in soil samples, as well as localised exceedances of PAH, lead and zinc. The groundwater was identified as flowing in a north / north-east direction, and elevated arsenic, copper and cyanide were identified in groundwater samples.
- A GI was undertaken by AEG in 2021 which encountered bedrock (Redcar Mudstone) at 37.7 m bgl. Non-Aqueous Phase Liquids (NAPL) and tar hotspots were identified within structures and Made Ground.
- A geo-environmental risk assessment was undertaken which identified a low risk to future site users and controlled waters and a very low risk to members of the public. An overall low geotechnical risk was also identified. It was recommended that investigation within areas of data gaps should focus on the extent of Made Ground and potential contaminants present within Made Ground.

Factual Reports

[CH2M \(2017c\), SSI Redcar – SSI1, Factual Report – Initial Trial Pitting, South Tees Site Company, November 2017](#)

10A.7.14 A GI was undertaken between November 2016 and April 2017 by CH2M (2017c) within the South Tees Development Corporation (STDC) site, which includes the Main Site; the western and central extent of the Water Connection Corridor and CO₂ Export Corridor and northern extent of the Other Gases Connection Corridor, Natural Gas Connection Corridor, Hydrogen Pipeline Corridor (south of the River Tees) and Electrical Connection Corridor.

10A.7.15 The GI comprised 328 trial pits to a maximum depth of 4.5 m bgl.

10A.7.16 Geo-environmental laboratory testing was undertaken on soil samples for asbestos, metals, inorganics, petroleum hydrocarbons, PAHs, PCBs, phenols, VOCs and SVOCs. Soil leachate testing was undertaken for metals and inorganics.

CH2M (2017d), SSI Redcar – SSI2, Factual Report – Initial Trial Pitting, South Tees Site Company, November 2017

10A.7.17 A GI was undertaken in May 2017 by CH2M (2017d) within the South Tees Development Corporation (STDC) site, which includes the north-western extent of the Main Site; northern extent of the Natural Gas Connection Corridor, Electrical Connection Corridor, Water Connection Corridor, CO₂ Export Corridor and additional land to the north of the Hydrogen Pipeline Connection Corridor and Other Gases Connection Corridor.

10A.7.18 The GI comprised 68 trial pits to a maximum depth of 4.5 m bgl.

10A.7.19 Geo-environmental laboratory testing was undertaken on soil samples for asbestos, metals, inorganics, petroleum hydrocarbons, PAHs, PCBs, phenols, VOCs and SVOCs. Soil leachate testing was undertaken for metals and inorganics.

Allied Exploration and Geotechnics Ltd (2018 a) Former SSI Steelworks Redcar – Advance Boreholes in SSI 1, Areas C & D, Final Factual Report, 2018

10A.7.20 Intrusive investigation was conducted at the Former SSI Steelworks Redcar between 25 July to 7 August 2017 comprising seven cable percussive boreholes, one extended using rotary coring techniques, with SPT and Variable Head Permeability Testing throughout. A factual report was produced following the investigation. All borehole locations were located within a parcel of land immediately south of the Main Site, CO₂ Export Corridor and Water Connection Corridor, and to the south of the north-western extent of the Natural Gas Connection Corridor, Electrical Connection Corridor, Other Gases Connection Corridor and Hydrogen Pipeline Corridor (south of the River Tees) within the Hydrogen Pipeline Corridor, BH21 and BH25 were also within the Electrical Connection Corridor and BH24 was also within the Water Connection Corridor.

10A.7.21 A summary of the findings is presented here:

- During drilling, visual or olfactory evidence of contamination was observed within BH23 (moderate hydrocarbon odour within superficial deposits), BH25 (hydrocarbon odours within Made Ground), BH26 (creosote and chemical odours within Made Ground and superficial deposits) and BH28 (chemical and possible ammonia odours within Made Ground and superficial deposits);
- Made Ground was observed to a maximum depth of 7.80 m bgl (BH23) and clinker, slag and burnt shale was identified across boreholes;
- Elevated concentrations of methane and carbon dioxide were detected during one or more round of post-investigation monitoring within BH25, BH26 and BH28. The highest detected concentrations were 65.2 % v/v for methane and 22.40 % v/v for carbon dioxide within BH28;

- The soil pH across the Site was found to be alkaline with the highest pH being 10.5 (BH23);
- Elevated concentrations of metals within soil samples including arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, vanadium and zinc were observed across the site;
- Elevated concentrations of petroleum hydrocarbons (BH23, BH25, BH26, BH27, BH28) and PAHs (BH21, BH23, BH25, BH26) were observed within soil samples;
- Elevated sulphates were observed within soil samples with the maximum concentration being 1100 mg/l within BH24;
- Marginally elevated soil VOC/SVOC concentrations were identified (BH23, BH25, BH27 and BH28);
- Within water samples, the pH was observed to be alkaline with the highest pH being 9.5 (BH27);
- Possible obstructions were observed within Made Ground (BH21 and BH23).

Allied Exploration & Geotechnics Limited (2018), Ground Investigation Contract, Report Reference: 4153 & 4154 (Area A)

10A.7.22 This Ground Investigation assessed the entirety of the Main Site, including that of the adjacent NZT Site. The information that was analysed from, a Geotechnical perspective, for the purposes of this report is outlined in Table 10A-42.

Table 10A-42: Boreholes from 2018 AEG Investigation Relevant to the Main Site

EXPLORATORY HOLE NUMBER	DRILLING METHOD	COMPLETION DEPTH (m bgl)	DEPTH OF INSTRUMENTATION	INSTRUMENT RESPONSE ZONE (m bgl)	REMARKS
S1-BH01	CP+RO+RC	40.00	50 mm to 6.00 m bgl 50 mm to 24.00 m bgl	1.00 to 6.00 23.00 to 24.00	Water strike at 4.00 m – water level rose to 3.98 m bgl (20 mins).
S1-BH03	CP	13.00	50 mm to 6.50 m bgl	1.00 to 6.50	-
S1-BH10	CP	11.00	50 mm to 7.05 m bgl	0.95 to 7.05	-
S1-BH16	CP +RC	41.00	50 mm to 7.00 m bgl	1.00 to 7.00	-
S1-BH17	CP	18.20	50 mm to 6.00 m bgl	3.50 to 6.00	-
S2-BHA01	CP+RC	41.00	50 mm to 5.50 m bgl 50 mm to 21.00 m bgl	1.00 to 5.50 20.00 to 21.00	-

EXPLORATORY HOLE NUMBER	DRILLING METHOD	COMPLETION DEPTH (m bgl)	DEPTH OF INSTRUMENTATION	INSTRUMENT RESPONSE ZONE (m bgl)	REMARKS
S2-BHA03	CP	40.00	50 mm to 7.00 m bgl	1.00 to 7.00	-

10A.7.23 Nine groundwater samples were scheduled for chemical analysis (metals, inorganics, total petroleum hydrocarbon (TPHs), polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs) and polychlorinated biphenyl (PCBs)). No interpretation was undertaken as part of AEGs report.

10A.7.24 Furthermore, 65 soil samples were scheduled for chemical analysis (metals, inorganics, TPH, PAH, PCBs and asbestos). No interpretation was undertaken as part of AEGs report.

Interpretative Reports

CH2M, Former SSI Steelworks, Redcar – Initial Ground Investigation Works – Geoenvironmental Summary, South Tees Site Company Ltd. May, 2018.

10A.7.25 A Geoenvironmental Summary Report was prepared by CH2M (2018) using data obtained from the SS11 and SS12 2017 trial pitting GI and a supplementary GI comprising seven rotary and percussive boreholes to between 15.5 m bgl and 40.3 m bgl. The report includes land within the Main Site and the northern extent of the Water Connection Corridor, Electrical Connection Corridor, Natural Gas Connection Corridor, CO₂ Export Connectino Corridor, Hydrogen Pipeline Corridor (south of the River Tees) and Other Gases Connection Corridor.

10A.7.26 Key points are summarised as follows:

- Asbestos was identified in 34 samples, out of 256 samples tested;
- Exceedances of naphthalene and >EC10-EC12 aromatics were recorded in soil samples from Made Ground;
- Exceedances of arsenic, boron, cadmium, chromium, copper, manganese, mercury, selenium, zinc, cyanide total, cyanide free, cyanide complex and ammoniacal nitrogen were recorded in soil leachate samples from Made Ground. The report noted that it is unlikely for the site to be a source of leachate from heavy metals and inorganics;
- An exceedance of zinc was recorded in a soil leachate sample from natural ground;
- Exceedances of arsenic, boron, cadmium, chromium, copper, mercury, nickel, selenium, zinc, cyanide total, aliphatics (C5-C5, C6-C8, C8-C10, C10-C12, C16-C21, C5-C25), aromatics (C5-C7, C7-C8, C12-C16, C5-C35), total TPH, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene,

benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, phenol, vinyl chloride and benzene were recorded in groundwater;

- Slag testing was undertaken which identified varying quantities of blast furnace slag and basic steel slag;
- Ground gas monitoring was undertaken in seven boreholes in four monitoring rounds between 17 / 18 August 2017 and 30 January 2018. The report suggested that the Characteristic Situation for the site is designated as CS1. However, data from BH25 from 15 September and BH28 from 30 January were disregarded as CH2M interpreted the results as anomalous. It is noted that significant flow rates (26l/hr) are absent, and if included would result in a CS4. Overall, it is recommended that the site is a CS2 and gas protection measures are required; and
- The results of the BRE testing indicate that a Design Sulphate Class of DS-5 and an Aggressive Chemical Environment for Concrete (ACEC) Class of AC-5 would be appropriate for Made Ground.

[Arcadis \(2018\), Geotechnical Risk Assessment Report, Report No. Redcar Steelworks-AUK-XX-XX-RP-GE-0001-P1-SSI1_SSI2A_GI_GRA](#)

- 10A.7.27 The report is located across the entirety of the Main Site and CO₂ Export Corridor, The northern extents of the Natural Gas Connection Corridor, Electrical Connection Corridor and Hydrogen Pipeline Corridor (south of the River Tees, and the western and central extent of the Water Connections Corridor, are included within the report boundary.
- 10A.7.28 This Geotechnical Risk Assessment was completed over the wider steelworks site that encompasses all of the Main Site. The assessment also covers the adjacent NZT area to the east where similar ground conditions are expected.
- 10A.7.29 The report supports the inferred geological stratigraphy that is outlined throughout this report. It highlights the presence of the Made Ground deposits of differing compositions owing to the industrialised setting of the Site. Made Ground overlies the superficial deposits of the Wind-Blown Sand, Tidal Flat Deposits, Glacial Till and Glaciolacustrine Deposits. The bedrock geology comprises the Redcar Mudstone, Penarth Group, and the Mercia Mudstone. The spatial presence of the deposits varies across the Site, which is discussed in greater detail throughout the present report.
- 10A.7.30 The Geotechnical Risks that were highlighted in the Arcadis risk assessment are the following and are discussed in further detail in the next sections of the present report:
- inadequate bearing capacity of Made Ground to support proposed structures;
 - anticipated total and differential settlement/heave more than the tolerable limits;
 - potential collapse compression because of surface water infiltration and groundwater movement;

-
- potential heave because of chemical changes causing expansion of the ferrous slag;
 - sulphate attack of concrete;
 - potential for UXO to be present within normally consolidated Tidal Flat Deposits;
 - obstructions within the made ground (boulder size fragments of slag and buried underground structures);
 - the potential for the presence of harmful ground gas;
 - presence of services across the Main Site;
 - long term creep settlement of natural soils; and
 - Areas of hydraulic fill associated with sluiced sand to raise levels at the Main Site. However, review of historical as built drawings have indicated that the area for this study was not filled with Hydraulic fill.

Arcadis (2022c) Land West of Warrenby, Teesworks, Redcar, Site Condition Report, Generic Quantitative Risk Assessment and Detailed Quantitative Risk Assessment, South Tees Development Corporation, REPORT NO: 10035117-AUK-XX-XX-RP-ZZ-0428-03-LWoW_DQRA

10A.7.31 Arcadis (2022c) undertook a DQRA for the adjacent NZT site including a small parcel of land within the CO₂ Export Connection Corridor, Water Connection Corridor, Electrical Connection Corridor, Natural Gas Connection Corridor, Hydrogen Pipeline Corridor (south of the River Tees) and Other Gases Connection Corridor using data obtained from previous GI.

10A.7.32 Key points are summarised as follows:

- Groundwater was encountered between 2.02 m bgl and 4.84 m bgl and between 1.91 m bgl and 4.38 m bgl during the 2017 and 2021 GI respectively. The groundwater levels at the interface of Made Ground and Tidal Flat Deposits was encountered between 1.8 m bgl and 4.58 m bgl during the 2017 GI.
- Groundwater was encountered within Tidal Flat Deposits at 4.71 m bgl during the 2017 GI, and the 2021 GI recorded groundwater within both the Tidal Flat Deposits and Glacial Till Deposits between 2.4 m bgl and 4.01 m bgl;
- Groundwater within mudstone was only recorded during the 2021 GI at depths between 1.98 m bgl and 5.69 m bgl;
- Arcadis suggested that groundwater within the Made Ground is likely in hydraulic continuity with the underlying Tidal Flat Deposits and flows towards the north. It is noted that the groundwater flows in a north / northeast direction within the Redcar Mudstone Formation;
- A review of the salinity of groundwater identified potential brackish conditions in the north of the site and freshwater conditions towards the south;

- The results of the Generic Quantitative Risk Assessment (GQRA) identified the following exceedances:
 - An exceedance of benzo(b)fluoranthene and three exceedances of dibenzo(a,h)anthracene in soil samples. A rare black crystallised tar was identified in Made Ground within the same location as a dibenzo(a,h)anthracene exceedance.
 - Asbestos was identified in 23 samples out of a total of 220 samples analysed between 0.5 m bgl and 4.4 m bgl, of which 13 samples were recorded lower than the limit of quantification and 10 recorded 0.001 – 0.333%/m/m.
 - No exceedances of the GAC for industrial workers were identified for inhalation of potential contaminants from groundwater.
 - Exceedances of the Water Quality Standards (WQS) were identified in soil leachate samples for metals (arsenic, cadmium, copper, iron, lead, manganese, mercury and nickel), inorganics (ammoniacal nitrogen, cyanide and sulphate), TPH and PAH in Made Ground. Leachate exceedances of metals (arsenic, copper, iron, mercury and nickel), inorganics (ammoniacal nitrogen, cyanide and nitrite), TPH and PAH's were identified in superficial deposits. Leachate samples from the bedrock also identified exceedances of iron, mercury, nickel, ammoniacal nitrogen, TPH and fluoranthene.
 - Exceedances of metals, inorganics, TPH, PAH, VOC / SVOC recorded in groundwater samples from Made Ground, superficial deposits and bedrock.

10A.7.33 The report notes that tar was visually identified in the north-east and in the south / south-east of the adjacent NZT site. However, the presence of NAPL was not identified during groundwater monitoring undertaken in 2004, 2018 and 2021.

- Elevated metals, PAH and TPH were recorded throughout the NZT site within soil samples, and a similar trend was identified with groundwater samples. Arcadis suggested this reflected a diffuse source of contamination.
- A DQRA was undertaken for the risk to controlled water receptors which identified exceedances of the Site Specific Assessment Criteria (SSAC) at the 50 m compliance point for manganese, ammoniacal nitrogen, cyanide total, sulphate, TPH (aromatic >EC10-EC12 and >EC16-EC21), fluoranthene and anthracene. Exceedances at the 200m compliance point were recorded for ammoniacal nitrogen, cyanide, sulphate and thiocyanate. The report suggested that most exceedances at the 50m and 200m compliance points are non-hazardous.
- The report concluded that there is not a significant risk to the North Sea for most contaminants except for likely non-hazardous contaminants (ammoniacal nitrogen, cyanide, sulphate and thiocyanate). There is a theoretical risk to the North Sea from a limited number of inorganics, although the risk was considered to be overestimated and did not consider dilution. It was also noted

that the NAPL and tar is not presenting a risk to water or ecological receptors. There is also a potential chronic exposure risk to human health for onsite workers associated with asbestos, PAH and tar.

Remediation Strategies

[Arcadis \(2018\), Ground Remediation Options Appraisal Report, Report No. Redcar Steelworks-AUK-XX-XX-RP-GE-0001-02-SSI1_SSI2A_GI_ROA.](#)

- 10A.7.34 The report is located across the entirety of the Main Site and CO₂ Export Corridor. The northern extents of the Natural Gas Connection Corridor, Electrical Connection Corridor and Hydrogen Pipeline Corridor (south of the River Tees, and the western and central extent of the Water Connections Corridor are included within the report boundary.
- 10A.7.35 Following the Site Condition Report, a remediation options appraisal was undertaken to assess which method of remediation would be most suitable for the site.
- 10A.7.36 Remediation methods assessed included:
- engineering controls;
 - excavation, screening, treatment and reuse;
 - excavation and disposal; and
 - capping in situ.
- 10A.7.37 The above methods were compared against each other for their suitability to meet the environmental targets for the site and if they would meet the geotechnical conditions require for future development.
- 10A.7.38 Based on a review of the results of the ranking process, site specific knowledge, consideration of the key remediation objectives, and view that the risk to human health receptors is the key driver for remediation at the site, Arcadis identified capping in situ as a preferred remediation strategy for the asbestos identified at the site and engineering controls as the preferred strategy to address the geotechnical constraints.
- [Arcadis \(2022b\) Land West of Warrenby, Teesworks, Redcar, South Tees Development Corporation, REPORT NO. 10035117-AUK-XX-XX-RP-ZZ-0417-05-Rem_Strat_LwoW](#)
- 10A.7.39 A Remediation Strategy was prepared by Arcadis (2022b) under the instruction of South Tees Development Corporation to address environmental constraints to ground conditions within the adjacent NZT site, which includes a parcel of land within the H2Teesside Utility Connection Corridors.
- 10A.7.40 Previous GI from the CH2M 2017 reports, Arcadis 2018 reports and AEG 2021 report were summarised within the Remediation Strategy and noted the following types of Made Ground:

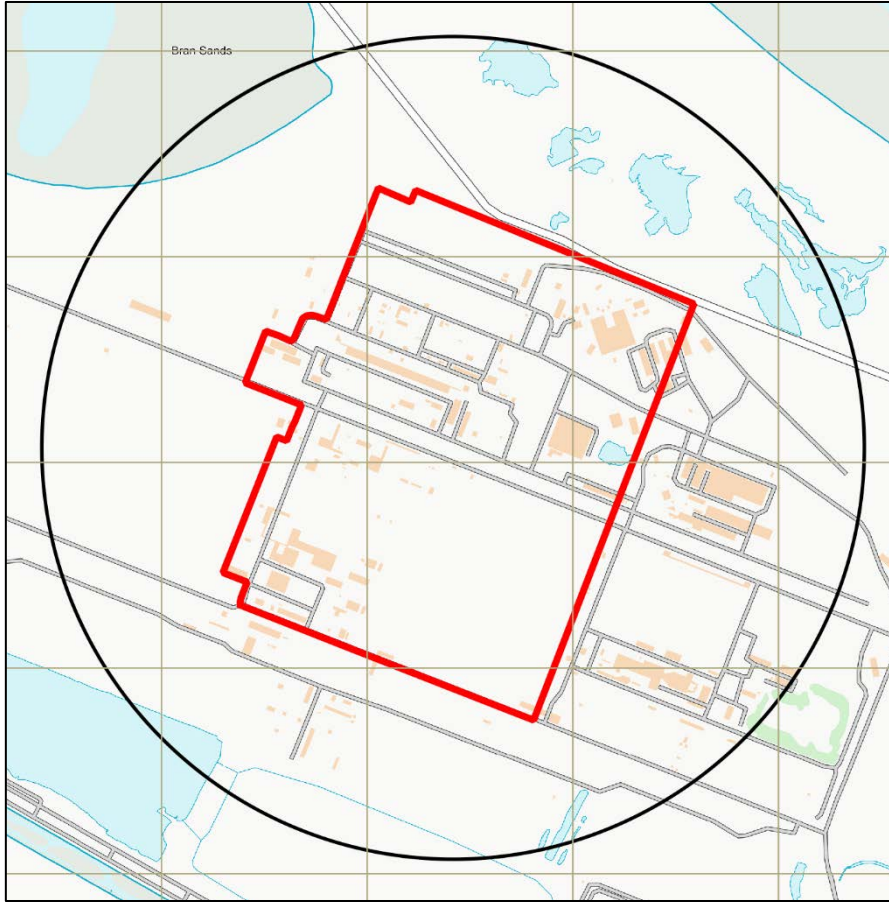
-
- slag dominant Made Ground comprising gravel to boulder sized fragments including brick, concrete, coal, sandstone and clinker;
 - granular Made Ground comprising a sandy gravel with clay, cobbles and gravel as well as brick, concrete, demolition materials and the presence of slag within the soil matrix;
 - cohesive Made Ground comprising soft to very stiff clay with brick, concrete, demolition materials and slag within the soil matrix;
 - sinter comprising a black fine gravel used as a surfacing material; and
 - waste comprising metal, wood and plastic.
- 10A.7.41 It is noted that there is a potential GI data gap within the area of the former blast furnace stock house, which was inaccessible at the time of writing due to ongoing demolition works.
- 10A.7.42 Arcadis recommended that further ground gas monitoring is required prior to redevelopment of the site.
- 10A.7.43 The following geotechnical constraints were identified:
- potential damage to structures associated with slag deposits and refractory bricks;
 - potential inadequate bearing capacity of Made Ground and Tidal Flat Deposits associated with long term creep settlement;
 - variability in ground conditions both laterally and vertically;
 - potential impacts of loading and the groundwater regime on total and differential settlement and heave;
 - aggressive ground conditions associated with sulphate; and
 - obstructions within Made Ground associated with underground structures and boulder sized fragments.
- 10A.7.44 The results of a Detailed Quantitative Risk Assessment (DQRA) undertaken by Arcadis were summarised which identified the following:
- potential risk to human health receptors associated with the presence of asbestos fibres within shallow soils;
 - exceedances of the screening criteria for PAH within shallow soils require remediation; AND
 - Arcadis note that NAPL and tar impacted material should not be reinstated and requires treatment or disposal at an appropriate facility. Potential NAPL contamination was identified in seven exploratory hole locations from the CH2M 2017 and AEG 2021 GI.
- 10A.7.45 The following remediation objectives were identified:
-

-
- management of contamination, including the NAPL soils, which is above the screening levels;
 - management of the source-receptor-pathway pollutant linkage for asbestos containing materials;
 - make excavated soils suitable for reuse under DoWCoP to maximise the reuse of soils; and
 - mitigate the potential risks associated with unexpected contamination by developing an unexpected contamination strategy.

10A.8 Annex D: Detailed Unexploded Ordnance Desktop Survey

Detailed Unexploded Ordnance (UXO) Threat & Risk Assessment

Meeting the requirements of *CIRIA C681* 'Unexploded Ordnance (UXO) A Guide for the Construction Industry' Risk Management Framework



PROJECT NUMBER	10202_1	ORIGINATOR	R. Taylor
PROJECT	The Foundry	REVIEWED BY	B. Wilkinson
CLIENT	AECOM	RELEASED BY	L. Gregory
VERSION	1.0	DATE	11 th November 2022
UXO RISK RATING	HIGH - This Study Site requires further action to reduce risk to ALARP during intrusive activities.		



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Acronyms and Abbreviations

AA	Anti-Aircraft	NEQ	Net Explosive Quantity
AAA	Anti-Aircraft Ammunition	NFF	National Filling Factory
ALARP	As Low As Reasonably Practicable	NGR	National Grid Reference
AOD	Above Ordnance Datum	OD	Ordnance Datum
ARP	Air Raid Precaution	OS	Ordnance Survey
AXO	Abandoned Explosive Ordnance	PM	Parachute Mine
BD	Bomb Disposal	PoW	Prisoner of War
BDO	Bomb Disposal Officer	RADAR	Radio Detection And Ranging
bgl	Below Ground Level	RAF	Royal Air Force
BGS	British Geological Survey	RN	Royal Navy
BH	Borehole	RNAS	Royal Naval Air Service
BPD	Bomb Penetration Depth	ROF	Royal Ordnance Factory
CDP	Cast Driven Piles	SAA	Small Arms Ammunition
CFA	Continuous Flight Auger	TA	Territorial Army
CIRIA	Construction Industry Research and Information Association	TNT	Trinitrotoluene
CPT	Cone Penetration Testing	UK	United Kingdom
CS	County Series	UN	United Nations
EO	Explosive Ordnance	USAAF	United States Army Air Force
EOC	Explosive Ordnance Clearance	UXB	Unexploded Bomb
EOD	Explosive Ordnance Disposal	UXO	Unexploded Ordnance
GI	Ground Investigation	V Weapons	<i>Vergeltungswaffen</i> – Vengeance Weapons
GIS	Geographic Information Systems	WD	War Department
GL	Ground Level	WWI	World War One
GP	General Purpose	WWII	World War Two
GPS	Global Positioning Systems		
HAA	Heavy Anti-Aircraft		
HE	High Explosive		
HO	Home Office		
HSE	Health and Safety Executive		
IB	Incendiary Bomb		
kg	Kilograms		
km	Kilometres		
LAA	Light Anti-Aircraft		
LCC	London County Council		
LE	Low Explosive		
LSA	Land Service Ammunition		
m	Metres		
MoD	Ministry of Defence		
mm	Millimetres		



EXECUTIVE SUMMARY

Study Site

The Client has defined the Study Site as “The Foundry North & South, H2 Teesside” and it is centred on NGR 456208, 525535.

Risk Level

HIGH

Potential Threat Sources

The most probable UXO threat is posed by WWII-era German HE bombs, British AXO/LSA/SAA, IBs, and British AAA projectiles (which were used to defend against German bombing raids).

Risk Pathway

Given the types of UXO that might be present on-site, all types of aggressive intrusive engineering activities may generate a significant risk pathway.

Key Findings

During WWII, the Study Site was situated within *Redcar Municipal Borough*, which recorded three HE bomb strikes per 100ha, a “very low” level of bombing.

Luftwaffe aerial reconnaissance photography associated with the Study Site identified *Redcar Iron Works* (located partially on-site) as a primary bombing target.

ARP records associated with the Study Site were not available. Nonetheless, further research of historical records identified evidence of significant bombing within *Redcar* and the surrounding area. Notably, multiple HE bomb strikes were recorded impacting in the vicinity of *Redcar Iron Works* (located on-site and in the vicinity) in 1941/42, with at least seven known to have directly impacted the works. In addition, supplementary research identified numerous HE bomb strikes in the vicinity of the Study Site, the closest being on and around *Bran Sands Bombing Decoy* (located 200m south-west).

Official bomb damage mapping associated with the Study Site was not available. Nonetheless, further research of historical records identified bomb damage to the *iron furnaces*, *mill boilers* and a *gas cleaning plant* within the *Redcar Iron Works*, due to the aforementioned bomb strikes.

Extensive military activity has also been documented on-site previously. For example, numerous anti-invasion installations were built within the Site including four minefields, five pillboxes and AAA gun batteries. As a result, it is considered highly likely that munitions may have been stored, located and/or fired from this Study Site during WWII.

Pre-WWII mapping (1938) and post-WWII mapping (1953) shows that the Study Site was located in a developed industrial area during WWII; the Study Site itself primarily consisted of undeveloped land, alongside multiple structures and railway lines in the north-eastern sector associated with *Redcar Iron Works*. Therefore, it is likely that footfall within the Study Site would have varied throughout WWII, with high levels of footfall expected in all developed areas. Nevertheless, despite high levels of footfall, in any areas of potentially significant bomb damage, it is plausible that bomb damage debris may have concealed a UXB entry hole and caused it to go unnoticed. Additionally, as most of the Site was undeveloped during WWII, there is also a generally elevated likelihood that any UXBs impacting in those areas could have done so unnoticed.

The Site has undergone significant post-WWII development in some areas, specifically concerning the removal of structures associated with *Redcar Iron Works* and the subsequent development of structures and railway lines associated with *Teesside Works* throughout the Study Site. Consequently, it is considered likely that any UXO within post-war disturbed and developed ground would potentially have been discovered and removed. However, the potential for deep buried UXO to be present within any remaining areas of undisturbed ground is assessed to be extant.

EXECUTIVE SUMMARY (...continued)

Recommendations

Given that extensive WWII bombing was recorded potentially on-site and/or in the immediate vicinity of the Study Site, combined with the extensive military installations and minefields located on-site and the possibility that the proposed intrusive works will encounter previously undisturbed ground below ground level in areas of the Study Site, the following risk mitigation measures are recommended as a minimum in order to reduce risks ALARP during intrusive works in **all previously undisturbed ground** (i.e., that which has not previously been excavated, probed, drilled or otherwise intrusively disturbed since it was potentially contaminated with UXO).

Recommended Risk Mitigation Measures Overview

“Open” Intrusive Works

Engineering Methodology	UXO Emergency Response Plan	UXO Safety and Awareness Briefing	On-Call EOD Engineer	Non-Intrusive Magnetometer Survey	EODE Watching Brief	Intrusive Magnetometer Survey	UXO Risk Rating (Post-Mitigation)
Trial Pits	✓	✓	✗	✗	✓	✗	ALARP
Excavations	✓	✓	✗	✗	✓	✗	
Trenching	✓	✓	✗	✗	✓	✗	

“Blind” Intrusive Works

Engineering Methodology	UXO Emergency Response Plan	UXO Safety and Awareness Briefing	On-Call EOD Engineer	Non-Intrusive Magnetometer Survey	EODE Watching Brief	Intrusive Magnetometer Survey	UXO Risk Rating (Post-Mitigation)
Boreholes	✓	✓	✗	✗	✗	✓	ALARP
Window Sampling	✓	✓	✗	✗	✗	✓	
Piling	✓	✓	✗	✗	✗	✓	

A full and detailed guide to the recommended risk mitigation measures is presented at Section 5 of this report.

For further information, please contact 6 Alpha Associates:

Website: <http://www.6alpha.com>

Telephone: +44 (0)2033 713 900

Email: enquiry@6alpha.com



ASSESSMENT METHODOLOGY

Approach

6 Alpha Associates (6 Alpha) is an independent, specialist risk management consultancy practice, which has assessed the prospective UXO risk at this Study Site by employing a process advocated by CIRIA. The CIRIA guide for managing UXO risks in the construction industry (C681) not only represents industry best practice but has also been endorsed by the UK's HSE. 6 Alpha were the lead technical author of the CIRIA C681 guide.

UXO hazards can be identified through the investigation of local and national archives associated with the Study Site, MoD archives, local historical sources, historical mapping as well as contemporary aerial photography (where it is available). The amalgamation of information is then assessed within a Semi-Quantitative Risk Assessment (as per industry best practice outlined in CIRIA C681) in order to form the basis of a proportional UXO risk mitigation strategy in circumstances where the SQRA evidences that further action is necessary in order to reduce the UXO risk at the Study Site.

The assessment of UXO risk is a measure of the probability of UXO encounter and initiation and the consequence of an inadvertent UXO initiation; the former being a function of the identified hazard and proposed development methodology and the latter being a function of the type of hazard and the proximity of personnel (and/or other 'sensitive receptors', such as equipment) to the hazard. UXO risk is thus calculated using the following formula:

$$\text{Risk (R)} = \text{Probability (P)} \times \text{Consequence (C)}$$

If intolerable UXO risks are identified, the methods of mitigation we have recommended are considered reasonable and sufficiently robust to reduce them to ALARP. We advocate the adoption of the ALARP legal principle because it is a key factor in efficiently and effectively ameliorating UXO risks. It also provides a ready means for assessing the Client's tolerability of UXO risk. In essence, the principle states that if the cost of reducing a risk significantly outweighs the benefit, then the risk may be considered tolerable. This does not mean that there is never a requirement for UXO risk mitigation, but that any mitigation must demonstrate that it is beneficial. Any additional mitigation that delivers diminishing benefits and that consume disproportionate time, money and effort are considered *de minimis* and thus unnecessary. Because of this principle, UXO risks will rarely be reduced to zero (nor need they be).

Important Notes

Although this report is up to date and accurate at the time of writing, 6 Alpha's UXO threat databases are continually being populated and updated as and when additional information becomes available. Nonetheless, 6 Alpha have exercised all reasonable care, skill and due diligence in providing this service and producing this report.

The assessment levels are also based upon our professional opinion and have been supported by our interpretation of historical records and third-party data sources. Wherever possible, 6 Alpha has sought to corroborate and to verify the accuracy of all data we have employed, but we are not accountable for any inherent errors that may be contained in third party data sets (e.g., National Archive or other library sources), and over which 6 Alpha cannot exercise control.

STAGE ONE – STUDY SITE LOCATION AND DESCRIPTION

Study Site

The Client has defined the Study Site as “The Foundry North & South, H2 Teesside”. The Study Site is centred at NGR 456208, 525535 as presented at *Figures 1 and 2*, respectively.

Location Description

The Study Site is situated north-west of the *Town of Redcar*, within *Teesside*, and totals an area of 44.1ha. Furthermore, the Study Site is bounded by:

- North: undeveloped land;
- East: undeveloped land and the former *Redcar Iron Works*;
- South: undeveloped land and the former *Redcar Iron Works*;
- West: undeveloped land and the former *Redcar Iron Works*.

Aerial Photography (2020) (Figure 3)

Current aerial photography corroborates the information above and shows that the Study Site is situated within a developed industrial and coastal area. The Study Site itself consists of disused structures associated with *Redcar Iron Works*, alongside small areas of hard standing and undeveloped land.

Proposed Works

The Client has described the following:

“We have designed GI’s inline with Eurocode 7 for all the sites. Target depths are 10m into the bed rock.”

“For foundry site it is a large energy and industrial complex being proposed. Majority of the structures will be piled to bed rock.”

Ground Conditions – General Overview

It is important to establish the specific ground conditions in order to determine the maximum *German UXB* penetration depth as well as the potential for other types of munitions to be buried. It is also important to establish the provenance of made ground, where this is recorded as being part of the ground make-up, in order to accurately determine the ground levels at the time when UXO contamination may have occurred so as to accurately determine the average/maximum bomb penetration depths and subsequently to make appropriate recommendations aimed at reducing the risk to ALARP.

Ground Conditions – Site Specific

BGS borehole log “NZ52NE56 – Redcar Stage II 3903A” (located in the Study Site’s eastern sector), recorded the following strata:

Depth bgl (m)	Strata	Description
0.00m to 4.30m	Fill	Sand to cobble sized slag
4.30m to 12.20m	Sand	Light brown fine and medium sand with gravel and occasional shell fragments.
12.30m to 15.10m	Clay	Stiff brown with little grey mottled silty clay with gravel
15.10m to 42.60m	Mudstone	Moderately weathered and moderately fractured red-brown mudstone with occasional bands of red-brown and green-grey weak silty mudstone.
42.60m to 45.10m	Mudstone	Slightly weathered moderately fractured brown slightly gypsiferous weak mudstone.

In addition, an analysis of BGS mapping associated with the Study Site suggests that the Site is likely to be underlain by a bedrock of “Redcar Mudstone Formation- Mudstone” in the south, “Penarth Group - Mudstone” in the centre and “Mercia Mudstone Group – Mudstone” in the north.



STAGE TWO – REVIEW OF HISTORICAL DATASETS

Sources of Information Consulted

The following information sources have been employed to establish the nature and scope of the UXO threat at this Study Site:

1. *6 Alpha's Azimuth Database*;
2. *Home Office WWII Bomb Census maps*;
3. *WWII and post-WWII aerial photography*;
4. *Official Abandoned Bomb Register*;
5. *Information gathered from the National Archives at Kew*;
6. *Historic UXO information provided by 33 Engineer Regiment (Explosive Ordnance Disposal) at Carver Barracks, Wimbish.*

Potential Sources of UXO Contamination - Overview

In general, there are several activities that might have contaminated a site with UXO, but the three most common ways are: legacy munitions from military training/exercises; deliberate or accidental dumping (AXO) and ordnance resulting from war fighting activities (also known as the Explosive Remnants of War (ERW)).

During WWII, the *Luftwaffe* undertook bombing campaigns all over the *UK* and although the *Luftwaffe* had designated primary bombing targets across the *UK*, their high-altitude night bombing was not highly accurate. There was also a period of indiscriminate bombing of civilian and industrial areas alike in *British* cities in an attempt to cripple the morale of the *British* people. As a result, thousands of buildings were damaged across industrial and residential areas and civilian fatalities were common. Bombs were also jettisoned over opportunistic targets and more rural locations were also attacked in this manner.

As the threat of invasion lingered over *Britain* during WWII, defensive actions were undertaken. The *British* and *Allied Forces* requisitioned large areas of land for military training and bomb storage (including HE bombs, naval shells, artillery and tank projectiles, explosives, LSA and SAA). Thousands of tonnes of these munitions were used for the *Allied Forces* weapon testing and military training alone. It has been estimated that at least 20 per cent of the *UK's* land has been used for military training at some point.

The most common type of UXO discovered today in the *UK* is the aerielly delivered high explosive (HE) bomb, which are comparatively thick-skinned and were dropped from *Luftwaffe* aircraft. If the bomb did not detonate when it was dropped, the force of impact enabled the UXO to penetrate the ground, often leaving behind it a UXB entry hole. These entry holes were not always apparent, and some went unreported, leaving the bomb buried and unrecorded. *British* AXO/LSA/SAA is also commonly encountered in areas that were formerly occupied by military forces (such as RAF airfields, military camps and/or military training areas). More rarely, additional forms of *German* UXO are occasionally discovered including *inter alia* Incendiary Bombs (IBs), and Anti-personnel (AP) bomblets and fragments of V1 and V2 rockets.

"*The best practice guide for dealing with your UXO risks on land*" (CIRIA publication C681) suggests that approximately 10 per cent of all munitions deployed during WWII failed to function as designed. ERW are therefore, still commonly encountered, especially whilst undertaking construction and civil engineering groundwork.

Furthermore, in exceptional circumstances, UXO is discovered unexpectedly and without apparent rational explanation. There are several ways this might occur:

- When *Luftwaffe* aircraft wished to swiftly escape e.g., from an aerial attack, they would jettison some or all of their bombs and flee. This is commonly referred to as *tip and run* and it has resulted in bombs being found in unexpected locations;
- Transportation of aggregate containing munitions to an area that was previously free of UXO, usually related to construction activities employing material dredged from a contaminated offshore borrow site;
- *British* decoy sites were also constructed to deliberately cause incorrect targeting. For obvious reasons, such sites were often built in remote and uninhabited areas – few historical records concerning these sites are available.

WWII Bombing of Teesside

Teesside was considered a highly important industrial area even before the mass mobilisation of *Britain's* industry at the outset of WWI and WWII. It encompassed *Middlesbrough, Billingham, Redcar* and other important manufacturing hubs. Much of the local industry was repurposed for the war effort, and so it became one of the major industrial areas to be targeted by the *Luftwaffe* in their attempts to cripple the *British* war effort.

The first bombs landed on *Middlesbrough* and the surrounding areas on the 25th May 1940 when a *Luftwaffe* bomber targeted the *South Steel Plant*. In total, over 200 buildings had been destroyed by the bombing of the *Middlesbrough* area by the end of the war. There were also a high number of casualties associated with the bombing in this period, as contemporary bombing by *Axis* aircraft over the *UK* was characterised by targeting civilian populations. Further bombing occurred across much of the area, with the town of *Redcar* attacked on numerous occasions.

WWII HE Bomb Density (Figure 4)

The Study Site was located within *Redcar Municipal Borough*, which recorded three HE bombs per 100 hectares, a “very low” level of bombing.

WWII Luftwaffe Bombing Targets (Figure 5)

Prior to WWII, the *Luftwaffe* conducted numerous aerial photographic reconnaissance missions over *Britain*, recording key military, industrial and commercial targets for attack, in the event of war. In addition, logistics infrastructure and public services, such as railways, canals, power stations, reservoirs, water and gas works were also considered viable bombing targets.

Luftwaffe aerial reconnaissance photography associated with the Study Site identified *Redcar Iron Works* (partially located on-site) as a primary bombing target.

WWII HE Bomb Strikes (Figure 6)

During WWII, ARP wardens compiled detailed logs of bomb strikes across their respective districts. ARP records associated with the Study Site were not available. Nonetheless, further research of historical records found evidence of significant bombing within *Redcar* and the surrounding area during WWII. Notably, multiple HE bomb strikes were recorded impacting in the vicinity of *Redcar Iron Works* (located partially on-site) in 1941/42, with at least seven known to have directly impacted the works. In addition, supplementary research identified numerous HE bomb strikes on and around *Bran Sands Bombing Decoy* (located 200m south-west at its closest point), *Warrenby Marshes* (located approximately 400m south), *South Gare* (approximately 850m north-west) and *West Coatham Grange Farm* (approximately 850m south-east). Furthermore, whilst IBs may have fallen within the Study Site, they fell in such large numbers that accurate record keeping was either non-existent or perfunctory. Nonetheless, supplementary research evidenced a “large number” of IBs impacted the beach near *Warrenby Marshes*.

In addition to IBs and HE bomb strikes, during the latter part of the war when aerial bombing had significantly declined, the main threat came from V type weapons. V1 and V2 rockets were thin-skinned, unmanned and inaccurate weapons. Despite this, there is no evidence to suggest that the Study Site (or its immediate vicinity) was subjected to rockets strikes during WWII.

The potential penetration depth of an UXB was dependent on a number of factors including but not restricted to those prior to striking the ground e.g. velocity and orientation of the UXB which in turn will be influenced on factors such as the release altitude from the aircraft and encounters with infrastructure during its fall; those encountered at the point of impact i.e. was the impact on concrete, grass, water etc. and finally, the below ground level conditions which were encountered such as infrastructure e.g. services, basements, foundations, and geology e.g. made ground, clay, sand, etc. Further, as the UXB penetrated the ground, it's velocity naturally slowed where, it either came to an abrupt stop e.g., against foundations or would continue for 10's of feet along a route of least resistance which often resulted in a curving of the trajectory back towards the surface. This is known as the “J Curve” effect and often resulted in a considerable horizontal off-set from the point of entry. This is often the reason why UXBs have been discovered against or under the foundations of buildings, which were present during WWII, or many meters from the point of impact.

WWII Bomb Damage

Official bomb damage mapping associated with the Study Site was not available. It is highly likely that bomb damage records associated with the industrial facilities were recorded privately and not released into the public domain as a matter of national security. Nonetheless, further research of historical records identified bomb damage to the *iron furnaces, mill boilers and a gas cleaning plant* within the *Redcar Iron Works* due to the aforementioned bomb strikes. Although the exact location of this damage could not be corroborated, it is likely to have been located in close proximity to the Study Site. Furthermore, an analysis of post-war mapping identified multiple “ruins” approximately 890m east-south-east of the Study Site boundary, all of which are likely indicative of bomb damage.

Abandoned Bombs

An examination of the official abandoned bomb records has identified the following abandoned bombs;

- One abandoned 50kg IBs situated at *Foreshore*, to the west of the *Redcar Iron Works* (located 190m south);
- Two abandoned 50kg IBs situated at *Warrenby Marshes* (located 480m south).

Records of WWII UXB Disposal Tasks

Civil defence records did not identify any UXB disposal tasks within *Redcar Municipal Borough* from 1940-45, within 1,000m of the Study Site. However, it is known that these records are incomplete, some having been destroyed by *Luftwaffe* action during WWII.

Nonetheless, further research of historical records identified one UXB encounter during WWII in the vicinity of the Study Site. Specifically, one UXB was removed from the “*blacksmiths shop*” within the *Redcar Iron Works*, possibly located on-site or in the immediate vicinity of the Study Site.

Military Activity (Figure 7 & 8)

There is evidence to suggest that areas of the Study Site were employed for various military purposes during WWII. For example, the area of the Site was seen as a potential amphibious invasion landing point in the early stages of WWII and so a number of defensive fortifications were installed on-site. Notably, 22 anti-invasion minefields were recorded as being laid on the coastline within 1,000m of the Study Site boundary, four of which were located on-site. These minefields were a part of a larger anti-invasion minefield-belt, which was deployed along a 20km front from *Hartlepool* to *Saltburn-by-Sea*. These minefields likely consisted primarily of what were known in WWII as *B-type C mines*. There is evidence to suggest that these minefields were cleared after WWII (as was then common practice), although an analysis of official *EOD* records neither corroborated such clearance nor provided evidence of the success rate of such clearance operations, and so it is possible (though unlikely) that some may remain shallow buried.

In addition, multiple other defensive installations were identified in the vicinity of the Study Site; including 27 anti-invasion pillboxes, of which five were located on-site; three *light anti-aircraft* batteries, of which one was located on-site; one *beach defence battery* 295m west-north-west; one *machine gun emplacement* 605m north-west, and one *spigot-mortar emplacement* 715m east.

Furthermore, to protect the area against aerial attacks, *Bran Sands Bombing Decoy* was constructed 200m south-west. It functioned as a series of controlled fires, which would be lit to simulate an urban area on fire, and also as a series of lights which were built to resemble a marshalling yard and furnace. This was done in order to divert *Luftwaffe* bombers into deploying their bombloads over the decoy area, instead of their real target. Further research indicates this decoy was bombed multiple times, and thus was at least partially successful in its aim.

Aside from defensive installations, a 20th century rifle range was located 400m north-east of the Study Site boundary, although the frequency of its use could not be corroborated. In addition, the Study Site was also located within a *WWII Armament Training Area*, which was an airspace used for military training and practice exercises, however this is unlikely to have generated a significant UXO contamination threat at the Site.

Given the large number of military installations and minefields on-site and/or in close proximity to the Study Site, it is considered highly likely that munitions may have been stored, located and/or fired from this Study Site during WWII. It was common for munitions to be buried at former military facilities and were often abandoned at the end of the war – the remnants of which are known as Abandoned Explosive Ordnance (AXO).

WWII Site Use

The CS mapping prior to WWII (1938) and OS mapping post-WWII (1953) shows that the Study Site was located in a developed industrial area during WWII; the Study Site itself primarily consisted of undeveloped land, alongside multiple structures and railway lines in the north-eastern sector associated with *Redcar Iron Works*. Therefore, it is likely that footfall within the Study Site would have varied throughout WWII, with high levels of footfall expected in all developed areas.

Generally, in developed areas with higher footfall, it is considered more likely that a local civilian, employee or any military personnel based at the Site would have observed and reported any UXB entry holes during WWII, which would have been dealt with at the time. Nevertheless, despite high levels of footfall, in any areas of potentially significant bomb damage, it is plausible that bomb damage debris may have concealed a UXB entry hole and caused it to go unnoticed. Additionally, as most of the Site was undeveloped during WWII, there is also a generally elevated likelihood that any UXBs impacting in those areas could have done so unnoticed.

Post-WWII UXO Encounters

An examination of the post-WWII BDO tasks associated with the Study Site has not identified any BDO operations within the Study Site itself, however the following tasks were undertaken in the area:

- The controlled demolition of one projectile at *South Gare, Redcar* on the 25th of June 2016 (located approximately 850m north-west).

Sources of UXO Contamination

Given the historic military activity documented at the Study Site, the most likely source of UXO contamination is *German* aerially delivered ordnance, which ranges from small IBs through to large HE bombs (the latter forms the principal threat), *British* AXO/LSA/SAA and AAA projectiles (which were used to defend the UK against *German* bombing raids) associated with the military activity on-site.

Post-WWII Study Site Development

Generally, the probability of encountering UXO in ground that has been disturbed since it may have been contaminated with UXO is considered to be remote (up to the depth below ground level previously disturbed by any intrusive works). Therefore, an understanding of the Study Site's previous development history is crucial when assessing the likelihood that UXO might be encountered at the Study Site.

Study Site Development History

From an analysis of the CS and OS historical mapping associated with the Study Site, the following history can be deduced:

Year	Analysis
1895 CS Map	The Study Site was located in a developing industrial and coastal area. The Study Site itself primarily consisted of undeveloped land, although a <i>tramway</i> and railway lines ran through the northern sector.
1915 CS Map	Significant changes were not recorded at the Study Site.
1938 CS Map	<i>Redcar Iron and Steel Works</i> had been developed and covered the north-eastern part of the Site. A large number of structures and railway lines were built as part of the works. Much of the southern sector of the Site remained undeveloped
1953 OS Map	Significant changes were not recorded at the Study Site.
1970-1973 OS Map	Further railway lines had been developed traversing the northern and central sectors of the Site.
1982-1985 OS Map	Structures associated with <i>Redcar Iron and Steel Works</i> was cleared. Multiple structures, railway lines and areas of hard standing associated with <i>Teesside Works, Redcar</i> had been developed throughout the entirety of the Study Site.
1992 OS Map	Significant changes were not recorded at the Study Site.
2000 Aerial Photography	Significant changes were not recorded at the Study Site.
2007 Aerial Photography	Several small structures associated with <i>Teesside Works, Redcar</i> had been demolished.
2020 OS Map	Further small structures associated with <i>Teesside Works, Redcar</i> had been demolished.

The Study Site history assessment is our best interpretation of the data available at the time of writing. Given that yearly revisions of neither CS and OS mapping, nor aerial photography, are available for analysis, there are gaps between the mapping revisions.

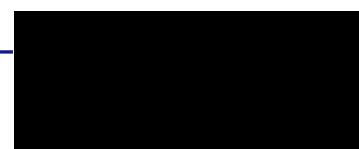
Consequently, it should not be assumed that any new structures and/or features that are labelled on a map revision were constructed, developed, installed or demolished in the exact year that the mapping illustrates the change. It is possible – and indeed likely – that the exact date of development occurred somewhere between the two closest mapping revisions. Specifically, this may be particularly relevant where there is a gap between pre and post-WWII mapping, as it may not be clear whether structures were present during WWII or if they were constructed in the post-WWII period.



STAGE THREE – DATA ANALYSIS

Variable	Result	Comment
Was the area considered to be a primary bombing target during WWII?	✓	<i>Redcar Iron Works</i> (located on-site) was identified as a primary bombing target.
Was the Study Site or the immediate area bombed during WWII?	✓	Further research identified multiple HE bomb strikes on and around <i>Redcar Iron Works</i> (located on-site and in the vicinity).
Did the Study Site or the immediate area experience bomb damage?	✓	Further research of historical records identified bomb damage to <i>Redcar Iron Works</i> due to the aforementioned bomb strikes.
Would munitions have been manufactured, stored and/or fired from the Study Site previously?	✓	Given the number of military installations and minefields on-site and in the vicinity, it is highly likely that munitions would have been located, stored and/or fired from the Study Site.
Was the ground undeveloped during WWII?	✓	The Study Site primarily consisted of undeveloped land, alongside structures and railway lines associated with <i>Redcar Iron Works</i> in the north-eastern sector.
Would the footfall have been high in the area?	✗	Within all developed areas, footfall would have been high, however in undeveloped areas, footfall is likely to have been low.
Would a UXB entry hole have been observed during WWII?	✗	In those areas of lower footfall, and/or those areas of potentially significant bomb damage, it is plausible that a UXB entry hole could have gone unnoticed.
Has UXO been encountered previously at the Study Site?	✗	There have been no documented UXO encounters on-site.
Have previous intrusive works removed the potential for UXO to be present?	✗	It is likely that any UXO within post-war disturbed and developed ground would potentially have been discovered and removed. The potential for a UXO encounter in areas of undisturbed ground remains extant.
Are proposed intrusive works likely to extend into previously undisturbed ground?	✓	Areas of the Study Site have remained undeveloped since WWII and therefore the proposed works may extend into previously undisturbed ground.
Is there potential for an unplanned encounter with UXO to occur during proposed intrusive works?	✓	Given that bombing was recorded potentially on-site/in the immediate vicinity of the Site, combined with the history of significant military activity on-site, it is considered possible for an unplanned encounter with UXO to occur.
Does the probability of a UXO encounter vary across the Study Site?	✓	The probability of encountering UXO within post-war disturbed and developed ground is considered to be remote. However, the probability of a UXO encounter within all previously undisturbed areas of the Study Site is extant.

N.B. The ✓ / ✗ symbology is intended to act only as a succinct visual indicator as to whether the data analysis has returned a positive (i.e., ✓) or negative (✗) answer to each question concerning the potential for UXO contamination at the Study Site.



STAGE FOUR – RISK ASSESSMENT

Threat Items

The most probable UXO threat items are *German* HE bombs, IBs, *British* AXO/LSA/SAA and *British* AAA projectiles. The consequences of initiating *German* HE bombs are generally more severe than initiating AXO/LSA/SAA, IBs or AAA projectiles, and thus they pose the greatest prospective risk to intrusive works.

Bomb Penetration Depth

Considering the ground conditions (highlighted in Stage 1), the average BPD for a 250kg *German* HE bomb is assessed to be approximately 6m bgl, with the maximum BPD considered to be approximately 14m bgl. Although it is possible that the *Luftwaffe* deployed larger bombs in the area, their deployment was infrequent, and to use such larger (or the largest) bombs for BPD calculations are not justifiable on either technical or risk management grounds.

WWII *German* bombs have a greater penetration depth when compared to IBs and AAA projectiles, which are unlikely to be encountered at depths greater than 1m bgl. However, due to the “J Curve” and the potential for structures to impede the penetration into the ground, HE bombs have been discovered at much shallower depths than the average.

Risk Pathway

Given the types of UXO that might be present on-site, all types of aggressive intrusive engineering activities (i.e., investigative groundworks and construction methodologies) may generate a significant risk pathway. Whilst not all UXO encountered aggressively will initiate upon contact, such a discovery could lead to serious impact on the project especially in terms of critical injury to personnel, damage to equipment and project delay.

Prospective Consequences

Consequences of UXO initiation include:

1. Fatally injure personnel;
2. Severe damage to plant and equipment;
3. Deliver blast and fragmentation damage to nearby buildings;
4. Rupture and damage underground utilities/services.

Consequences of UXO discovery include:

1. Delay to the project and blight;
2. Disruption to local community/infrastructure;
3. The expenditure of additional risk mitigation resources and EOD clearance;
4. Incurring additional time and cost.

UXO RISK CALCULATION

Site Activities

Although there is some variation in the probability of encountering and initiating items of UXO when conducting different types of intrusive activities, a number of ground intrusive methodologies have been described for analysis at this Study Site. The consequences of initiating UXO vary greatly, depending upon, *inter alia* the mass of HE in the UXO and how aggressively it might be encountered. For this reason, *6 Alpha* has conducted separate risk rating calculations for each intrusive methodology that might be employed.

Risk Rating Calculation

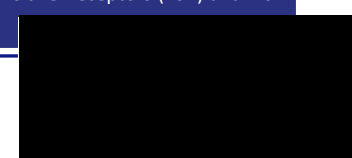
6 Alpha's Semi-Quantitative Risk Assessment assesses and rates the risks posed by the most probable threat items when conducting a number of different activities on the site. UXO risk is determined by calculating the probability of encountering and initiating UXO and the consequences of an inadvertent UXO detonation.



UXO Risk Calculation Table – All Areas

Activity	UXO Threat Items	Probability (SH+EM=P)	Consequence (D+PSR=C)	UXO Risk (PxC=R)
Trial Pits	HE Bombs	2+2=4	3+3=6	4x6=24
	AAA Projectiles	2+2=4	3+1=4	4x4=16
	IBs	1+2=3	3+1=4	3x4=12
	AXO/LSA/SAA	2+2=4	3+2=5	4x5=20
Window Sampling	HE Bombs	2+3=5	3+2=5	5x5=25
	AAA Projectiles	2+3=5	3+1=4	5x4=20
	IBs	1+3=4	3+1=4	4x4=16
	AXO/LSA/SAA	2+3=5	3+2=5	5x5=25
Boreholes	HE Bombs	2+3=5	3+2=5	5x5=25
	AAA Projectiles	2+3=5	3+1=4	5x4=20
	IBs	1+3=4	3+1=4	4x4=16
	AXO/LSA/SAA	2+3=5	3+2=5	5x5=25
Excavations	HE Bombs	2+2=4	3+3=6	4x6=24
	AAA Projectiles	2+2=4	3+1=4	4x4=16
	IBs	1+2=3	3+1=4	3x4=12
	AXO/LSA/SAA	2+2=4	3+2=5	4x5=20
Trenching	HE Bombs	2+2=4	3+3=6	4x6=24
	AAA Projectiles	2+2=4	3+1=4	4x4=16
	IBs	1+2=3	3+1=4	3x4=12
	AXO/LSA/SAA	2+2=4	3+2=5	4x5=20
Piling	HE Bombs	2+3=5	3+2=5	5x5=25
	AAA Projectiles	2+3=5	3+1=4	5x4=20
	IBs	1+3=4	3+1=4	4x4=16
	AXO/LSA/SAA	2+3=5	3+2=5	5x5=25

Abbreviations – Site History (SH), Engineering Methodology (EM), Probability (P), Depth (D), Consequence (C), Proximity to Sensitive Receptors (PSR) and Risk Rating (RR).



STAGE FIVE – RECOMMENDED RISK MITIGATION MEASURES

Do the ground conditions support a geophysical UXO survey?

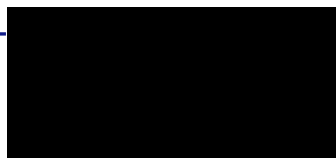
Non-Intrusive Methods of Mitigation – Magnetometer results may be affected by ferro-magnetic contamination due to previous construction activities and made ground within the Study Site.

Intrusive Methods of Mitigation – Intrusive magnetometry may be effective on this Study Site, prior to boreholing and piling especially. However, any ferrous metal/red brick contamination in made ground/old foundations may affect the detection capability of the UXB survey equipment, as it passes through the contaminated layer especially. Nonetheless, beyond the contaminated strata such a survey should prove effective.

Mitigation Measures to Reduce Risk to ‘ALARP’

Activity	Risk Mitigation Measures	Final Risk Rating
All Activities in All Areas	<p>1. Operational UXO Emergency Response Plan; appropriate site management documentation should be held on-site to guide and plan for the actions which should be undertaken in the event of a suspected or real UXO discovery (this plan can be supplied by <i>6 Alpha</i>);</p> <p>2. UXO Safety & Awareness Briefings; the briefings are essential when there is a possibility of explosive ordnance encounter and are a vital part of the general safety requirement. All personnel working on the site should receive a briefing on the identification of a UXB, what actions they should take to keep people and equipment away from such a hazard and to alert site management. Information concerning the nature of the UXB threat should be held in the site office and displayed for general information on notice boards, both for reference and as a reminder for ground workers. The safety awareness briefing is an essential part of the <i>Health & Safety Plan</i> for the site and helps to evidence conformity with the principles laid down in the <i>CDM regulations 2015</i> (this brief can be delivered directly, or in some cases remotely, by <i>6 Alpha</i>).</p>	ALARP
Trial Pits, Excavations and Trenching into Previously Undisturbed Ground	<p>3. EOD Engineer in the Watching Brief Role; Where “open” intrusive works into previously undisturbed ground are proposed an EOD Engineer should be present in the UXO Watching Brief role to monitor ongoing “open” intrusive works to identify any suspicious items that may be UXB or UXO related (this service can be provided by <i>6 Alpha</i>).</p>	
Window Sampling, Piling and Boreholing into Previously Undisturbed Ground	<p>4. Intrusive UXO Survey; Where ‘blind’ intrusive works into previously undisturbed ground are proposed, an intrusive UXO survey (employing down-hole magnetometer or MagCone techniques) is strongly recommended. Such a survey should extend to the <i>assessed average bomb penetration depth</i> or to the maximum depth of the works, whichever is encountered first, or until geology is encountered through which it is assessed a UXB would not penetrate, to identify for signs of sub-surface anomalies which may model as the target UXO in advance of said works. (This service can be provided by <i>6 Alpha</i>).</p>	

This assessment has been conducted partially based on the information provided by the Client, should the proposed works change then *6 Alpha* should be re-engaged to refine this risk assessment



Report Figures

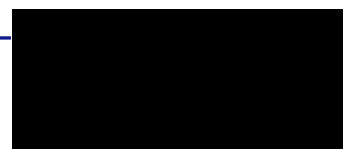
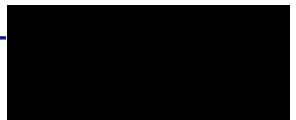


Figure One - Study Site Location



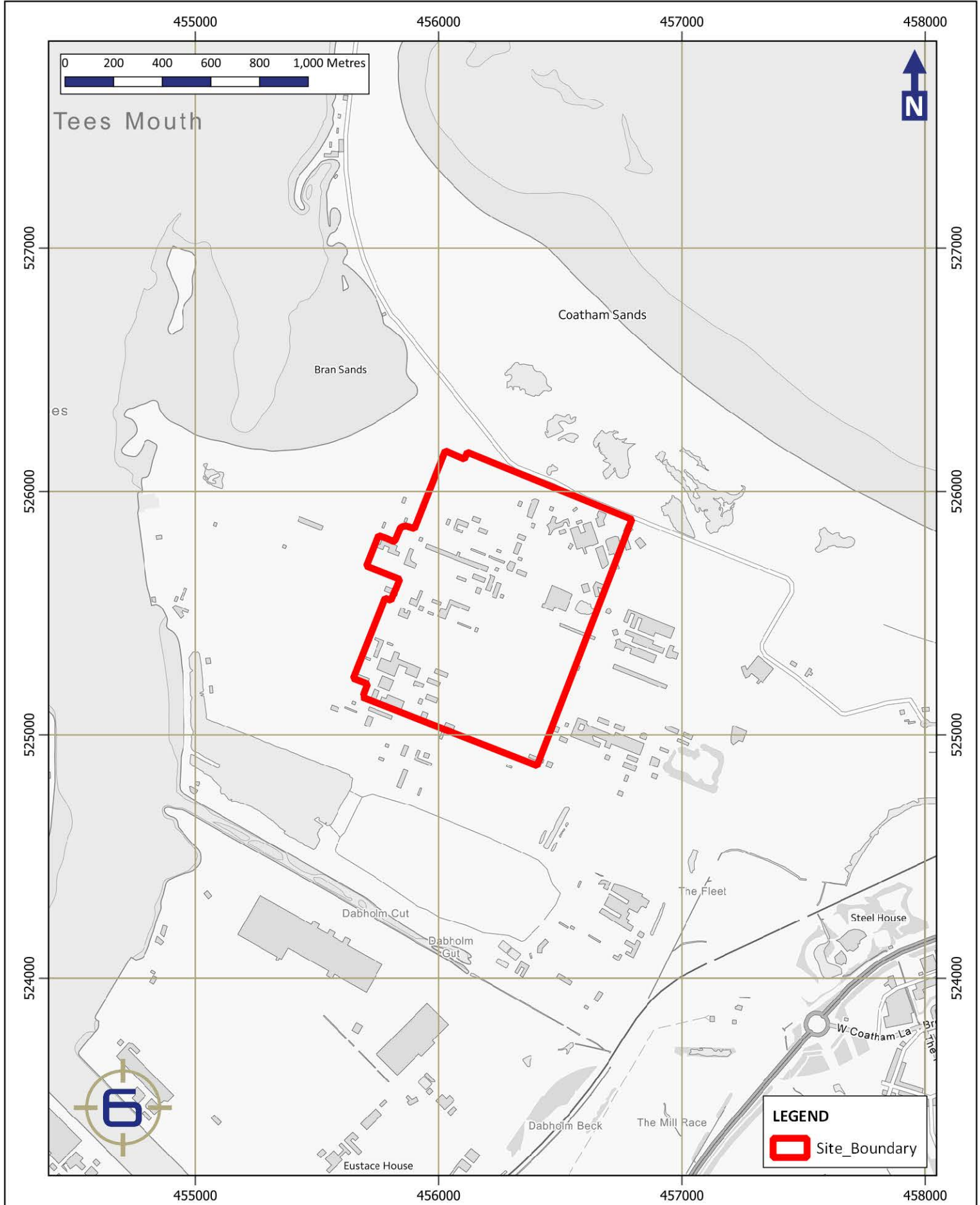


THE FOUNDRY NORTH & SOUTH, H2 TEESSIDE



Site Location

British National Grid



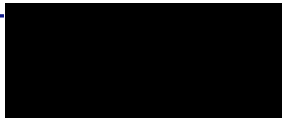
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Figure Two - Study Site Boundary



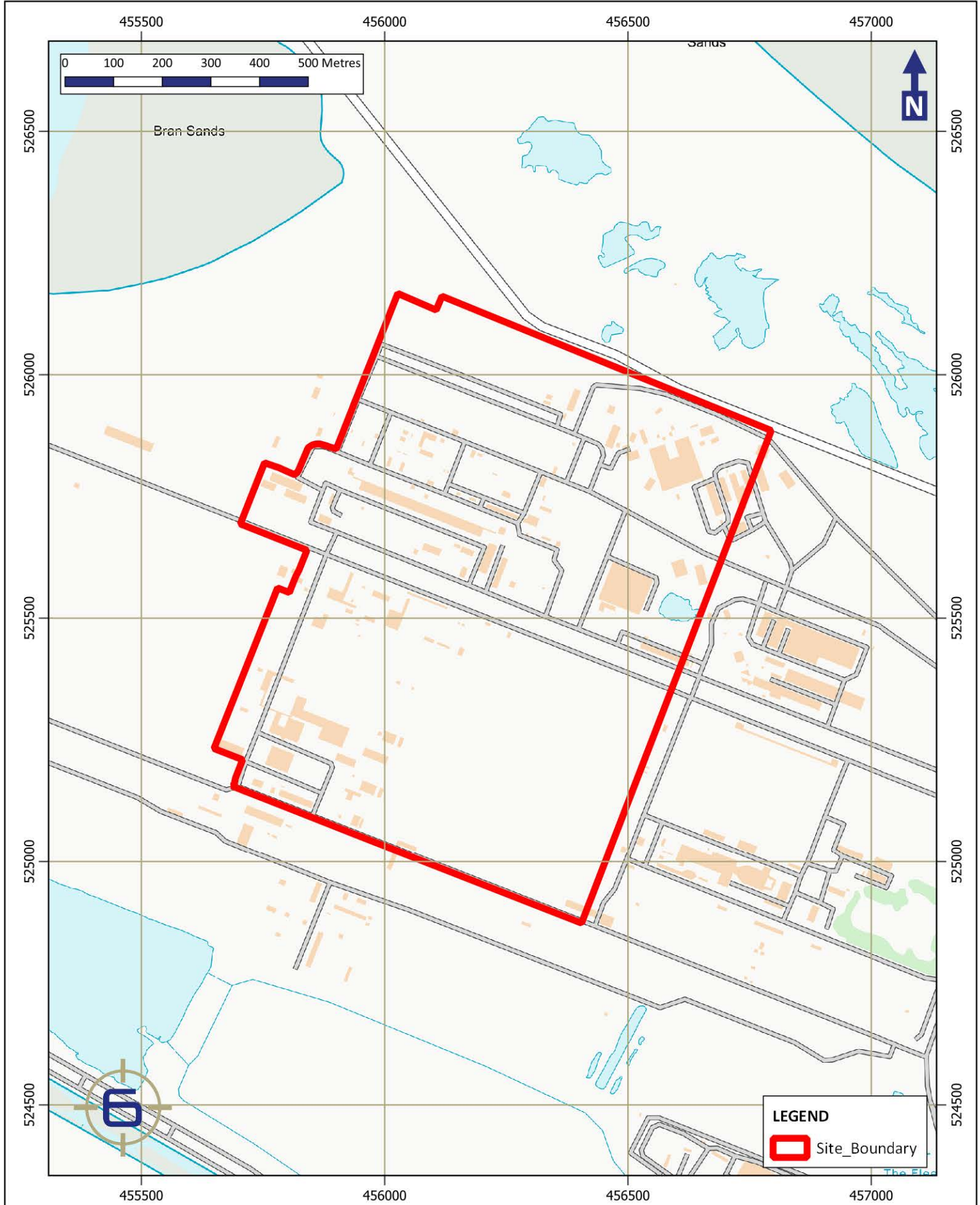


THE FOUNDRY NORTH & SOUTH, H2 TEESSIDE



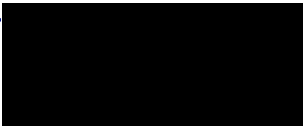
Site Boundary

British National Grid



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Figure Three - Aerial Photography (2020)





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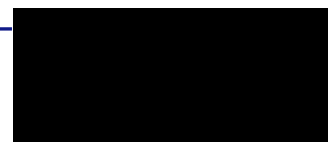
Aerial Photography (2020)

British National Grid



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Figure Four - WWII High Explosive Bomb Density



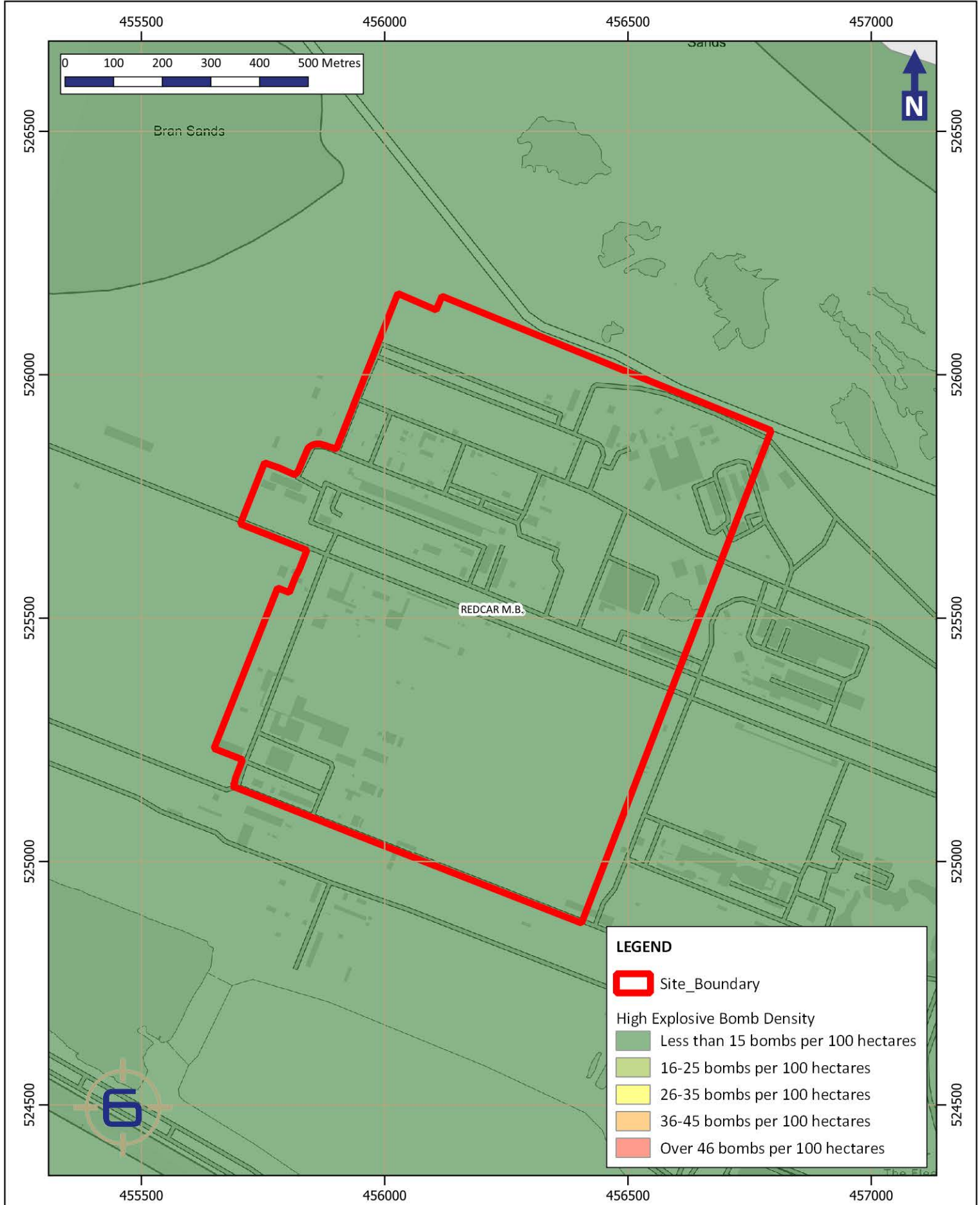


THE FOUNDRY NORTH & SOUTH, H2 TEESSIDE



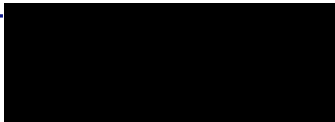
WWII High Explosive Bomb Density

British National Grid



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Figure Five - WWII Luftwaffe Bombing Targets



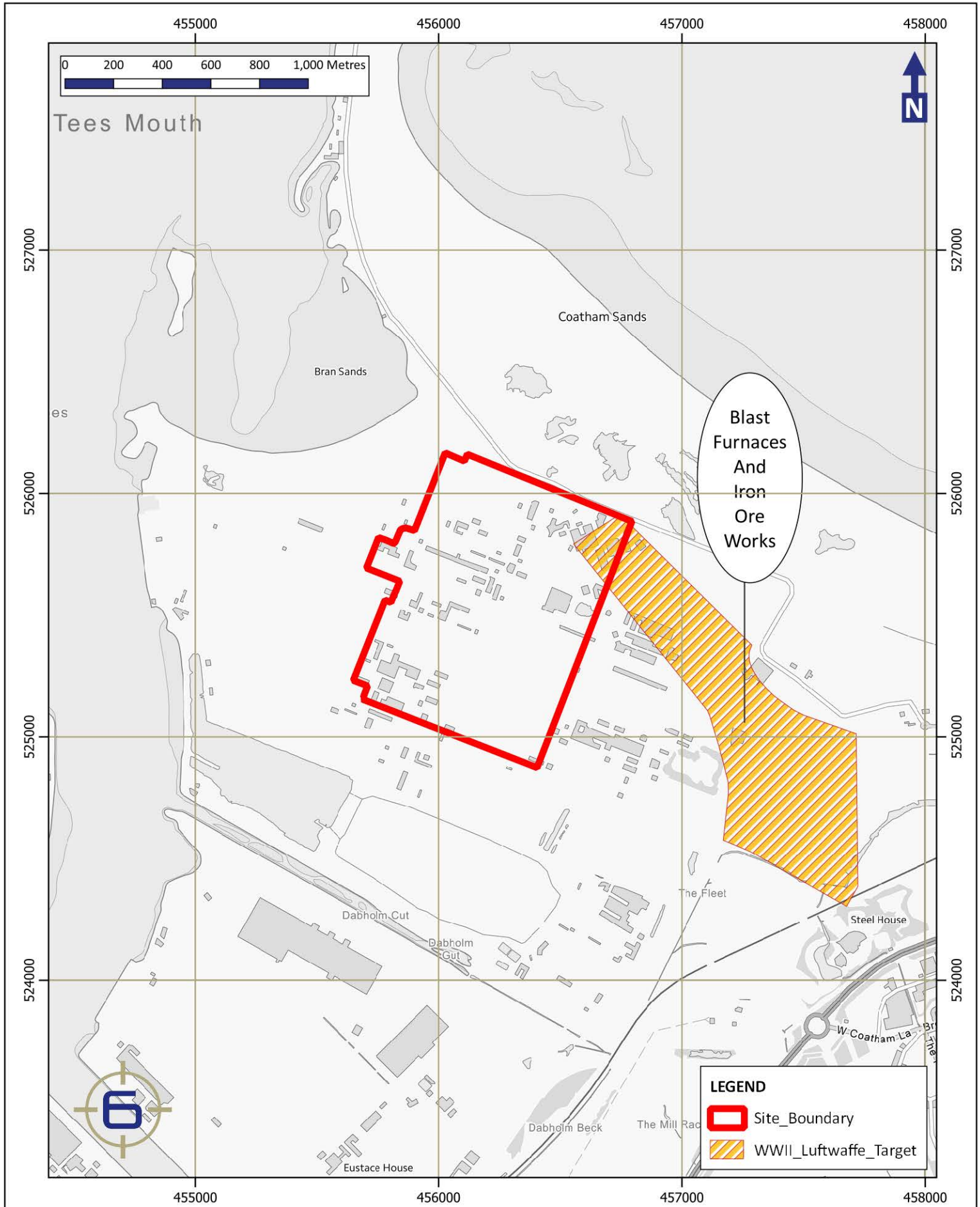


THE FOUNDRY NORTH & SOUTH, H2 TEESSIDE



WWII Luftwaffe Bombing Targets

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Figure Six - WWII High Explosive Bomb Strikes

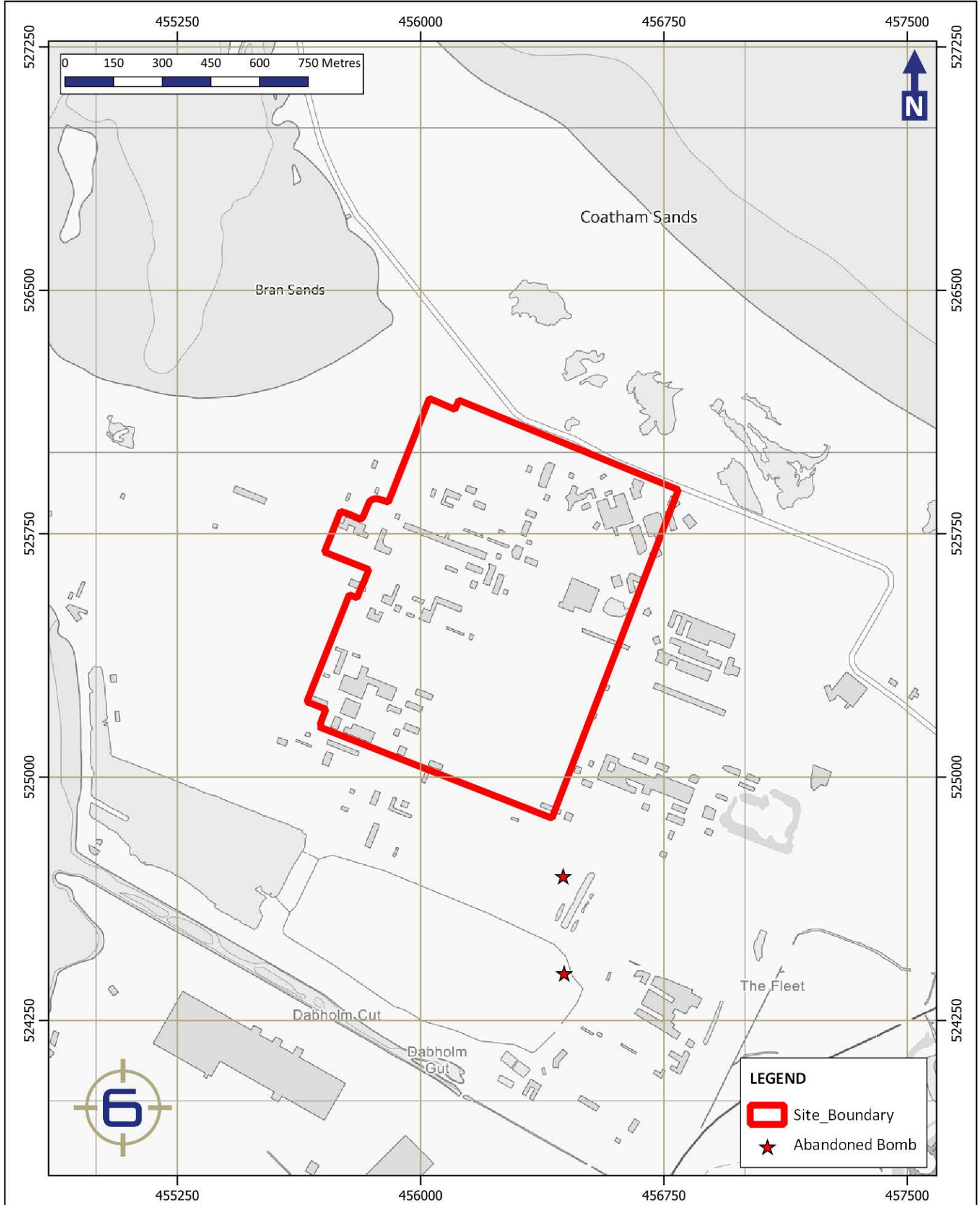


THE FOUNDRY NORTH & SOUTH, H2 TEESSIDE



WWII Abandoned Bombs

British National Grid



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Figure Seven - WWII Armament Training Area

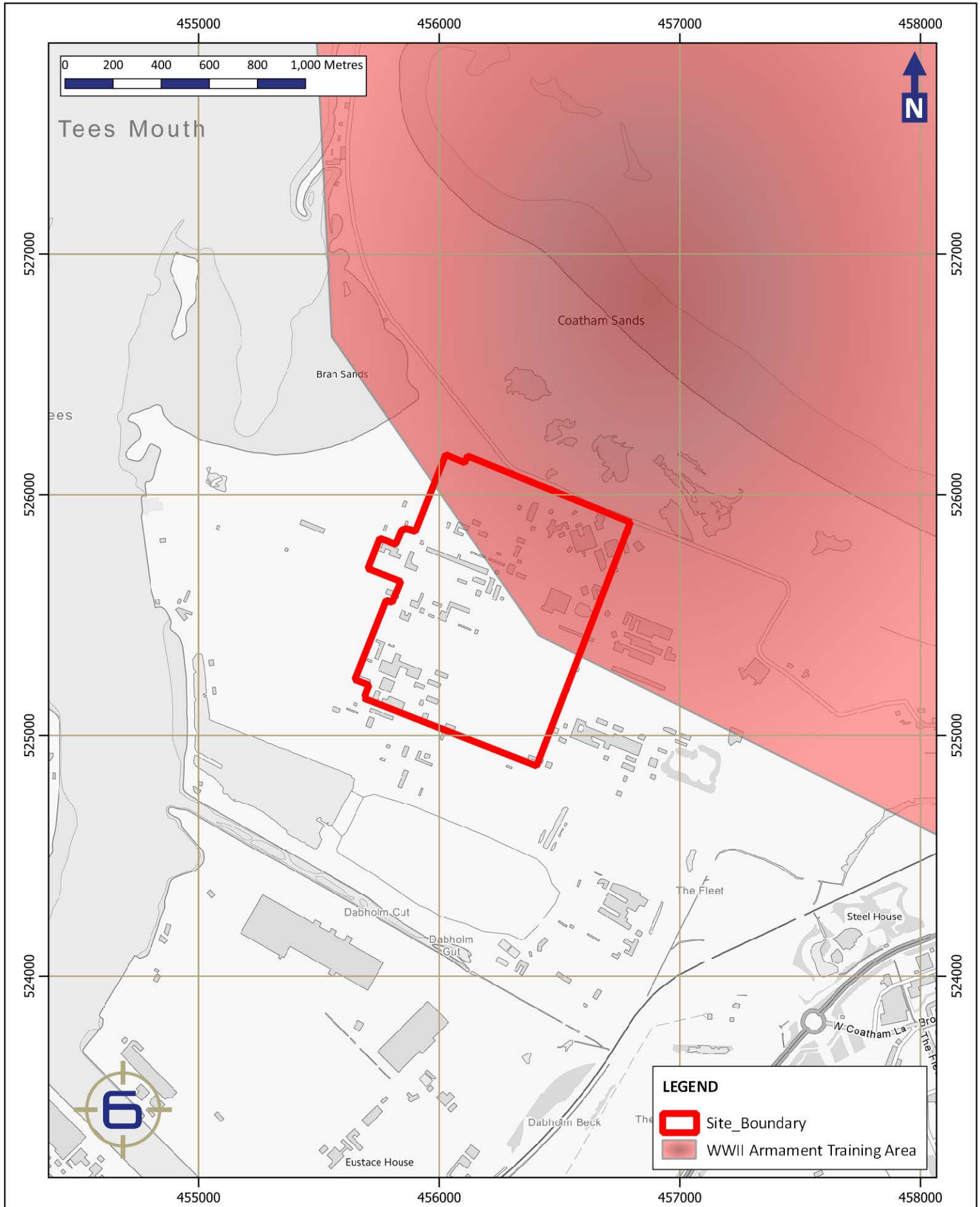


THE FOUNDRY NORTH & SOUTH, H2 TEESSIDE



Extent of WWII Armament Training Areas

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LEGEND

- Site_Boundary
- WWII Armament Training Area

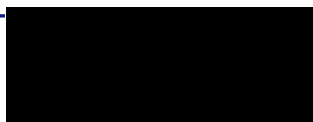
PROJECT NO.	FIGURE	DRAWN	CHECKED	DATE
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Figure Eight - WWII Defensive Features



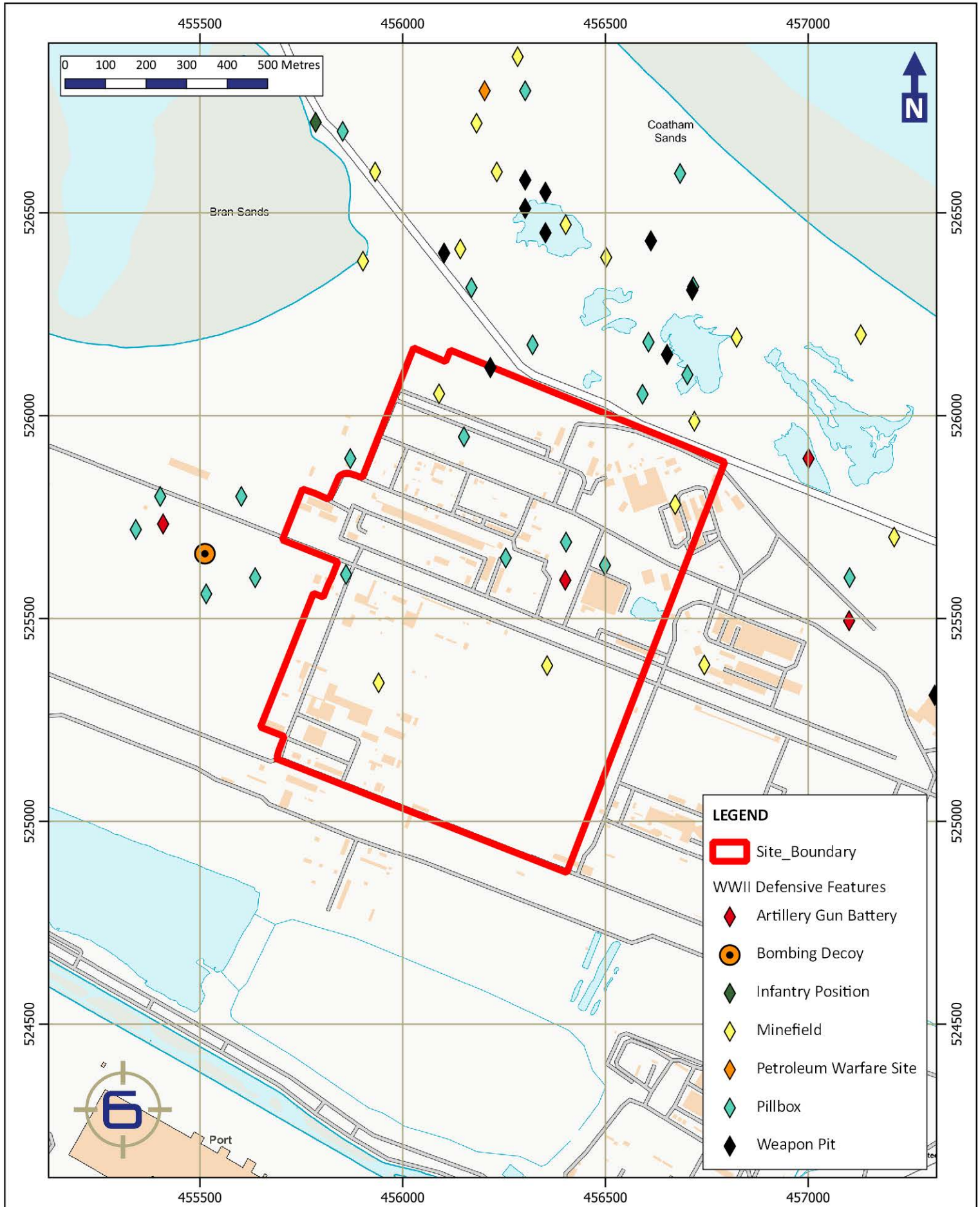


THE FOUNDRY NORTH & SOUTH, H2 TEESIDE



WWII Defensive Features

British National Grid



LEGEND

- Site_Boundary
- WWII Defensive Features
- ◆ Artillery Gun Battery
- Bombing Decoy
- ◆ Infantry Position
- ◆ Minefield
- ◆ Petroleum Warfare Site
- ◆ Pillbox
- ◆ Weapon Pit

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