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3. Description of the Existing Environment

3.1 Site Location

- 3.1.1 The Proposed Development (the Site) covers a wide area located within the administrative boundaries of Redcar and Cleveland Borough Council (RCBC) to the south of the River Tees (South Bank and Dormanstown Wards) and in Stockton-on-Tees Borough Council (STBC) to the north of the River Tees (Billingham South Ward). A portion of the Site to the South of the Tees lies within the South Tees Development Corporation (STDC) area.
- 3.1.2 The proposed Site boundary is shown on Figure 3-1: Site Boundary Plan (Preliminary Environmental Information (PEI) Report, Volume II). The area within this boundary is defined as the “Site”. This boundary is provisional and for the purposes of the PEI Report only. The final site boundary for the purposes of the DCO application, including land for the connection corridors and temporary land required during construction of the Proposed Development, will be refined through on-going studies and taking into account the responses to the statutory consultation.
- 3.1.3 This Chapter is supported by Figures 3-1 to 3-4 (PEI Report, Volume II).

3.2 The Site

- 3.2.1 The Site is divided into the following areas (described in more detail in Chapter 4: Proposed Development (PEI Report, Volume I) and shown on Figures 3-2A to 3-2E (PEI Report, Volume II):
- The Power, Capture and Compressor site (PCC) and associated “sterile” area (Figure 3-2A);
 - CO₂ Export Pipeline (Figure 3-2A);
 - Natural Gas Connection Corridor (Figure 3-2B);
 - Electrical Connection Corridor (Figure 3-2C); and
 - Water Connection Corridors (Figure 3-2D); and
 - CO₂ Gathering Network Corridor (Figure 3-2E).
- 3.2.2 The PCC has an area of approximately 60 ha. The associated “sterile” area to the west and south of the PCC which be used for tree planting has an area of 17 ha (see Figure 3-1, PEI report, Volume II). Both the PCC and sterile area are will be located on part of the former Sahaviriya Steel Industries PCL (SSI) site to the south-east of the Redcar Bulk Terminal, on the south bank of the River Tees in the South Bank Ward of RCBC within the STDC area.
- 3.2.3 The SSI site comprises approximately 225 ha of land previously used for iron and steel manufacture developed on land reclaimed from the Tees Estuary



over the late 19th and 20th century. The PCC contains redundant large-scale plant and buildings associated with the steelworks including the former raw materials handling facility, the sinter plant and conveyor systems. There are also large open land areas that were previously utilised for raw materials, storage and processing.

- 3.2.4 The former SSI site contains the commencement of the CO₂ Export Pipeline and also parts of the Water Connection Corridors. The Water Connection Corridors include the locations of the former blast furnace and coke ovens.
- 3.2.5 Both the Water Connections Corridor and the CO₂ Export Pipeline cross Coatham Dunes and Coatham Sands before continuing seaward.
- 3.2.6 The Water Connections Corridor also follows the route of the former Northumbrian water feed to the SSI Steelworks.
- 3.2.7 The proposed PCC is remote from residential receptors, although there are areas of public/private amenity close to its northern and eastern boundary. The nearest residential settlements is the town of Redcar (approximately 1.8 km east of the PCC) including the suburb of Dormanstown (approximately 1.4 km to the south east of the PCC).
- 3.2.8 The other Connections Corridors outside the former SSI Steelworks site are located within and around land developed for use by the steel industry from the late 19th century and by the chemical industry after the second world war including land at Billingham, Seal Sands and Wilton. Some of this land has also been reclaimed from the Tees Estuary.
- 3.2.9 The other connections corridors pass through vacant land or existing utilities corridors to the south and north of the Tees:
- the Natural Gas Connection Corridor run to the west, and south of the PCC and crosses the Tees to allow potential connections to the National Gas Grid at Seal Sands;
 - the Electrical Connection Corridor run to the south of the PCC to allow connection for electricity export to the National Electricity Transmission System (NETS) at Lackenby Substation; and
 - the CO₂ Gathering Network Corridors will connect the Compressor Station at the PCC to current and potential future industries at Teesport and, via a crossing of the Tees, at Seal Sands and Billingham.
- 3.2.10 The routing of the connections within the corridors is the subject of on-going assessment and will be informed by the feedback to the statutory consultation.

3.3 Surrounding Area

- 3.3.1 Area surrounding the Site is characterised by industrial land uses. The nearest main settlements being the towns of Redcar, Eston and Middlesbrough. There is a concentration of industrial land uses around the mouth of the River Tees. The operational Redcar Bulk Terminal is located to the north-west of the PCC, on the south bank of the River Tees.



- 3.3.2 To the north-east of the Site lie the coastal areas of South Gare and Coatham Sands, that are local environmental and community assets. To the south lies Northumbrian Water Ltd.'s Bran Sands effluent treatment works, operational land of PD Ports Teesport and the Wilton International chemical complex.
- 3.3.3 The Teesside Wind Farm is located off-shore approximately 2.4 km north east of the Site and is oriented north-west to south-east, parallel with the shoreline at Coatham Sands.
- 3.3.4 The Site extends across the River Tees westwards towards Billingham and to the south into and around the area occupied by the Wilton International chemical complex.
- 3.3.5 On the north bank of the River Tees, and to the west of the PCC, industrial complexes are present at Seal Sands and Billingham with both industrial and residential development at Port Clarence.
- 3.3.6 The main route to the Site will be via existing access roads from the A1085 "Trunk Road" between Redcar and the A1053 Tees Dock Road, north of Grangetown and approximately 4 km south of the PCC. From here, the A19 will be accessed from either the A66, passing north of Middlesbrough, or the A174, passing to the south.
- 3.3.7 Land to the south of the A174 is predominantly rural with limited residential and industrial development and large areas of woodland and open land.
- 3.3.8 Rail lines to and from the Redcar Bulk Terminal run east/west along the southern boundary of the former SSI Steelworks.

3.4 Potential Sensitivities / Receptors

- 3.4.1 A number of environmental receptors relevant to the EIA have been identified within and outside the boundary of the Site. Distances are provided as the shortest distance between the receptor and the closest point of the boundary of the Site and/or the PCC.
- 3.4.2 Key receptors for each topic area have been identified as part of the assessment process and details are included in the relevant technical chapters (Chapters 8 to 24, PEI Report, Volume I). A summary is also provided below.

Sensitive Residential Receptors

- 3.4.3 Residential receptors are shown on Figure 3-3, PEI Report, Volume II. There are no residential receptors within 500 m of the PCC. The closest residential properties (individual receptors) to the PCC are those at Marsh Farm 650 m east and Dormanstown (Broadway West) approximately 1.3 km south-east.
- 3.4.4 There no residential receptors within the wider Site boundary. There are a number of residential receptors located immediately adjacent to the Site in the following areas:



- Lazenby – multiple residential properties on Grange Estate, Pasture Lane and Kings Close (south of the Electrical Connection Corridor and CO₂ Gathering Network);
- Lackenby – multiple residential properties on High Street and Rosedean Farmhouse and Old Hall Farm, Crow Lane (west of the Electrical Connection Corridor);
- Eston – multiple residential properties on Hutton Road, Roseberry Crescent, Wilton Way, Coniston Road, Ullswater Close, Shakespeare Avenue and St David’s Road (south west of the Electrical Connection Corridor);
- Grangetown – multiple residential properties on Cresswell Road (west of the Electrical Connection Corridor); and
- Dormanstown – multiple residential properties on Meggitts Avenue, Armitage Road, Wilton Avenue and Broadway West (east of the Electrical Connection Corridor and CO₂ Gathering Network).

3.4.5 It is anticipated that these residential receptors are likely to be located further away from the final boundary when it is refined following consultation and further design studies prior to submission of the DCO application.

3.4.6 Potential effects on residential receptors are considered in Chapter 8: Air Quality, Chapter 11: Noise and Vibration, Chapter 16: Traffic and Transport, and Chapter 17: Landscape and Visual Amenity (PEI Report, Volume I).

Sensitive Environmental Receptors

3.4.7 Designated nature conservation sites in the vicinity of the Site and the PCC are presented in Table 3-1 and on Figure 3-4 (PEI Report, Volume II).

Table 3-1: Statutory Ecological Designations

Designation	Approx. distance from PCC	Approx. distance from the Site
Teessmouth and Cleveland Coast SPA ¹	Immediately north	Within the Site
Teessmouth and Cleveland Coast Ramsar site ¹	Immediately north	Within the Site
North York Moors SPA	11 km south-east	7 km south-east
North York Moors Special Conservation Area (SAC)	11 km south-east	7 km south-east
Northumbria Coast Ramsar	15 km north-west	14.5 km north-west
Northumbria Coast SPA	15 km north-west	13 km north-west
Durham Coast SAC	15 km north-west	13 km north-west
Teessmouth and Cleveland Coast Site of Special Scientific Interest (SSSI) ²	Immediately north	Within the Site
Lovell Hill Pools SSSI	6 km south-east	2 km south-east
North York Moors National Park	11 km south-east	7 km south-east
Seaton Dunes and Common Local Nature Reserve (LNR)	4 km north-west	2 km north-west

¹ This includes the extension of the areas covered by the Teessmouth and Cleveland Coast SPA and Ramsar site approved by the Minister for the Environment on the 16th of January 2020.

² The Teessmouth and Cleveland Coast SSSI was confirmed on the 18 April 2019 and includes the areas previously notified as Seal Sands SSSI, Redcar Rocks SSSI, Cowpen Marsh SSSI, Seaton Dunes and Common SSSI, South Gare and Coatham Sands SSSI, Tees and Hartlepool Foreshore and Wetlands SSSI. Source: Magic Maps (DEFRA, n.d.)



3.4.8 The Teesmouth and Cleveland Coast SPA/Ramsar is located immediately north of the PCC (at its nearest point). The SPA/Ramsar includes a range of coastal habitats (sand and mud-flats, rocky shore, saltmarsh, freshwater marsh and sand dunes) on and around the Tees Estuary. The SPA/Ramsar site was recently extended to include Coatham Dunes.

Table 3-2: Non-Statutory Ecological Designations

Designation	Approx. distance from PCC	Approx. distance from Site boundary
Eston Pumping Station Local Wildlife Site (LWS)	1.1 km south	Within the Site
Coatham Marsh LWS	480 m east	Partially within the site
Wilton Woods Complex LWS	4.8 km south east	330 m south
Redcar to Saltburn Foreshore LWS	4 km east	3.6 km east
Coatham Rocks Local Geological Site (LGS)	2.2 km east	1.8 km east

3.4.9 The potential effects of the Proposed Development on designated ecological sites and other ecological receptors are considered in Chapters 12 to 15 of this PEI Report, covering (respectively) terrestrial, aquatic, marine ecology and ornithology, with supporting information provided in Chapter 8: Air Quality and Chapter 11: Noise and Vibration (PEI Report, Volume I).

Traffic and Transport

3.4.10 There are no adopted highways within the PCC.

3.4.11 The Site extends across a number of transport routes (highways and railways) as follows:

- A178;
- A66;
- A1085;
- A1053;
- A1046;
- A1185;
- B1275;
- A1058;
- A1056;
- A1185;
- B1275;
- Tees Dock Road; and
- The Stockton to Hartlepool railway line.



3.4.12 The PCC is not crossed by any public rights of way (PRoW). The nearest PRoW to the PCC are:

- Bridleway 116/32/1 – the nearest point of which is approximately 630 m east of the PCC;
- Footpath 116/31/2 – the nearest point of which is approximately 1.65 km south of the PCC; and
- the terminus of the Teesdale Way long-distance footpath which runs through the Site along the northern boundary of the PCC.

3.4.13 A number of PRoW cross the Site, namely:

- Footpath 116/31/2;
- Footpath 102/2/3;
- Bridleway 116/9/2;
- Bridleway 116/10/1;
- Bridleway 117/10/2;
- Bridleway 124/179/2;
- Footpath 102/193/1;
- Footpath 102/193/2;
- Bridleway 102/194/2; and
- Footpath 102/2/1.

3.4.14 The England Coast Path runs through the Site to the east and south of the PCC.

3.4.15 The potential amenity effects of the Proposed Development are considered in Chapter 17: Landscape and Visual Amenity and Chapter 20: Socio-Economics and Tourism (PEI Report, Volume I). PRoW in the vicinity of the PCC and the Proposed Development Site are presented on Figure 3-5 (PEI Report, Volume II).

Air Quality

3.4.16 There are no Air Quality Management Areas (AQMAs) within the Site boundary as no AQMAs have been declared in either of the administrative areas of RCBC or STBC.

3.4.17 Air quality effects are considered in Chapter 8: Air Quality (PEI Report, Volume I).

Geology and Hydrogeology

3.4.18 Artificial Ground is widespread across the SSI site. The Artificial Ground is associated with the reclamation of land from the Tees using waste materials (including slag) and the long historical industrial use of the site and.



- 3.4.19 The published British Geological Survey (BGS) 1:50,000 scale maps ((Sheets 33 (BGS,1987) and 34 (BGS,1998)) show the Site to be underlain by superficial deposits, including:
- Peat;
 - Beach and Tidal Flat Deposits;
 - Blown Sand;
 - Tidal Flat Deposits;
 - Glaciolacustrine Deposits;
 - Glaciofluvial Deposits; and
 - Glacial Till.
- 3.4.20 The BGS maps show the bedrock geology underlying the Site to be:
- the Sherwood Sandstone Group (Triassic) in the north and west;
 - Mercia Mudstone Group (Triassic) in the centre;
 - Redcar Mudstone Formation (Jurassic) in the south and east; and
 - the Triassic Penarth Group occurs as a thin band between the Mercia Mudstone Group and Redcar Mudstone Formation.
- 3.4.21 The Sherwood Sandstone is classified by the Environment Agency as a Principal Aquifer. These are 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.
- 3.4.22 The superficial deposits are classified by the Environment Agency as Secondary A Aquifers. Secondary A Aquifers contain 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.
- 3.4.23 There are no Groundwater Dependent Terrestrial Ecosystems or Source Protection Zones (SPZ 1 to 3) that can potentially be impacted by the Proposed Development.

Soils and Agriculture

- 3.4.24 There is limited agricultural land within the Site. A small area of land to the north of the A174 is classified as Grade 3a and Grade 2 Agricultural Land, which is Best and Most Versatile (BMV) land (Natural England, n.d.)

Hydrology and Flood Risk

- 3.4.25 The PCC is located in Flood Zone 1 (land that has a less than 1 in 1,000 annual probability of river or sea flooding) as shown on the Flood Map for Planning (Rivers and Sea).



- 3.4.26 Land within the Site is within Flood Zone 1, Flood Zone 2 (land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding) and Flood Zone 3a (land having a 1 in 100 or greater annual probability of river flooding; or land having a 1 in 200 or greater annual probability of sea flooding) as well as areas of land that benefit from flood defences to the east of Billingham.
- 3.4.27 The nearest designated watercourse to the PCC is the River Tees, located approximately 1.6 km to the west (at its closest point) which is classed by the Environment Agency as a Main River. The Site crosses the River Tees between the Redcar Bulk Terminal and the Queen Elizabeth II Jetty approximately 1.6 km south west of the PCC to allow the construction of Natural Gas Connection and CO₂ Gathering Network pipelines under the Tees.
- 3.4.28 The River Tees is tidal in the vicinity of the Site, with the normal tidal limit approximately 14 km upstream (at the Tees Barrage), therefore any work beneath the Tees is below MLWS.
- 3.4.29 The Dabholm Gut flows to the River Tees approximately 0.8 km south of the PCC. The Dabholm Gut is tidal and receives water from:
- The Fleet (that runs from Coatham Marsh, to the west of Redcar);
 - The Mill Race (from east of the Wilton International complex); and
 - Dabholm Beck (from the west of the Wilton International complex).
- 3.4.30 The North Sea is approximately 400 m north of the PCC. The Site extends into the North Sea to MLWS covering an area of shoreline at Coatham Sands.
- 3.4.31 The Northumbrian Water Bran Sands effluent treatment plant (to the south of the PCC) discharges into the Dabholm Gut, as does effluent from the Wilton International complex.
- 3.4.32 The Site crosses the following surface water courses:
- The Dabholm Gut;
 - The Fleet;
 - The Mill Race;
 - Dabholm Beck;
 - Mains Dike;
 - Kettle Beck;
 - Knitting Wife Beck; and
 - Belasis Beck Holme Fleet
- 3.4.33 There are numerous localised drains, pools/surface water bodies and areas of marshy ground within the Site.
- 3.4.34 The potential hydrological effects of the Proposed Development (including a flood risk assessment) are considered in Chapter 9: Surface Water, Flood Risk and Water Resources (PEI Report, Volume I).

Cultural Heritage

3.4.35 There are no designated heritage assets within the Site.

3.4.36 There is one Scheduled Monument located within 5 km of the PCC; the World War I early warning acoustic mirror is located approximately 4.7 km east of the PCC. There are 25 other Scheduled Monuments within 5 km of the wider boundary of the Site. These are listed in Table 3-3 below.

Table 3-3: Scheduled Monuments within 5 km of the Site

Scheduled Monument	Approx distance from the Site boundary
Eston Nab hill fort, palisaded settlement and beacon	850 m south
Bowl barrow 1.1 km north-west of High Barnaby Farm	1.1 km south
Bowl barrow 1.1 km north-west of High Court Green	1.2 km south
Bowl barrow on Eston Moor, 1.4 km north-west of High Barnaby Farm	1.2 km south
Bowl barrow on Eston Moor, 1.2 km north-west of High Barnaby Farm (two listed entries)	1.2 km south
Bowl barrow 1km north-west of High Court Green	1.4 km south
Three bowl barrows on Wilton Moor, 850 m north-north-west of High Barnaby Farm	1.4 km south
Bowl barrow 850 m north-west of High Court Green	1.5 km south
Two bowl barrows 700 m north-west of High Court Green	1.6 km south
Bowl barrow 800 m north of High Barnaby Farm	1.7 km south
Bowl barrow 500 m north-west of High Court Green	1.8 km south
Bowl barrow on Eston Moor, 1.45 km west of High Barnaby Farm	1.7 km south
Bowl barrow 450 m north-west of High Court Green	1.9 km south
Ring cairn, on Eston Moor 1.3 km north of Mill Farm	1.8 km south
Bowl barrow 1 km north-west of Court Green Farm	2 km south east
Bowl barrow 550 m north-west of Court Green Farm	2.2 km south
Bowl barrow 600 m north-west of Court Green Farm	2.2 km south east
Round barrow on Upsall Moor known as Mount Pleasant	2.6 km south
World War I early warning acoustic mirror 650 m north-west of Bridge Farm	3 km east
Two round barrows on Patterson's Bank	3.5 km south east
Claxton medieval moated site	4.1 km north
Manorial settlement, dovecote and fragment of field system, immediately north of Marske Inn Farm	4.6 km east
Stockton market cross immediately south of Town Hall	4.6 km south west
Medieval settlement remains, post mill and field system 240 m north of Pinchinthorpe Hall	4.8 km south
Fishpond 550 m east of Acklam Park	4.9 km south



- 3.4.37 There are at least 80 listed buildings within 3 km of the PCC, 5 of which are Grade I and 9 of which are Grade II*. There is a cluster of approximately 23 listed buildings at Kirkleatham, five of which are Grade I and six of which are Grade II* and are within 500 m of the boundary of the Site.
- 3.4.38 There are a further 23 listed buildings in the vicinity of Lazenby, Wilton and Lackenby, two of which are Grade II*. There is a further Grade II* listed building located approximately 1 km south of the boundary of the Site at Billingham and one at South Bank located approximately 1.4 km west of the boundary of the Site at South Bank.
- 3.4.39 Wilton Conservation Area is located to the south of the A174, within 500 m of the boundary of the Site with Yearby Conservation Area located approximately 850 m to the south east.
- 3.4.40 Albert Park is a Registered Park and Garden which is located approximately 3.4 km south east of the boundary of the Site in Middlesbrough.
- 3.4.41 The potential effects on heritage assets are considered in Chapter 18, Cultural Heritage and Chapter 19, Marine Heritage (PEI Report, Volume I).

Landscape

- 3.4.42 The PCC is located within National Character Area (NCA) 23: Tees Lowlands NCA.
- 3.4.43 At a regional scale the area in which the Site is located to the north of the River Tees is characterised within the Stockton-on-Tees Landscape Character Assessment (LCA) (WYG Environment, 2011) and the Site is located within the East Billingham to Teesmouth LCA. There are no Landscape Character Designations covering the industrial complexes along the banks of the River Tees.
- 3.4.44 The North York Moors National Park boundary is located approximately 5 km to the south of the Site.
- 3.4.45 The effects of the Proposed Development on landscape are considered in Chapter 17: Landscape and Visual Amenity (PEI Report, Volume I).



3.5 References

British Geological Survey (1987). *England Wales Sheet 33 Stockton*. Map. 1:50,000 scale.

British Geological Survey (1998). *England Wales Sheet 34 Guisborough*. Map. 1:50,000 scale.

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WYG Environment (2011). *Stockton on Tees Landscape Character Assessment* [Online]. Prepared for Stockton on Tees Borough Council. Available at: <https://www.stockton.gov.uk/media/1585754/landscapecapacityst.pdf>

