Net Zero Teesside Project

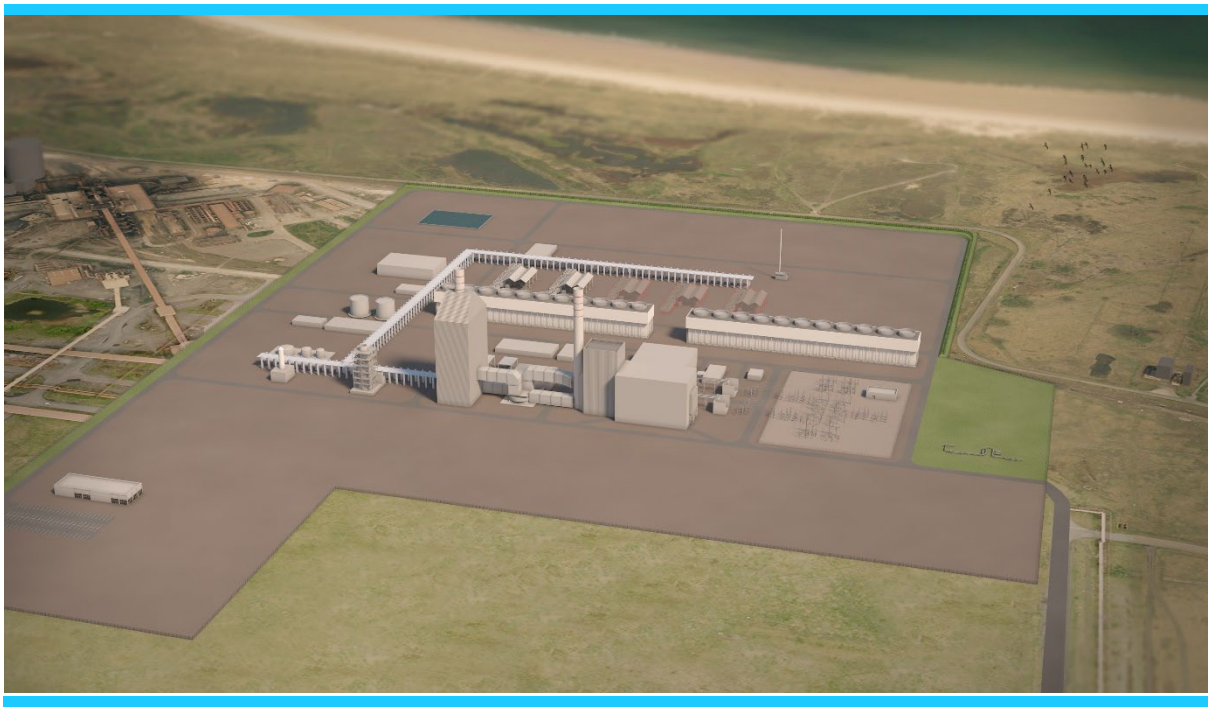
Planning Inspectorate Reference: EN010103

Land at and in the vicinity of the former Redcar Steel Works site, Redcar and in Stockton-on-Tees, Teesside

The Net Zero Teesside Order

Document Reference: 9.46 Applicants' Response to the Examining Authority's Third Written Questions

The Planning Act 2008
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



Applicants: Net Zero Teesside Power Limited (NZT Power Ltd) & Net Zero North Sea Storage Limited (NZNS Storage Ltd)

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GLOSSARY

Abbreviation	Description
AOD	Above ordnance datum
AS-	Additional Submissions
BAT	Best Available Techniques
BEIS	The Department for Business, Energy and Industrial Strategy
CCGT	Combined Cycle Gas Turbine
CCUS	Carbon Capture, Utilisation and Storage
CEMP	Construction and Environmental Management Plan
CTMP	Construction Traffic Management Plan
CO_2	Carbon dioxide
CPO	Compulsory Purchase Order
dB	Decibels
DCO	Development Consent Order
dDCO	Draft Development Consent Order
EIA	Environmental Impact Assessment
EPC	Engineering, Procurement and Construction
ES	Environmental Statement
ETS	Emissions Trading Scheme
ExA	Examining Authority
FEED	Front end engineering and design
FRA	Flood Risk Assessment
Ha	Hectares
HDD	Horizontal Directional Drilling
HIA	Hydrogeological Impact Appraisal
HoT	Heads of Terms
kV	Kilovolts
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
Mt	Million tonnes
NATS	National Air Traffic Services

NSIP	Nationally Significant Infrastructure Project
NWL	Northumbria Water Lagoon
NZT	The Net Zero Teesside Project
NZT Power	Net Zero Teesside Power Limited
NZNS Storage	Net Zero North Sea Storage Limited
PA 2008	Planning Act 2008
PCC	Power Capture and Compressor Site
PDA-	Procedural Deadline A
PINS	Planning Inspectorate
RCBC	Redcar and Cleveland Borough Council
RR	Relevant Representation
SBC	Stockton Borough Council
SEL	Sound Exposure Level
SPA	Special Protection Areas
SoCG	Statement of Common Ground
SoS	Secretary of State
STDC	South Tees Development Corporation
SuDS	Sustainable urban drainage systems
UXO	Unexploded Ordnance
WFD	Water Framework Directive

CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 Overview

1.1.1 This document, the 'Applicants' response to the Examining Authority's Third Written Questions' (Document Ref. 9.46) has been prepared on behalf of Net Zero Teesside Power Limited and Net Zero North Sea Storage Limited (the 'Applicants'). It relates to the application (the 'Application') for a Development Consent Order (a 'DCO'), that has been submitted to the Secretary of State (the 'SoS') for Business, Energy and Industrial Strategy ('BEIS'), under Section 37 of 'The Planning Act 2008' (the 'PA 2008') for the Net Zero Teesside Project (the 'Proposed Development').

1.1.2 The Application was submitted to the SoS on 2 and was accepted for Examination on 16 August 2021. A change request made by the Applicants in respect of the Application was accepted into the Examination by the Examining Authority ('ExA') on 6 May 2022. A further change request has been submitted to the ExA at Deadline 6 on 23 August 2022.

1.2 Description of the Proposed Development

1.2.1 The Proposed Development will work by capturing CO_2 from a new the gas-fired power station in addition to a cluster of local industries on Teesside and transporting it via a CO_2 transport pipeline to the Endurance saline aquifer under the North Sea. The Proposed Development will initially capture and transport up to 4Mt of CO_2 per annum, although the CO_2 transport pipeline has the capacity to accommodate up to 10Mt of CO_2 per annum thereby allowing for future expansion.

1.2.2 The Proposed Development comprises the following elements:

- **Work Number ('Work No.') 1** – a Combined Cycle Gas Turbine electricity generating station with an electrical output of up to 860 megawatts and post-combustion carbon capture plant (the **'Low Carbon Electricity Generating Station'**);
- **Work No. 2** – a natural gas supply connection and Above Ground Installations ('AGIs') (the **'Gas Connection Corridor'**);
- **Work No. 3** – an electricity grid connection (the **'Electrical Connection'**);
- **Work No. 4** – water supply connections (the **'Water Supply Connection Corridor'**);
- **Work No. 5** – waste water disposal connections (the **'Water Discharge Connection Corridor'**);
- **Work No. 6** – a CO_2 gathering network (including connections under the tidal River Tees) to collect and transport the captured CO_2 from industrial emitters (the industrial emitters using the gathering network

will be responsible for consenting their own carbon capture plant and connections to the gathering network) (the **'CO_2 Gathering Network Corridor'**);

- **Work No. 7** – a high-pressure CO_2 compressor station to receive and compress the captured CO_2 from the Low Carbon Electricity Generating Station and the CO_2 Gathering Network before it is transported offshore (the **'HP Compressor Station'**);
- **Work No. 8** – a dense phase CO_2 export pipeline for the onward transport of the captured and compressed CO_2 to the Endurance saline aquifer under the North Sea (the **'CO_2 Export Pipeline'**);
- **Work No. 9** – temporary construction and laydown areas, including contractor compounds, construction staff welfare and vehicle parking for use during the construction phase of the Proposed Development (the **'Laydown Areas'**); and
- **Work No. 10** – access and highway improvement works (the **'Access and Highway Works'**).

1.2.3 The electricity generating station, its post-combustion carbon capture plant and the CO_2 compressor station will be located on part of the South Tees Development Corporation (STDC) Teesworks area (on part of the former Redcar Steel Works Site). The CO_2 export pipeline will also start in this location before heading offshore. The generating station connections and the CO_2 gathering network will require corridors of land within the administrative areas of both Redcar and Cleveland and Stockton-on-Tees Borough Councils, including crossings beneath the River Tees.

1.3 The Purpose and Structure of this document

1.3.1 This document sets out the Applicants' response to the ExA's Third Written Questions (ExQ3), which were issued on 13 October 2022.

1.3.2 The Applicants' response to each Written Question is provided in the following sections of the document. The ordering corresponds to the order in which the topics appear on the document published on the Planning Inspectorate's web page. This document does not contain a section for Population and Human Health because no questions were asked.

- Section 2 - General and Cross-Topic Questions
- Section 3 - Compulsory Acquisition and Temporary Possession
- Section 4 - Design Landscape and Visual
- Section 5 – Development Consent Order
- Section 7 - Historic Environment
- Section 8 - Planning Policy and Legislation

- Section 9 - Water Environment

1.3.3 Each section contains a table which includes the reference number for each relevant question, the ExA's comments and questions and the Applicants' response to each of those questions.

2.0 GENERAL AND CROSS-TOPIC QUESTIONS

ExQ3	Question to:	Question:	Response
GEN.3.1	Applicants	'Other Consents and Licences' [REP2-007] includes reference to a number of other consents, licences and permits that would be required for the Proposed Development. The Applicants are asked to: i) Provide a final update on progress with obtaining these consents, licences and permits by the end of the Examination; and Include a section providing an update on these consents, licences and permits in any final Statements of Common Ground (SoCG) that are being drafted with the relevant consenting authorities.	The Applicants refer to the Written Summary of Oral Submission - ISH5 (Document Ref. 9.43), which includes an update in relation to the main consents and licences, at Item 7. In relation to other consents and licences listed in the Other Consents and Licences (Document Ref. 5.10), the Applicants confirm that an update to the status of the Connection Agreement for connection to the electricity distribution network has been made. An updated Other Consents and Licences document is submitted alongside this document at Deadline 11 as clean and tracked changes versions.
GEN.3.2	Applicants Redcar and Cleveland Borough Council (RCBC) Stockton-on-Tees Borough Council (STBC)	The most recent updated List of Developments [REP8-047 and REP9-013] include a number of additional relevant development proposals in the vicinity of the Order Limits and updates to the status of previously known proposals. The Applicants are asked to: i) At Deadline (D) 11, provide a final review of the tables and figures to include relevant planning applications submitted or determined since production of the most recent lists and confirm whether any such updates would affect the conclusions reached in the Environmental Statement (ES) in particular with regard to cumulative effects; i) The Relevant Planning Authorities (RPAs) are asked to: By D12, to confirm if the final review is comprehensive, provide details of any additional relevant major planning applications which have since been submitted, and provide updates to the status of the referenced planning applications as necessary including when a decision has been made and if approved, whether that development has commenced.	i) The Applicants have submitted the final version of the 'Updated List of Developments' (Document Ref. 9.34) in response to Second Written Question GEN.2.2(i) at Deadline 11. Since the version of the document submitted at Deadline 9 [REP9-013], the Applicants have added ID 125 (RCBC planning application ref. R/2022/0773/ESM) to the long list of developments contained at Appendix 1. The Applicants have reviewed the submitted environmental information for ID 125 and concluded that there is no potential for significant cumulative effects with the Proposed Development. Accordingly, there is no change in the conclusions of the Environmental Statement The Applicants have reviewed the list of existing planning applications contained at Table 2.1, Section 3 and Appendix 1 and have not identified any changes or updates since the document was last submitted at Deadline 9. The Applicants have also submitted, at Deadline 11, a revised version of 'ES Vol II Figure 24-2 Long List of Other Developments' (Document ref. 6.3.127) and 'ES Vol II Figure 24-3 Short List of Other Developments' (Document ref. 6.3.128) which, respectively, show the location of all long and short list developments.
GEN.3.3	Environment Agency (EA) Applicants	The Examining Authority (ExA) understands [REP5-032 and REP9-027] that the Environmental Permit is likely to require 95% carbon capture as a minimum over a year, with the exception of periods of time when the Combined Cycle Gas Turbine (CCGT) is exempt from operating in carbon capture mode. However, there is a lack of clarity around the control of timing of the CCGT in unabated mode. In the EA's latest submission [REP9-027], examples of when this is necessary are given which includes 'if the transport and storage network is not available' and 'if required to provide additional generation in times of stress'. i) Is it the case that the circumstances allowing operation in unabated mode are closely defined in the Environmental Permit? ii) Would there be timescales associated with the unabated periods?	i) Yes. The permit is expected to include wording similar to "The activities shall, subject to the conditions in this permit, be operated using the techniques and in the manner described in Schedule 1 unless otherwise agreed in writing by the Environment Agency" - text along these lines is common in environmental permits. Schedule 1 of the permit will include the CCGT and carbon capture plant. The Environment Agency typically requires operators to notify them of any departures from normal plant operation (i.e. the CCGT and the carbon capture plant operating). ii) Some permits specify restricted running hours per year for certain operating modes but typically there is a provision that the operator must notify the Environment Agency of any periods of abnormal

ExQ3	Question to:	Question:	Response
		Is there anything in the Environmental Permit to stop the CCGT running in unabated mode continuously?	operation, any breach of a permit condition, any breakdown or malfunction of abatement equipment or of any operation which affects the environment. Typically, there is a permit provision that if normal operation is not resumed within a certain period, operations must be curtailed. The carbon capture plant is effectively an abatement technique applied to the CCGT and represents BAT for this CCGT. The permit will require BAT to be applied unless otherwise agreed with the Environment Agency. The Applicants provided further information in relation to the environmental permit at ISH5, and refer the Examining Authority to the text relating to Requirement 31 within item 4 of the Written Summary of Oral Submissions - ISH5 (Document Ref. 9.43).
GEN.3.4	Applicants	At D5 the EA [REP5-032] requested clarification from the Applicants as to whether the CO_2 export pipeline (during ongoing maintenance) would be pigged from the oil and gas reservoir towards shore, therefore resulting in Naturally Occurring Radioactive Material (NORM) waste arriving at the proposed installation for appropriate disposal off-site. The Applicants are asked to provide clarification on this matter and if necessary, update the Other Consents and Licences document [REP2-007] to reflect the position.	The question from the EA refers to an oil and gas reservoir - the Endurance store does not, and has never, contained oil or gas; Endurance is an aquifer, not a hydrocarbon reservoir, and so contains salty water, also referred to as brine. The intention is that the CO2 will be injected into the aquifer for storage, fluids will not be produced from the aquifer into the pipeline. As there are no hydrocarbons being produced from the aquifer, the pipeline will not need to be pigged for maintenance, no NORM will be created so a permit will not be required. No changes are therefore required to REP2-007.

3.0 COMPULSORY ACQUISITION, TEMPORARY POSSESSION AND OTHER LAND AND RIGHTS CONSIDERATIONS

ExQ3	Question to:	Question:	Response
CA.3.1	Affected Persons (APs)	Are any APs aware of any further inaccuracies in the Book of Reference (BoR) [REP6-007], Statement of Reasons (SoR) [REP6-009] or Land Plans [REP6-014]? If so, please set out what these are and provide the correct details.	N/A
CA.3.2	Applicants	Further to the Applicants' responses to ExQ1 CA.1.5 [REP2-016] and ExQ2 CA.2.2 [REP6-121], are any further land or rights acquisitions required before the Proposed Development could become operational?	The Applicants' response to CA.2.2 remains accurate. The Applicants continue to work with CF Fertilisers Limited ("CFL"), Suez Recycling and Recovery UK Limited ("Suez"), and Sembcorp Utilities UK Limited ("Sembcorp") on voluntary agreements. These agreements include the associated access rights for the Proposed Development.
CA.3.3	Applicants	An updated 'Guide to Land Plan Plots' was provided at D6 [REP6-011]. Can the Applicants ensure that an updated version is provided together with any updated Land Plans further to any forthcoming change request?	The Applicants confirm that an updated Guide to Land Plan Plots will be submitted with the forthcoming change request at Deadline 12, in addition to updated Land Plans.
CA.3.4	Sembcorp Utilities (UK) Ltd	Can Sembcorp provide any comments as to the following: i) D6 Submissions (section 6.0) [REP7-009]; ii) Updated 'Justification of Corridor Widths' [REP8-051]; The latest version of the Draft Development Consent Order (dDCO) [REP8-003] which is of relevance to Sembcorp including the definitions, Requirements (R) 11, 18 and 37, the Protective Provisions at Part 16 and plans to be certified at Schedule 14; and iii) Provide an update on discussions in relation to voluntary agreements, and indicate whether these are likely to be successfully concluded before the close of the Examination and if so whether the objection to CA of the listed plots is likely to be withdrawn before the close of the Examination; and iv) Provide a set of preferred Protective Provisions by D12 should agreement not be reached by Deadline 11.	N/A
CA.3.5	Teesside Gas Processing Plant/ Teesside Gas and Liquids Processing (TGPP)	TGPP in their D9 submission [REP9-035] references the potential deletion of plot 106. Could TGPP: i) Provide further explanation for this request and why a new Work number should be created in order to grant access rights over plot 106 at this late stage in the process; and ii) Provide an update on the voluntary agreement with a likely timescale for it to be finalised.	N/A
CA.3.6	Anglo American	Could Anglo American provide comments on the Applicants' justification for corridor widths [REP8-051] and Shared Areas Plan [REP8-008], and an update on the side agreement with a likely timescale for it to be finalised.	N/A
CA.3.7	CATS North Sea Limited (CNSL)	Initial representations from CNSL [REP3-012, REP4-032 and REP6-121] related to the proposed CA of plot 112 and possible alternatives. Could	N/A

ExQ3	Question to:	Question:	Response
		CNSL clarify whether they retain their concerns in relation to plot 112 and whether a voluntary agreement is likely to be concluded prior to the close of the Examination.	
CA.3.8	All APs	All APs are asked to provide an update on the negotiations regarding the acquisition of plots where there were concerns regarding the operational viability for the current users. Indicate whether these are likely to be successfully concluded before the close of the Examination and if so whether the objection to Compulsory Acquisition (CA) and/or Temporary Possession (TP) of these plots is likely to be withdrawn before the close of the Examination.	N/A
CA.3.9	Applicants	The Applicants are asked to provide an update on the status of Unregistered/ Unknown plots listed for the CA of land and rights as noted in the CA Schedule [REP9-022] as plot 468 for CA of land, and plots 274, 362, 48, 49, 50, 51, 52, 64, 6a for the CA of rights.	There is no update on the position in relation to these plots – the Applicants do not have any further information on who may own them, given the lack of publicly available information (such as at the Land Registry) and the lack of response to enquiries that the Applicants have made. After the DCO is granted, the Applicants will issue a notice to all those with an interest in the Order Limits, as required by section 134 Planning Act 2008, and will erect site notices for those plots where ownership is unknown. This provides another opportunity for an owner or occupier to come forward and assert their claimed interest in the relevant plot. The Applicants' enquiries in relation to these plots will also continue via direct discussions with adjoining land owners. Where ownership cannot be determined the Applicants will then rely on the compulsory acquisition powers in the DCO in order to be able to acquire the interests required for the Proposed Development within these areas.
CA.3.10	Applicants	The Applicants are asked to ensure that any name changes, changes in rights and any further information in relation to unregistered/ unknown plots are accounted for in the final BoR and CA Schedule.	The Applicants confirm that the ExA's request will be addressed in the final BoR and CA Schedule (to be submitted at Deadline 12).
Statutory Undertakers			
CA.3.11	BT Telecommunications plc Openreach Limited Vodafone Limited Cornerstone Telecommunications Infrastructure Limited Telefonica Applicants	The ExA has not received responses to question CA.2.15 of ExQ2 [PD-016] from the listed telecommunications operators. The Applicants' response [REP6-121] confirms that Openreach are now included in the updated BoR [REP6-007], and as no comments have been received Part 2 of Schedule 12 of the dDCO [REP8-003] will remain as drafted in order to protect any further unknown telecommunications operators. Could each of the operators listed: i) Confirm whether they have any assets or interests within the Order Limits and if so, provide details of their location; and ii) Confirm if they are satisfied with the protective provisions set out in Part 2 of Schedule 12 of the dDCO, and if not satisfied provide comments accordingly.	The Applicants refer to its Written Summary of Oral Submissions for CAH3 (Document Ref. 9.44) which sets out the latest position in relation to telecommunications code operators at Agenda Item 7, and the Applicants' view on the approach that the Examining Authority should take in relation to these matters. The Applicants have not received any further communication from the listed operators. The Applicants will provide a further update at Deadline 12 and where necessary will address the tests set out in Section 138 Planning Act 2008.

ExQ3	Question to:	Question:	Response
		Could the Applicants: i) Explain any further efforts made to make contact with the listed telecommunications Statutory Undertakers to whom Part 2 of the dDCO may apply, and to explain what approach the ExA should take if no responses are received before the end of the Examination;	
CA.3.12	National Grid Electricity Transmission plc National Grid Gas plc Network Rail Infrastructure Limited Northern Gas Networks Limited Northern Powergrid Plc Northumbrian Water PD Teesport	The Applicants' Written Summary of Oral Submissions for CAH2 [Item 7, REP5-026] confirms the statutory undertakers to whom standard protective provisions set out in Parts 1 and 3 of Schedule 12 of the dDCO [REP8-003] would apply, and bespoke protective provisions at Parts 10, 11, 13, 25 and 26 which apply to statutory undertakers who are listed in the BoR [REP6-007]. i) Could the listed Statutory Undertakers set out any outstanding concerns with the protective provisions; and ii) If the protective provisions are not satisfactory provide your preferred alternative wording. iii) Are the Applicants and Statutory Undertakers aware of any additional statutory undertakers to whom protective provisions should apply?	N/A
CA.3.13	Applicants	Could the Applicants: i) Provide a progress report on negotiations with each of the Statutory Undertakers listed in the BoR [REP6-007] and in Item 7 of the Written Summary of Oral Submissions for CAH2 [REP5-026]; and ii) Provide an indication of whether these negotiations will be completed before the close of the Examination and if they won't provide a progress report on the preparation of the section 127 case that will need to be submitted by the Applicants including a timescale for when this would be submitted into the Examination.	The Applicants refer to its Written Summary of Oral Submissions for CAH3 (Document Ref. 9.44) which sets out the latest position in relation to statutory undertakers at Agenda Item 7. The Applicants will provide a further update at Deadline 12 and where necessary will address the tests set out in Section 127 Planning Act 2008.
Crown Consent			
CA.3.14	Applicants	Following the additional response to ExQ2 CA.2.19 [REP9-020], the Applicants are asked to provide a further update on progress made regarding obtaining Crown consent and the likelihood of this being achieved before the close of the Examination. Should this matter not be resolved the ExA will require a full and final submission setting out how the Proposed Development could proceed if Crown consent is not forthcoming at D13.	The Applicants refer to its Written Summary of Oral Submissions for CAH3 (Document Ref. 9.44) which sets out the latest position in relation to Crown consent at Agenda Item 6.
Funding			
CA.3.15	Applicants	The Applicants are asked to provide an update to the Funding Statement [AS-201] at D13, including whether there have been any changes to the	The Applicants note the ExA's request and will submit an updated Funding Statement at Deadline 13 on 7th November.

ExQ3	Question to:	Question:	Response
		funding arrangements since the Application was submitted, and in respect of changes to the Order Limits.	

4.0 DESIGN LANDSCAPE AND VISUAL

ExQ3	Question to:	Question:	Response
DLV.3.1	RCBC	*Note: This question partly repeats ExQ2 DLV.2.1 [PD-016], as no answer was received from RCBC at D6 or D9.* At ISH4 [EV8-001 to 006], the ExA highlighted the increasing emphasis on good design, which is not only set out in National Policy Statements but in a variety of other national publications and in relation to other Nationally Significant Infrastructure Projects (NSIPs). The ExA pointed out the recommendations in the National Infrastructure Commission Design Principles Document for a design champion, and use of design review panels. Reference was made to 'iconic' structures and a 'strong visual beacon' as noted in the Teesworks Design Guide [REP2-055] design typology C5 (p.39). The ExA noted that the Power Capture and Compression (PCC) site could be considered a 'gateway' site and put to the Applicants that its prominence requires further thought and justification. The site has the potential to become a local landmark as the blast furnace has been, and that this is highlighted by its exposed coastal location and the 'first of a kind' status of the Proposed Development. The Applicants' response to ExQ2 DLV.2.1 confirms that they do not consider the use of a design panel/ champion nor the use of a 'landmark' type structure to be necessary for a number of reasons, and that they consider R3 to provide RCBC with sufficient post-consent control of detailed design matters. The final SoCG with RCBC notes at points 17 and 22 that design/ landscape and visual impact is considered acceptable, and that an appropriate mechanism for minimising adverse impacts will be secured through R3 of the dDCO. However, it makes no reference to whether RCBC's opinion on whether the use of a design panel/ champion in post-consent review of final design is appropriate or necessary. Can RCBC provide comment: i) Do the amendments to R3 in terms of reference to the Design and Access Statement (DAS) provide a sufficient basis to secure a high quality detailed design of the development of the PCC site; ii) Should a 'landmark' type structure be encouraged; iii) Would consultation with South Tees Development Corporation (STDC) on R3 ensure that the Teesworks Design Guide and Masterplan are sufficiently taken account of in consideration of the final design; and Does RCBC have the necessary expertise and resources to take on the design approval post-consent, or would an external design review be necessary? If so, indicate what additional support you believe would be required and from whom such support should come.	The Applicants refer to their response to ExQ2 DLV.2.1 made at Deadline 6 [REP6-121]. That response set out why Applicants do not consider that the use of 'landmark' type structures are necessary or appropriate to deliver good design at the PCC Site and that Requirement 3 provides sufficient post-consent control of the detailed design of the PCC Site so as to secure high quality design. Furthermore, Requirement 3 of the version of the dDCO submitted at Deadline 8 [REP8-003] requires the relevant planning authority to consult STDC on the detailed design of the Proposed Development, while sub-paragraph (13) of Requirement 3 states that the details submitted to and approved by the relevant planning authority, must be in accordance with the design principles set out in Sections 7 and 8 of the Design and Access Statement. Those design principles take account of the Masterplan and the Teesworks Design Guide. The approach of tying the design to the principles in design documents submitted at the application stage is consistent with other recently made DCOs for generating stations, such as the Thurrock Flexible Generation Plant Development Consent Order 2022 The Applicants consider that use of a design panel or champion would be disproportionate in the case of the Proposed Development given the context within which the buildings and structures proposed for the PCC Site would sit. The PCC Site is not subject to any national landscape designations and neither are there any within its vicinity, while there are limited heritage assets within the surrounding area. The PCC Site is not identified as a 'Gateway Plot' within the Teesworks Design Guide and the setting within which it sits is very much an industrial one. The Applicants are not aware of any DCO projects where design panels or champions have been made a requirement for development of a similar nature and in a similar location as NZT. For instance, neither the Tees CCPP DCO at the nearby Wilton International Site, which sits within a similarly industrial context, or the Eggborough CCGT DCO in North Yorkshire, which is located within a very open countryside setting, include detailed design requirements that stipulate the use of a design panel or champion.

ExQ3	Question to:	Question:	Response
DLV.3.2	Hartlepool Borough Council (HBC)	*Note: This question partly repeats ExQ2 DLV.2.5 [PD-016], as no answer was received from HBC at D6 or D9.* Viewpoints 1 to 4 indicate views from the Hartlepool area [APP-181 to APP-191 and APP-217 to APP-222]. At ISH4, the ExA raised concerns in particular with the visuals from the promenade at Seaton Carew (viewpoint 2). The Applicants provided amended visuals at D6 [REP6-093 to REP6-095]. Could HBC provide comments on the following: i) Are you satisfied that viewpoints 1 to 4 are representative of typical views of sensitive receptors in these locations? ii) Did HBC have sight of these viewpoints in advance of submission of the Application, and if so, did you raise any issues? And iii) Provide any further comments you may have on the aforementioned visuals and Chapter 17 of the ES [APP-099] in terms of landscape and visual effects on the Hartlepool area.	N/A
DLV.3.3	Applicants	Figure 17-21 [REP6-095] is a repeat of Figure 17-20 [REP6-094]. Please submit the correct photomontage for Figure 17-21 (Seaton Carew Viewpoint 2).	The Applicants confirm that Figure 17-20 was submitted in error in place of Figure 17-21. The Applicants have submitted Figure 17-21 (showing the relevant photomontage) at Deadline 11.

5.0 HISTORIC ENVIRONMENT

ExQ3	Question to:	Question:	Response
HE.3.1	RCBC STBC HBC	*Note: This partly repeats ExQ2 HE.2.3 [PD-016], as no answer was received from RCBC STBC or HBC at D6 or D9.* The Applicants' response to ExQ1 HE.1.1 [REP4-028] provides details on the scope of archaeological investigation, and states that construction activity would not impact buried archaeological remains and that therefore mitigation set out in a Written Scheme of Investigation (WSI) is not required. The response also includes the WSI for marine archaeology. The updated Framework CEMP [Table 5A-12, REP9-007] includes procedures for reporting, protection and management of unexpected archaeological discoveries. Historic England's response to ExQ2 HE.2.3 [REP9-028] confirms it is for the RPA's archaeological advisors to confirm if archaeological works landward of Mean Low Water are not required. Could all RPAs (in consultation with the relevant archaeology service as necessary) confirm their satisfaction with this approach, or if they require any further information or clarification?	N/A
HE.3.2	Applicants	Historic England's response to ExQ2 HE.2.3 [REP9-028] comments on Schedule 11, Condition 15 of the dDCO and notes that the (offshore) geophysical survey extended only partially into the Order Limits, and that the data was sourced from a survey for Teesside Offshore Wind Farm, so the majority of the site within the Order Limits has not been subject to archaeological investigation. The Written Scheme of Investigation (WSI) for Marine Archaeology [Appendix B, REP4-028] acknowledges the presence of a palaeo-channel within the Order Limits, which is described as being of medium value. Could the Applicants provide a response to Historic England's comments regarding the methodology of the outline WSI and, if necessary, an amended version?	An updated Outline Offshore Written Scheme of Investigation updated in response to Historic England D9 submission [REP9-028] has been prepared. This is an update of Appendix B (Written Scheme of Investigation for Marine Archaeology) to Document Ref. 9.18 Further Information Regarding Applicants' Responses to Historic Environment First Written Questions previously submitted at Deadline 4 [REP4-028]. The updated offshore WSI document has been included as Appendix 1 in the Applicants Comments on Deadline 9 Submissions and Additional Submissions (Document Ref. 9.42) submitted at Deadline 11.
HE.3.3	RCBC	*Note: This partly repeats ExQ2 HE.2.4 [PD-016], as no answer was received from RCBC at D6 or D9.* Development Principle STDC8 of the South Tees Area SPD [REP2-054] 'Preserving Heritage Assets' supports proposals which contribute to the development of an industrial heritage trail. Paragraph 3.67 of the SPD notes that this will likely be handled as a discrete project placed under the direct control of RCBC working with local heritage groups. The Applicants and STDC provided comments at D6 [REP6-121 and REP6-144]. Can RCBC provide any further information regarding its role in future plans for an industrial heritage trail?	N/A

ExQ3	Question to:	Question:	Response
HE.3.4	RCBC	*Note: This partly repeats ExQ2 HE.2.5 [PD-016], as no answer was received from RCBC at D6 or D9.* RCBC [REP2-094] indicated that guidance from Cleveland Industrial Archaeology Society (CIAS) would be recommended in relation to R14 of the dDCO. Commenting on the response, the Applicants [REP3-011] noted that CIAS is not a statutory consultee but a local society that makes records of industrial sites and equipment, carries out historical research and works to help the preservation of business records and physical relics. The Applicants commented further [REP6-121] that it would not require amendment and that the RPA has discretion as to who to consult. i) Can RCBC confirm that they are content with the current wording of R14 and that consultation of CIAS can be undertaken without amendment of the Requirement.	N/A
HE.3.5	RCBC	*Note: This partly repeats ExQ2 HE.2.6 [PD-016], as no answer was received from RCBC at D6 or D9.* ExQ1 HE.1.4 iv) asked whether the Applicants' assessment of impacts to the setting of nearby designated heritage assets in ES Chapter 18 (paragraphs 18.6.14 to 18.6.24) was sufficient, and whether their significance has been adequately identified and assessed. RCBC in their response [REP2-094] stated that 'there is potential for greater impact on setting, for example even from Huntcliff overlooking Saltburn'. In response to ExQ2 HE.2.6 the Applicants provided an assessment of significance of the three Listed buildings at Marsh Farm, Warrenby [REP7-010]. Could RCBC: i) Explain further their response regarding Saltburn; and ii) Provide comments specific to the group of Grade II listed buildings at Marsh Farm, and confirm whether they are in agreement with the Applicants' assessment of significance [REP7-010].	N/A

6.0 PLANNING POLICY AND LEGISLATION

ExQ3	Question to:	Question:	Response
PPL.3.1	Applicants RCBC STBC	Sections 3.3, and 4 and 5 of the Planning Statement [REP1-003] refer to the local and national policy context. The Applicants and RPAs are asked to confirm if they are aware of any additional local or national policy or guidance which has been issued since production of the Planning Statement in May 2022. If so, provide details of relevance to and implications for the Proposed Development.	The Applicants undertook a review of national and local policy and guidance in response to Second Written Question PPL.2.1 at Deadline 6 of the Examination. This review confirmed that no new or additional national or local policy or guidance had been issued since the submission of the updated Planning Statement at Deadline 1 in May 2022 [REP1-003]. The Applicants have undertaken a further review for Deadline 11. The following has been identified, which are of relevance to the Proposed Development: • Phase-2 CCUS cluster sequencing – Following the selection in November 2021 of the East Coast Cluster (which encompasses the Proposed Development) as a Track-1 CCUS cluster, on 12th August 2022 BEIS issued an update shortlisting the power CCUS, industrial carbon capture, waste and CCUS-enabled hydrogen projects to proceed to the due diligence stage of the Phase-2 cluster sequencing process. The Proposed Development has been selected as the power CCUS project to be taken forward as part of the Phase-2 cluster sequencing process. • The Growth Plan 2022 – on 23rd September 2022, the then Chancellor of the Exchequer, Kwasi Kwarteng MP, published the Growth Plan 2022, which sets out policies to support increased economic growth in the UK, including speeding up the delivery of infrastructure. Annex B of the Growth Plan 2022 sets out infrastructure projects that will be accelerated as fast as possible. This includes under 'Carbon Capture and Storage (CCUS)' the East Coast Cluster, which includes the Proposed Development. The Phase-2 cluster sequencing shortlisting announcement in August 2022, although not policy, further underlines the importance of the Proposed Development to delivering the Government's commitment to establish at least two decarbonised clusters by 2030, while the Growth Plan 2022 reinforces the Government's energy and climate change policies and recognises the role of decarbonisation in promoting economic growth. The Phase-2 cluster sequencing shortlisting announcement and the Growth Plan 2022 do not however, have any implications for the Proposed Development in terms of its assessment within the Planning Statement. No other new or additional national policy or guidance has been identified and there have been no changes to local policy or guidance.

7.0 WATER ENVIRONMENT

ExQ3	Question to:	Question:	Response
WE.3.1	Northumbrian Water Limited (NWL) Applicants	The latest correspondence that the ExA is aware of between NWL and the Applicants is recorded in the SoCG received at D5 [REP5-020]. i) NWL and the Applicants are asked to provide an update on the status of discussions regarding the provision of water supply and wastewater treatment. ii) The suitability of Bran Sands for wastewater treatment is based on a simulated waste water sample provided to NWL in 2021. Please confirm that this sample is still considered representative and that NWL still conclude that there are no significant issues posed with processing the waste stream. iii) The SoCG records that conservative foul water volumes for discharges were shared with NWL in July 2022 and that these were going to be assessed. Has it been confirmed that Marske-by-the-sea Sewage Treatment Works is capable of treating the domestic foul water discharges?	i) The Applicants held preliminary discussions with NWL in early 2020 on the supply of raw water and wastewater treatment to facilitate early design considerations for the Proposed Development. The Applicants have been in regular engagement with NWL since early 2021 on the provision of wastewater treatment, with NWL conducting treatment trials from 3Q 2021 to 2Q 2022 (see further the response to ii) below). In June 2022, the Applicants shared water supply demands for the Proposed Development. NWL has completed an initial network analysis using this data and determined that they are within available capacity. NWL are currently developing a project plan of the commercial and technical activities required to support the Proposed Development, in relation to both water supply and wastewater treatment. This forms part of a formal process for NWL to establish a commercial agreement with the Applicants. No significant issues have been identified that would prevent NWL from supporting the Proposed Development. ii) The sample is still considered representative. It was produced based on the Applicants' understanding of what the wastewater would contain, using information obtained from pre-FEED design and engineering work, and it included conservative ammonia concentrations compared to the pre-FEED design basis. The treatment trials conducted by NWL concluded that the sample and forecast volumes could be accommodated within the existing Bran Sands WwTP facility and operational capacity. As the Applicants proceed through FEED they will continue to review the sample against the more detailed design information to ensure it remains representative of the updated wastewater specification. The Applicants expect that it will remain representative. iii) The Applicants and NWL are continuing to engage on the treatment of foul water. The volumes shared by the Applicants in July 2022 are low in comparison to historical volumes during the operation of the former steelworks (which were treated at Marske-by-the-Sea STW) and therefore the Applicants remain confident that the Marske-by-the-Sea STW is capable of treating the foul water discharges. Foul water treatment is included in the project plan under development by NWL referenced at i) above.
WE.3.2	EA Applicants	At D6 [REP6-133], the EA stated that they had reviewed the draft Net Zero Water Quality Assessment and that the approach outlined and the impacts were acceptable. However, the EA is unable to 'sign off' this assessment until it has clarity on the matters raised in its written comments provided to the Applicants and had sight of the updated effluent dispersion modelling report, which was due at D7. This was not provided. A Briefing Paper was submitted	i) A meeting was also held with the EA on 17th October 2022 at which both the modelling and WFD compliance were discussed. The WFD assessment has been submitted at Deadline 11 and shared directly with the EA for comment.

ExQ3	Question to:	Question:	Response
		at D8 [REP8-050]. This included an outline to the discharge modelling and referred to this supporting an updated Water Framework Directive (WFD) assessment. An updated dispersion modelling report was submitted at D9 [REP9-015], but this was not accompanied by an updated assessment as expected. The latest SoCG [REP8-042] between the EA and the Applicants states that in September 2022 'the Applicant has requested a meeting with the EA to discuss nutrient modelling updates'. Please provide: i) An update on discussions between the Applicants and the EA in relation to the WFD and related Environmental Permit(s) ii) An estimate of timescales to complete these discussions iii) Confirmation that the 'Water Quality Assessment' (60675797, 14 June 2022) in the appendices to the 'Nutrient Nitrogen Briefing Paper' [REP9-015] is the same as that referred to by the EA in REP6-133. Is this also the 'preliminary modelling' on which the EA provided comments in August 2022 as referred to in REP8-042? iv) The EA's assessment of the most recent dispersion modelling report [REP9-015], including whether or not it is fit for purpose, whether it represents a reasonable worst case, and the estimate of error and accuracy in the model. v) Has the EA had sight of an updated modelling report that was due, but not provided, at D7? vi) Has the EA had sight of an updated WFD assessment based on an updated water quality assessment? In 'matters to be agreed' the SoCG [REP8-042] it says 'the EA consider that the potential for process water discharges including DIN to have adverse effects on WFD and site integrity of the adjacent designated sites and needs to be considered further'. vii) What are the other discharges referred to that could cause adverse effects, apart from Dissolved Inorganic Nitrogen (DIN)? viii) Is the EA satisfied that these other potential pollutants have been adequately considered? It is understood from the SoCG [REP8-042] that the EA provided detailed comments on the preliminary modelling on 22 August 2022. ix) Please provide a copy of these comments.	A second meeting to discuss the EA's review of the updated WFD assessment has been arranged for 4th November and a summary of the outcome of this meeting will be provided by the Applicants at Deadline 13. The environmental permit application was Duly Made on 30th June 2022. Several discussions have been held between the Applicants and the Environment Agency permitting officer regarding the application. Public consultation on the permit application was undertaken by the Environment Agency between 2nd September 2022 and 1st October 2022; no comments were received on the application. Permit determination is expected to be concluded early in 2023. ii) The Applicants are liaising with the Environment Agency with a view to completing the discussions by the close of Examination, and to the extent that is not possible the Applicants will ensure that the Examining Authority is provided with an updated position (at Deadline 13), including what matters remain outstanding. The Applicants will ensure that the Examining Authority is provided with sufficient information on which to make its recommendation to the Secretary of State. iii) The Applicants confirm that the 'Water Quality Assessment' (60675797, 14 June 2022) in the appendices to the 'Nutrient Nitrogen Briefing Paper' (Appendix A) [REP9-015], is <u>not</u> the same as that referred to by the EA in REP6-133. The 'Water Quality Assessment' (60675797, 14 June 2022) in the appendices to the 'Nutrient Nitrogen Briefing Paper' (Appendix A) [REP9-015] is the 'preliminary modelling' on which the EA provided comments in August 2022 as referred to in REP8-042. iv) The Applicants note that EA has been provided with the updated modelling report as appended to the Nutrient Nitrogen Briefing Paper [REP9-015]. The Applicants have arranged to discuss the modelling report with the EA at the forthcoming meeting on the 4th of November. v) The Applicants confirm that the updated modelling report intended to be issued at D7 was submitted as Appendix B to the updated Nutrient Nitrogen Briefing Paper at Deadline 9 [REP9-015] but not directly shared with the EA. However, the results of the modelling were discussed with the EA at a meeting in relation to the WFD assessment on 17th October 2022 and will also be discussed at the meeting on the 4th of November. vi) The Applicants note that the EA have not yet seen the updated WFD Assessment but that an updated assessment has been submitted at Deadline 11 and will be shared directly with both the

ExQ3	Question to:	Question:	Response
			EA and Natural England. A meeting to discuss the content of the WFD assessment with the EA was held on 17th October 2022 and will also be discussed at the meeting on the 4th of November. vii) The other discharges referred to that could cause adverse effects, apart from Dissolved Inorganic Nitrogen (DIN), are Total Organic Nitrogen and Particulate Nitrogen. As set out in paragraph 3.1.2 in the Nutrient Nitrogen Briefing Paper [REP9-015] the assessment of nutrient nitrogen impacts in the briefing paper is based on the assessment of total nitrogen inputs to the water environment. The effluent produced by the Proposed Development will contain Dissolved Inorganic Nitrogen (DIN) in the form of ammonia in the effluent. There will be no Dissolved Organic Nitrogen (DON) or particulate Nitrogen in the effluent produced by NZT. Returned effluent from Bran Sands will include an equivalent nitrogen load to that sent for treatment – which will largely be in the form of DIN, but may also include dissolved organic nitrogen or particulate nitrogen (which would otherwise have been discharged to the Estuary). Data was available for DIN at this stage and as such the modelling is based on the volume of water containing an equivalent nitrogen load in the form of DIN. If further data reveals that the Bran Sands effluent contains DON and/or particulate nitrogen, a lower volume of returned effluent would be required to achieve equivalency, however, the total nitrogen load returned from Bran Sands would remain consistent. viii) N/A ix) A copy of the EA's comments on the preliminary modelling submitted by email on 22nd August 2022 is appended as Appendix EXQ3.WE.3.2.
WE.3.3	NE Applicants	The latest SoCG between the Applicants and NE [REP8-044] states that there has been on-going correspondence, including a meeting on 15 September 2022, between the parties regarding the approach to nutrient neutrality, including the discharge modelling. The SoCG between the EA and the Applicants [REP8-042] records that comments on the preliminary modelling were received from NE on 19 August 2022. The update to the Nutrient Nitrogen Briefing Paper submitted by the Applicants to the ExA at D9 [REP9-015] is subsequent to this. Please provide: i) An update on discussions between the Applicants and NE in relation to nutrient neutrality ii) An estimate of timescales to complete these discussions iii) Confirmation that the 'Water Quality Assessment' (60675797, 14 June 2022) in the appendices to the 'Nutrient Nitrogen Briefing Paper'	i) Extensive work has been undertaken by the Applicants in close liaison with Natural England and the Environment Agency to assess and address the requirements of the Nutrient Neutrality guidance once that issue was raised by Natural England during examination. This work includes detailed modelling of effluent discharges to the Tees estuary and Tees Bay and evaluation of design approaches that could be used to prevent exacerbation of the nutrient nitrogen levels on the qualifying features of the SPA. It has been agreed with Natural England that their area of concern relating to nitrogen levels is the Seal Sands mudflats, as that is the main area of feeding for the terns. All potential sources of nitrogen in effluent from the Proposed Development have been considered and the Applicants have worked with NWL to understand the level of treatment achievable at Bran Sands WwTW. Through this work the Applicants identified that the 'base case' of discharging treated effluent through the existing consented Bran

ExQ3	Question to:	Question:	Response
		[REP9-015] is the 'preliminary modelling' on which NE provided comments in August 2022 [REP8-042]? iv) NE's assessment of the most recent dispersion modelling report [REP9-015], including whether or not it is fit for purpose, whether it represents a reasonable worst case, and the estimate of error and accuracy in the model. v) Has NE had sight of an updated modelling report that was due, but not provided, at D7? vi) Please provide a copy of the comments made by NE to the Applicants regarding the preliminary modelling on 19 August 2022.	Sands discharge would still lead to nitrogen containing effluent being discharged into the Tees estuary. The Applicants therefore have considered an alternative approach (which is within the confines of the Proposed Development) from the base case to instead take a return of treated effluent back from Bran Sands and discharge it via the proposed replacement outfall. Plume modelling of the outfall discharge has been undertaken and this has demonstrated that the discharged nitrogen does not impact on the mudflats. In addition, the Proposed Development will abstract water from the River Tees for cooling purposes and discharge it into the Tees Bay after use. This abstracted water already contains a baseline of nitrogen that is currently passing into the estuary and past the Seal Sands mudflats, so by abstracting this water and discharging it to the Bay the Proposed Development will reduce nitrogen levels impacting on the Seal Sands mudflats. In addition, the Applicants have separately offered to support Natural England's understanding of nutrient levels in the area around Seal Sands mudflats through an agreed monitoring programme. This assessment has been discussed with Natural England and the following position has been agreed: - Subject to the addition of a draft requirement to secure the use of the mitigation measures outlined (or equivalent), the Applicants and Natural England agree that the Proposed Development achieves nutrient neutrality at the Seal Sands mudflats, which is Natural England's area of potential concern. - Subject to the HRA being updated to take the proposed mitigation secured by the draft requirement into Stage 2 of the assessment, the Applicants and Natural England agree that there is no adverse effect on the integrity of the Teesmouth and Cleveland Coast SPA. In addition, the Applicants have separately offered to support Natural England's understanding of nutrient levels in the area around Seal Sands mudflats through an agreed monitoring programme. A draft Requirement for a Nitrogen Safeguarding Scheme was submitted by the Applicants to NE by email on 13th October 2022 and discussed with NE at the meeting on October 14th. In a post-meeting email on 14th of October, Natural England confirmed that the wording of the requirement is acceptable to NE. The Applicants have subsequently proposed updated wording for the requirement to Natural England and which has been agreed. The Applicants has included the text of the updated requirement in its ISH6 – Applicants' Written Summary of Oral Submissions (Document Ref. 9.45) at Deadline 11, and will include it in the Draft DCO to be submitted at Deadline 12. The Applicants' proposals for monitoring nutrients were also submitted to NE for comment by email on 13th October and discussed with NE at the meeting on 14th October. The Applicants have proposed these as a voluntary measure, to assist Natural England in developing data and

ExQ3	Question to:	Question:	Response
			information to enhance the understanding of nutrients in the Tees Estuary. In the email of 14th of October, NE welcomed the proposed monitoring commitment. The Applicants propose that this secured by legal agreement between the Applicants and NE, which the Applicants are drafting for NE's consideration. The Applicants consider that this agreement and the monitoring commitments are not 'necessary' (so as to need to be secured via a DCO requirement or development consent obligation), in light of the conclusions of assessment. The agreement and monitoring would not therefore be a matter for the Secretary of State to take into account in determining the DCO application. The Applicants will however provide information to the Examining Authority on the substance of the monitoring to be secured in the agreement, and anticipate doing so at Deadline 12 (1 November). ii) NE submitted a statement to the ExA in advance of ISH6 [AS-209] in which it agreed that the modelling presented in the Nutrient Nitrogen Briefing Paper [REP9-015] for Option A demonstrates that the development would achieve nutrient neutrality and that this should be secured by requirement. Natural England. Subject to the HRA being updated to incorporate the proposed mitigation secured by the draft requirement at Stage 2 (Appropriate Assessment), NE would support a conclusion of No Adverse Effects on Site integrity for impacts on Seal Sands. In the statement to the ExA, Natural England also notes that assessing Water Framework Directive compliance in the Tees Coastal water body is the responsibility of the Environment Agency and that a demonstration of compliance would provide further evidence that the integrity of the SPA/Ramsar is not affected by the Proposed Development. iii) The Applicants confirm that the 'Water Quality Assessment' (60675797, 14 June 2022) in the appendices to the 'Nutrient Nitrogen Briefing Paper' (Appendix A) [REP9-015], is the 'preliminary modelling' on which NE provided comments in August 2022 [REP8-043]. iv) N/A v) The Applicants confirm that the updated modelling report intended to be issued at D7, was submitted as Appendix B to the updated Nutrient Nitrogen Briefing Paper at Deadline 9 [REP9-015] but that this was not directly shared with the NE. However, the contents of the Nutrient Nitrogen Briefing Paper and the results of the modelling were presented to NE at meetings on 14th and 17th October 2022. After the latter meeting, NE submitted a statement to the ExA on Nutrient Neutrality [AS-205] on 17th October 2022. vi) A copy of NE's comments on the preliminary modelling submitted by email on 19th August 2022 is appended as Appendix EXQ3.WE.3.3.

APPENDIX 1 – EXQ3 WE.3.2 – EA EMAIL OF 22ND AUGUST 2022

From: [redacted]
Sent: 25 October 2022 16:56
To: [redacted]
Subject: FW: NZT - Draft Nutrient Modelling Report
Attachments: EA_comments_NZT-WQ_Aug22.xlsx

FYI

From: [redacted]
Sent: 22 August 2022 13:55
To: [redacted]
Subject: [EXTERNAL] RE: NZT - Draft Nutrient Modelling Report

Hi Mary,

Please find attached the EA's review of the water quality assessments. Our comments are outlined in the attached spreadsheet.

The approach outlined and the impacts are acceptable. However, we're currently unable to sign off the document until we get clarity on the matters raised in our comments, and until we've had sight of the updated effluent dispersion modelling report which is expected on Deadline 7.

Regards

[redacted]

From: [redacted]
Sent: 29 July 2022 16:33
To: [redacted]
C[redacted]
Subject: NZT - Draft Nutrient Modelling Report

Hi [redacted]

Please find attached the draft water quality report which was discussed in the meeting on 7 July 2022 for your information. There will be a further update which included cumulative information and the updated version will include the requests made by EA in the meeting.

The report is sent in two sections, the main body of the report and one of the appendices which is currently in the examination (Appendix A Initial Design Stage Report)

Regards

[redacted]

Marine Modelling comments on	
Doc no:	60675797
Title:	Net Zero Teesside - Water Quality Assessment Intermediate Design Stage
Reviewer(s):	[redacted]
Received for review on:	August 2022

EA comment number	Page/ Paragraph	Reviewer's Comment
EA // 1	2.2.2	We do not understand what this condensed water is, or how it may be possible to re-use it. What is the flow rate for it? It would be useful to include a flow-process diagram.
EA // 2	3.1	Please include the definition of a 'thin dam' structure within this report.
EA // 3	4.1	Please clarify how the pipe size will be reviewed in the existing outfall tunnel? Will another pipe be run through the existing outfall?
EA // 4	4.1	What is the final exit velocity?
EA // 5	table 5.1	It is assumed that a, b, c refer to the dimensions indicated in Figure 4.1, 4.2. It would be very helpful to include this info in the table caption.
EA // 6	table 5.1	How can this plume fail to reach the water surface? Typically, effluent plumes are trapped at intermediate layers where they have elevated salinity, so that as the temperature drops they reach a position of neutral buoyancy. Or else where there is a pycnocline in the ambient water. Neither of those conditions applies (so far as we understand). Therefore, please can you provide some narrative on this and what is happening. Without an answer to this question, the results cannot be verified.
EA // 7	6.1	"A continuous flow rate and DIN concentration…" Do you mean "constant"?
EA // 8	6.2	"it is recommended that the Delft3D model is revised to include wave action" We do not support this recommendation. Dispersion modelling with waves is not a well-proven technology. If your outfall requires wave mixing to provide sufficient dilution, design a better outfall.
EA // 9	6.2	Which level of your colour scale corresponds to the EQS?
EA // 10	6.2	You have presented results at sigma=0.35, 0.90, 0.98. How many layers does the model use for it internal calculations? And where are they? How / why have you selected a subset of layers for the results presentation? It would make the report easier to read if you adopted a consistent figure format, displaying all layers - these individual frames could be much smaller to ensure they all fit on one page. Further - 35% is not particularly close to the seabed. How represenative is this of impacts on benthic organisms?
EA // 11	6.2	The model cells at the outfall location seem very large. In light of the CORMIX predictions, it is not clear that this configuration will give sufficient accuracy to capture the effluent plume. Please comment on the effect this may have on the concentrations / extent of the plume, and whether mesh refinement would change the predictions.
EA // 12	fig 6.7 - 6.9	We note your comment about wave action increasing mixing, and agree this makes your prediction conservative. Nevertheless - what size is the predicted mixing zone?
EA // 13	fig 6.7 - 6.9	We note these are mis-referenced in the text.
EA // 14	6.2 ff	What is the time dimension on these plots? Max / average / snapshot?
EA // 15	7	"The near field modelling shows that the impacts of the discharge is small for all four assessed discharge Options at all stages of the tidal cycle." Given what you proceed to discuss about DIN, this statement is misleading.

EA // 16	7	"DIN emissions … are not sufficient to cause ... no impacts on water quality in the Tees Estuary." This sentence needs to be relooked at.
EA // 17	7	"restricting DIN effluent DIN concentrations to 890 µmol/l would result in a mixing zone of acceptable size." Definition of "acceptable" has not been agreed.
EA // 18	7	As noted above, you should not rely on wave mixing to solve the dilution. You have noted elsewhere in the report that the outfall configuration is more sketched than designed - this would be a more appropriate task to prioritise.
EA // 19		
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Influencing Investment
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Update comment

APPENDIX 2 – EXQ3 WE.3.3 – NE EMAIL OF 19TH AUGUST 2022

From: [redacted]
Sent: 19 August 2022 17:14
To: [redacted]
Cc: [redacted]
Subject: [EXTERNAL] NZT - Nutrient Modelling Reporting

Good afternoon,

In response to your specific question, if the "draft modelling can be used to confirm that NE can agree that the modelling does not show DIN entering into Tees Estuary", Natural England does not agree that the modelling shows this. See below detailed comments from our specialists on this matter.

In addition, the draft assessment would not exempt the discharges to the Tees Bay from our advice on Nutrient Neutrality. As I previously highlighted, the draft Water Quality Assessment only refers to Dissolved Inorganic Nitrogen, rather than Total Nitrogen. Can you confirm if you have also modelled for Total Nitrogen or is your intention to cover this as part of the future Nutrient Nitrogen calculation?

The modelling does show that there will be an increase of DIN levels within the Tees Bay area of the Teesmouth and Cleveland Coast SPA/Ramsar. To allow Natural England to determine whether or not the elevated levels of DIN within the Tees Bay will negatively affect the qualifying features of the SPA/Ramsar, the applicant should provide an assessment of the qualifying features that use this area and if its supporting features could be negatively affected. If there is the potential for negative effects, the applicant should assess the extent of the supporting features that will be affected and the overall impacts to the SPA/Ramsar. This should be done in combination with the existing impacts as a result of nutrient enrichment at Seal Sands.

Please find below detailed comments regarding the draft Water Quality Assessment, as well as additional questions and recommendations for the applicant.

Detailed Comments Regarding the Draft Water Quality Assessment
Our specialists have provided the following detailed questions and comments to further inform this assessment:

1. Caution should be taken when interpreting the concentration of un-ionized ammonia at low pH. As the water pH will buffer to 8 in seawater, the un-ionised fraction of ammonia will increase as a result, suggesting that the concentration of un-ionised ammonia will be higher in the receiving environment than that measured in the effluent.
2. Regrading excluding chemicals based on being discharged at lower concentrations than the receiving environment/EQS – these discharges are still increasing the load of this chemicals in the ocean and since the ocean water continually evaporates yet chemical do not, the concentration will ultimately increase from any addition of chemical, regardless of the concentration it was introduced at. For very low concentrations, we agree that the mixing and volume of the receiving environment should minimise the impact. It will also be less relevant for nutrient compounds such as ammonium/DIN as these can exchange with the atmosphere.
3. Figures 3-3, 3-4 and 3-5 would benefit from axis titles with units.
4. Section 3.6 – states average DIN concentrations within Tees Bay of 11.6 µmol/l. DIN concentration has significant seasonal variation and so it would be inappropriate to average across the entire year. It would be better to either uses Total Nitrogen, winter DIN, or those months with the highest DIN concentrations since DIN will be influenced by primary productivity (peak primary productively may vary slight each year).
5. EQS of DIN are based on concentrations from 1st Nov to 28th February. It is important that the ambient concentrations reported are averaged across comparable timeframes.
6. It might be worth noting that the winter DIN concentrations at sample point B exceeds the EQS at 37 µmol/l based on data from the same period (Jul 19 – Nov 21). The Tees waterbody has also failed to meet DIN standards for the WFD, having moderate status or worse consistently from 2011-2019. The status of the waterbody should be considered instead of basing calculations around sample point A – if amended to use winter concentrations only this will be a limited amount of data and will lack statistical robustness since this is just a single sample location.
7. [redacted]: There is no published DIN data on sample point A (NE-45600302). It is a benthic sampling site. The applicant should clarify where their values for DIN at sample point A have been sourced.
8. Section 6.2 – The contour at which DIN meets EQS is based on the background concentrations. We are uncertain of how robust these are because of the limited samples from 2019-2021, the uncertainty whether these have been calculated as winter DIN, and the source of the data. How would this modelled contour change if ambient winter DIN concentrations were higher than those reported from point A? If ambient concentrations of DIN the waterbody exceed EQS in the winter, then there will be no scenario where EQS is reached and instead the discharge of additional DIN from the outfall will only increase the amount of Nitrogen in the receiving environment.
9. It should be noted that despite possible dilution occurring as the effluent disperses, the area of high concentration zone may overlap with *Mytilus edulis* beds which are highly sensitive to Transition elements & organo-metal contamination (e.g. Copper) and synthetic compound contamination (e.g. Diazinon) [redacted].
10. Despite possible dilution of DIN, there will be a risk to increased primary productivity around the outfall site (increased phytoplankton abundance, possible risk of harmful algal blooms, increased opportunistic macroalgae). It is important to assess the likelihood of eutrophication impacts in the immediate discharge location and how these could translate to the wider area.
11. In the summary it states that 'DIN emissions at the predicted effluent concentrations are not sufficient to cause major impacts on Tees Bay water quality'. Can the applicant clarify how an major impacts have been defined and on what evidence is this based?
12. The last sentence states: 'Restricting DIN effluent DIN concentrations to 890 µmol/l would result in a mixing zone of acceptable size'. Can the applicant clarify how an acceptable size has been defined and on what evidence is this based?

Additional Questions

1. Abstraction:

a. The Environmental Statement (Ch.9 Surface Water, Flood Risk and Water Resources states that "abstraction from the River Tees has been removed from the Proposed Development". However, the draft Water Quality Assessment states that the "source of the Blowdown Water is untreated River Tees water from three abstraction points". Can the applicant clarify this point, in particular with regards to entrapment and entrainment?
b. Additionally, can the applicant confirm what the estimated volume of abstraction will be required for this development on an annual basis?

2. Nitrogen within the Tees Bay:

c. Can the applicant confirm if there is a plan to monitor the discharges to the Tees Bay and the receiving water quality? If not, Natural England request that a monitoring plan is put in place, as this would allow the applicant's conclusions to be tested. Such a plan should include trigger points and actions for if nitrogen levels are higher than shown in the modelling.

3. Existing Pipe Modification/Maintenance

d. Can the applicant confirm if there is there the potential for invasive works in Coatham Dunes to modify or maintain the existing discharge pipe? Or if the possibility of such works can be excluded.

4. In Combination assessment (TN in the Tees Bay)

e. In previous correspondence with the applicant, it was indicated that an in-combination assessment of nitrogen impacts in the Tees Bay was not possible because the applicant was waiting for data from the Environment Agency? Can you confirm if this is still the case or if this assessment has now been made?

Informative Points to Applicant

1. Abstraction:

a. The applicant could consider abstraction-point mitigation for nitrogen, if mitigation is required.

2. SUDS:

b. Maximising the use of on-site SUDS may further reduce the nutrient and chemical content of the discharge.

3. Fire Water

c. We would expect a construction phase and operational phase site pollution plan to include consideration of the discharge of fire water and mitigation measures to prevent adverse impacts in the case of fire water being discharged to the adjacent designated sites.

Best wishes,
[redacted]

[redacted]
Senior Adviser – Strategic Plans for Places

[redacted]

www.gov.uk/natural-england

<< OLE Object: Picture (Device Independent Bitmap) >>

We now offer free and chargeable advice to land owners and managers planning works on Sites of Special Scientific Interest through SSSI Advice Service.

To help Developers consider the environment Natural England offers two chargeable services:
- the Discretionary Advice Service (DAS) which can provide advice on planning/licensing proposals;
- the Pre-submission Screening Service (PSS) for European Protected Species mitigation licence applications.