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DWD

69 Carter Lane
London
EC4V 5EQ

Mr John Wheadon
Head of Energy Infrastructure Planning Delivery
Department for Energy Security & Net Zero
3 - 8 Whitehall Place
London
SW1A 2AW

By email: netzeroteessideproject@planninginspectorate.gov.uk

Dear Mr Wheadon

APPLICATION REF: EN010103 – THE NET ZERO TEESIDE PROJECT

LAND AT AND IN THE VICINITY OF THE FORMER REDCAR STEEL WORKS SITE (TEESWORKS SITE), REDCAR AND IN STOCKTON-ON-TEES

I write on behalf of the Applicants, Net Zero Teesside Power Limited and Net Zero North Sea Storage Limited, in respect of the Secretary of State's letter dated 30th November 2023 relating the Net Zero Teesside Project (the NZT Project).

The Secretary of State's letter dated 30th November 2023 referred to the Applicants' letter dated 6th October 2023 and response to representations from Climate Emergency Policy and Planning (CEPP) sent to the Secretary of State on 6th and 12th September 2023 and requested that:

1. the Applicants respond to CEPP's statement that the figure of 16,782,184 tCO₂e for onshore operational emissions (Table 3-1) is that which is remaining **after** the 90% carbon capture assumption, and that subtracting carbon captured again (in Table 3-4) double counts the reduction, resulting in a calculation error; and that
2. the Applicants should respond with clarification in this regard and, if necessary, correct and update their assessment of GHG emissions and evaluation of significance in [REP6-123].

The Applicants' response to the above points is provided below.

1.0 INTRODUCTION

- 1.1.1 The Secretary of State for the Department of Energy Security and Net Zero (the Secretary of State) published a Consultation Letter on 7th August 2023 in respect of the Net Zero Teesside DCO Application. Climate Emergency Policy and Planning (CEPP) submitted a response to this letter on 6th September 2023 (the CEPP response).
- 1.1.2 The Applicants have addressed and responded to the CEPP response in their post-examination submission letter of 6th October 2023 (the October letter). On 30th November 2023 the Secretary of State published a request for further information in relation to the October letter (the RFI).

1.1.3 The RFI addresses two issues, included for completeness below:

- a. *“In a letter dated 6 October 2023 and in response to representations from Climate Emergency Policy and Planning (CEPP) sent to the Secretary of State on 6 and 12 September 2023, the Applicants revised their figures in Table 3 of Appendix 6 to the addendum submitted to the Secretary of State on 4 August concerning the Environmental Statement for the Wider Net Zero Teesside Project. These figures show the contextualisation of residual operational emissions compared to the relevant Carbon Budget Delivery Plan sectoral carbon budgets. As a result of the figures being revised, the estimated residual emissions and percentage contributions for the Power Sector have all increased.”* (paragraph 1)
- b. *“In the same letter the Applicants responded to concerns raised by CEPP (in paragraphs 4.4 and 4.5 of CEPP’s letter of 6 September 2023) regarding a double counting error in [REP6-123]. The Secretary of State does not consider that the Applicants’ response adequately addresses the potential double counting error identified by CEPP. Specifically, the Applicants should respond to CEPP’s statement that the figure of 16,782,184 tCO₂e for onshore operational emissions (Table 3-1) is that which is remaining after the 90% carbon capture assumption, and that subtracting carbon captured again (in Table 3-4) double counts the reduction, resulting in a calculation error. The Applicants should respond with clarification in this regard and, if necessary, correct and update their assessment of GHG emissions and evaluation of significance in [REP6-123], and otherwise, accordingly.”* (paragraph 2)

1.1.4 The first issue concerns the proportion of projected Power Sector emissions in the Carbon Budget Delivery Plan (CBDP) as published by the UK Government. The Applicants acknowledge that the earlier omission of Transport and Storage unavailability figures in their submission of 4th August resulted in this proportion being too low. The revised proportions included in the October letter address this. The Applicant further notes that the UK Government has stated in paragraph 19 of the CBDP that the sectoral figures shown in Table 2 of the CBDP are *“only projections and should not be interpreted as hard sectoral policy targets”*. The increased proportion of these projections do not materially affect the overall GHG assessment, or alter the evaluation of significance.

1.1.5 In Section 2 of this response, the Applicants address the second issue which relates to CEPP’s suggestion that there has been “double counting”. The existing data provided in the **Cumulative Onshore and Offshore GHG assessment [REP6-123]** are presented in this submission in such a way as to clarify the overall GHG impact of the NZT Proposed Development and the NEP Project, address any misunderstanding of that data and to confirm that there has been no double counting of emissions data by the Applicants.

1.1.6 Section 3 provides confirmation that the existing Evaluation of Significance is unchanged and supported by the contents of this response.

2.0 NO DOUBLE COUNTING CONFIRMATION

2.1.1 The Applicants presented whole life GHG emissions data in Table 3-4 of the **Cumulative Onshore and Offshore GHG assessment [REP6-123]** submitted in August 2022 during Examination. CEPP has suggested that the Applicants’ data in Table 3-4 contains a ‘double counting’ error (see CEPP submission dated 6th September 2023). The Applicants responded to CEPP’s suggestion in Section 3.0 of the October letter.

- 2.1.2 In the RFI the Secretary of State seeks further assistance in understanding why there is no double counting error, and specifically a response to CEPP's suggestion as to whether the deduction of carbon captured from figure of 16,782,184 tCO₂e for onshore operational emissions in Table 3-4 of [REP6-123] "*double counts the deduction*".
- 2.1.3 In this response, the Applicants confirm that while there has been no double counting in their assessment at any stage, including in Table 3-4 of REP6-123, it is acknowledged that the presentation of the cumulative data in that submission was insufficiently clear. In order to assist the Secretary of State's understanding of the overall GHG impact of the NZT Power Station and NEP Project, the Applicants have therefore presented the existing data in a simpler and clearer form.
- 2.1.4 The individual data points presented in this submission and included in **Table 1** and **Table 2** below are taken directly from the Cumulative Onshore and Offshore GHG Assessment [REP6-123]. No new data relating to emissions sources or storage have been introduced in this submission, nor any omitted. But as noted above, they are presented here in a simpler format for ease of interpretation and to avoid any potential for confusion or perceptions of double counting.
- 2.1.5 Unlike Table 3-4 of [REP6-123], **Table 1** and **Table 2** below present emissions and storage data separately. The presentation of data in this submission also differs from that in [REP6-123] in two other ways. Firstly, it includes data relating to all estimated carbon stored via the NEP Project, whether from the NZT Power Station or from third party emitters within the Teesside cluster. The Applicants note that data relating to storage from third party emitters is subject to a greater degree of uncertainty compared to corresponding storage from the NZT Power Station, but it is all included here for completeness.
- 2.1.6 Secondly, emissions to the atmosphere presented here explicitly include estimated additional emissions that may result from periods of unavailability of the Transport and Storage (T&S) system. This T&S unavailability data has been applied both to emissions from the NZT power station and from third party industrial emitters. Operation of the NZT Power Station will be subject to the requirements of its environmental permit.
- 2.1.7 Tables 3-1, 3-2 and 3-3 from [REP6-123] are replicated in full in Section 4.0 below, showing how individual data points from that submission have been re-presented in **Table 1** and **Table 2** below. No data from [REP6-123] relating to emissions to the atmosphere or to carbon in long-term storage have been added or omitted in this submission.

Table 1: Summary of estimated cumulative net whole-life emissions to the atmosphere

Development	Phase	GHG emissions (tCO ₂ e)
Onshore Construction and Operation	Construction (4 years)	76,012 ¹
	Operation (25 years)	16,782,184
	Total Onshore	16,858,196
Offshore Construction and Operation	Construction (3 years)	324,699
	Operation (25 years)	30,988
	Decommissioning	1,721
	Total Offshore	357,408
T&S unavailability	NZT Power Station	3,592,523
	Teesside 3 rd party industrial emitters	2,632,500
	Total T&S unavailability	6,225,023
Whole life GHG emissions		23,440,627

2.1.8 The total atmospheric emissions figure summarised in **Table 1** is consistent with the whole life GHG emissions figure of 20,808,127 tCO₂e in Table 1 on page 22 of the CEPP response, with the sole exception that the CEPP total emissions figure does not include T&S unavailability from third party emitters of 2,632,500 tCO₂e and the figure presented in **Table 1** does.

2.1.9 As explained in the October letter, the Applicants consider that these emissions to the atmosphere should be viewed not only in isolation, but also in the context of the overall carbon storage likely to be achieved through use of the offshore element of the NEP Project. Net carbon storage for the NEP Project is summarised in **Table 2** below. These data also take account of estimated T&S unavailability totals for both the NZT Power Station and third party industrial emitters. Total lifetime carbon storage from the power station and from other emitters in the Teesside cluster are estimated at over 92 million tonnes CO₂e. Data presented in **Table 2** replicates Table 3-3 of the **Cumulative Onshore and Offshore GHG Assessment [REP6-123]** included in Section 4.0 below.

Table 2: Summary of estimated net carbon storage

Development	Phase	GHG emissions (tCO ₂ e)
NZT Power Station	Carbon captured	53,364,418
	<i>T&S unavailability</i>	<i>3,592,523</i>
	Net carbon storage	49,771,895
Teesside 3 rd party industrial emitters	Carbon captured	45,000,000
	<i>T&S unavailability</i>	<i>2,632,500</i>
	Net carbon storage	42,367,500
Cumulative net carbon storage		92,139,395

¹ The Applicants recognise that the data presented in the **Cumulative Onshore and Offshore GHG Assessment [REP6-123]** and restated here did not include a figure for onshore decommissioning. As noted in paragraph 21.3.63 of **Chapter 12 Climate Change of the ES [APP-103]**, data required to estimate this impact was not available, but it has been provisionally estimated to be commensurate with emissions from the construction phase, i.e. c. 76,012 tCO₂e. This omission is not material to the cumulative GHG assessment and has no bearing on the evaluation of significance.

2.1.10 Total emissions to the atmosphere, shown in **Table 1**, and total net carbon storage figures, shown in **Table 2**, are presented separately to avoid any perception of double counting. There is no overlap between the data presented in these tables, nor are any identified emissions sources omitted.

2.1.11 By presenting existing GHG data in such a way as to keep emissions to the atmosphere entirely separate from carbon in long term storage, the Applicants have sought to address the concerns of CEPP and respond directly to the request for clarification from the Secretary of State. The Applicants recognise that the earlier aggregation of emissions and storage data in Table 3-4 was insufficiently clear and inadvertently gave rise to confusion, and therefore invite the Secretary of State to consider instead the presentation of data in this submission.

3.0 EVALUATION OF SIGNIFICANCE

3.1.1 The assessment of significance of GHG emissions from the cumulative onshore and offshore developments is discussed in **Section 3.6** of the **Cumulative Onshore and Offshore GHG assessment [REP6-123]**. This assessment was carried out in accordance with the current IEMA guidance *Assessing Greenhouse Gas Emissions and Evaluating their Significance (2nd Edition)* published in February 2022².

3.1.2 Key points from the IEMA guidance on the evaluation of significance include the following:

- a. 'The crux of significance is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050.'
- b. 'It is down to the practitioner's professional judgement on how best to contextualise a project's GHG impact.'
- c. 'Where the fundamental reason for a proposed project is to combat climate change (e.g. a wind farm or carbon capture and storage project) and this beneficial effect drives the project need, then [the impact] is likely to be significant.'

3.1.3 Overall emissions to the atmosphere summarised in **Table 1** above can be best contextualised against the UK's national carbon budgets, as this represents the only legally-binding trajectory to net zero. Carbon budget totals, as proposed by the Committee on Climate Change, approved by the UK Government and ratified by Parliament, have been set up to and including the 6th Carbon Budget period. No carbon budget totals have been set for the 7th and subsequent budget periods, so it is not possible to contextualise emissions against the net zero trajectory for these periods.

3.1.4 **Table 3** below shows how emissions to the atmosphere from the construction and operation of the NZT Power Station and NEP Project contribute to the 4th, 5th and 6th UK Carbon Budgets.

3.1.5 Emissions totals shown in **Table 3** assume that all construction of the onshore and offshore elements takes place during the 4th Carbon Budget period. Operation of the NZT Power Station and NEP Project is assumed to commence in 2028. Operational emissions from the onshore and

² Institute of Environmental Management and Assessment (2022). *Assessing Greenhouse Gases and Evaluating their Significance*. <https://www.iema.net/resources/blog/2022/02/28/launch-of-the-updated-eia-guidance-on-assessing-ghg-emissions>

offshore elements, and additional emissions resulting from projected periods of T&S unavailability, are assumed to remain constant over the 25 year design life.

Table 3: Estimated emissions to the atmosphere as proportion of UK carbon budget totals

Carbon period	Budget	Carbon Budget (Mt CO2e)	Emissions (t CO2e)	Proportion of carbon budget
4 th (2023-27)		1,950	400,711	0.021%
5 th (2028-32)		1,725	4,607,639	0.267%
6 th (2033-37)		965	4,607,639	0.477%

3.1.6 Table 3 shows that emissions to atmosphere never exceed 0.477% of the UK’s national carbon budgets for periods when a budget has been set.

3.1.7 In addition to a quantitative contextualisation of emissions relative to a suitable trajectory to net zero, any evaluation of significance should also take account of consistency with existing and emerging policy, and the extent to which it reduces emissions whether directly or indirectly compared to the without-project baseline. As is discussed below, the without-project baseline for any new project involving carbon capture and storage is an equivalent, existing installation that provides the same service(s) but without carbon capture and storage.

3.1.8 The IEMA guidance provides examples of significance criteria to assist the practitioner in evaluating the significance of a project’s GHG impact. These criteria are shown in **Table 4** below:

Table 4: Examples of significance criteria

Impact	Description	Significance
Major Adverse	The project’s GHG impacts not mitigated or only compliant with ‘do-minimum’ standards	Significant
Moderate Adverse	The project’s GHG impacts are partially mitigated and partially meet applicable existing or emerging policy goals for projects of this type.	Significant
Minor Adverse	The project’s GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for a project of this type.	Not Significant
Negligible	The project’s GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such as radical decarbonisation or net zero achieved well before 2050.	Not Significant
Beneficial	The project’s net GHG impacts are below zero and it causes a reduction in atmospheric concentration, whether directly or indirectly compared to the without project baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.	Significant

- 3.1.9 The NZT Power Station and NEP Projects are fully consistent with existing UK Government policy as it relates to the generation of low-carbon electricity and the role of carbon capture and storage in support of the UK’s transition to net zero. This is set out in the **Project Need Statement [AS-015]**, the updated **Planning Statement [REP1-003]**, and in the Applicants’ comments on the revised NPS noted in their recent letter to the Secretary of State dated 28th November 2023.
- 3.1.10 As discussed in Section 3.6 of the **Cumulative Onshore and Offshore GHG assessment [REP6-123]**, the significance of a project can be viewed in isolation, but is more properly seen in the wider context, and in particular taking account of the ‘without project’ baseline as discussed in the IEMA guidance document.
- 3.1.11 When viewed in isolation, the NZT Proposed Development and NEP Project could be viewed on the basis of their estimated net emissions to the atmosphere of 23.4 MtCO₂e as summarised in **Table 1** above. The Proposed Developments “*would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for a project of this type*”. On this basis, their net GHG impact could be evaluated as **Minor Adverse** and therefore **Not Significant**.
- 3.1.12 The Proposed Developments should however be assessed in the light of the wider energy system that they are an integral part of. As noted above, the IEMA guidance specifically requires that the without project baseline be taken into account when evaluating significance.
- 3.1.13 In this instance, the without project baseline can reasonably be assumed to include an existing gas-fired power station without carbon capture and storage. The onshore element of the Proposed Development will enable such existing, unabated, gas-fired generating capacity to be displaced in support of the UK’s ongoing transition to a low-carbon power sector, and consistent with delivery of the UK’s carbon budgets and 2050 net zero target.
- 3.1.14 Operational emissions from an unabated gas-fired power station are not quantified here. But it is clear that an installation with no carbon capture fitted will have direct emissions that are an order of magnitude greater than those from an equivalent power station from which at least 90% of the carbon dioxide is captured. Indirect, upstream emissions from the supply of natural gas to each power station will be the same in each case.
- 3.1.15 The NEP Project offshore element will facilitate not only the long term storage of a large majority of emissions from the Net Zero Teesside Power Station, but will also enable a large amount of carbon emissions from third party emitters to be stored. As shown in **Table 2** above, the offshore element will enable the long term storage of over 92 MtCO₂e over its design life.
- 3.1.16 As noted in **Table 4** above, the IEMA guidance offers the following text as a description of a project with a Beneficial effect: “*The project’s net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without project baseline*”. As noted above, it is reasonable and appropriate for the Applicant to assume that the without project baseline would include an existing gas-fired generation without carbon capture and storage that the Proposed Development is likely to displace.
- 3.1.17 It is also reasonable and appropriate, therefore, to conclude that the overall GHG impact, at a cumulative level, would be **Beneficial** and **Significant**. This evaluation of significance remains the

same as that shown in the **Cumulative Onshore and Offshore GHG assessment [REP6-123]** and is unaffected by the presentation of data in this submission.

4.0 APPENDIX 1 – ANNOTATED DATA TABLES FROM CUMULATIVE ONSHORE AND OFFSHORE GHG ASSESSMENT [REP6-123]

4.1.1 To assist the Secretary of State in the decision-making process, Tables 3-1, 3-2 and 3-3 from the Cumulative Onshore and Offshore GHG Assessment [REP6-123] are replicated here, with annotations to show how individual data points are used in **Table 1** and **Table 2** above.

4.1.2 Table 3-1 provides details of emissions resulting from the construction and operation of the onshore element including the NZT Power Station. Table 3-2 shows the corresponding data for the offshore element, while Table 3-3 shows all carbon storage from both the NZT Power Station and third party industrial emitters.

Table 3-1 from [REP6-123]: Onshore GHG emissions

Onshore GHG emissions	Activity	GHG Emissions (tCO ₂ e)
Construction	Embodied carbon of material and products	64,170
	Material and product transport	2,974
	Electricity use	176
	Onsite fuel use	3,755
	Waste disposal	65
	Workers commuting	4,873
	Total construction emissions over construction duration	76,012
	Annualised	19,003
Operation	Electricity usage	11,779 ³
	Uncaptured direct emissions from combustion of natural gas.	5,929,380
	Well to Tank emissions from upstream supply of natural gas.	10,101,668
	Waste disposal	308,892
	Workers commuting	7,922
	Materials	392,506
	Materials transport	30,037
	Total operation over 25-year period	16,782,184
	Annualised	671,287
Total Onshore GHG Emissions	16,858,196	

4.1.3 Data in shaded cells from Table 3-1 have been included in **Table 1** above.

³ Updated from ES to reflect grid decarbonisation

Table 3-2 from [REP6-123]: Offshore GHG emissions

Offshore GHG emissions		Activity	GHG Emissions (tCO ₂ e)
Offshore Construction	Embodied carbon of materials & products	Seabed infrastructure	702
		Flow Lines	3,500
		Teesside Pipeline	126,400
		Power & communications cables	4,100
		Wells	1,950
		Total embodied carbon from material & fabrication processes	136,652
	Transport of materials to site		14,892
	Construction activities	Vessel emissions	172,852
		Well water washing	303
		Total construction activities GHG emissions	173,155
Total Offshore Construction emissions (3 years)			324,699
Offshore Operations	Vessel emissions	28,196	
	Fugitive emissions	2,792	
Total Operational emissions (25 years)			30,988
Decommissioning	Vessel emissions	1,721	
Total Decommissioning			1,721
Total Offshore GHG emissions			357,408

4.1.4 Data in shaded cells from Table 3-2 have been included in **Table 1** above.

Table 3-3 from [REP6-123]: Carbon Capture Data

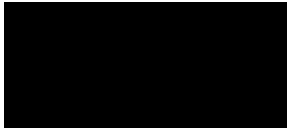
Development	Phase	GHG Emissions (tCO ₂ e)
NZT Power station	Carbon captured	-53,364,418
	T&S unavailability	3,592,523
	Overall carbon storage	-49,771,895
<i>Teesside 3rd party industrial emitters (not included in cumulative assessment)</i>	<i>Carbon captured</i>	<i>-45,000,000</i>
	<i>T&S unavailability</i>	<i>2,632,500</i>
	<i>Overall carbon storage</i>	<i>-42,367,500</i>

4.1.5 All data from Table 3-3 have been included in **Table 2** above. Data in shaded cells have also been included in **Table 1** as they are included in overall emissions to the atmosphere.

4.1.6 This appendix demonstrates that all data included in the **Cumulative Onshore and Offshore GHG Assessment [REP6-123]** has also been provided, in a simpler form, in this submission.

I would be grateful if you could confirm receipt of this submission.

Yours sincerely,



Geoff Bullock
Director – Head of Planning
DWD – on behalf of NZT Power Limited & NZNS Storage Limited