

H2Teesside Project

Planning Inspectorate Reference: EN070009

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

The H2 Teesside Order

Document Reference: 8.11.15 Response to ExQ1 Surface Water, Flood Risk and Water Resources

Planning Act 2008



Applicant: H2 Teesside Ltd

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1.0 INTRODUCTION

1.1 Overview

1.1.1 This document has been prepared on behalf of H2 Teesside Limited (the 'Applicant'). It relates to an application (the 'Application') for a Development Consent Order (a 'DCO'), that was submitted to the Secretary of State for Energy Security and Net Zero ('DESNZ') on 25 March 2024, under Section 37 of 'The Planning Act 2008' (the 'PA 2008') in respect of the H2Teesside Project (the 'Proposed Development').

1.1.2 The Application has been accepted for examination. The Examination commenced on 29 August 2024.

1.2 The Purpose and Structure of this document

1.2.1 The purpose of this document is to set out the Applicant's responses to the Examining Authority's ExQ1 on Surface Water, Flood Risk and Water Resources, which were issued on 4 September 2024 [PD-008]. This document contains a table which includes the reference number for each relevant question, the ExA's comments and questions and the Applicant's responses to each of those questions, [and is followed by appendices where they are referred to in the responses].

Table 1-1 Applicant’s Responses to ExQ1 Surface Water, Flood Risk and Water Resources

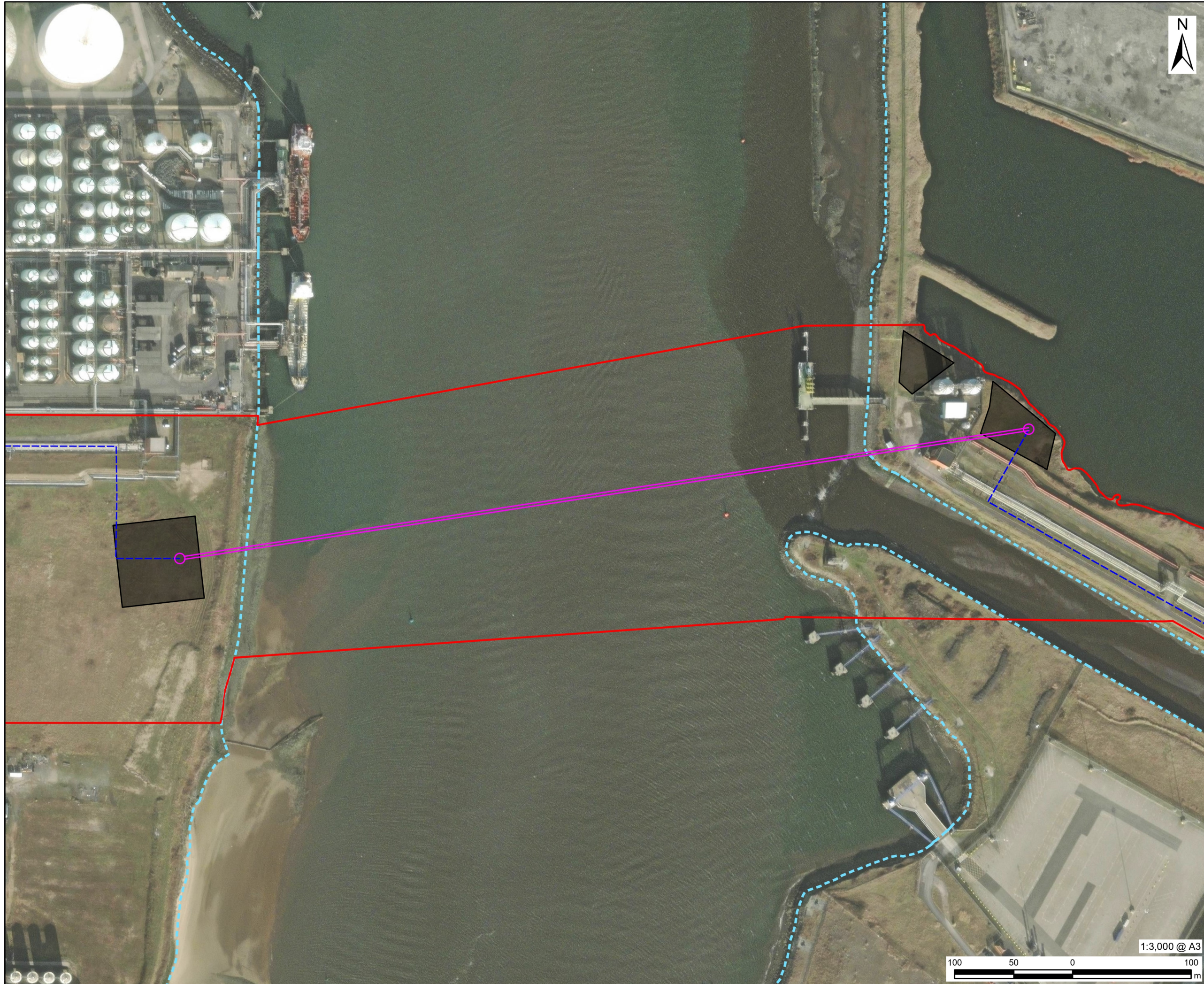
EXQ1	QUESTION TO:	QUESTION:	RESPONSE
Q1.15.1	Applicant/ Northumbrian Water Ltd (NWL)	Information/ Update sought. The Application documentation submitted indicates that raw water supply will be required for various processes, including for cooling water, as well as domestic and sanitary use. Paragraph 4.3.27 of ES Chapter 4 (Proposed Development) [APP-056], states that it would be from the existing NWL raw water supply to the STDC site or a new connection to the NWL supply via tie into NZT infrastructure or a new connection. ES Chapter 9 (Surface Water, Flood Risk and Water Resources) [APP-061], Table 9-19 summarises the clean water requirement (m3/ hour) for the operational phase. Can the Applicant/ NWL provide an update on the status of any agreements between the parties for water supply to the Proposed Development during operation.	The Applicant understand from NWL network analysis that sufficient water is available in the network to supply the Proposed Development. The Applicant continues to engage with NWL (and the South Tees Group) regarding water supply, but no agreements have yet been reached.
Q1.15.2	Applicant	Review/ Clarification. The EA in its RR [RR-009] notes ES Chapter 9 (Surface Water, Flood Risk and Water Resources) [APP-061] includes some areas highlighted as compounds being located within Flood Zone (FZ) 2 and FZ 3 and as such it considered additional mitigation maybe required to ensure these are not at risk of flooding or increase flood risk elsewhere. Please review your Appendix 9C (FRA) [APP-192] and update that document to include an assessment of the flood risks associated with the compound areas, together with any appropriate mitigation, or provide a detailed explanation as to why such an update is not required.	Please see the Applicant’s Response to Relevant Representations Ref No. EA1 [REP1-007]. Whilst the Flood Risk Assessment [APP-192] indicates that compounds are to be located in Flood Zone 1 where possible, where compounds can only be located in Flood Zones 2 and 3 for operational reasons, mitigation measures are presented in the following documents: Flood Risk Assessment [APP-192, Section 9.A.9], ES Chapter 9 Surface Water, Flood Risk and Water Resources [APP-061, Section 9.5] and the Framework CEMP [APP-043]. The Framework CEMP includes a requirement for an Emergency Response Plan and a Flood Risk Management Action Plan (produced as part of the Final CEMP(s)). The construction compounds are of temporary nature and management of flood risk is a common requirement of EPC Contractors and their supply chains, the detail of which are proposed to be controlled within Requirement 11. A commitment to the production of both the emergency response and flood risk management action plans is included in Paragraph 2.3.2 of the Framework CEMP [APP-043]. As such, the Applicant does not consider an update to the FRA is required.
Q1.15.3	Applicant	Evidence/ Clarification sought. The EA in its RR [RR-009] states in regard to ES Chapter 9 (Surface Water, Flood Risk and Water Resources) [APP-061] “There is inadequate evidence that demonstrates that all of the proposed infrastructure, in particular the pipeline corridors and critical plant equipment in FZ3 will remain safe in times of a flood...” As such the EA considers there to be a “...risk that elements of the proposed development will not be safe for its lifetime.” It sets out a suggested solution in it’s RR but ultimately advises “Evidence should be provided in the FRA demonstrating how the design of existing pipelines in FZ3 are: 1) flood resilient,	Please see the Applicant’s Response to Relevant Representations Ref No. EA2 [REP1-007]. As defined in Paragraph A.6.27 of the FRA [APP-192] the Proposed Development is classified as 'Essential Infrastructure' in line with NPPF Annex 3: Flood Risk Vulnerability Classification. Essential Infrastructure is defined as “Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including infrastructure for electricity supply including generation, storage and distribution systems; including electricity generating power stations, grid and primary substations storage; and water treatment works that need to remain operational in times of flood”. Due to the connections required and the infrastructure needing to be connected to, some pipelines

EXQ1	QUESTION TO:	QUESTION:	RESPONSE
		<p>2) if they can currently withstand floodwaters as stated in section 9A.9.27 of the FRA CIRIA Report C688 'Flood Resilience and Resistance for Critical Infrastructure' (CIRIA, 2010), and</p> <p>3) if the existing infrastructure in FZ3 will be altered/ refurbished to meet this standard of protection for the lifetime of the development.</p> <p>In addition to the above the EA advise that confirmation is also required on whether the crossing at the River Tees is below ground, above ground or both, as there is reference to both types of crossing in different documents.</p> <p>Please provide the evidence sought by the EA above, or signpost the ExA to where within the submitted Application that evidence is to be found. Additionally, please clarify for the EA whether the crossing of the River Tees is above or below ground (or both) updating the submitted Application documentation, as may be necessary.</p>	<p>and infrastructure will be required to be developed in areas identified as Flood Zone 2 or 3. However, largely this proposed infrastructure in Flood Zones 2 and 3 will be underground; those elements that aren't (e.g. Above Ground Installations) are typically unmanned and access is normally only required for planned maintenance which can be scheduled to avoid any flood risk events.</p> <p>Details regarding watercourse crossings are outlined in Chapter 4 Proposed Development [APP-056] with further details provided in Section 9.5 of ES Chapter 9 Surface Water, Flood Risk and Water Resources [APP-061]. These confirm the crossing of the River Tees and Greatham Creek (and adjacent water features at Seal Sands) will be underground using trenchless technologies (Horizontal Direction Drilling (HDD) or Micro Bored Tunnelling (MBT)). The use of trenchless technologies avoids any direct impact to the estuary or creek bed and thereby minimising disturbance during construction. For the purposes of assessment, the worst case depth below the bed is assumed to be 10 m. For the Tees Crossing this is expected to be in the range of 40 to 50 m depth but will be determined following the Ground Investigation at the detailed design phase.</p> <p>No element of the Proposed Development is classed as Highly Vulnerable infrastructure – in contrast, the nature of the Proposed Development has low vulnerability, being underground or designed to be exposed to the elements. Locations where further detailed design is required is proposed to be managed through the process of Protected Provisions and Requirement 11</p> <p>Existing above ground pipelines including those in the Linkline corridor are appropriately designed, protected and maintained in accordance with pipeline design standards and legislative requirements.</p>
Q1.15.4	Applicant	<p>Review/ Update sought.</p> <p>ES Chapter 9 (Surface Water, Flood Risk and Water Resources) [APP-061], as supported by the Appendix 9C: FRA [APP-192], describes several temporary construction and enabling works such as, but not limited to, temporary storage in the floodplain, open-trench channels and trenchless channels, directional drilling under the tees, utilising existing culverts and overbridges. However, the EA appears concerned that these have not been adequately considered within the FRA.</p> <p>The EA advise in it RR [RR-009] that any such works in FZ3 have potential to increase of flood risk and those such works (the temporary construction and enabling works in FZ3) need to be assessed and considered in the FRA. The EA advises the FRA should demonstrate the use of operational controls and/ or mitigation measures throughout the construction phase, and minimise flood risk in areas at high-risk of flooding.</p> <p>In addition to the above, the EA advises it is vital there are no adverse impacts to the EA's flood defence assets along Greatham Creek.</p> <p>Bearing the above in mind, please review the FRA, in the light of the above comments, and amend Chapter 9 (Surface Water, Flood Risk and Water Resources) [APP-061] as necessary and advise whether any adverse impacts to the EA's flood defence assets</p>	<p>Please see the Applicant's Response to Relevant Representations Ref No. EA3 [REP1-007].</p> <p>Mitigation measures are presented in the following documents: Flood Risk Assessment [APP-192, Section 9.A.9], ES Chapter 9 Surface Water, Flood Risk and Water Resources [APP-061, Section 9.5] and the Framework CEMP [APP-043]. Mitigation measures specific to maintaining the integrity of flood defences, including Greatham Creek, are provided within the aforementioned documents and consultation with the Environment Agency will be maintained to ensure no impacts to flood defence assets.</p> <p>Further, defining specific mitigation measures at this stage will limit opportunities for refinement and optimisation relating to temporary construction activities and enabling works, whereas the Protective Provisions and Requirement 11 facilitate approaches to be refined and evolve whilst protecting the environment, development and others from increased flood risk.</p> <p>As a result of these mitigation measures, the Applicant does not consider an update to Chapter 9 or the FRA is needed.</p>

EXQ1	QUESTION TO:	QUESTION:	RESPONSE
		<p>along Greatham Creek will occur/ or are likely to occur as a result of the Proposed Development.</p>	<p>This was discussed at a meeting on 21 August 2024 with the Environment Agency who have confirmed this response is acceptable as the issue will be consulted on further with the Environment Agency during production of the Final CEMP.</p>
Q1.15.5	Applicant	<p>Clarification/ Amendments sought.</p> <p>The EA in its RR [RR-009] raises a number of concerns/ issues in regard to Appendix 9B (Water Quality Modelling Report) [APP-193]. These concerns/ issues include/ relate to:</p> <ul style="list-style-type: none"> • Section 9B.5 Water Quality Modelling. • Plate 9B-9: Salinity Data for Tees Bay. • Figure 9B-15 (<i>sic</i>) Plate 9B-15. • Table 9B-10: Effective Volume Flux Calculations. • Benzo(g,h,i)-perylene, pages 56-57. <p>Please review and respond to the concerns raised by the EA, as set out above, providing evidence (where necessary) or signpost the ExA to where within the submitted Application Documentation you have addressed the concerns/ issues raised by the EA or provided the evidence sought.`</p>	<p>Please see the Applicant’s Response to Relevant Representations Ref No. EA4, 5, 6, 7 and 8 [REP1-007].</p> <p>The following clarifications have been made in response to the EA’s comments:</p> <p>Section 9B.5 Water Quality Modelling – CORMIX files were not provided to the EA with the draft report. These have since been supplied.</p> <p>Plate 9B-9: Salinity Data for Tees Bay – Error in figure legend, a corrected version was issued.</p> <p>Figure 9B-15 (<i>sic</i>) [reference is to Plate 9B-15] - It was confirmed to the EA that the green shading in this image shows the mixing patterns in Tees Bay over the entire model run. It was provided to show how dissolved substances move through the bay, it does not relate to any specific concentration of any specific substance. It shows that water and dissolved substances can move between the Bay and the Estuary, but the results of the modelling also show that any contaminants from the H2Teesside outfall will be diluted to below EQS values well before that point.</p> <p>Table 9B-10: Effective Volume Flux Calculations - There was a typing error in the effective volume flux calculations for cadmium which has been corrected in the Errata report. The questions raised by the EA do not have any impact on the modelling or conclusions of the report.</p> <p>Benzo(g,h,i)-perylene, pages 56-57. There was a typographical error in the Scenario numbering that gave the impression that some scenario results had not been reported. This was corrected in the Errata report [PDA-021]. Concentrations of benzo(g,h,i)perylene are limited using MAC EQS values only and this parameter has been modelled in the far field as set out in Table 9B-18 (scenario 3 = scenario 5). The MAC EQS for benzo(g,h,i)perylene is already breached within Tees Bay so a maximum increase of 5% above background concentrations has been used to establish the area over which water quality impacts may be seen for this parameter. The results in Plate 9B-21 shows that discharges from H2Teesside will be rapidly diluted by water in Tees Bay under scenario 3 (5) and will only increase concentrations of this substance by more than 5% above ambient over an extremely limited area in the immediate vicinity of the discharge point and in the deepest waters. For this reason, the impact on receiving water quality is considered to be insignificant.</p>
Q1.15.6	Applicant	Clarification/ Information sought.	<p>It can be confirmed that the entry and exit points for trenchless crossings are above Mean High Water Springs. Figures 1 to 4 have been appended to these responses (see Appendix</p>

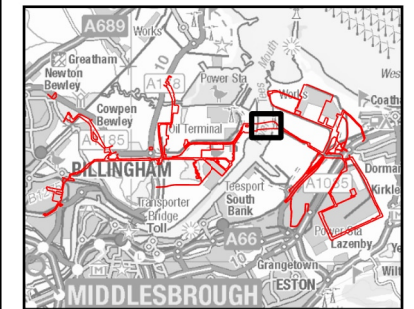
EXQ1	QUESTION TO:	QUESTION:	RESPONSE
		<p>The Marine Management Organisation in its RR [RR-021] advises “<i>It is unclear whether the entry and exit pits for the trenchless crossings are above Mean High Water Springs...</i>” (Paragraph 4.1.1) and that section 4.10 of ES Chapter 4 (Proposed Development) [APP-056] does not present a map detailing these locations. Please provide such a plan or signpost the ExA as to where in the submitted Application Documentation such a plan is to be found.</p>	<p>1) to illustrate this is the case . This has been shared with the Marine Management Organisation.</p>

APPENDIX 1: FIGURES 1-4



LEGEND

	Proposed Development Site
	Mean High Water Springs (MHWS)
	HDD Crossing
	Pipeline Route (Indicative)
	Microtunnel Launch and Reception Shaft Compound



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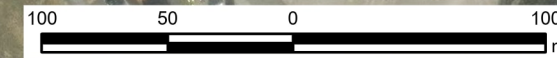
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FIGURE TITLE
Major Crossing River Tees

FIGURE NUMBER
Figure 1






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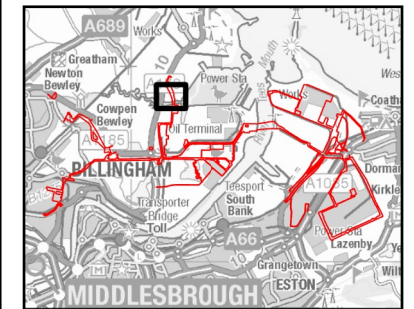
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LEGEND

	Proposed Development Site
	Mean High Water Springs (MHWS)
	HDD Crossing
	Pipeline Route
	HDD Entry and Exit Point Compound



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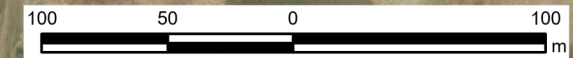
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FIGURE TITLE
Major Crossing Greatham Creek

FIGURE NUMBER
Figure 2

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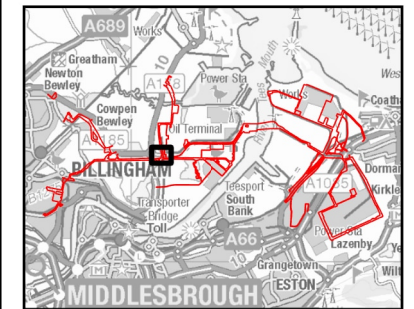
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- LEGEND**
- Proposed Development Site
 - HDD Crossing
 - Pipeline Route
 - HDD Entry and Exit Point Compound



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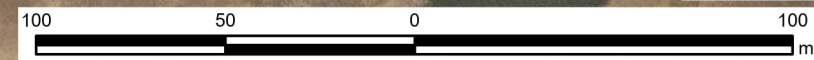
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FIGURE TITLE
Major Crossing Linkline and Seal Sands Road

FIGURE NUMBER
Figure 3

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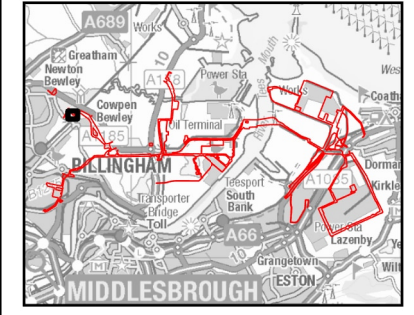
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- LEGEND**
- Proposed Development Site
 - HDD Crossing
 - Pipeline Route



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DCO Examination

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FIGURE TITLE
Major Crossing Cowpen Bewley
National Rail Line

FIGURE NUMBER
Figure 4

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