

# 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: 8.25.3 Response to ExQ2.3 Air Quality and Emissions

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 ExQ2.3 on Air Quality and Emissions, which were issued on 28 November 2024 [PD-015]. 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.

**Table 1-1: Applicant’s Responses to ExQ2.3 Air Quality and Emissions**

EXQ2	QUESTION TO:	QUESTION:	RESPONSE
Q2.3.1	Applicant	Paragraph 1A.3.3 of your Change Application Report – Appendices [CR1-045] is noted. However, please signpost the ExA to where within the submitted documentation an explanation of what comprises scenarios 1, 2 and 3 for the start-up and emergency modes used in the air quality modelling for the flares can be located or provide a detailed explanation of these scenarios.	<p>The scenarios and sources included in the Change Application Report are the same as in the Original ES, but with updated parameters, including a second flare:</p> <ul style="list-style-type: none"> <li>• normal operation – including auxiliary boilers (hydrogen and tailings gas fired) and flares in normal operation (pilot and purge only);</li> <li>• start-up – including Fired Heaters (natural gas fired), flares (to include pilot and flares operating as in Emergency scenario, in 3 different modes, referred to as scenario 1, 2 and 3), and Auxiliary Boilers (natural gas fired); and</li> <li>• emergency – including Emergency flares operation (in 3 different modes, referred to as scenario 1, 2 and 3) and emergency diesel generators.</li> </ul> <p>The gas burned in the flare will differ in composition and flow depending on which stage of the start-up process the facility is at. During Case 1, the gas is composed of roughly 74 Mole % Hydrogen, 24.5 Mole % Carbon Dioxide and 1.5 Mole % Other. During Case 2, the gas is composed of almost 100 Mole % Hydrogen. During Case 3, the gas is composed of roughly 92 Mole % Methane, 3 Mole % Ethane, 4 Mole % Nitrogen and 1 Mole % Other (i.e. natural gas).</p> <p>During emergency, the same flaring cases have been used to represent all potential scenarios.</p> <p>It should be noted that the Environmental Permit will require an “other than normal operating conditions” (OTNOC) Plan which will consider and control these matters.</p>
Q2.3.2	Applicant	Some of the values in the emissions inventory per unit data in Table 1A-3 of [CR1-045] are significantly reduced from those set out in the original air quality modelling (Table 8B-2 of Appendix 8B: Air Quality – Operational Phase [APP-191]). The Applicant is requested to provide a detailed explanation for these change in values or direct the ExA as to where within the submitted documentation a detailed explanation can be located.	As part of the permit application process, refined data has been developed for the emission sources. Emission values have generally slightly increased for most emission sources except the diesel generator.
Q2.3.3	Applicant	The updated air quality modelling in the Change Application Appendices [CR1-045] does not include a change in annual PM10 concentrations, as set out in the update to the information in Table 8b-21 of Appendix 8B: Air Quality – Operational Phase [APP-191]. Please explain why this was not included or direct the ExA to where the explanation can be located?	As part of the permit application process, refined data was made available which shows that emissions of PM10 only need to be included in the abnormal emission scenarios. The fuels burned in normal operation have negligible particulate emissions. As the abnormal scenarios are only predicted to occur for a number of hours that makes annual mean impacts negligible, as such a change in annual PM10 concentrations was not included in the Change Report Appendices [CR1-045].
Q2.3.4	Applicant	The ExA notes the Applicant’s response to ExQ1 Q1.3.3 [REP2-021]. Reference is made to the Common Wastewater and Waste Gas Treatment/ Management Systems in the Chemical Sector Best Available Technique(s) (BAT) Reference Documents, section 4.5.3, BAT 17, which identifies the use of flare to combust gaseous emissions as being BAT during start-up and shut-down but not for continuous use.	<p>In order to prevent emissions to air from flares, BAT is to use flaring only for safety reasons or non-routine operational conditions (e.g. start-ups, shutdowns).</p> <p>The activity of flaring during start-up and shutdown will be controlled as part of the Environmental Permit.</p> <p>The Environmental Permit will include Start-up and Shut-down requirements that the Applicant must comply with.</p>

EXQ2	QUESTION TO:	QUESTION:	RESPONSE
		<p>Having considered the above in designing the Proposed Development, the Applicant states flaring is to be adopted as an embedded control measure during start-up and shut down.</p> <p>With this in mind, can the Applicant signpost how and where flaring during start-up and shut down will be secured in the draft DCO [CR1-015]* as an embedded control measure as part of the design of the Proposed Development.</p> <p>* Note: The most recent version of the draft DCO [REP4-004] was submitted at DL4.</p>	<p>It is also expected there will be a condition that requires the production of an 'other than normal operating conditions (OTNOC)' plan. This will include periods of start-up and shut-down and will need to be agreed with the Environment Agency prior to operation.</p> <p>As such the Applicant considers that it is not necessary to secure this activity in the draft DCO.</p>
Q2.3.5	Applicant	<p>The ExA advises that Q1.13.2 and Q1.13.3 in it's ExQ1 [PD-008] incorrectly referred to stack parameters used as the basis for assessment in Appendix 11B [APP-199]. These questions should have referred to Appendix 8B (Air Quality – Operational Phase) [APP-191]. The Applicant is requested to provide a response to those questions (Q1.13.2 and Q1.13.3) as relevant to Appendix 8B (Air Quality – Operational Phase).</p>	<p>Q1.13.2:</p> <p>The height of the Auxiliary Boiler Stack is set at 78 metres above Ordnance Datum (being 70 metres above ground level). The air quality assessment has determined 78 metres as the minimum height for the auxiliary boiler, considering it as the worst-case scenario. This has been added to the DCO Design Parameters Schedule 15.</p> <p>Q1.13.3:</p> <p>Referencing paragraph 8B.3.6, where the internal stack diameter is stated as 1.65 meters, the 2-meter diameter mentioned in the dDCO accounts for the entire width, including the external pipeline width, therefore, there is a difference of 35 cm to account for the stack walls.</p>
Q2.3.6	Applicant and Natural England (NE)	<p>At NE9, [REP2-072], NE raised the issue of construction dust assessment and monitoring and the potential significant/ adverse effect on the Teesmouth and Cleveland Coast Site of Special Scientific Interest (SSSI)/ Special Protection Area (SPA)/ Ramsar.</p> <p>The ExA notes at NE9 [AS-039], NE does not agree that measures designed for protection of human health would automatically protect sensitive ecosystems, given the different mechanisms of impact and the differential proximity.</p> <p>The Applicant's response in NE9 [AS-039] is human receptors are generally more sensitive to dust than ecosystems because of particulates in atmosphere that can be breathed into the lungs. In contrast, for ecosystems the main concern of dust is coating of vegetation (i.e. much larger than the particles that can be breathed into the lungs). The Applicant therefore considers measures that will control dust emissions to such an extent that small particulate release is minimised will be sufficient to prevent significant dust coating of vegetation. Indeed the Applicant's Framework Construction Environmental Management Plan (CEMP) [REP2-011]*, at Section 9, sets out that one of the main aims of the monitoring regime is vegetation protection and advises this is set out in the Framework CEMP.</p>	<p>The Applicant can confirm Table 7-1 (Air Quality) is the correct reference.</p>

EXQ2	QUESTION TO:	QUESTION:	RESPONSE
		<p>The Applicant further states noting the above, and the commitment to consult with NE on the effectiveness of any proposed measures (including monitoring) in reducing effects on designated sites (see Table 7-2 of the Framework CEMP [REP2-011]*) and it considers this matter to be closed.</p> <p>Firstly, the ExA would ask the Applicant whether its reference to Table 7-2 of the Framework CEMP [REP2-011]* (Surface Water, Flood Risk and Water Resources) is correct or whether the correct reference should be Table 7-1 (Air Quality)?</p> <p>Secondly, the ExA would ask NE:</p> <ol style="list-style-type: none"> <li>1. Does it have any further comments or observation in relation to the mitigation and enhancement measures set out in Table 7-1 Air Quality of the Framework CEMP [REP2-011]*?</li> <li>2. Does it agree with the Applicant’s assessment and conclusions with respect of the sensitivity of ecosystems to dust emissions referred to above and agree with the Applicant that this matter should now be considered closed.</li> <li>3. Do you consider that the provisions for the monitoring of vegetation set out in Section 9 the framework CEMP [REP2-011]* to be adequate and sufficient.</li> </ol> <p>* The ExA notes the Applicant submitted Revision 2 of the Framework CEMP at DL3 (Examination Library reference [REP3-003]).</p>	
Q2.3.7	NE	<p>The Applicant’s response to Q1.3.13 [REP2-021] is noted. The Applicant states <i>“The Applicant has reviewed the citation for the Durham Coast SAC (Special Area of Conservation) which lists the qualifying features as “H1230 Vegetated sea cliffs of the Atlantic and Baltic coasts”. Coastal Dune Grasslands are not a qualifying feature of the Durham Coast SAC and therefore it was not included in the Report to Inform HRA (Document reference 5.10) [AS-016]. However, this was included in the modelled air quality assessment presented in Appendix 8B (Document reference 6.4.8) [APP-191] because it is listed as an interest feature on the Air Pollution Information System (APIS).”</i></p> <p>The ExA would ask NE to confirm whether it is satisfied with the approach adopted by the Applicant and if not, why not.</p>	<p>The Applicant has agreed this matter with Natural England. This was confirmed by Natural England at Deadline 2 see [REP2-072] and is also reported in the SoCG between the two parties. An updated SoCG with Natural England has been submitted at Deadline 5.</p>