



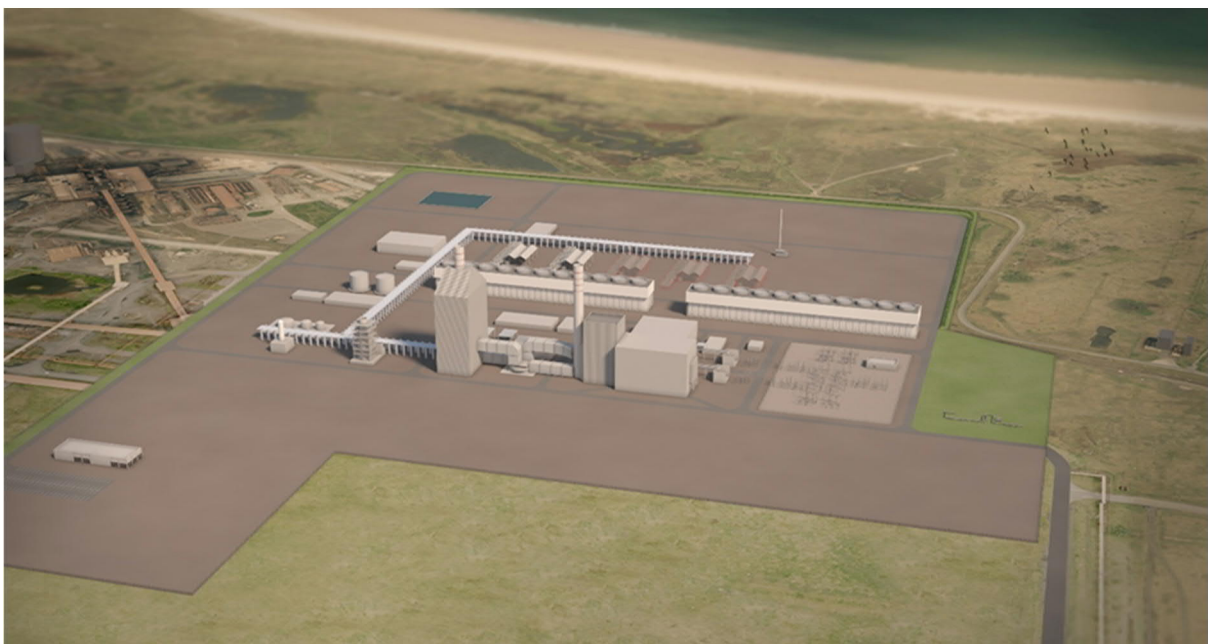
# Net Zero Teesside – Environmental Statement - Addendum

Planning Inspectorate Reference: EN010103

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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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# 1. Introduction and Scope of Environmental Statement Addendum

## 1.1 Introduction

### Background

- 1.1.1 On 19 July 2021, Net Zero Teesside Power Limited and Net Zero North Sea Storage Limited (the 'Applicants') made an application for a Development Consent Order (DCO) under the Planning Act 2008 to the Planning Inspectorate (who considers such applications on behalf of the Secretary of State for Business, Energy and Industrial Strategy) (the 'DCO Application'). The DCO Application was accepted for examination on 16 August 2021.
- 1.1.2 The Applicants are seeking development consent for the construction, operation and maintenance of the Net Zero Teesside Project ('NZT'), including associated development (together the 'Proposed Development') on land at and in the vicinity of the former Redcar Steel Works site, Redcar, and on land in Stockton-on-Tees, on Teesside (the 'Site'). The former Redcar Steel Works site is within the landownership South Tees Development Corporation (STDC).
- 1.1.3 The Applicant's notified the Examining Authority on 18 February 2022 that it intends to submit a request to change the Application [**AS-043**]. There are thirteen changes ('the Proposed Development Changes'), some of which result in changes to the Order Limits across the Site as described in the Applicants' notification of the proposed changes report (the 'Change Notification Report' [**AS-044**]). The Applicants are now submitting a formal change request application referred to as the 'Change Application'.
- 1.1.4 The Proposed Development Changes arise from ongoing design development by the Applicants given the 'First of a Kind' nature of the Proposed Development, the land interests within the Order Limits and the degree of optionality within the DCO Application. Since submission, the Applicants have continued to engage with Interested Parties with a view to addressing comments and agreeing common ground, while also continuing with pre-Front End Engineering Design (pre-FEED) studies.
- 1.1.5 A consultation on the Proposed Development Changes was carried out by the Applicants between 10<sup>th</sup> March and 14<sup>th</sup> April 2022. Further details of the consultation activities and feedback received is contained in the Consultation Report submitted with the Change Application (Document Ref. 7.6).
- 1.1.6 This ES Addendum is provided in support of the Change Application that is now being submitted to the Examining Authority.

## Purpose of this document

- 1.1.7 As a result of the Change Application, the Environmental Statement [**APP-083** to **APP-347**] submitted as part of the DCO Application (hereafter referred to as the 'Original ES') was reviewed to identify if any of the Proposed Development Changes altered scope and conclusions of the Original ES.
- 1.1.8 The ES Addendum should be read in conjunction with the Original ES and identifies where ES Addendum text supersedes Original ES text.
- 1.1.9 The ES Addendum only considers how the Proposed Development Changes affect the assessments presented as part of the Original ES. This ES Addendum does not consider changes in legislation or baseline conditions and if there are no materially different effects, i.e. if no significant change to an assessment is presented as part of the ES Addendum, then conditions are the same as those listed in the Original ES.
- 1.1.10 Whilst the Proposed Development Changes are described as changes (primarily reductions) to the extent of the Order Limits, the driver for those changes is refinements to the extent of works required in connection with the Proposed Development. As it is the changes to extent of works that triggers potential changes to the environmental effects reported on in the Original ES, this ES Addendum assesses the impact of the modifications to the extent of works by reference to Work Numbers.

## 1.2 Scope and methodology of the ES Addendum

### Overview

- 1.2.1 Throughout this ES Addendum, references are given to the Examination Library numbers assigned by the Examining Authority (identified within square brackets, e.g. [**APP-043**] for information previously accepted for examination and to the Applicant's document numbers ('Application Document Ref.' numbers) for documents which have yet to be assigned an Examination Library number by the Examining Authority.
- 1.2.2 A glossary of terms and list of abbreviations used in this ES Addendum is provided within ES Vol I Cover and Contents [**APP-082**].
- 1.2.3 The general assessment methodology and topic-specific methodologies, relevant legislation, policy and guidance, key assumptions and limitations set out in Original ES (specifically Chapter 2 Assessment Methodology submitted with the DCO Application [**APP-084**]) remain unchanged unless specifically stated in this ES Addendum.

## 1.3 Structure of this ES Addendum

- 1.3.1 This ES Addendum comprises of two volumes:
  - ES Addendum Volume I (this document) - describes the modifications to the extent of Work Numbers which have triggered the Proposed Development Changes and outlines whether the changes affect the original ES technical chapters and appendices [**APP-084** to **APP-107** and

**APP-237 to APP-348]** and original ES figures [**APP-109 to APP-236]** submitted with the DCO Application; and

- ES Addendum Volume II (Document Ref. 7.8.2) - provides updated ES figures.

1.3.2 This ES Addendum is also accompanied by an ES Addendum Non-Technical Summary (NTS) (Document Ref. 7.7) which provides a summary of the key findings from the ES Addendum in non-technical language. The ES Addendum NTS provides an update to the NTS submitted with the DCO Application [**APP-081]**

## 2. Proposed Development Changes

### 2.1 Introduction

2.1.1 This chapter of the ES Addendum presents a description of the Proposed Development Changes and evaluates how the change in area of the affected Work Number modifies the description of the Proposed Development and the assessment outcomes as presented in the Original ES.

### 2.2 Evaluation of Proposed Development Changes

2.2.1 Since the submission of the DCO Application, thirteen changes to the Order Limits have been identified through continued engagement with Interested Parties with a view to addressing comments and agreeing common ground, while also continuing with pre-FEED work. The Applicants informed the Examining Authority of the proposed changes in the Change Notification Report.

2.2.2 Each of the changes have resulted in changes in the area of the Work Numbers for the Proposed Development, which are presented in Schedule 1 of the draft DCO [AS-004].

2.2.3 Each of the modifications to Work Numbers associated with the Proposed Development Changes is explained below. Where necessary, Section 3 of the ES Addendum provides an explanation of how chapters of the Original ES would change as a result of the Proposed Development Changes if the description of the Proposed Development has changed as a result.

2.2.4 An updated Site Location Plan is presented as Figure 1.1 of ES Addendum Volume II (Document Ref. 7.8.2). The Order Limits are presented in Figure 3.1 and Figure 3.2 of the ES Addendum Volume II (Document Ref. 7.8.2).

#### Change 1 - Removal of Optionality for Work No. 2A Underground High-Pressure Gas Pipeline

2.2.5 Change 1 involves the removal of optionality for the Gas Connection by removal of 'new build' options Option 1A and Option 1B, meaning a bored tunnel between North Tees and the Power Capture and Compression (PCC) site is no longer proposed. This follows selection of a gas supply to the PCC Site via a direct connection to the existing Sembcorp gas pipeline at Bran Sands (Option 2), which does not require a new crossing of the River Tees. In addition to removal of the bored tunnel, this change will also remove the need for excavation of access shafts at Navigator Terminals and Teesworks, along with associated Heavy Goods Vehicle (HGV) movements, noise impacts and dust generation.

2.2.6 This change also removes the requirement for construction of an underground pipeline from Navigator Terminals and along the northern side of Seal Sands Road through Seal Sands to connect with the National Gas Grid (NGG) Above Ground Installation (AGI) at Teesside Central Area Transmission System (CATS).



- 2.2.7 The land area elsewhere within Work No. 2A has also been reduced following pre-FEED design and landowner consultation for the selected Gas Connection – Option 2 (Sembcorp Pipeline Tie-In).
- 2.2.8 The effect of removing Option 1B is likely therefore to be beneficial during the construction phase. The change will not have any change in the previously predicted effects during the operation or decommissioning phases.

### **Change 2 - Reduction in Optionality for Work No. 2B Above Ground Installations**

- 2.2.9 Change 2 arises from the reduction in optionality for the Gas Connection which is part of Change 1 above. Removal of the bored tunnel options also removes the requirement to construct a new AGI under Option 1B (Trafigura tie-in and new underground pipeline) to allow an alternative connection to the NGG AGI at the CATS terminal.
- 2.2.10 Reducing the area of Work No. 2B and corresponding reductions in land take reduces the need for the excavation and removal of spoil, reduces associated HGV movements, reduces noise experienced by noise sensitive receptors and reduces dust generation. The effect of removing Option 1B is likely therefore to be beneficial during the construction phase. The change will not have any change in the previously predicted effects during the operation or decommissioning phases.

### **Change 3 - Reduction in the Order Limits for Work No. 3A Electrical Connection**

- 2.2.11 Change 3 involves the removal of land at Tod Point which contains the existing STDC Substation and an existing electricity pylon neither of which are required as part of the Proposed Development. Some land previously required permanently is also now changed to temporary use only as a result of further landowner consultation.
- 2.2.12 Narrowing the area of Work No. 3A and corresponding reductions in land take will increase the distance to noise sensitive receptors from sub-station construction. The effect of this will therefore be beneficial during the construction phase. The change will not have any change in the previously predicted effects during the operation or decommissioning phases.

### **Change 4 - Reduction in the Order Limits for Work No. 5A Wastewater Disposal Works – Existing Outfall**

- 2.2.13 Change 4 results from confirmation of the location of the former steelworks outfall into Tees Bay and the removal of land from Work No. 5A. As a result, the Order Limits have been amended to cover the physical extent of the existing outfall and its direct routing to the PCC site only.
- 2.2.14 Narrowing the area of Work No. 5A and corresponding reduction in land take will increase the potential distance to noise sensitive receptors from any refurbishment operations and reduce the potential extent of works in the marine environment. The effect of this is likely therefore to be beneficial during





the construction phase. The change will not alter the previously predicted effects during the operation or decommissioning phases.

### **Change 5 - Reduction in the Order Limits for Work No. 5C Wastewater Disposal Works – Pipeline Connections to Bran Sands**

- 2.2.15 Change 5 involves reduction in land required for both permanent and temporary works to install the new wastewater pipelines between Bran Sands Wastewater Treatment Plant and the PCC site. These reductions have been possible following further landowner consultation.
- 2.2.16 Narrowing the area of Work No. 5C and corresponding reductions in land take will increase the distance to noise sensitive receptors from construction. The effect of this is likely therefore to be beneficial during the construction phase. The change will not result in an update to the previously predicted effects during the operation or decommissioning phases.

### **Change 6: Change in Optionality for Work No. 6 CO<sub>2</sub> Gathering Network**

- 2.2.17 Change 6 involves a reduction in optionality by removing Option 1 (bored tunnel direct to the PCC site) for the CO<sub>2</sub> Gathering Network (see also Change 1 for the Gas Connection). Change 6 also includes a reduction in other land within Work No. 6 following pre-FEED work and landowner consultation.
- 2.2.18 The removal of Option 1 (bored tunnel) is not considered in relation to Change 6, since it has already been considered in relation to Change 1. Narrowing Work No. 6 and corresponding reductions in land take will increase the distance to noise sensitive receptors from any construction operations (as construction effects were measured from the previous Order Limits in the DCO Application). The change will not therefore have any change in the previously predicted effects during the operation or decommissioning phases.

### **Change 7: Change in the Means of Crossing the Tees Work No. 6 CO<sub>2</sub> Gathering Network – Use of Existing Infrastructure**

- 2.2.19 Change 7 involves the introduction of a new option (Option 3) to Work No. 6 for the crossing of the Tees by the CO<sub>2</sub> Gathering Network using the existing Sembcorp No. 2 service tunnel. This is now the preferred option for crossing the Tees rather than the bored tunnel (Option 1; removed in Change 6). The alternative option remains crossing the Tees using a pipe installed within a Horizontally Directionally Drilled (HDD) bore (Option 2; altered by Change 8 below).
- 2.2.20 This change, compared to the options considered in the Original ES, would remove the need for stockpiling and disposal of excavated spoil associated with tunnelling/boring. This would reduce HGV movements and the potential for associated dust generation. Use of the existing tunnel infrastructure would also reduce noise impacts associated with boring / drilling.



2.2.21 Whilst this change would mean that the Tees crossing would be constructed underground within the Sembcorp No. 2 Tunnel, there would still be potential noise impacts associated with onshore pipe handling and stringing. However, these would not exceed the noise parameters previously assessed for the construction of the above ground portions of the CO<sub>2</sub> Gathering Network at Navigator Terminals and along the Dabholm Gut. As such they have been scoped out of further assessment. The effect of this change would therefore be neutral during the construction phase. The change will not also not have an any change in the previously predicted effects during the operation or decommissioning phases.

### **Change 8: Change in the Means of Crossing the Tees - Work No. 6 CO<sub>2</sub> Gathering Network – Change in the Trajectory and Direction of Drilling of HDD Bore**

2.2.22 Change 8 involves a change in the means of crossing the Tees, in the event that a crossing via HDD (Option 2) is selected as part of Work No. 6. However, Change 8 would not alter the area of Work No. 6. Change 6 is a change in the direction of HDD drilling, which will now be from Dabholm Gut to North Tees, rather than vice versa. This has followed further pre-FEED work and landowner consultation.

2.2.23 Changing the trajectory of the HDD bore itself has no impact on the Order Limits. However, the change in trajectory will mean that the HDD commences from a launch point on land between Dabholm Gut and Bran Sands Lagoon. HDD drilling equipment will therefore be located close to the Bran Sands Lagoon, which is included within the Teesside and Cleveland Coast SPA and Ramsar site for its use by bird species. It will therefore be necessary to consider the environmental impacts of HDD operations in this location and whether there is the potential for them to cause noise or visual disturbance to bird species using the lagoon. This is considered in further detail in Section 4 of this ES Addendum and in the Appendices to this document, which presents the updates to the Noise (Appendix A) and Ornithology (Appendix B) assessments required to assess the effect of this Change. Change 8 is also considered in an update to the Habitat Regulations Assessment Report included with the Change application (Document Ref. 5.13 Rev. 2.0).

2.2.24 The reversal of the drilling directions also means that pipe stringing operations will move from along the Dabholm Gut to North Tees along the northern edge of Seal Sands Road. This change requires the noise assessment to be reviewed and may also require measures to avoid disruption associated with the pipeline crossing over Seal Sands Road.

2.2.25 The change also means that there will be small changes in traffic movements (HGVs and construction workers) associated with the change in location of HDD and pipe stringing operations. However, the change in the number of personnel on each side of the Tees will not be significant in terms of the peak number of vehicle movements assessed in the Transportation Assessment. This means there is no requirement for further assessment of the change in traffic movements.



- 2.2.26 The effect of this change will not result in a change to the previously predicted effects during the operation or decommissioning phases.

### **Change 9: Reduction in the Order Limits for Work No. 9 Temporary Construction and Laydown Areas**

- 2.2.27 Change 9 will involve the reduction in temporary construction and laydown areas to reflect a reduction in land take following updated design considerations.
- 2.2.28 Narrowing the area of Work Nos. 9A, 9B and 9F and corresponding reductions in land take will increase the distance to noise sensitive receptors. The effect of reducing the land requirements is likely therefore to be beneficial during the construction phase. The change will not have any change in the previously predicted effects during the construction phase. The operation and decommissioning phases are not relevant since Work No. 9 will only take place during construction.

### **Change 10: Minor Increase in the Order Limits for Work No. 9 Temporary Construction and Laydown Areas**

- 2.2.29 Change 10 involves a minor increase in the size of the proposed Saltholme Laydown Area (Work No. 9D) as a result of a very small gap being identified in the Order Limits between the laydown area and Seaton Carew Road. It has therefore been necessary to add a new plot of land on the western side of the laydown area to allow direct access to Seaton Carew Road. The area of the new land required has an area of approximately 110 m<sup>2</sup>. The new plot of land would be used for the same purpose as the immediately adjacent plot.
- 2.2.30 This small increase in the area of Work No. 9 and correspondingly minor increase in land take will decrease slightly the distance to noise sensitive receptors from construction activities. However, due to the small width of the additional land, its already having been included in baseline surveys and its location adjacent to the public highway, the effect is likely to be neutral during the construction phase. This change will not alter the previously predicted effects during the operation or decommissioning phases.

### **Change 11: Change in Work Number for Pipe Stringing**

- 2.2.31 Change 11 changes the Work No. for pipe stringing on land owned by Teesworks from Work No. 5A to Work No. 9A as a result of the reduction in size of Work No. 5A in Change 4. There will be no change in the pipe stringing operations proposed and assessed in this area. There will also not be any change in the previously assessed effects during the construction, operation or decommissioning phases.

### **Change 12: Addition of part of Seal Sands Road to Work No. 10 Access and Highway Improvements**

- 2.2.32 Change 12 changes the Work No. applicable to Seal Sands Road from Work No. 2A to Work No. 10 to allow access. This Change is as a result of the removal of Seal Sands Road from Work No. 2A in Change 1. There will be no

change in the use of Seal Sands Road proposed and assessed in this area. There will not be any change in the previously assessed effects during the construction, operation or decommissioning phases.

### **Change 13: Removal of small parcels of land from Work No. 10 Access and Highway Improvements**

- 2.2.33 Change 13 involves the removal of small parcels of land relating to Work No. 10 in the Seal Sands area and from Teesworks land from Work No. 10 being removed from the Order Limits as they are no longer required. It also includes removal of a small parcel of land owned by Teesworks from Work No. 4.
- 2.2.34 The change will not result in any change in the previously assessed effects during the construction, operation or decommissioning phases.
- 2.2.35 These changes will result in small parcels of land in the Seal Sands area and from STDC land from Work Nos. 10 and 4 being removed from the Order Limits, as they are no longer required and there will be no change to the effects previously assessed.

## 3. Changes to the Original Environmental Statement

### 3.1 Introduction

- 3.1.1 This chapter of the ES Addendum describes any changes in the introductory chapters of the Original ES required as a result of the modifications to the extent of works associated with the Proposed Development Changes. Other than these changes, the Original ES text remains valid. There are also additional events that have been added to Chapter 22 Major Accidents and Hazards [APP-104] as a consequence of the Proposed Development Changes, which are also described in this section.

### 3.2 Changes to Chapters 1-7 of the Original ES

#### Chapter 1 – Introduction

- 3.2.1 The general background to the DCO Application and the general description of the Proposed Development remains as described following the Proposed Development Changes. While further consultation has taken place because of the Proposed Development Changes (which is detailed in Section 5 of this ES Addendum), no changes are therefore required to **Chapter 1: Introduction [APP-083]** of the Original ES.

#### Chapter 2 – Methodology

- 3.2.2 The general assessment methodology and topic-specific methodologies, relevant legislation, policy and guidance, key assumptions and limitations set out in **Chapter 2: Assessment Methodology [APP-084]** remain unchanged so far as relevant to the Proposed Development Changes. No further changes are proposed.

#### Chapter 3 – Description of the Existing Environment

- 3.2.3 The overall description of the Proposed Development site set out in **Chapter 3: Site Description of the Existing Environment [APP-085]** remains unchanged and there have been either no increases or slight reductions in the distances measured between the Order Limits and receptors as a result of the Proposed Development Changes.
- 3.2.4 The Proposed Development Changes reduce the Order Limits such that the area of the Site has been reduced from 462 ha to 304 ha.

#### Chapter 4 – Proposed Development

- 3.2.5 The CO<sub>2</sub> Gathering Network section of Chapter 4 has been updated to reflect the changes proposed (specifically changes 6, 7 and 8 to Work No. 6). Paragraph 4.3.40 has been updated to reflect the changes and a further bullet

point has been added to the section. The following table compares the original text with the replacement text to describe the change.

**Original ES text for paragraph 4.3.40**      **Replacement text for paragraph 4.3.40**

<p>The routing of the CO<sub>2</sub> Gathering Network across the River Tees will be either:</p> <ul style="list-style-type: none"> <li>• via a micro-bored tunnel from Seal Sands directly to the PCC (and shared with the Natural Gas Connection) and then below ground along the southern side of the Teesworks Spine Road to the PCC Site; or</li> <li>• installed using a horizontal directional drilled (HDD) bore from Seal Sands to the northern bank of the mouth of Dabholm Gut and then above ground along the northern bank of Dabholm Gut past Bran Sands Wastewater Treatment Plant and then north to the PCC Site (see Figure 5-2, ES Volume II, Document Ref. 6.3).</li> </ul>	<p>The routing of the CO<sub>2</sub> Gathering Network across the River Tees will be either:</p> <ul style="list-style-type: none"> <li>• installed using a horizontal directional drilled (HDD) bore drilled from a location on land on the north bank of Dabholm Gut to land near to Navigator Terminals on North Tees (Option 2);</li> <li>• construction of the pipeline within the existing Sembcorp No. 2 Tunnel from Navigator Terminals to the northern bank of the mouth of Dabholm Gut (Option 3);</li> <li>• The pipeline will then run above ground along the northern bank of Dabholm Gut past Bran Sands Wastewater Treatment Plant and then north to the PCC Site (see Figure 5-2, ES Addendum Volume II (Document Ref. 7.8.2).</li> </ul>
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3.2.6 The Natural Gas Connection section of Chapter 4 has been updated to reflect the changes proposed. Paragraphs 4.3.57 and 4.3.60 have been removed from the original ES and the associated replacement and reordering of paragraphs to reflect the changes proposed has been detailed in the following tables. Paragraph 4.3.58 has been replaced with the text below to reflect Change 1 (and Work No. 2A).

**Original ES text for paragraph 4.3.58**      **Replacement text for paragraph 4.3.58 (amended text highlighted in red)**

<p>Natural gas will be used as the fuel for the operation of the Low-Carbon Electricity Generating Station. Subject to agreement with National Gas Grid (NGG), natural gas will be supplied via a tie-in to the gas transmission network in the area (Work No. 2) on the north bank of the Tees at Seal Sands with subsequent transport through a new 24" buried gas line. This option requires a crossing of the Tees direct to the STDC site via a new tunnel shared with the CO<sub>2</sub> Gathering Network. Upon exit from the tunnel the new gas pipeline terminates at</p>	<p>Natural gas will be used as the fuel for the operation of the Low-Carbon Electricity Generating Station. Subject to agreement with National Gas Grid (NGG), natural gas will be supplied via a tie-in to the gas transmission network in the area (Work No. 2) on the north bank of the Tees at Seal Sands with subsequent transport through the existing Sembcorp Gas Pipeline under the River Tees to Bran Sands and then via a new 24" diameter buried gas</p>
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the PCC with a new gas receiving facility (Above Ground Installation (AGI)).	pipeline from Bran Sands to the PCC Site.
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3.2.7 The change to paragraph 4.3.59, has been made with reference to Change 1 (Work No. 2A), to reduce the optionality of the gas connection by the removal of the previously proposed new build options and the single route now proposed, using the existing Sembcorp gas pipeline tunnel.

**Original ES text for paragraph 4.3.59**      **Replacement text for paragraph 4.3.59**

The route corridors being considered for connection to the high-pressure transmission system are shown in Figure 3-2B in ES Volume II (Document Ref. 6.3).	The route for the connection to the high-pressure gas transmission system is shown in Figure 3-2B in ES Addendum Volume II (Document Ref. 7.8.2).
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3.2.8 Paragraph 4.3.61 has been changed to reflect the reduction in optionality for the gas connection. The replacement for this paragraph is presented in the following table.

**Original ES text for paragraph 4.3.61**      **Replacement text for paragraph 4.3.61**

Two new co-located AGIs will be constructed next to the existing NGG facility at Seal Sands. The first (NGG) AGI will receive the natural gas from the newly created tie-in to the existing new 24" NGG pipeline; in turn this will cross feed to the second new (NZZ) AGI and then on into the new 24" buried gas line described above. The new NZZ AGI will include metering, isolating valves and Pipeline Inspection Gauge ("pig") launcher.	Two new co-located AGIs will be constructed next to the existing NGG facility at Seal Sands. The first (NGG) AGI will receive the natural gas from the newly created tie-in to the existing NGG pipeline; in turn this will cross feed to the second new (NZZ) AGI and then on into the existing buried Sembcorp Gas Pipeline described above.
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3.2.9 Paragraph 4.3.62 has been updated as a result of Change 1 (Work No. 2A), by reducing two alternative routes for the new gas supply to the single selected option. Replacement paragraph 4.3.62 is presented in the following table.

**Original ES text for paragraph 4.3.62**      **Replacement text for paragraph 4.3.62**

The project has identified two alternative routes for the new gas supply which will be further developed during the design phase: <ul style="list-style-type: none"> <li>the outlet from the new NZZ AGI gas could be routed into the existing, disused 24" Trafigura pipeline which runs between the Tees Gas Processing Plant</li> </ul>	The outlet from the new NZZ AGI will be routed into the existing, 24" Sembcorp Gas Pipeline located approximately 100m north of the new AGI. The existing Sembcorp Gas Pipeline runs through the existing Seal Sands Utility corridor and crosses the river Tees from a location nearby Navigator Terminals and lands on
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<p>(TGPP) on Seal Sands to the Navigator Terminal. At this location a tie-in will be constructed (new AGI with pig receiver) which then connects (via a new AGI with pig launcher) into the new 24" gas line and into the new tunnel and on to STDC as described above. At present the Trafigura line is under long term preservation and detailed assessment will be undertaken to understand the re-use of this pipeline.</p> <ul style="list-style-type: none"> <li>the outlet from the new NZT AGI could be fed into the existing, disused 24" Sembcorp gas line which runs through North Tees. The existing Sembcorp pipeline crosses the river Tees and lands on the north bank of Dabholm Gut and runs on to Wilton site on the South Tees. At a point near the NWL Bran Sands WwTP, a new tie-in will be constructed which then connects via a new AGI into a new gas pipeline which could run to the STDC site to the new gas receiving station via a wayleave to the South of the NWL Bran Sans WwTP. At present the Sembcorp line is under long term preservation and detailed assessment will be undertaken to understand the re-use of this pipeline. In the event the Sembcorp tie-in is adopted, as this is located on the south bank of the Tees there will be no requirement for a tunnel under the Tees.</li> </ul>	<p>the north bank of Dabholm Gut. It then runs down the Dabholm Gut, past the NWL Bran Sands WwTP and on to Wilton site south of the Tees. A new tie-in to the existing Sembcorp Gas Pipeline will be constructed near to the NWL Bran Sands WwTP, which will then connect via another new AGI into a new gas pipeline which will run to the east of the NWL Bran Sands WwTP up to the PCC Site. The new section of gas pipeline will be installed below ground using a combination of open-cut and trenchless technologies, depending on the constraints or crossings required.</p>
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3.2.10 Paragraph 4.3.63 has been deleted as a result of the selection of the gas connection option in Change 1.Paragraph 4.7.6 of Chapter 4 has been replaced as shown in the following table to reflect Changes 7 and 8 (Work No. 6).

**Original ES text for paragraph 4.7.6      Replacement text for paragraph 4.7.6**

<p>The CO<sub>2</sub> Gathering Network and the Natural Gas Connection both require crossings underneath the tidal River Tees using either a micro-bored tunnel (Natural Gas Connection and CO<sub>2</sub> Gathering Network) or a pipeline installed using HDD techniques (CO<sub>2</sub> Gathering Network only) which are below MWHS [sic].</p>	<p>The CO<sub>2</sub> Gathering Network requires a crossing underneath the tidal River Tees using either the existing Sembcorp No. 2 Tunnel (Option 3), or a pipeline installed using HDD techniques (Option 2), both of which are below MHWS.</p>
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## Chapter 5 – Construction Programme and Management

- 3.2.11 The sections on the construction of the Gas Connection have been changed, and the following tables identifies updates to the relevant paragraphs.
- 3.2.12 Paragraph 5.3.18 has been replaced to match the changes made as a result of Changes 1 and 2 (which relate to Work No. 2).

### Original ES text for paragraph 5.3.18 Replacement text for paragraph 5.3.18

<p>There are two possible routing options for the Natural Gas Connection to the PCC Site (Work No. 2):</p> <ol style="list-style-type: none"> <li>1. New Build Option: a new below ground pipeline would run from a proposed Above Ground Installation (AGI) at Seal Sands, along the route of a disused railway line to Navigator Terminals and then beneath the Tees in a Micro-Bored Tunnel (MBT) (see Box 5-1) direct to the Teesworks site. The new pipeline would then run below ground along the Teesworks Spine Road to the gas receiving station on the PCC Site; or Alternatively the project could re-use the existing dis-used Trafigura pipeline that runs from Seal sands to Navigator Terminals to connect to the new tunnel above. In this instance a new AGI would be required at Seal Sands to connect the existing Trafigura gas pipeline to the pipeline within the tunnel.</li> <li>2. Sembcorp Pipeline Tie-In Option: a new below ground pipeline constructed using open cut and horizontal directional drilling (HDD) (see Box 5-1) would run from a proposed AGI connecting to the existing Sembcorp gas pipeline at the eastern end of Dabholm Gut and then continue northwards direct to the gas receiving station on the PCC Site. This utilises the existing gas pipeline that runs under the River Tees.</li> </ol>	<p>The Gas Connection to the PCC Site (Work No. 2) utilises the existing Sembcorp Gas Pipeline that runs from Seal Sands under the River Tees to Wilton and will involve:</p> <ul style="list-style-type: none"> <li>• construction of an Above Ground Installation (AGI) at Seal Sands connecting the existing National Transmission System (NTS) to the existing Sembcorp Gas Pipeline;</li> <li>• construction of another AGI connecting to the Sembcorp Gas Pipeline at Seal Sands; and</li> <li>• a new below ground pipeline constructed using open cut and horizontal directional drilling (HDD) (see Box 5-1), which would run from the proposed AGI at Bran Sands northwards to the gas receiving station on the PCC Site.</li> </ul>
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- 3.2.13 Paragraph 5.3.19 has been replaced in line with Changes 1 and 2 (which relate to Work No. 2).

### Original ES text for paragraph 5.3.19 Replacement text for paragraph 5.3.19

These two routeing options are illustrated on Figure 5-2 (ES Volume II, Document Ref. 6.3) and on the Indicative Gas Connection and Above Ground Installation Plans (Document Ref. 4.7) submitted with the Application.	This is illustrated on Figure 5-2 ES Addendum Volume II (Document Ref. 7.8.2) and on the Indicative Gas Connection and Above Ground Installation Plans (Document Ref. 4.7) submitted with the Application.
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- 3.2.14 Paragraph 5.3.20 has been updated to take account of the gas connection which has been proposed as part of Change 1 (which relates to Work No. 2). The text of paragraph 5.3.20 is replaced in the following table.

**Original ES text for paragraph 5.3.20**      **Replacement text for paragraph 5.3.20**

Whichever gas connection route is adopted, it will be constructed by the contractor, with connection works coordinated with National Grid Gas (NGG). The construction of the Minimum Offtake Connection (MOC) from the National Grid AGI required for both options will be undertaken by a National Grid approved contractor. The construction of the MOC will require stripping and stockpiling of soil/made ground and excavation to approximately 1 m below the depth of the existing gas main, along a length of approximately 12 m (6 m either side of the connection point).	The gas connection at Seal Sands will be constructed by the contractor, with connection works coordinated with National Grid Gas (NGG). The construction of the Minimum Offtake Connection (MOC) from the National Grid AGI will be undertaken by a National Grid approved contractor. The construction of the MOC will require stripping and stockpiling of soil/made ground and excavation to approximately 1 m below the depth of the existing gas main, along a length of approximately 12 m (6 m either side of the connection point).
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- 3.2.15 Paragraphs 5.3.27 and 5.3.28 have been deleted from **Chapter 5** as a result of the removal of the bored tunnel option by Change 1.
- 3.2.16 **Box 5-1** (Typical Approach to Trenchless Crossings) is updated to remove reference to the bored tunnel from Navigator Terminals to the PCC Site.
- 3.2.17 **Box 5-2** (Spoil Management) is updated to remove reference to spoil arising from the bored tunnel as a result of Change 1 (Work No. 2).
- 3.2.18 **Table 5.3** (Crossings on the Gas Connection Routes) is updated to remove references to National Gas Grid and Trafigura (Change 2, Work No. 2) and shows the Sembcorp pipeline connection only (Change 1, Work No. 2).

**Table 3-1. Special Crossings on the Gas Connection Route**

Crossing Name	Grid Reference	Description	Type	Existing/Upgraded/New
GC1	457051, 524623	Blue Main (Teesworks)	Trenchless	New
GC2	456998, 524489	Railway x 2 (Teesworks)	Trenchless	New
GC3	456971, 524360	York Potash Conveyor	Trenchless	New
GC4	456919, 524174	CATS Pipeline	Trenchless	New
GC5	456696, 523754	Minor Rd (x2), Existing Pipelines (x2 – including Breagh)	Trenchless	New

3.2.19 Paragraph 5.3.30 is updated to provide a revised reduced estimate of the maximum volume of spoil which would be produced from drilling, boring or tunnelling activities as part of the Proposed Development.

3.2.20 As paragraph numbers have changed as a result of deletions, the following tables include the paragraph numbers and text from the Original ES and what the corresponding paragraph number and text would now be. The following table shows how paragraph 5.3.68 has been replaced to reflect Changes 6, 7 and 8 (Work No. 6) and the updated paragraph number.

<b>Original ES text for paragraph 5.3.68</b>	<b>Replacement text for paragraph 5.3.65</b>
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<p>The CO<sub>2</sub> Gathering Network pipeline (and associated fibre-optic control cable) will need to cross the River Tees using trenchless technologies (see Box 5-1) using either:</p> <ul style="list-style-type: none"> <li>the micro-bored tunnel from Navigator Terminals to the Teesworks site shared with the Natural Gas Connection for both the CO<sub>2</sub> Gathering Network Pipeline and associated fibre-optic cable (see above); or</li> <li>a direct crossing from Navigator Terminals to the northern bank of the Dabholm Gut constructed using HDD techniques, with the fibre-optic control cable installed using an existing utilities tunnel under the Tees.</li> </ul>	<p>The CO<sub>2</sub> Gathering Network pipeline (and associated fibre-optic control cable) will need to cross the River Tees using either the existing Sembcorp No. 2 Tunnel (Option 3) or using a direct crossing from Navigator Terminals to the northern bank of the Dabholm Gut constructed using trenchless technologies (HDD) (Option 2) (see Box 5-1). The fibre-optic control cable will be installed using either the existing Sembcorp No. 2 Tunnel or within the HDD bore.</p>
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3.2.21 Paragraph 5.3.69 has also been amended to reflect Change 7 (Work No. 6) and the associated details required for construction of the pipeline within the Sembcorp No. 2 Tunnel, the text substitution (and updated paragraph number) is presented in the following table.



**Original ES text for paragraph 5.3.69**

**Replacement text for paragraph 5.3.66**

<p>For the direct crossing to the northern bank of the Dabholm Gut, the section of the CO<sub>2</sub> Gathering Network running north from the end of Dabholm Gut to the PCC site to the east of Bran Sands will either be above ground or alternatively installed underground using open-cut techniques (as the route is not an existing managed utility corridor).</p>	<p>Construction of the pipeline within the Sembcorp No. 2 Tunnel will require up to 20 workers, and involve the installation of new support frames at the top of the North and South shafts and pipe supports along the tunnel. Protection will be installed within the shaft and tunnel prior to construction to protect existing assets and infrastructure. The pipe spools will be lifted into and down the shaft before transitioning to the horizontal tunnel. Pipe spools will be welded and non-destructive tested within the tunnel and transported on rollers for the full length of the tunnel. In addition to the activities details in Section 5.3.64 [note: previously paragraph 5.3.67 in the Original ES]. Construction of the pipeline within the Sembcorp No. 2 Tunnel will involve the following:</p> <ul style="list-style-type: none"> <li>• Working under the Sembcorp Safe System of Work / Permit to Work;</li> <li>• Installation of temporary and permanent supports within the tunnel and at the top of the shaft;</li> <li>• Use of bevelled rollers and/or guides to safely maintain the pipe position during transition through the tunnel;</li> <li>• Use of welding and NDT habitats on scaffold working platforms. The platforms will be designed to not impact the existing access and egress through the tunnel;</li> <li>• Installation of lifting and pulling points;</li> <li>• Protection of adjacent assets and infrastructure within the shaft and tunnel;</li> <li>• Coordinating the construction window(s) with the asset operator and owner in order to minimise the impact on existing assets and planned activities;</li> <li>• Implementation of best practice and learnings based on previous pipeline construction within the tunnel; and</li> <li>• Development of a dedicated Health and Safety plan for the tunnel scope, addressing the unique working environment</li> </ul>
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3.2.22 Paragraph 5.3.67 has been updated to state “The alternative trenchless crossing of the Tees will be constructed using HDD techniques, with the fibre-

optic control cable installed using either the Sembcorp No. 2 Tunnel under the Tees or run through the HDD bore)", to reflect Change 8 (Work No. 6).

3.2.23 Paragraph 5.3.68 (formerly Paragraph 5.3.69) is amended as follows:

**Original ES text for paragraph 5.3.69**    **Replacement text for paragraph 5.3.68**

<p>For the direct crossing to the northern bank of the Dabholm Gut, the section of the CO<sub>2</sub> Gathering Network running north from the end of Dabholm Gut to the PCC site to the east of Bran Sands will either be above ground or alternatively installed underground using open-cut techniques (as the route is not an existing managed utility corridor).</p>	<p>For the direct crossing to the northern bank of the Dabholm Gut, the section of the CO<sub>2</sub> Gathering Network running east of Bran Sands from the end of Dabholm Gut to the PCC Site will either be above ground or alternatively installed underground using open-cut techniques (as the route is not an existing managed utility corridor).</p>
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3.2.24 **Table 5-8** (Special Crossings on the CO<sub>2</sub> Gathering Network) has been updated to remove references to the Tees Crossing direct to the PCC Site by bored tunnel (Change 6, Work No. 6) and a reference to Tees Crossing using Sembcorp No. 2 Tunnel (Change 7, Work No. 6) has been added. Minor consequential changes to the crossings described have been made.

**Table 3-2. Special Crossings on the CO<sub>2</sub> Gathering Network**

Crossing Name	Grid Reference	Description	Type	Existing/Upgraded/ New
<b>North Tees (Seal Sands to Navigator Terminals)</b>				
CG1	447817, 522753	Rail (industrial)	Pipe bridge	Existing
CG2	447830, 522840	Rail (industrial)	Pipe bridge	Existing
CG3	447849, 522927	Road (Belasis Ave)	Culvert	Existing
CG4	448137, 523106	Road (Nelson Ave)	Culvert	Existing
CG5	448444, 523338	Road (Cowpen Bewley Rd)	Culvert	Existing
CG6	448947, 523545	Farm Track	Culvert	Existing
CG7	449578, 523559	Farm Track	Culvert	Existing
CG8	449935, 523567	Minor watercourse	Pipe bridge	Existing
CG9	450180, 523572	Farm Track	Culvert	Existing
CG10	450437, 523578	Farm Track	Culvert	Existing
CG11	450662, 523559	Minor Road (Seaton Carew Rd)	Culvert	Existing
CG12	451035, 523583	Minor Road (Seal Sands)	Culvert	Existing
CG13	451076, 523585	Minor Road (Seal Sands)	Pipe bridge	Existing
CG14	452475, 523589	Minor Road (Seal Sands)	Pipe bridge	Existing
CG15	453489, 523450	Minor Road (Seal Sands)	Pipe bridge	Existing
CG16	453597, 523627	Minor Road (Seal Sands)	Pipe bridge	Existing

Crossing Name	Grid Reference	Description	Type	Existing/ Upgraded/ New
CG17	453598, 523762	Minor Road (Seal Sands)	Pipe bridge	Existing
CG18	453681, 524208	Minor Road	Pipe bridge	Existing
CG19	453766, 524337	Minor Road	Pipe bridge	Existing
CG20	453886, 524519	Minor Road	Pipe bridge	Existing
CG21	453946, 524719	Minor Road (Navigator Terminals)	Pipe bridge	Existing
<b>Tees Crossing by HDD Bore</b>				
CGC22	454687, 524780	River Tees (HDD)	HDD bore	New
CGC23	455258, 524663	Existing pipe rack	Auger bore	New
<b>Tees Crossing using Sembcorp No. 2 Tunnel</b>				
CGC24	454686, 524771	River Tees	Tunnel	Existing
CGC25	455196, 524652	Minor Road (Dabholm Gut)	Pipe bridge	Existing
<b>Dabholm Gut to PCC Site</b>				
CGC26	455380, 524552	Minor Road (Dabholm Gut)	Pipe bridge	Existing
CGC27	455562, 524447	Minor Road (Dabholm Gut)	Pipe bridge	Existing
CGC28	455801, 524301	Minor Road (Dabholm Gut)	Pipe bridge	Existing
CGC29	455885, 524240	Minor Road (Dabholm Gut)	Pipe bridge	Existing
CGC30	456193, 524116	Minor Road (Dabholm Gut)	Pipe bridge	Existing
CGC31	456540, 523836	Minor Road (Dabholm Gut)	Under road bridge	Existing
CGC32	456695, 523763	Minor Road (Dabholm Gut)	Pipe bridge	Existing
CGC33	457016, 524316	Rail (x2) (Industrial)	Pipe bridge	Existing
CGC34	457098, 524604	Minor Road (Teessworks)	Auger bore	New

## Chapter 6 – Alternatives and Design Evolution

- 3.2.25 Paragraph 6.7.2 of **Chapter 6: Alternatives and Design Evolution [APP-089]** has been included to explain how the changes proposed have developed between submission of the Application and the current point.
- 3.2.26 An additional table (**Table 6.2**) (Summary of design changes and a comparison of environmental effects between ES submission and the Change Notification) has been included to describe the Proposed Development Changes (see below).

**Table 6-2. Proposed Development Changes between DCO Submission and Examination**

Change	Reason for Change	Changes in Environmental Effects
1	Refined in response to Feedback from consultation, Ongoing evaluation and refinement of the Proposed Development design, to reduce construction corridors and land take.	Environmental effects are the same or lower than assessed at DCO Submission based on: <ul style="list-style-type: none"> <li>- Reduced excavation of natural and potentially contaminated materials</li> <li>- Reduced dust generation</li> <li>- Reduced noise generation and potential impacts on SPA/Ramsar/SSSI</li> <li>- Reduced HGV and worker transport movements</li> <li>- Increased distance to receptors.</li> </ul>
2	Refined in response to Feedback from consultation, Ongoing evaluation and refinement of the Proposed Development design, to reduce construction corridors and land take.	Environmental effects are the same or lower than assessed at DCO Submission based on: <ul style="list-style-type: none"> <li>- Reduced excavation of natural and potentially contaminated materials.</li> <li>- Reduced dust generation</li> <li>- Reduced noise generation and potential impacts on SPA/Ramsar/SSSI</li> <li>- Reduced HGV and worker transport movements</li> <li>- Increased distance to receptors.</li> </ul>
3	Refined in response to Feedback from consultation, Ongoing evaluation and refinement of the Proposed Development design, to reduce construction corridors and land take.	Environmental effects are the same or lower than assessed at DCO Submission based on increased distance to receptors through reduction in the Order Limits at Tod Point
4	Refined in response to Feedback from consultation, Ongoing evaluation and refinement of the Proposed Development design, to reduce construction corridors and land take.	Environmental effects are the same as re-use of this existing infrastructure already assessed.

Change	Reason for Change	Changes in Environmental Effects
5	Refined in response to Feedback from consultation, Ongoing evaluation and refinement of the Proposed Development design, to reduce construction corridors and land take.	Environmental effects are the same or lower than assessed at DCO Submission based on increased distance to receptors through reduction in the Order Limits at Bran Sands and Teesworks.
6	Refined in response to Feedback from consultation, Ongoing evaluation and refinement of the Proposed Development design, to reduce construction corridors and land take.	Environmental effects are the same or lower than assessed at DCO Submission based on: <ul style="list-style-type: none"> <li>- Reduced excavation of natural and potentially contaminated materials.</li> <li>- Reduced dust generation.</li> <li>- Reduced noise generation and potential impacts on SPA/Ramsar/SSSI</li> <li>- Reduced HGV and worker transport movements</li> <li>- Increased distance to receptors.</li> </ul>
7	Refined in response to Feedback from consultation, Ongoing evaluation and refinement of the Proposed Development design, to reduce construction corridors and land take.	Environmental effects are the same or lower than assessed at DCO Submission based on: <ul style="list-style-type: none"> <li>- Removal of requirement for HDD crossing of Tees for CO2 Gathering Network.</li> <li>- Removal of drilling/excavation noise.</li> <li>- Only pipe storage and handling on surface. Pipeline construction will be below ground in existing operational service tunnel.</li> <li>- No change to Major Accidents and Hazards assessment for management of risks associated with the construction, operation and decommissioning of CO<sub>2</sub> Gathering Network in Sembcorp No. 2 Tunnel.</li> </ul>
8	Change following refinement of the Proposed Development design.	Environmental effects are the same than assessed at DCO Submission based on: <ul style="list-style-type: none"> <li>- assessment of movement of HDD launch point from Navigator Terminals to the north bank of the Dabholm Gut and potential increase in noise and visual disturbance of SPA/Ramsar bird species using Bran Sands lagoon.</li> <li>- Assessment of changes in HGV and worker traffic movements.</li> <li>- Assessment of noise and traffic impacts of pipe stringing across Seal Sands Road.</li> </ul>



Change	Reason for Change	Changes in Environmental Effects
9	Refined in response to Feedback from consultation, Ongoing evaluation and refinement of the Proposed Development design, to reduce construction corridors and land take.	Environmental effects are the same or lower than assessed at DCO Submission based on the reduced land take of the construction corridors and therefore increased distances to sensitive receptors.
10	Change following land referencing in relation to access to Work No. 9D	Environmental effects are considered to be the same as assessed at DCO Submission based on the <i>de minimis</i> increase in land area.
11	Administrative Change in the DCO	Administrative change in the DCO. No change in environmental effects.
12	Administrative Change in the DCO	Administrative change in the DCO. No change in environmental effects.
13	Refined in response to Feedback from consultation, Ongoing evaluation and refinement of the Proposed Development design, to reduce construction corridors and land take.	Environmental effects are the same or lower than assessed at DCO Submission based on the reduced land take of the construction corridors and therefore increased distances to sensitive receptors.

## Chapter 7 - Legislation and Policy

- 3.2.27 None of the changes reported on in this Addendum have been driven by legislative changes in national, regional or local policy. As a result, Chapter 7: Legislative Context and Planning Policy [**APP-089**] has not been updated.

## Chapter 22 – Major Accidents and Natural Disasters

- 3.2.28 Chapter 22 Major Accidents and Natural Disasters [**APP-104**] has been updated to assess risks during construction, operation and decommissioning of the CO<sub>2</sub> Gathering Network pipeline in the Sembcorp No. 2 Tunnel. Updated versions of Tables 22-2 and 22-3 are presented below. Updated text has been highlighted in red.

**Table 22-2: Potential Major Accident and/ or Disaster Events during Construction grouped by Risk Event (Updates only – highlighted)**

Scenario Ref.	Risk Event (High Level)	Risk Description	Risks and Consequence before Mitigation	Embedded Mitigation Measures and References	Mitigated to ALARP?	Tolerability
C-1	Fire/ explosion and risk of release of harmful gas.	Multiple manufactured hydrocarbon liquid lines inside the Sembcorp No. 2 Tunnel. Disturbance of existing pipelines during construction resulting in loss of containment from 3 <sup>rd</sup> party pipelines.	Asphyxiation risk and toxic effects from damage to existing pipes within the tunnel and releases of their contents.  Tunnel Flooding	Use of Sembcorp Safe Systems of work, Permit to Work and procedures. Restrictions on no. of construction worker in tunnel at one time. All risks of working in confined spaces mitigated to ALARP.  Ventilation using forced draft air flow. Use of a pre-agreed and tested emergency response and escape and evacuation plan.	Yes	Yes

**Table 22-3: Potential Major Accident and/ or Disaster Events during Operation grouped by Risk Event (Updates only)**

Scenario Ref.	Risk Event (High Level)	Risk Description	Risks and Consequence before Mitigation	Embedded Mitigation Measures and References	Mitigated to ALARP?	Tolerability
O-3	Toxic / asphyxiant gas release	Accidental release of CO <sub>2</sub> at high pressure on the PCC or from a low, medium or high pressure pipeline (including within Sembcorp No.2 Tunnel).	CO <sub>2</sub> is toxic and an asphyxiant, depending on the concentration in air. It is also odourless and heavier than air.  A release of CO <sub>2</sub> could be caused by mechanical failure, corrosion or impact damage resulting in a loss of containment.  The impact of the release on people and the environment depends on the	Monitoring and detection of CO <sub>2</sub> .  Compliance with Pipeline Safety Regulations (1996) and additional specific safety measures for CO <sub>2</sub> pipelines will apply, including the monitoring of fluid composition and the prevention of water ingress, which could accelerate corrosion and premature failure.	Yes	Yes

Scenario Ref.	Risk Event (High Level)	Risk Description	Risks and Consequence before Mitigation	Embedded Mitigation Measures and References	Mitigated to ALARP?	Tolerability
			pressure, temperature and mass of material that is lost, however there is the potential for a major accident resulting in significant harm and potential fatalities, both on-site and off-site. Further details of the hazards associated with a CO <sub>2</sub> release are contained in Section 22.7.	Pressure monitoring and pressure relief systems to prevent over pressurisation situations. Leak detection systems.		
O-4	Toxic/asphyxiant gas release	Release of medium pressure CO <sub>2</sub> From the CO <sub>2</sub> Gathering Network (including within Sembcorp No.2 Tunnel).	<p>CO<sub>2</sub> is toxic and an asphyxiant, depending on the concentration in air. It is also odourless and heavier than air.</p> <p>A leak or rupture from a system containing low or medium pressure (gas phase) CO<sub>2</sub> from the CO<sub>2</sub> Gathering Network is unlikely to be seen as it is an odourless and transparent gas. Depending on the energy of the gas there may be reduced air entrainment close to the release point leading to larger dispersion distances to safe concentrations. The risk is that in some circumstances a low/medium pressure CO<sub>2</sub> release is not dispersed rapidly and not visible with a risk of toxic impacts and subsequent harm to human health and protected species.</p> <p>A release of low/medium -pressure gaseous CO<sub>2</sub> would be caused by</p>	<p>The CO<sub>2</sub> Gathering Network is not routed in the immediate vicinity of residential areas. It is predominately routed through industrial areas.</p> <p>Sembcorp No. 2 Tunnel is not usually manned except during planned maintenance.</p> <p>Use of Sembcorp Safe Systems of work, Permit to Work and procedures. Restrictions on no. of workers in tunnel at one time (maximum no. twenty). All risks of working in confined spaces mitigated to ALARP.</p>	Yes	Yes

Scenario Ref.	Risk Event (High Level)	Risk Description	Risks and Consequence before Mitigation	Embedded Mitigation Measures and References	Mitigated to ALARP?	Tolerability
			<p>mechanical failure or impact damage resulting in a loss of containment.</p> <p>The impact of the release on people and the environment depends on the pressure, temperature and mass of gas that is released and in the case of humans the subsequent toxic load that they are exposed to; however there is the potential for a major accident resulting in significant harm and potential fatalities, both on-site and off-site.</p>			
O-9	Domino effects to neighbouring facilities	Fire and/or explosion, toxic release, discharges to air and water.	<p>Inside the tunnel, CO<sub>2</sub> being heavier than air would take time to disperse due to the (below ground) elevation</p>	<p>The proposed CO<sub>2</sub> Gathering Network and Natural Gas Connection Corridor routes (inc. tunnel) pass through the consultation zones for a number of existing COMAH facilities and lie within existing pipeline corridors.</p> <p>Risks of release within Sembcorp No. 2 Tunnel mitigated through use of thick wall pipe, isolation, Ventilation using forced draft air flow.</p>	Yes	Yes

## 4. Environmental Assessment of Proposed Development Changes

### 4.1 Introduction

4.1.1 This chapter of the ES Addendum identifies where the Proposed Development Changes have the potential to modify the assessment of impacts and effects reported in the technical chapters of the original ES.

### 4.2 Scope and methodology for the assessment of the proposed changes

4.2.1 A preliminary environmental assessment (screening) of whether the changes proposed would change the baseline or alter the outcomes of the previous assessments presented within ES Volume I, II and III of the ES [APP-083-APP-348] has been completed. The screening exercise has identified the following topics assessments as being altered as a result of the changes, these are:

- Noise and Vibration;
- Ornithology; and,
- Major Accidents and Disasters (see in Section 3 above).

4.2.2 Further information detailing the changes to the Noise and Vibration and Ornithology assessments is presented in Vol II of the ES Addendum.

4.2.3 An update to the Habitats Regulations Assessment (HRA) Appropriate Assessment (Document Ref. 5.13 Rev. 2.0) also forms part of the submission in support of the Change Application.

4.2.4 The results of the screening assessment are presented in Table 4-1.

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**Table 4-1: Net Zero Teesside screening of environmental assessments for Proposed Development Changes**

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
<b>Chapter 8</b> Air Quality <b>[APP-090]</b>	Out	None of the changes will result in modifications to the impacts previously assessed during the construction, operational or decommissioning stages.	<b>8A</b> Air Quality - Construction Phase <b>[APP-247]</b>	Out	None of the changes will result in a change in the baseline conditions at construction stage. The removal of the long-tunnel option has reduced the potential for dust generation but does not change the assessment which has already been made in the chapter and no change is proposed.
			<b>8B</b> Air Quality - Operation Phase <b>[APP-248]</b>	Out	None of the changes have the potential to change the outcomes of this assessment/appendix because the changes do not affect the PCC Site and the operational emissions associated with this.
			<b>8C</b> Air Quality - Amine Degradation Assessment <b>[APP-249]</b>	Out	None of the changes have the potential to change the outcomes of this appendix because the changes will not affect the solvents proposed in the application.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
<b>Chapter 9</b> Surface Water, Flood Risk and Water Resources [ <b>APP-091</b> ]	Out	None of the changes in modifications to the impacts previously assessed during the assessment and because the changes will not affect the implementation of mitigation measures during construction or alter the nature or volume of discharges during operation.	<b>9A</b> Flood Risk Assessment [ <b>APP-250 to APP-252</b> ]	Out	None of the changes have the potential to change the conclusions of this assessment because the changes predominately involve no change to the development options assessed in the original ES. There is only a small increase of 110m <sup>2</sup> required at the Saltholme Laydown Area (Work No. 9D) to allow direct access to Seaton Carew Road, which although located in Flood Zone 3 is adjacent to existing areas of the Order Limits also within Flood Zone 3. In both cases, the mitigation measures proposed in the Flood Risk Assessment are still appropriate.



ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
			<b>9B</b> Background Water Quality [APP-253]	Out	None of the changes have the potential to change the outcomes of this appendix because the changes will not affect the previous water quality monitoring data or details of existing third-party discharge and abstraction permits.
			<b>9C</b> WFD Assessment [APP-254]	Out	None of the changes have the potential to change the outcomes of this assessment because the changes predominately involve the reduction of the Order Limits (with only a small increase of 110m <sup>2</sup> in Work No. 9D) and will not affect the implementation of mitigation measures during construction or alter the nature or volume of discharges during operation.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
<b>Chapter 10</b> Geology and Contaminated Land [APP-092]	Out	None of the changes have the potential to in modifications to the impacts previously assessed during the and because the changes will not affect the implementation of mitigation measures during construction or operation of the Proposed Development.	<b>10A</b> Preliminary Sources Study Report [APP-255 to APP-292]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes do not affect the baseline, which includes historical mapping.
			<b>10B</b> Contaminated Land-Conceptual Site Model [APP-293]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes do not affect the identification of sources, pathways and receptors.
			<b>10C</b> Contaminated Land Environmental Risk Assessment [APP-294]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes do not affect the proposed mitigation measures.
			<b>10D</b> Geotechnical Risk Register [APP-295]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes do not affect the geotechnical risks assessed.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
<b>Chapter 11</b> Noise and Vibration [APP-093]	In	The changes have been reviewed and for Changes 1 to 7 and 9 to 13 do not change the outcomes of the assessment, because distances between noisy activities and noise sensitive receptors is	<b>11A</b> Construction Noise Assessment Methodology [APP-296]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes do not affect the methodology or data used for the construction noise assessment.

increased, therefore meaning that construction noise predictions are lower. No significant effects were previously predicted and this remains the case.

**11B** Operational Noise Information [**APP-297**]

Out

None of the changes have the potential to change the outcomes of this appendix, because the changes do not affect the methodology or data used for the operational noise assessment.

For Change 8, the change in direction of HDD drilling changes the location of the HDD launch point making it slightly closer to residential properties to the south of the Tees.

The noise model has been re-run for the construction of the CO<sub>2</sub> Gathering Network across the Tees using HDD techniques in a revised direction. There is no increase in the significance of effects.

The updated assessment of noise and vibration impacts associated with Change 8 is appended as Appendix A to this document.

**Chapter 12** Terrestrial Ecology [**APP-094**]

Out

None of the changes will result in modifications to the impacts previously

**12A** Legislation and Planning Policy Relevant to Ecology [**APP-298**]

Out

None of the changes will update or change the contents of the appendix.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
		assessed during the at construction, operational or decommissioning stages, therefore they do not change the assessment of effects on designated sites or protected species.	<b>12B</b> Ecological Impact Assessment Methods [APP-299]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes do not affect the methodology or data used for the ecological assessment.
			<b>12C</b> Preliminary Ecological Appraisal [APP-300 to APP-304]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes predominately involve the reduction of the Order Limits, with only a small increase of 110m <sup>2</sup> required at the Salholme Laydown Area (Work No. 9D) to allow direct access to Seaton Carew Road, which was already surveyed as part of the application.  This area has subsequently been surveyed and included in the Terrestrial Ecology Assessment

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
			12D Bat Survey Report [APP-305 to APP-306]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes predominately involve the reduction of the Order Limits, with only a small increase of 110m <sup>2</sup> required at the Saltholme Laydown Area (Work No. 9D) to allow direct access to Seaton Carew Road, which was not considered to bats for terrestrial invertebrates following an additional walkover survey.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
			12E Reptile Survey Report [APP-307]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes predominately involve the reduction of the Order Limits, with only a small increase of 110m <sup>2</sup> required at the Saltholme Laydown Area (Work No. 9D) to allow direct access to Seaton Carew Road, which was not considered to require further survey for reptiles following an additional walkover survey.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
			12F Terrestrial Invertebrate Survey Report [APP-308]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes predominately involve the reduction of the Order Limits, with only a small increase of 110m <sup>2</sup> required at the Saltholme Laydown Area (Work No. 9D) to allow direct access to Seaton Carew Road, which was not considered to require further survey for terrestrial invertebrates following an additional walkover survey.



ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
			<b>12G</b> Water Vole and Otter Survey Report [ <b>APP-309</b> ]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes predominately involve the reduction of the Order Limits, with only a small increase of 110m <sup>2</sup> required at the Saltholme Laydown Area (Work No. 9D) to allow direct access to Seaton Carew Road, which was not considered to require further survey for water vole or otter following an additional walkover survey.
			<b>12H</b> Supplementary Habitat Information Report Coatham Sands [ <b>APP-310 to APP-311</b> ]	Out	None of the changes have the potential to change the outcomes of this appendix, which includes baseline ecological data for a wider area of Coatham Sands outside of the Order Limits and is therefore not affected by the changes.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
			12I Terrestrial Invertebrate Survey Coatham Dunes [APP-312]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes will not affect this baseline ecological data for Coatham Sands.
			12J GCN Report [APP-313]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes predominately involve the reduction of the Order Limits, with only a small increase of 110m <sup>2</sup> required at the Saltholme Laydown Area (Work No. 9D) to allow direct access to Seaton Carew Road, which was not considered to require further survey for great crested newts following an additional walkover survey.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
<b>Chapter 13</b> Aquatic Ecology [APP-095]	Out	None of the changes will result in modifications to the impacts previously assessed during the construction, operational or decommissioning stages, therefore they do not change the assessment of effects on aquatic ecology.	<b>13A</b> Aquatic Ecology Supplementary Desk Study and Field Survey Report [APP-314]	Out	None of the changes have the potential to change the outcomes of this appendix, because this appendix was already based on an earlier version of the Order Limits.
<b>Chapter 14</b> Marine Ecology [APP-096]	Out	None of the changes will result in modifications to the impacts previously assessed during the construction, operational or decommissioning stages, therefore they do not change the assessment of effects on marine ecology.	<b>14A</b> Intertidal Benthic Ecology Survey Report [APP-315]	Out	None of the changes have the potential to change the outcomes of this appendix, which includes baseline benthic ecological data for a wider part of the intertidal area than the Order Limits and is therefore not affected by the changes.
			<b>14B</b> Fisheries and Fish Ecology Baseline [APP-316 to APP-318]	Out	None of the changes have the potential to change the outcomes of this appendix, which includes baseline fisheries and fish ecological data for a 10km study area that is wider than the Order Limits and is therefore not affected by the changes.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
			<b>14C</b> Marine Mammal Baseline [ <b>APP-319</b> ]	Out	None of the changes have the potential to change the outcomes of this appendix, which includes baseline marine mammal ecological data for a 10km study area that is wider than the Order Limits and is therefore not affected by the changes.
			<b>14D</b> Subtidal Benthic Ecology [ <b>APP-320</b> ]	Out	None of the changes have the potential to change the outcomes of this appendix, which includes baseline benthic ecological data for a wider part of the subtidal area than the Order Limits and is therefore not affected by the changes.
			<b>14E</b> Coastal Modelling Report [ <b>APP-321</b> ]	Out	None of the changes affect the baseline or findings of the Appendix.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
<b>Chapter 15</b> Ornithology [APP-097]	In	The changes have been reviewed and do not change the outcomes of the assessment, because the changes predominately increase the distances between noisy activities and noise sensitive receptors. The	<b>15A</b> Ornithology Baseline [APP-322 to APP-325]	Out	None of the changes have the potential to change the outcomes of this appendix, which is a baseline report that covered an area larger than the Order Limits and is therefore not affected by the changes.

only exception to this is Change 8, which will involve commencing drilling of the River Tees crossing from a 70m wide strip of land between Dabholm Gut and Bran Sands Lagoon to the east of the River Tees. This will involve construction activity in close proximity to a lagoon designated as part of the Teesmouth and Cleveland Coast SPA. With the implementation of visual and noise barriers, there would be a neutral (not significant) effect on the breeding birds and species for which the SPA/Ramsar and SSSI are designated. There would also not be any cumulative effects with construction or operation of the York Potash project on the north side of Bran Sands Lagoon. The updated assessment of noise and visual impacts on SPA/Ramsar bird species associated with Change 8 is appended as Appendix B to this document.

**15B CONFIDENTIAL**  
Ornithology Baseline  
[APP-326]

Out

None of the changes have the potential to change the outcomes of this appendix, which is a baseline report that covered an area larger than the Order Limits and is therefore not affected by the changes.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
<b>Chapter 16</b> Traffic [APP-098]	Out	<p>Note: The Habitats Regulations Assessment Report has also been updated (Document Ref. 5.13 Rev. 2.0) and has confirmed that with mitigation the effect on individual species and on the SPA / Ramsar and SSSI would be no noise disturbance to SPA/Ramsar birds and no adverse effects on the integrity of the SPA/Ramsar. There would also not be any cumulative effects with construction or operation of the York Potash project on the north side of Bran Sands Lagoon.</p> <p>None of the changes will result in modifications to the impacts previously assessed during the construction, operational or decommissioning stages, therefore they do</p>	<b>16A</b> Transportation Assessment [APP-327 to APP-332]	None of the changes have the potential to change the outcomes of this appendix, because the changes proposed will not affect peak construction traffic.	

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
		not change the assessment of effects on traffic. The changes proposed do not affect peak construction traffic numbers assessed.	<b>16B</b> Framework Construction Worker Travel Plan [ <b>APP-333</b> ]		None of the changes have the potential to change the outcomes of this appendix, because the changes proposed affect the deployment of measures in the travel plan.
			<b>16C</b> Framework Traffic Management Plan [ <b>APP-334</b> ]		None of the changes have the potential to change the outcomes of this appendix, because the changes proposed affect how traffic management takes place.
<b>Chapter 17</b> Landscape and Visual Amenity [ <b>APP-099</b> ]	Out	None of the changes will result in in modifications to the impacts previously assessed during the construction, operational or decommissioning stages, therefore they do not change the assessment of effects on	<b>17A</b> Landscape Character [ <b>APP-335</b> ]	Out	None of the changes have the potential to change the outcomes of this appendix, which includes baseline information on landscape character for a study area that is wider than the Order Limits and is therefore not affected by the changes



ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
		landscape and visual amenity.	<b>17B</b> LVIA Proposed Methodology [APP-336]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes do not affect the methodology used for the landscape and visual assessment.
			<b>17C</b> Potential Viewpoints [APP-337]	Out	None of the changes will result in a change in the baseline conditions at construction, operational or decommissioning stages, therefore they do not change the proposed viewpoints used in the landscape and visual impact assessment.
<b>Chapter 18</b> Cultural Heritage [APP-100]	Out	None of the changes will result in a in modifications to the impacts previously assessed during the construction, operational or decommissioning	<b>18A</b> Cultural Heritage Baseline Report [APP-338]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes do not affect the heritage baseline.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
		stages, therefore they do not change the assessment of effects on cultural heritage.	<b>18B</b> Cultural Heritage Gazetteer [ <b>APP-339</b> ]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes do not affect the heritage baseline.
<b>Chapter 19</b> Marine Heritage [ <b>APP-101</b> ]	Out	None of the changes will result in in modifications to the impacts previously assessed during the construction, operational or decommissioning stages, therefore they do not change the assessment of effects on marine heritage.			
<b>Chapter 20</b> Socio-Economics [ <b>APP-102</b> ]	Out	None of the changes will result in in modifications to the impacts previously assessed during the construction, operational or decommissioning stages, therefore they do	<b>20A</b> Economics Benefits Report [ <b>APP-340</b> ]	Out	None of the changes have the potential to change the outcomes of this appendix, because the changes do not affect the economics benefits of the Proposed Development.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
		not change the assessment of effects on socio-economics.	<b>20B-</b> Navigational Risk Assessment [APP-341 to APP-343]	Out	None of the changes have the potential to change the outcomes of this appendix, because the replacement outfall extents remain the same and this is that was identified as requiring a vessel exclusion zone.
<b>Chapter 21</b> Climate Change [APP-103]	Out	None of the changes will result in modifications to the impacts previously assessed during the construction, operational or decommissioning stages, therefore they do not change the assessment of effects on climate change.			

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
<b>Chapter 22</b> Major Accidents and Disasters [APP-104]	In	The changes have been reviewed and do not change the outcomes of the assessment, however the changes have resulted in changes to Tables 22.2 and 22-3 which have been updated to reflect that the CO <sub>2</sub> Gathering Network may be constructed, operated and decommissioned in an existing services tunnel. See Section 3.2.			
<b>Chapter 23</b> Public Health [APP-105]	Out	None of the changes will result in in modifications to the impacts previously assessed during the construction, operational or decommissioning stages, therefore they do not change the assessment of effects on public health.			

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
<b>Chapter 24</b> Cumulative and Combined Effects [APP-106]	Out	None of the changes proposed will result in changes to the already assessed cumulative and combined effects	<b>24A</b> Planned Development and Development Allocations [APP-344]	Out	Based on the review of the technical chapters presented above, none of the changes have the potential to change the outcomes of this appendix, because the changes do not materially affect the Proposed Development's Zone of Influence and therefore the cumulative schemes listed in this appendix.
			<b>24B</b> Assessment of Cumulative Effects Stages 1-3 [APP-345]	Out	Based on the review of the technical chapters presented above, none of the changes have the potential to change the outcomes of this appendix, because the changes do not materially affect the Proposed Development's Zone of Influence and therefore the cumulative schemes listed in this appendix and scoped in or out of the cumulates assessment.

ES Chapter	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes	ES Appendix	Screening Decision	Rationale - potential for the environmental effects to be altered as a result of Proposed Development Changes
			<b>24C</b> Statement of Combined Effects [APP-346]	Out	Based on the review of technical chapters presented above, none of the changes have the potential to change the environmental effects or mitigation measures associated with the Proposed Development, therefore the potential for combined effects remains as stated within this appendix.
<b>Chapter 25</b> Summary of Significant Effects [APP-107]	Out	None of the changes result in changes to significance of effects in the chapters which have been updated as a result of the changes.	<b>25A</b> Commitments Register [APP-347]	Out	None of the changes alter the outcomes of this appendix, because the changes do not require any new or different mitigation measures.



- 4.2.5 The screening assessment has identified that the Proposed Changes will not affect the significance of effects predicted for Air Quality, Surface Water, Flood Risk and Water Resources, Geology and Contaminated Land, Terrestrial Ecology, Aquatic Ecology, Marine Ecology, Traffic, Landscape and Visual Amenity, Marine Heritage, Socio-Economic, Climate Change, Public Health, Cumulative and Combined Effects and the Summary of Significant Effects chapters.
- 4.2.6 As explained in Section 1.3, updates to the noise and ornithology assessments to address the potential impacts of Change 8 are provided within Appendices A and B of this ES Addendum respectively.

## 5. Consultation

5.1.1 Informal (non-statutory) consultation on the Proposed Development Changes has been undertaken by the Applicant in line with the Change Notification Report [AS-044] and commenced on 8 March 2022 and finished on 14 April 2022.

5.1.2 This consultation has encompassed:

- informal consultation with prescribed persons, including relevant local authorities, statutory undertakers, landownership interests and non-prescribed consultees were consulted by letter (via email) on 14 March 2022.
- Newspaper notification, site notices, website updates and social media were used
- Public information events took place on 22 and 23 March 2022 in Lazenby Village Hall and 25k Community Centre, Redcar respectively.

5.1.3 The approach to consultation and how the Applicant has had regard to the responses received is more fully documented within the Changes Application Consultation Statement (Document 7.6). Table 5-1 provides a summary of matters raised during the consultation.

**Table 2-1: Summary of Consultation Relevant to the EIA Addendum**

Consultee	Date	Summary of Comments/Issues
NATS	15 March 2022	No comments to make on the Proposed Changes.
Historic England	16 March 2022	Historic England confirmed that in their view the Proposed Changes did not materially change the advice they issued previously on 15th September 2020 and advised that their position remains unchanged.
Natural England	28 March 2022	Natural England (NE) made comments in relation to Proposed Changes 7 & 8. NE agreed that the impacts of these two particular proposed changes should be assessed in the update to the Environmental Statement; in particular, Chapter 11 (Noise and Vibration) and Chapter 12 (Terrestrial Ecology), as well as



the Habitats Regulations  
Assessment.

With regard to Proposed Change 8, NE highlighted the potential for in combination effects arising from the additional work adjacent to the Dabholm Gut and Bran Sands Lagoon with the Anglo-American (York Potash) Woodsmith Project Conveyor development.

NE had no comments to make with regard to Proposed Changes 1-6 or 9-13.

Loftus Town Council	30 March 2022	Loftus Town Council confirms their continued support for the Project.
Webinar attendee	30 March 2022	The size and massing of the Power Capture and Compression (PCC) Site buildings and structures.
Webinar attendee	30 March 2022	Construction and operation of the CO <sub>2</sub> Gathering Network pipeline in the Sembcorp No. 2 Tunnel.
Webinar attendee	30 March 2022	Risks associated with the compression and transport of CO <sub>2</sub> .
Webinar attendee	30 March 2022	What consideration has been given to future CO <sub>2</sub> storage options once the Endurance saline aquifer is full?

## Summary of consultation conclusion

- 5.1.4 The full consultation report (Proposed Development Changes: Consultation Statement) can be reviewed in (Document Ref 7.6).
- 5.1.5 The Applicant carried out a consultation on a number of Proposed Development Changes to the Proposed Development between 8 March 2022 and 14 April 2022.
- 5.1.6 The Applicant consulted Statutory Consultees and Landowners via letter and email and the local community via a mixture of methods including the first public information events related to the Proposed Development.



- 5.1.7 The Applicant has reviewed the feedback received and shown due regard to relevant responses as set out in Table 2-1 above.
- 5.1.8 The consultation is therefore considered to fulfil the criteria set out in Advice Note 16 and the ExA's Response to Applicant's letter dated 1 February 2022 [PD-011].

## 6. Summary

- 6.1.1 This ES Addendum has identified how the Proposed Development Changes interact and change the content, scope and conclusions of the Original ES submitted as part of the DCO Application.
- 6.1.2 The Proposed Development Changes that have been identified as requiring changes to the Original ES are Changes, 1, 2, 6, 7 and 8. These changes are in the form of amendments to Chapters 3. (Description of the Existing Environment), 4. (Proposed Development), 5. (Construction Programme and Management) and 6. (Alternatives). These changes are included in this document.
- 6.1.3 Change 1 involves options being removed from the Original ES assessment by formalising the use of the Sembcorp Tie In as a way of connecting into the National Gas Grid. Change 2 is associated with Change 1 in that part of the gas infrastructure proposed is no longer required. There are, however, no changes to the significance of effects predicted in the original ES which formed part of the DCO Application arising from Changes 1 and 2.
- 6.1.4 Changes 6 and 7 involves reducing optionality for the construction of the CO<sub>2</sub> Gathering Network. Change 7 has required an update to the information contained in Chapter 22 Major Accidents and Disasters (ES Volume I, Document Ref. 6.2.22 **[APP-XX]**) which is contained in Section 3.2 of this document. There are no changes to the significance of effects predicted in the original ES which formed part of the DCO Application arising from Changes 1 and 2.
- 6.1.5 Change 8 has required an update to both the noise and ornithology assessments arising from the movement of noise sources from North Tees to land to the north of Dabholm Gut. The results of these updated assessments are presented in Appendix A (Noise) and B Ornithology of this ES Addendum.



# Appendix A: Noise



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# 11. Introduction

## 11.1 Introduction

- 11.1.1 This document provides an addendum to the noise and vibration assessment which formed part of the the Original Environmental Statement (ES) and should be read in conjunction with the following documents submitted with the Development Consent Order (DCO) Application:
- **Chapter 11:** Noise and Vibration of the ES Volume I (Application Document Ref. 6.2.11) [**APP-093**];
  - **Appendix 11A:** Construction Noise Assessment Methodology (Application Document Ref. 6.4.16) [**APP-296**]; and
  - **Appendix 11B:** Operational Noise Information (Application Document Ref. 6.4.17) [**APP-297**].
- 11.1.2 This assessment considers the noise and vibration effects arising from the Proposed Development Changes, as summarised in sections below.
- 11.1.3 This Addendum only considers changes in baseline conditions or potential effects since the submitted ES was prepared; if no change is listed then conditions are the same as those presented in the submitted ES.
- 11.1.4 There is one Figure accompanying this chapter of the ES Addendum.
- 11.1.5 A glossary of terms and list of abbreviations used in this ES Addendum is provided within Document Ref. 6.2 ES Vol I Cover and Contents [**APP-082**].

## 11.2 Changes in Legislation, Policy and Guidance

- 11.2.1 The Environment Act 2021 ('The Act') (Her Majesty's Stationary Office (HMSO) 2021) was given Royal Assent after the submission of the Application and sets out legislation to provide a post-Brexit environmental framework for the United Kingdom. In summary, The Act includes new legislation such as: binding targets on air quality/ water quality, biodiversity, and resource efficiency and waste reduction.
- 11.2.2 The majority of The Act is not yet in force. The Office for Environmental Protection (OEP) has been brought into effect but is yet to receive its enforcement powers in England that would apply to the Proposed Development. The Applicant will continue to monitor implementation of The Act throughout the course of Examination and will consider the need for changes where they apply to policy or plans and their implementation, during the course of Examination. Until any changes are made, extant legislation and policies remain in force.
- 11.2.3 Draft revised National Policy Statements (NPS) for energy infrastructure were published by the Department for Business, Energy and Industrial Strategy (BEIS) on 6 September 2021 after submission of the Application.

Consultation closed on 29 November 2021 and BEIS is now considering consultation feedback, prior to finalising the revised NPS. Until the reviewed NPS is finalised, the extant NPS remains in place. Based on the NPS changes consulted upon by BEIS, it is considered likely that the Proposed Development will remain in accordance with the approach to be set out in the revised NPS.

- 11.2.4 The emerging NPS EN-1 policy remains largely unchanged in relation to noise and vibration. Paragraph 5.12.9 adds the requirement for development to be undertaken in accordance with statutory requirements for noise. Regard must be given to the relevant sections of the Noise Policy Statement for England, the NPPF, and the government's associated planning guidance on noise.
- 11.2.5 There are no notable changes to NPS EN-2 to EN-5 in relation to noise and vibration.
- 11.2.6 The National Planning Policy Framework (NPPF) was updated in July 2021 (MHCLG 2021). With regard to noise and vibration, whilst the policy paragraphs have been renumbered, the policy text remains unchanged from that reported in **Chapter 11: Noise and Vibration** of the ES Volume I (Application Document Ref. 6.2.11) [**APP-093**].

## 11.3 Proposed Development Changes

- 11.3.1 Section 2 of ES Addendum Volume I (Document Ref. 7.8.1) provides an overview of the Proposed Development Changes. Section 4.0, Table 4-1 of ES Addendum Volume I provides a scoping assessment of the Proposed Development Changes including the rationale for those Proposed Development Changes that are considered to require re-assessment in this chapter.
- 11.3.2 The following Proposed Development Changes have therefore been considered within the revised assessment for noise and vibration at the Proposed Development Site:
- Proposed Development Change 1 - Removal of optionality for the Gas Connection by removal of both "new build" options - Option 1A and Option 1B (i.e. removal of the long tunnel between North Tees and the PCC site) resulting in a reduction in the Order limits. There will also be a reduction in land take elsewhere following pre-Front End Engineering Design (pre FEED) and landowner consultation for the selected Gas Connection - Option 2 (Sembcorp Pipeline Tie-In) (**Work No. 2A**);
  - Proposed Development Change 6 - Change in optionality for Work No. 6 by removal of Option 1 (Bored Long Tunnel Direct to PCC) for the CO<sub>2</sub> Gathering Network (see also Change 1 for the Gas Connection) resulting in reduction in the Order limits. It also includes a reduction in other land areas of Work No. 6 following pre-FEED design and landowner consultation (**Work No. 6**);

- Proposed Development Change 7 - Change in the means of crossing the Tees within the Order Limits for Work No. 6 CO<sub>2</sub> Gathering Network to include new Option 3 (Sembcorp No 2 Tunnel) (**Work No. 6**); and
- Proposed Development Change 8 - Change in the means of crossing the Tees in the Order Limits for Work No. 6 CO<sub>2</sub> Gathering Network (HDD crossing) as part of Option 2 (HDD) to change the direction of HDD drilling (from Dabholm Gut to North Tees, rather than *vice versa*) following pre-FEED design (**Work No. 6**)

11.3.3 All other Proposed Development Changes described in ES Addendum Volume I, reduce the area of Work Numbers and consequentially reduce the extent of the Order Limits and would not alter the significance of effects in the assessment of noise and vibration effects and therefore, have not been considered further.

## 11.4 Relevant Additional Information

11.4.1 Since submission of the DCO Application, no Additional Information has been identified that is relevant to the assessment of noise and vibration.

## 11.5 Consultation

11.5.1 Consultation on the Proposed Development Changes has been undertaken as described in Section 5 of ES Addendum Volume I (Document Ref. 7.8.1).

11.5.2 A summary of comments raised via the consultation and other technical engagement, is summarised in Table 9-1.

## 11.6 Updated Baseline Conditions

### Existing Baseline

11.6.1 No changes to the submitted ES.

### Future Baseline

11.6.2 No changes to the submitted ES.

## 11.7 Development Design and Impact Avoidance

### Construction

11.7.1 Changes 1 and 6 and 7 would reduce the noise and vibration impacts of crossing the River Tees by removing the need for a bored tunnel from Navigator Terminals to the PCC Site.

11.7.2 Change 7 will involve no new above ground activities associated with pipe handling and stringing than have previously been assessed. Surface noise generation associated with construction work within the Sembcorp No. 2 Tunnel is therefore unlikely to be significant and has therefore been scoped out of further assessment.

- 11.7.3 Change 8 will modify the location of the noise impacts of drilling the HDD bore from the original launch point at Navigator Terminals to a revised launch point on land to the north of the Dabholm Gut, drilling west across the Tees to an exit point at Navigator Terminals.
- 11.7.4 For Change 8, movement of the HDD drilling rig to the northern side of the Dabholm Gut will locate drilling activities close to Bran Sands lagoon, which forms part of the Teesside and Cleveland Coast SPA. Noise and vibration impacts on the Teesside and Cleveland Coast SPA arising from the Changes are assessed in the updated Habitat Regulations Assessment (Document Ref 5.13 Rev. 5.0)
- 11.7.5 No further design and impact avoidance measures during construction are proposed as a result of Proposed Development Changes, above those stated in Chapter 11: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.11) [APP-093]. However, as with all Proposed Development activities, consideration will be given to the revised construction activities associated with Proposed Development Changes 7 and 8 in the final Construction Environmental Management Plan (CEMP). This will include setting out provisions to reduce noise and vibration impacts and effects relating to the proposed construction activities, as far as reasonably practicable, based on the measures outlined in Section 11.5 of Chapter 11: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.11) [APP-093]. A Framework CEMP is included as part of the Application Appendix 5A (Application Document Ref. No. 6.4.5).

## Operation

- 11.7.6 No further design and impact avoidance measures as a result of the Proposed Development Changes, above those stated in Chapter 11: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.11) [APP-093] are considered necessary.

## 11.8 Likely Impacts and Effects

### Construction

- 11.8.1 The Additional Information and Proposed Development Change introduces a new construction activity to be assessed in addition to the construction noise and vibration effects presented in Chapter 11: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.11) [APP-093].
- 11.8.2 An assessment of the construction effects of Proposed Development Change 8 has been undertaken. Details regarding the noise prediction methodology, including a full list of indicative construction plant and associated sound power levels ( $L_w$ ) for each construction phase, are presented in Appendix 11A of ES Volume III (Application Document Ref 6.4.16 [APP-296]).
- 11.8.3 With respect to prediction of noise levels during construction of the CO<sub>2</sub> Gathering Network, the values presented are for activities such as 'pipe

stringing, pipe bending and pipeline welding', which are reasonable worst-case activities to apply for the purposes of the assessment. This represents the highest noise levels predicted from multiple potential sub-activities considered for pipeline construction for both above ground pipeline (as is the case for the CO<sub>2</sub> Gathering Network) and below ground (as is the case for the Gas Connection) (see Appendix 11A: Construction Noise Assessment Methodology, ES Volume III, Document Ref. 6.4.16 [APP-296]). This includes the crossings under the River Tees which will be via a horizontal directional drilled tunnel or using the existing Sembcorp Number 2 Tunnel. A horizontal directional drilled tunnel will produce higher noise levels at the same distance as 'pipe stringing, pipe bending and pipeline welding' but as it is further from NSRs it will result in lower noise levels at the receptors. Surface works at the Sembcorp Number 2 Tunnel will be similar to the 'pipe stringing, pipe bending and pipeline welding' activity but also at a greater distance from receptors.

- 11.8.4 Updated distances between Noise Sensitive Receptors (NSRs) and construction activities for the CO<sub>2</sub> Gathering Network are set out in updated Table 11-20 below. Updated noise predictions at NSRs are set out in updated Table 11-22 and worst-case noise effects are set out in updated Table 11-24 below. There has been no increase in the significance of construction effects arising from the change.
- 11.8.5 Noise impacts associated with Change 8 on birds within the Teesside and Cleveland Coast Special Protection Area and Ramsar are assessed within the updated Habitat Regulations Assessment (Document Ref. 5.13 Rev 2.0) included with this Change application and also in the addendum to Chapter 15: Ornithology of the ES (ES Addendum, Appendix B).

**Table 11-1: Distances Between NSRs and Construction (Updated for Changes to the Order Limits)**

	<b>CO<sub>2</sub> Gathering Network</b>
NSR1 - 58 Broadway West, Redcar	900
NSR2 - 51 York Road Redcar	1300
NSR3 - 131 Broadway West	900
NSR4 – Marsh House Farm	500
NSR5 - Billingham (Charlton Close)	700
NSR6 -Haverton Hill	700
NSR7 - Northumbrian Water site offices	70
NSR8 - Seal Sands offices	20

<sup>1</sup>Where an NSR is significantly further from the construction area than the closest NSRs, significant noise effects are not likely if noise levels are suitably controlled at the closer key representative receptors. Therefore, these NSRs have not been assessed and are marked “N/A”.

**Table 11-2: Indicative Construction Noise Predictions for the Proposed Development outside of the PCC Site (Updated for Change 8)**

<b>Receptor</b>	<b>CO<sub>2</sub> Gathering Network</b>
NSR1 - 58 Broadway West, Redcar	45
NSR2 - 51 York Road Redcar	43
NSR3 - 131 Broadway West	45
NSR4 - Marsh House Farm	50
NSR5 - Billingham (Charlton Close)	47
NSR6 - Haverton Hill	47
NSR7 - Northumbrian Water site offices	65
NSR8 - Seal Sands offices	78

**Table 11-3: Indicative Worst-Case Construction Effects for Construction away from the PCC Site**

<b>Receptor</b>	<b>Time Period</b>	<b>CO<sub>2</sub> Gathering Network</b>
NSR1 – 58 Broadway West, Redcar	Daytime	Negligible adverse
	Evening	Negligible adverse
	Night-time	N/A <sup>2</sup>
NSR2 – 51 York Road Redcar	Daytime	Negligible adverse
	Evening	Negligible adverse

Receptor      Time Period

		CO <sub>2</sub> Gathering Network
	Night-time	N/A <sup>2</sup>
NSR3 - 131 Broadway West	Daytime	Negligible adverse
	Evening	Negligible adverse
	Night-time	N/A <sup>2</sup>
NSR4 - Marsh House Farm	Daytime	Negligible adverse
	Evening	Negligible adverse
	Night-time	N/A <sup>2</sup>
NSR5 - Billingham (Charlton Close)	Daytime	Negligible adverse
	Evening	Negligible adverse
	Night-time	N/A <sup>2</sup>
NSR6 - Haverton Hill	Daytime	Negligible adverse
	Evening	Negligible adverse
	Night-time	N/A <sup>2</sup>
NSR7 - Northumbrian Water site offices	All time periods	Negligible adverse
NSR8 - Seal Sands offices	All time periods	Minor adverse

## Operation

11.8.6 There is no change to the Operational Noise and Vibration assessment as a result of the Proposed Development Changes, above those stated in Chapter 11: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.11) [APP-093].

## 11.9 Additional Mitigation, Monitoring and Enhancement Measures

11.9.1 No additional mitigation/ monitoring or enhancement measures are required as a result of the Proposed Development Changes, above those stated in Chapter 11: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.11) [APP-093]. The generators required to power the HDD rig will be contained in noise attenuating enclosures. Noise from drilling operations will be further mitigated by use of noise attenuation barriers around the drill site. Further information is provided in the updated Habitat Regulations Assessment report (Document Ref. 5.13 Rev. 2.0).

## 11.10 Limitation or Difficulties of Additional Assessment

11.10.1 The limitations and/ or difficulties related to this chapter of the ES Addendum are consistent with those reported in Chapter 11: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.11) [**APP-093**].

## 11.11 Summary of Updated Residual Effects

11.11.1 There are no changes to the residual effects identified in Chapter 11: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.11) [**APP-093**], as a result of the Proposed Development Changes. The residual effects would remain as reported within Section 11.9 of Chapter 11: Noise and Vibration (i.e. not significant) on the basis that mitigation is employed such that the BS 5228 ABC noise limits are met, and the Section 11.5 and 11.7 mitigation guidance is followed.

## 11.12 References

BEIS (2021) *Planning for new energy infrastructure: review of energy National Policy Statements*.

HMSO (2021) *Environment Act 2021*

Ministry of Housing, Communities and Local Government (2021). *National Planning Policy Framework*.



# Appendix B: Ornithology



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# 15. Introduction

## 15.1 Introduction

- 15.1.1 This Chapter provides an addendum to the ornithology assessment which formed part of the the submitted Environmental Statement (ES) and should be read in conjunction with the following documents submitted with the Development Consent Order (DCO) Application:
- **Chapter 15:** Ornithology of the ES Volume I (Application Document Ref. 6.2.15) [APP-097];
  - **Appendix 15A:** Ornithology Baseline (Application Document Ref. 6.4.34) [APP-322-325]; and
  - **Appendix 15B:** CONFIDENTIAL Ornithology Baseline (Application Document Ref. 6.4.35) [APP-326].
- 15.1.2 This assessment considers the effects on bird species arising from the Proposed Development Changes, as summarised in sections below.
- 15.1.3 This Addendum only considers changes in baseline conditions or potential effects since the submitted ES was prepared; if no change is listed then conditions are the same as those presented in the submitted ES.
- 15.1.4 No new figures have been prepared to accompany this chapter of the ES Addendum, other than those incorporated into the above baseline survey report addenda.
- 15.1.5 A glossary of terms and list of abbreviations used in this ES Addendum is provided within Document Ref. 6.2 ES Vol I Cover and Contents [APP-082].

## 15.2 Changes in Legislation, Policy and Guidance

- 15.2.1 The Environment Act 2021 ('The Act') (Her Majesty's Stationary Office (HMSO) 2021) was given Royal Assent after the submission of the Application and sets out legislation to provide a post-Brexit environmental framework for the United Kingdom. In summary, The Act includes new legislation such as: binding targets to improve air and water quality, biodiversity, and resource efficiency and waste reduction.
- 15.2.2 The majority of The Act is not yet in force. The Office for Environmental Protection (OEP) has been brought into effect but is yet to receive its enforcement powers in England that would apply to the Proposed Development. The Applicant will continue to monitor implementation of The Act throughout the course of Examination and will consider the need for updates where they apply to policy or plans and their implementation, during the course of Examination. Until any changes are made, extant legislation and policies remain in force.

- 15.2.3 Draft revised National Policy Statements (NPS) for energy infrastructure were published by the Department for Business, Energy and Industrial Strategy (BEIS) on 6 September 2021 after submission of the Application. Consultation closed on 29 November 2021 and BEIS is now considering consultation feedback, prior to finalising the revised NPS. Until the reviewed NPS is finalised, the extant NPS remains in place. Based on the NPS changes consulted upon by BEIS, it is considered likely that the Proposed Development will remain in accordance with the approach to be set out in the revised NPS.
- 15.2.4 Draft NPS EN-1 retains the focus on mitigation measures for biodiversity but expands the scope for which protective measures must be considered and demonstrated.
- 15.2.5 Paragraph 5.5.4 adds that the design process should include nature inclusive design. Development Proposals should consider the ambitions of the 25 Year Environment Plan and contribute to Biodiversity Net Gain.
- 15.2.6 Paragraph 5.4.8 has been updated to provide more specific guidance to protect and enhance biodiversity and geological conservation interests: “The Habitats Regulations set out sites for which an HRA will assess the implications of a plan or project, including Special Areas of Conservation and Special Protection Areas. As a matter of policy, the following should be given the same protection as sites covered by the Habitat’s Regulations: potential Special Protection Areas and possible Special Areas of Conservation; listed or proposed Ramsar sites; and sites identified, or required, as compensatory measures for adverse effects on other HRA sites.”
- 15.2.7 Paragraph 5.4.13 retains protective measures for Ancient and Veteran Trees but removes the advice for the Secretary of State to refuse consent based on the loss of Ancient Woodland. The policy has been altered to state that Applicants must provide a suitable compensation strategy where development would result in the loss or deterioration of an ancient woodland or veteran trees.
- 15.2.8 Paragraph 5.4.18 specifies changes in mitigation requirements for birds. The Applicant should now demonstrate that the timing of construction has been planned to avoid/minimise disturbance to birds during the breeding season. Furthermore, mitigation measures should look to preserve and enhance existing habitats rather than replace them.
- 15.2.9 Paragraph 5.4.22 adds: “General guidance suggests that any habitat creation or enhancement delivered for biodiversity net gain should be maintained for at least 30 years”.
- 15.2.10 Taking into account the changes in Draft NPS EN-1, the assessment of the Proposed Development in respect to biodiversity and nature conservation is unchanged.
- 15.2.11 Draft NPS EN-4 considers the long-term potential impact of gas pipelines on biodiversity to be limited. The focus of Draft NPS EN-4 has remained the same with the addition of the below policy.

- 15.2.12 The changes to Draft NPS EN-4 with respect to biodiversity are not relevant to the operations of the Proposed Development. Accordingly, the assessment of the Proposed Development remains unchanged.
- 15.2.13 Draft NPS EN-5 maintains its focus on the impact of electricity networks on wildlife and biodiversity, particularly the potential negative impacts on birds. However, the changes to Draft NPS EN-5 with respect to biodiversity are not relevant to the operation of the Proposed Development. The assessed impacts of the Proposed Development on biodiversity and nature conservation remain unchanged.
- 15.2.14 The National Planning Policy Framework (NPPF) was updated in July 2021 (MHCLG, 2021). With regard to biodiversity and nature conservation, whilst the policy paragraphs have been renumbered, the policy text remains largely unchanged from that reported in **Chapter 15: Ornithology** of the ES Volume I (Application Document Ref. 6.2.15) [**APP-097**].
- 15.2.15 The above changes to legislation and planning policy do not alter the scope, approach or conclusions of the biodiversity and nature conservation assessment as described in **Chapter 15: Ornithology** of the ES Volume I (Application Document Ref. 6.2.15) [**APP-097**].

## 15.3 Proposed Development Changes

- 15.3.1 Section 2 of ES Addendum Volume I (Document Ref. 7.8.1) provides an overview of the Proposed Development Changes. Section 4.0, Table 4 of ES Addendum Volume I provides a scoping assessment of the Proposed Development Changes, including the rationale for those Proposed Development Changes that are considered to require re-assessment in this chapter.
- 15.3.2 The following Proposed Development Changes have therefore been considered within the revised ornithological assessment at the Proposed Development Site:
- Proposed Development Change 1 - Removal of optionality for the Gas Connection by removal of both options which require the construction of a new crossing of the River Tees - Option 1A and Option 1B (i.e. removal of the long tunnel between North Tees and the PCC site) resulting in a reduction in the Order limits. There will also be a reduction in land take elsewhere following pre-Front End Engineering Design (pre FEED) and landowner consultation for the selected Gas Connection - Option 2 (Sembcorp Pipeline Tie-In) (**Work No. 2A**);
  - Proposed Development Change 6 - Change in optionality for Work No. 6 by removal of Option 1 (Bored Long Tunnel Direct to PCC) for the CO<sub>2</sub> Gathering Network (see also Change 1 for the Gas Connection) resulting in reduction in the Order limits. It also includes a reduction in other land areas of Work No. 6 following pre-FEED design and landowner consultation (**Work No. 6**);

- Proposed Development Change 7 - Change in the means of crossing the Tees within the Order Limits for Work No. 6 CO<sub>2</sub> Gathering Network to include new Option 3 (Sembcorp No 2 Tunnel) (**Work No. 6**); and
- Proposed Development Change 8 - Change in the means of crossing the Tees in the Order Limits for Work No. 6 CO<sub>2</sub> Gathering Network (HDD crossing) as part of Option 2 (HDD) to change the direction of HDD drilling (from Dabholm Gut to North Tees, rather than *vice versa*) following pre-FEED design (**Work No. 6**)

15.3.3 All other Proposed Development Changes described in ES Addendum Volume I, reduce the area of Work Numbers and consequentially reduce the extent of the Order Limits and would not alter the significance of effects in the assessment of effects on Ornithology and therefore, have not been considered further.

## 15.4 Relevant Additional Information

15.4.1 Since submission of the DCO Application, no Additional Information has been identified that is relevant to the assessment of Ornithology.

## 15.5 Consultation

15.5.1 Consultation on the Proposed Development Changes has been undertaken as described in Section 5 of ES Addendum Volume I (Document Ref. 7.8.1).

15.5.2 A summary of comments raised via the consultation and other technical engagement, is summarised in Table 9-1.

## 15.6 Updated Baseline Conditions

### Existing Baseline

15.6.1 No changes to the submitted ES.

### Future Baseline

15.6.2 No changes to the submitted ES.

## 15.7 Development Design and Impact Avoidance

### Construction

15.7.1 Changes 1 and 6 and 7 would reduce the noise and vibration impacts of crossing the River Tees by removing the need for a bored tunnel from Navigator Terminals to the PCC Site.

15.7.2 Change 7 will involve no new above ground activities associated with pipe handling and stringing compared to those that were previously assessed. Surface noise generation associated with construction work within the Sembcorp No. 2 Tunnel is assumed to be not significant given the depth of the tunnel below the surface (and the attenuating effect of this), and the limited range of activities that would occur in the tunnel.



- 15.7.3 Change 8 will modify the location of the noise impacts of drilling the HDD bore from the original launch point at Navigator Terminals to a revised launch point on land to the north of the Dabholm Gut, drilling west across the Tees to an exit point at Navigator Terminals.
- 15.7.4 For Change 8, movement of the HDD drilling rig to the northern side of the Dabholm Gut will locate drilling activities close to Bran Sands lagoon, which forms part of the Teesside and Cleveland Coast SPA. As described in Section 15.8 below, Noise and vibration impacts and visual disturbance on the Teesside and Cleveland Coast SPA associated with these activities can be mitigated using noise barriers and visual screens.
- 15.7.5 No further design and impact avoidance measures during construction are proposed as a result of the Proposed Development Changes, above those stated in Chapter 15: Ornithology of ES Volume I (Application Document Ref. 6.2.15) [APP-097]. Mitigation for construction activities will be secured via a requirement in the DCO via a Final Construction Environmental Management Plan (CEMP). This will include setting out provisions to reduce noise and vibration impacts and effects relating to the proposed construction activities, as far as reasonably practicable, based on the measures outlined in Section 11.7 of Chapter 11: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.11) [APP-093] and Section 15.7 of Chapter 15: Ornithology of ES Volume I (Application Document Ref. 6.2.15) [APP-097]. A Framework CEMP is included as part of the Application Appendix 5A (Application Document Ref. No. 6.4.5).

## Operation

- 15.7.6 No further design and impact avoidance measures as a result of the Proposed Development Changes, above those stated in Chapter 15: Ornithology of ES Volume I (Application Document Ref. 6.2.15) [APP-097] are considered necessary.

## 15.8 Likely Impacts and Effects

### Construction

- 15.8.1 The Proposed Development Change introduces a new construction activity to be assessed in addition to the construction noise and vibration effects presented in Chapter 11: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.11) [APP-093] and Chapter 15: Ornithology of ES Volume I (Application Document Ref. 6.2.15). [APP-097].
- 15.8.2 An assessment of the potential effects associated with noise and visual disturbance during construction arising from with Change 8 has been undertaken and set out below.
- 15.8.3 The HDD rig required for construction of the Tees crossing will be placed on a 40- 50 m wide strip of land between Dabholm Gut and Bran Sands Lagoon to the east of the River Tees, with the drilling trajectory towards a landing site in the northern part of Navigator Terminal west of the river. This will potentially result in noise and visual disturbance occurring within and adjacent to the

Teessmouth and Cleveland Coast SPA, with potential for adverse effects on birds within Dabholm Gut and Bran Sands Lagoon east of the river.

- 15.8.4 There is also the potential for noise and visual disturbance on brownfield land adjacent to the receiving site at Navigator Terminals west of the river and any birds using the available foreshore habitat in this area (as indicated by the occurrence of Natural England/s Priority Habitats Inventory habitat “Mudflats”);
- 15.8.5 Dabholm Gut and Bran Sands Lagoon support bird species for which the SPA and Ramsar site are notified and all except the brownfield land at Navigator Terminal lie within the boundaries of the SPA and Ramsar site. Table 15-5 and section 15-4 of 6 in Chapter 15: Ornithology of ES Volume I (Application Document Ref. 6.2.15) [APP-097] set out the occurrence of species at these locations.
- 15.8.6 The Likely Significant Effects assessment included in the Habitat Regulations Assessment Report (Document Ref. 5.13 Rev. 2.0) shows that noise disturbance impacts on the qualifying bird species in the Teessmouth and Cleveland Coast SPA / Ramsar during construction and decommissioning could not be excluded due to the proximity of the HDD launch site to Bran Sands Lagoon.
- 15.8.7 For the Environmental Statement, baseline noise levels) were obtained at Bran Sands (see ES Figure 11-1, ES Volume II, Document Ref. 6.3)
- 15.8.8 Table 15.1 shows that this location has relatively low existing LAeq values (between 44 and 48 dB, but also relatively low LAFmax values (57-67 dB) when compared to monitoring at RSPB Saltholme due to its greater distance from the road network.

**Table 15.1: Baseline noise measurements at Bran Sands in the Teessmouth and Cleveland Coast SPA / Ramsar**

LOCATION	TIME PERIOD	LAeq,T (dB)	LAFmax (dB)
Bran Sands	day	48	67
Bran Sands	evening	46	63
Bran Sands	night	44	57
Bran Sands	weekend	46	67

- 15.8.9 Notwithstanding the baseline noise measurements, Natural England have confirmed that they consider the 70 dB threshold (i.e. noise levels below 70 dB at the bird enable a conclusion of no adverse effect on integrity) to be an appropriate disturbance metric for this SPA/Ramsar, based on research undertaken in the Humber Estuary and the fact that the birds of Teessmouth & Cleveland Coast SPA/Ramsar have exhibited considerable tolerance to variations in noise level.
- 15.8.10 The construction works for the Tees Crossing for the CO<sub>2</sub> Gathering Network will involve Horizontal Direct Drilling (HDD) which require launch pits. The HDD launch pit will be on the isthmus of land on the northern side of the

Dabholm Gut and south of Bran Sands Lagoon within the Teesmouth & Cleveland Coast SPA/Ramsar site.

15.8.11 Since there is no percussive element to the works only LAeq data are reported. Modelling confirms that noise levels would be 69 dB (i.e. below 70 dB as agreed with Natural England) at 65 m from the drilling rig.

**Table 15.2: HDD with no Noise Barrier**

Distance from edge of construction area (m)	Level L <sub>Aeq,T</sub> (dB)	Significance
65	69	Hull University Institute of Estuarine & Coastal Studies (IECS) Receptor Value
100	65	At pond 13
150	61	At pond 14
190	58	10 dB above Bran Sands measured daytime L <sub>Aeq,T</sub>
270	55	10 dB above Coatham measured daytime L <sub>Aeq,T</sub>
525	48	Equal to Bran Sands measured daytime L <sub>Aeq,T</sub>
675	45	Equal to Coatham measured daytime L <sub>Aeq,T</sub>

15.8.12 The inclusion of a noise barrier (Table 15.3) would reduce noise levels to 69 dB just 24m from the nearest point of HDD such that by 100m from the works the noise level due to the HDD would be a relatively quiet 57 dB.

**Table 15.3: HDD with full screening barrier**

Distance from edge of construction area (m)	Level L <sub>Aeq,T</sub> (dB)	Significance
24	69	IECS Receptor Value
90	58	10 dB above Bran Sands measured daytime L <sub>Aeq,T</sub>
100	57	At pond 13
130	55	10 dB above Coatham measured daytime L <sub>Aeq,T</sub>
150	54	At pond 14
290	48	Equal to Bran Sands measured daytime L <sub>Aeq,T</sub>

425

45

Equal to Coatham measured  
daytime  $L_{Aeq,T}$ 

- 15.8.13 The HDD noise modelling demonstrates that provided a full noise barrier is incorporated, noise levels would fall below the 70dB disturbance threshold agreed with Natural England by 24m from the HDD launch point. Therefore, provided that the HDD launch point is situated no more than approx. midway between Dabholm Gut and the lagoon, noise levels in these parts of the SPA / Ramsar would not result in disturbance to overwintering waterfowl.
- 15.8.14 Notwithstanding the fact that noise levels will be well below 70dB, in addition to the installation of a noise barrier, simultaneous vantage point bird monitoring will be undertaken if HDD is due to occur during November to March in order to confirm the absence of disturbance events.
- 15.8.15 The HDD noise modelling demonstrates that without the inclusion of a noise barrier, there would be significant effects (likely to be at least moderate adverse) on SPA and Ramsar birds due to abandonment of feeding habitats at Bran Sands Lagoon and Dabholm Gut. It is difficult to quantify the magnitude of this impact as the precise location of the HDD rig and any associated plant or machinery has not been determined, and consequently the area of habitat within which the 70dB threshold is met cannot be accurately measured. Therefore, without a noise barrier, this impact is cautiously assessed as being significant (moderate adverse), affecting a strip of habitat estimated to be up to 50m wide along both the northern half of Dabholm Gut (in other words, affecting around half of the width of this channel along the entire length of its intertidal habitat) and the southern edge of Bran Sands Lagoon. With a full noise barrier noise levels would fall below the 70dB threshold at 24m from the launch point and, provided the HDD launch point is situated approximately midway between Dabholm Gut and Bran Sands Lagoon, noise levels in these parts of the SPA/Ramsar and SSSI would not result in disturbance to any of the birds occurring in these habitats and therefore this impact would be not significant (negligible adverse). The use of a noise barrier would be secured this will be secured as a requirement in the DCO through the Final CEMP.
- 15.8.16 Applying the same noise model, without a noise barrier at the location of the exit point of the HDD at Navigator Terminal, would result in the 70dB threshold being met within a strip of brownfield land approximately 93m wide and 4.5ha in area (including the Proposed Development area) along the northern edge of Navigator Terminal. With inclusion of a noise barrier, these measurements are reduced to approximately 71m and 3.3ha respectively. All of the habitat within these areas is intersected or partially occupied by existing infrastructure including buildings and access tracks and lies within a short distance of major infrastructure in Seal Sands immediately to the north and is therefore already suboptimal for use by birds such as feeding and roosting waders. The exit site for the HDD bore is approximately 92 m inland of the intertidal foreshore habitats and it is understood that between this location and the foreshore all works activity would be within the HDD bore below ground and therefore no disturbance will occur to the limited amount

of intertidal habitat that intersects the line of the River Tees crossing, either with or without screening of the works.

- 15.8.17 Taking into account the considerations set out above, and that the brownfield land at Navigator Terminal is unlikely to be used by wetland birds on anything more than an occasional basis, with bird distribution here highly likely to favour habitats within the southern half of the area away from existing infrastructure, noise levels would not result in disturbance to overwintering water birds; this potential impact would be not significant (neutral) with respect to impacts on bird species individually or on the SPA / Ramsar site and SSSI.
- 15.8.18 In addition to noise impacts, the presence of the drill rig, associated plant and machinery, vehicle movements and the presence of construction staff would be expected to result in visual disturbance to the birds in Dabholm Gut and Bran Sands Lagoon that would result in the partial abandonment or diminished use of these locations particularly by birds for which the SPA / Ramsar site and SSSI are notified (principally waders and ducks). Furthermore, given the flat and open nature of the landscape across Navigator Terminals, sightlines here exist between the Proposed Development and any birds that might using the brownfield land. At this location the movements of vehicles, plant and staff could result in visual disturbance of bird on the adjacent brownfield land. Therefore, it is likely that visual disturbance from construction of the CO<sub>2</sub> Gathering Network at Navigator Terminal would deter birds from using the brownfield land to the south of the Proposed Development, with the possibility of adverse impacts on species for which the SPA / Ramsar and SSSI are notified, albeit only occasionally at this location, and on small numbers of breeding birds.
- 15.8.19 Collectively the impacts of visual disturbance during construction of the CO<sub>2</sub> Gathering Network at these locations, without the use of visual screens, is cautiously assessed as being significant (moderate adverse). However, a requirement for visual screening (in addition to noise barriers) of the CO<sub>2</sub> pipeline is identified in the updated HRA report (Document Ref. 15.3 Rev. 2.0), recommending the use of visual screens at specific locations including when working in or near the SPA / Ramsar Pools and lagoons and / or Dabholm Gut. This will be secured as a requirement in the DCO through the Final CEMP. This recommendation should be applied also to works at Navigator Terminal, alongside the use of noise barriers at all of these locations; such measures would prevent visual disturbance of birds in these areas and as such the impact of visual disturbance on breeding birds and species for which the SPA / Ramsar and SSSI are notified would be not significant (neutral).

## Operation

- 15.8.20 There is no change to the Operational assessment as a result of the Proposed Development Changes, above those stated in Chapter 15: Ornithology of ES Volume I (Application Document Ref. 6.2.15) [APP-097].

## Cumulative Effects

- 15.8.21 In their consultation response to the proposed Changes, Natural England asked that the cumulative effects of construction of the York Potash developments north of Bran Sands Lagoon along with construction of the CO<sub>2</sub> Gathering Networks, be assessed.
- 15.8.22 The cumulative effects section of Chapter 15: Ornithology of ES Volume I (Application Document Ref. 6.2.15) [APP-097]. is updated as follows:
- 15.8.23 The York Potash development, which comprises two separate applications that together include the installation of a wharf / jetty with two ship loaders, capable of loading 12 million tons of bulk dry material per annum. Dredging activities will be required to create a berth. The scheme also includes a storage building, a materials handling facility and an overhead conveyor. Both schemes lie directly adjacent to the Proposed Development and are therefore similarly situated in relation to the Teesmouth and Cleveland Coast SPA / Ramsar; the proposed harbour facilities and overhead conveyor lie adjacent to the River Tees Channel and the northern edge of Bran Sands Lagoon respectively. The relevant impact pathways are likely to include water quality impacts during construction / operation, visual / noise disturbance to SPA / Ramsar birds and other species during construction/decommissioning / operation.
- 15.8.24 The elements of the York Potash development described above benefit from development consent. If there is overlap of construction periods, there are requirements under the York Potash consent that requires similar noise and visual screening to be incorporated during construction and that this would restrict the impacts of disturbance to levels that are not significant either alone or in combination with the Proposed Development. Significant cumulative or in-combination effects of the Proposed Development and York Potash are therefore not predicted to occur. Further assessment of cumulative noise impacts is herein focused on construction and operation of the PCC.

## 15.9 Additional Mitigation, Monitoring and Enhancement Measures

- 15.9.1 No additional mitigation/ monitoring or enhancement measures are required as a result of the Proposed Development Changes, above those stated in Chapter 11: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.11) [APP-093] and Chapter 15: Ornithology of ES Volume I (Application Document Ref. 6.2.15) [APP-097]. The generators required to power the HDD rig will be contained in noise attenuating enclosures. Noise from drilling operations will be mitigated by use of noise attenuation barriers around the drill site. Further information is provided in the updated Habitat Regulations Assessment report (Document Ref. 5.13 ).

## 15.10 Limitation or Difficulties of Additional Assessment

15.10.1 The limitations and/ or difficulties related to this chapter of the ES Addendum are consistent with those reported in Chapter 15: Ornithology of ES Volume I (Application Document Ref. 6.2.15) [**APP-097**].

## 15.11 Summary of Updated Residual Effects

15.11.1 There are no changes to the likely residual effects identified in Chapter 15: Ornithology of ES Volume I (Application Document Ref. 6.2.15) [**APP-097**], as a result of the Proposed Development Changes. The residual effects would remain as reported within Section 15.10 of Chapter 15: Ornithology (i.e. not significant) on the basis that mitigation is employed and the Section 15.5 and 15.7 mitigation guidance is followed.

## 15.12 References

BEIS (2021) *Planning for new energy infrastructure: review of energy National Policy Statements*.

HMSO (2021) *Environment Act 2021*

Ministry of Housing, Communities and Local Government (2021). *National Planning Policy Framework*.

