H2Teesside Project

Planning Inspectorate Reference: EN070009

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

The H2 Teesside Order

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Planning Act 2008

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1.0 INTRODUCTION

1.1 Background

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

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

1.2 The Purpose and Structure of this Document

1.2.1 This document provides the comments of the Applicant in response to the submissions made by Interested Parties at Deadline 6A of the Examination (22 January 2025).

1.2.2 The responses do not respond to submissions made in relation to the progress in discussions on Protective Provisions. An update on these matters is provided in a separate Deadline 7 submission.

2.0 RESPONSE TO DEADLINE 6 SUBMISSIONS

Table 2-1: Response to Deadline 6A Submissions

PARTY	SOURCE DOCUMENT(S)	IP COMMENT AT DEADLINE 6A	APPLICANT RESPONSE
National Gas Transmission (NGT)	Written summaries of submissions at CAH2 and Protective Provisions [REP6a-032]	NGT suggested that there had been a lack of engagement from the Applicant since CAH2. NGT consider that the position on the PPs in the NZT DCO is an anomaly and that the PPs in the H2T DCO should provide for: • NGT's consent being required for the use of DCO land powers by the Applicant; • the PPs should override any private agreement relating to apparatus; • it should be NGT's sole discretion as to whether it assists the Applicant in delivering rights and facilities for any alternative apparatus; and that NGT should not be required to substantiate any cost or compensation it seeks under the PPs indemnity.	The Applicant has been continuing to negotiate protective provisions and a side agreement with NGT. There are a small number of commercial matters relating to this negotiation that remain outstanding, including in relation to the use of DCO land powers by the Applicant. Since CAH2, the Applicant has considered these outstanding matters and communicated an updated position to NGT which was discussed at a meeting with NGT on 4 February 2025. This includes that the Applicant does not agree on the removal of the principle of the final two bullet points. Not only is no provision in these respects not a standard approach for statutory undertakers in general terms, it is not a standard approach for NGT on other made DCOs, including Heckington Fen, A1 Morpeth to Ellingham, Hynet CO2 pipeline and the A66 Northern Trans Pennine Project, which all include some form of provision dealing with these issues. It is for NGT to explain what specifically about the Proposed Development means these provisions should not apply. The Applicant is currently updating the protective provisions and side agreement to reflect this discussion. These updates will also address the other issues identified in NGT's comment at Deadline 6A.
National Grid Electricity Transmission (NGET)	Written summaries of submissions at CAH2 and response to action points. [REP6a-033]	NGET raise concerns in respect of: • Engagement between the Proposed Development and NGET's Saltholme Substation expansion plans. • Applicant's challenge of NGET's engineering justifications • If Change 4 is brought forward • Alternatives considered by the Applicant	The Applicant notes the following; • With regards to engagement and consultation with NGET, the Applicant has engaged with NGET as early as August 2022 and has remained in contact with NGET since then, including the statutory consultation that the Applicant held before submitting its DCO application. It's the Applicant's understanding that NGET do not dispute the fact that the Applicant was not informed of any expansion plans by NGET until Jun 2024. The Applicant has been trying to get further detail about these expansion from NGET since Jun 2024, however, the first time that any drawings were shared was as part of NGET Deadline 5 written submissions. Moreover, since Jun 2024 until very recently NGET had been refusing the Applicant any access to the site. Timely sharing of any drawings and site access could have led to earlier development of the "compromise solution". • The Applicant had been focusing its technical resources on progressing the "compromise solution" with NGET's technical team instead of debating the Engineering report in order to best respond to an engineering challenge that was not previously present. • This work was progressing at pace until on 4th February 2025 NGET abruptly informed the Applicant of their unilateral conclusion that the

PARTY	SOURCE DOCUMENT(S)	IP COMMENT AT DEADLINE 6A	APPLICANT RESPONSE
			"compromise solution" does not work for NGET. Following this, the Applicant's technical team are now pulling together a report that challenges NGET's conclusion with a view to submitting this into the examination as soon as possible. • The Applicant has now submitted Change 4 formally into the examination. It should be made clear that this is a less optimal (but still deliverable) design compared for the DCO Application and this late design change has been made in the spirit of creating space for the two developments to co-exist, in the context where one of those developments was not taking place when pre application scheme development for H2Teesside was taking place. • The Applicant has, as part of the technical discussions, explained the alternatives it had considered and why it has discarded them to NGET. This is also explained in the Second Change Application Report. The Applicant will also include this information in its report mentioned above to be submitted into the examination.
South Tees Group	Written summaries of January Hearings [REP6a-037]	STG raise concerns in respect of: • the Phase 2 Order limits; • clash with NatPower; • corridor widths and Protective Provisions; and • Requirement 33.	The Applicant notes the following: • In respect of the Phase 2 Order limits, its position was set out in its Summary of Oral Submissions at CAH2 (REP6A-018). However, following further discussion with STG, the Applicant has made the decision to reduce the Order limits on the Main Site – this is Change 5 as described in the Second Change Application Report submitted at this Deadline. That Change Report explains how remaining land outside of the Main Site on Phase 1 will not sterilise STG's development aspirations for the Teesworks Site, • Change 1, as described in the Second Change Application Report, removes the overlap with the NatPower BESS site. • It is not standard practice for a DCO promoter to provide a note to explain the flexibility sought for every square metre of a DCO application. The compelling case in the public interest for the Proposed Development is based on the delivery of hydrogen, via pipeline, to offtakers across Teesside, and sufficient land is therefore required to ensure that these nationally significant pipelines can be delivered. The Order Width Explanatory note explains key pinch points that have led to particularly large limits of deviation, however it is also the case that much of the logic in that note applies generally across Teesworks – given industry standard easement width requirements (including allowing for space and working space) and the constraints of other existing assets and ground conditions in the area (and the Protective Provisions for the asset owners/operators in the DCO), the Order limits account for the flexibility required to ensure that the nationally significant pipelines can be delivered without being unduly constrained. The Applicant considers that the Protective Provisions for STG's benefit in the draft DCO currently

PARTY	SOURCE DOCUMENT(S)	IP COMMENT AT DEADLINE 6A	APPLICANT RESPONSE
			allow for this, but continues to work with STG to develop a mutually accepted set of provisions, as summarised in the Protective Provisions statement also submitted at Deadline 7. • Requirement 33 was updated at Deadline 6A to account for STG's comments. The Applicant considers that these changes should resolve STG's outstanding concerns on this matter.

3.0 RESPONSE TO NATURAL ENGLAND

Table 3-1: Response to Natural England's Deadline 6A Submission

REF NO:	APPLICANT'S D5 RESPONSE	NATURAL ENGLAND'S COMMENTS AT DEADLINE 6A	APPLICANT'S D7 RESPONSE
NE2: Impact Assessment on Birds	A new bird count methodology has been developed by the Applicant and reviewed by Natural England on multiple occasions. Natural England has provided comments and advice throughout this process. Following the establishment of a final version of the methodology, the Applicant is now progressing with the revised calculations and assessment, which are planned for release at Deadline 6A as part of the updated version of the HRA. An appendix detailing the number of birds potentially disturbed during the programmed works across the Proposed Development will be included in a revised HRA by Deadline 6A to provide more clarity. Assessment of visual and noise disturbance impacts on the waterbird assemblage, particularly where works in multiple locations could occur simultaneously, using the NE agreed revised bird count methodology will be included in a revised HRA by Deadline 6A	Natural England has reviewed the draft versions of the methodology but is yet to be consulted on the final outputs. We will provide comments on this at Deadline 7.	Annex J of the updated Report to Inform HRA submitted at D6A [REP6a-012] contains the assessment of impacts upon the waterbird assemblage of the Teesmouth and Cleveland Coast SPA/Ramsar, accounting for project works phases, and concludes that there will be no adverse effect on site integrity.
NE3: Functionally Linked Land (FLL)	The Applicant has added further consideration of effects to functionally linked land to the Deadline 5 version of the HRA: • Paragraph 4.2.6-7 and Figure 16 a and b discuss the extent of permanent habitat loss, including specific locations. • Paragraphs 6.2.3 to 6.2.13 provide further analysis of these impacts by sector. Habitat use by birds within and outside of the SPA can be divided into roosting and "other behaviours", which are predominantly feeding and loafing[1]. AECOM's count sectors were designed with the intention of providing baseline data for key habitats within the Teesmouth and Cleveland Coast SPA and all land with the potential to provide a supporting function to the SPA that lies outside the SPA boundary and that might be affected by construction and/or operation of the Proposed Development. A further objective of the surveys was to provide baseline data of a sufficient spatial extent to enable robust assessment of potential effects of the Proposed Development on birds irrespective of any association with designated sites. Thus, the presence of a bird count sector outside of the SPA does not necessarily confirm a functional linkage exists at that location, but for the sake of completeness, the report to inform the Habitats Regulations Assessment by default considers the occurrence of birds in every count sector. The functionally linked land marked up on Figure 16b was determined through analysis of the baseline bird count data to identify areas of suitable habitat that overlap the Proposed Development where this would result in habitat losses, or	**Permanent losses** Natural England disagrees with ruling out the main site as functionally linked land. This is because the site supports significant numbers of SPA birds for an essential behaviour (roosting). We acknowledge that the main site will not be of optimal habitat quality, however the site supports significant bird numbers and it is therefore our opinion that it is regarded as functionally linked land. We advise that the RtiHRA[2] assesses the significance of this loss in terms of the wider landscape and other roosting habitat available. We advise that further information is required to inform the assessment of the permanent losses of land on either side of the Tees Crossing. We are aware that the Applicant is intending to submit a revised version of their HRA on 22/01/25 which may contain this information. We intend to review this and discuss with the Applicant if further information is required. **Temporary Loss Functionally Linked Land** Natural England welcomes the quantification of areas of land	The Applicant has considered the potential for loss of functionally linked land at Stage 1 of the updated Report to Inform HRA [REP6a-012] process (refer to Paragraphs 4.2.8 to 4.2.10). Table 4-1 summarises the locations where the qualifying bird species from the Teesmouth and Cleveland Coast SPA and Ramsar were recorded. Where qualifying bird species were recorded within land, this land was considered as potential functionally linked land. Temporary and permanent loss of functionally linked land is taken forward to Appropriate Assessment. Section 6.2 of the Appropriate Assessment discusses permanent loss of functionally linked land. Figure 15 shows the locations of permanent habitat loss. Permanent habitat loss will occur in Sectors 9 and 12 within the Main Site. Based on the count data and the ongoing nature of site clearance and industrial activity within Teesworks, the Applicant does not regard any of the habitats within or immediately adjacent to the Main Site (including Sectors 9 and 12) as being functionally linked to the SPA. Functionally linked land is defined as being critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying feature for which a SAC, SPA or

[1] Loafing is a scientific term applied to bird behaviours not specifically associated with breeding, roosting, feeding or predator avoidance. Loafing birds appear to an observer as being alert but doing nothing.
[2] Report to inform HRA

	that would otherwise be impacted by noise or visual disturbance outside of the SPA boundary and that supported regular occurrence of wetland birds in numbers greater than ones or twos, regardless of their behaviour. Figure 16a and b show the extent of Functionally Linked Land (FLL) that intersects the Proposed Development Site. The Figures also include the following information: • The SPA boundary; • Count sectors surveyed by AECOM; • The Proposed Development Site Boundary; • Wetland bird roosts identified by AECOM's surveys and data supplied by INCA; and • Locations of infrastructure that will result in permanent habitat loss. Permanent habitat losses (AGIs) Based on the count data and the ongoing nature of site clearance and industrial activity within Teesworks, the Applicant does not regard any of the habitats within or immediately adjacent to the Main Site as being functionally linked to the SPA. Land within the Main Site is used primarily by loafing and resting birds on an occasional/opportunistic basis and as such it is not critical to, or necessary for, the ecological or behavioural function of birds, nor is the function and integrity of the SPA dependent on it. Aside from the Main Site, the majority of permanent structures (AGIs) are located within or immediately adjacent to existing infrastructure or are in areas that are already undergoing earthworks or other industrial activity that render the habitat unsuitable for anything other than very occasional opportunistic use by small numbers of water birds. These include AGIs that overlap count sector 13 near the Main Site; an AGI within Navigator Terminal (adjacent to count sector 25), and a location between existing pipe racking and Saltholme East Pool (count sector 24). One location (Cowpen Bewley Woodland Park) is within woodland and therefore is too enclosed for wetland birds (consequently this location was not surveyed for wetland birds). Two locations near Saltholme (within AECOM count sector B1 and adjacent to sector G1) are within open grassland habitat but this is enclosed by a substation, a power station, the A1185 to the north and existing pipe racking to the south and is therefore rendered unsuitable for wetland birds. An AGI on the land between Dabholme Gut (Count Sector 18) and Bran Sands Lagoon (count sector 16) overlaps the location of an occasional roost used by teal and lapwing, which occurred on the margin of the proposed development boundary and the lagoon. **Temporary habitat losses** Based on the approach to identifying functional linkages described above, FLL has been identified within parts of Brinefields east of the A178 (AECOM count sectors 2, G4 and G5); and farmland between Saltholme substation and Cowpen Bewley village south of the A1185 (AECOM count sectors B1 – B6). Observations of bird behaviour in these areas during AECOM's surveys has identified these as important for feeding and loafing birds, with roosts occurring elsewhere (as shown on the Figures).	temporarily lost. We are awaiting further information from the Applicant on the numbers of birds disturbed, areas to be disturbed, expected noise levels and the updated HRA. We will provide more comments on this once we have received all the outstanding information. **Restoration of Functionally Linked Land** Natural England agrees that the proposed restoration of temporary losses of functionally linked land is sufficient. We advise that these measures are secured within the wording of the CEMP.	Ramsar site has been designated. The Main Site is the site of the former Redcar Steelworks which has been demolished and the land remediated under a separate planning consent. After remediation, the habitat will comprise of bare ground / crushed hardcore. Technical Note Assessment of Potential Losses of Functionally Linked Land (FLL) within Terrestrial Habitat at Navigator Terminal contained in Appendix 1 of this document has been produced to summarise the known baseline conditions with respect to the terrestrial habitats within Navigator Terminal, at the western landfall of the Proposed H2 Teesside crossing of the River Tees in order to determine whether any of the habitat losses arising from the proposed development will result in losses of Functionally Linked Land (FLL) for qualifying species of Teesmouth and Cleveland Coast SPA. The note concludes that any losses of terrestrial habitat within Navigator Terminal resulting from H2 Teesside will not constitute losses of Functionally Linked Land for qualifying species of Teesmouth and Cleveland Coast SPA. Land within the Main Site is used primarily by loafing and resting birds on an occasional/opportunistic basis and as such it is not critical to, or necessary for, the ecological or behavioural function of birds, nor is the function and integrity of the SPA dependent on it. As such the land is not considered to be FLL. The ornithology survey reported that black headed gull and herring gull were recorded within Sector 9 at high tide. A peak count of 10 black-headed gulls was recorded in November 2022, a mean frequency of 0.94. This is below 1% of the SPA / Ramsar population. A peak count of 28 herring gulls was recorded in March 2022, with a mean frequency of 2.5. This is above the 1% SPA population threshold. Although the number of gulls recorded in March 2022 exceeded the 1% threshold of the SPA population, the Teesmouth and Cleveland Coast SPA and Ramsar site is designated for non-breeding birds. Since these birds were recorded in March, outside the wintering period, the loss of habitat is unlikely to adversely affect site

	Not all areas within the Proposed Development Site will be directly impacted, and the exact working width will be confirmed at detailed design stage. Based upon a worst-case scenario, the areas of direct temporary loss of FLL during construction (determined by measuring the area within the red line boundary that overlaps the FLL) would be 21.9 ha in total, and this can be sub-divided as follows: • Based on an indicative programme it has been assumed that between Saltholme substation and Cowpen Bewley, up to 14.15 ha of land would be potentially lost between March and September 2027 (7 months) (aligning with the seasonal restrictions already committed to) – this ensures that works take place here during the months in which non-breeding birds are most numerous, specifically to avoid potential effects on nonbreeding SPA birds (noting that these fields were not identified as supporting qualifying breeding species). Therefore, the habitat losses to SPA birds are minimised in this area. • At Brinefields the total area potentially affected is 7.75 ha, however all works will be timed to avoid the non-breeding months, as per Figure 14a, such that potential effects on non- breeding SPA birds are minimised. North of this, as far as the southern Bank of Greatham Creek (within AECOM count Sector G5), the area of FLL habitat lost would be zero, since it does not overlap the Proposed Development Site, however the area identified on the plan is immediately adjacent to the Proposed Development Site where works would potentially be required, in some form, between March and November (as the worst-case scenario 9 months). This area would, however, be screened by closed-board acoustic barriers to control noise and visual disturbance to acceptable levels, therefore potential effects on SPA birds in this area would be adequately controlled. The area measurements provided above are based on losses occurring across the entire red line boundary, where this intersects the functionally linked land identified in the figures, as a worst-case estimate of the potential effects on qualifying species of the SPA. However, actual losses would occur only within the working width, which would be smaller, but cannot be accurately quantified at this stage. **Restoration of FLL following construction** The species recorded using the habitats described above (principally waders and gulls) feed by probing soft ground for invertebrates or other food items below the surface and/or by picking such items off the surface of the substrate. The habitats present in these areas include short sward grassland and arable land in various states of crop rotation from well established crop to recently ploughed ground. The installation of a buried pipeline will require soil to be excavated and stored prior to installation of the pipe, after which the trench will be backfilled. This will create soft, unvegetated surface soils within the working areas that would, regardless of any efforts to restore habitat, provide foraging resources for birds immediately following the construction period. On this basis it is expected that the land would be functional as soon as pipeline installation is completed,		integrity (even if the Applicant's position were not agreed by Natural England, and the land was considered to be FLL). At low tide, a peak count of 6 herring gulls was recorded in Sector 9 in January 2022 (mean frequency of 0.5). This is below 1% of the SPA / Ramsar population. At low tide, a peak count of 40 herring gulls was recorded in Sector 12 in April 2023, with a mean frequency of 5.75. This exceeds the 1% SPA population threshold. However, since the SPA and Ramsar site is designated for non-breeding herring gulls, and the peak count occurred in April, there will be no adverse effect on site integrity (even if the Applicant's position were not agreed by Natural England, and the land was considered to be FLL). In summary, there will be no adverse effect upon the integrity of the Teesmouth and Cleveland Coast SPA and Ramsar as a result of permanent loss of Main Site land. Permanent habitat loss from AGIs is discussed in Paragraphs 6.2.8 to 6.2.13 of the Appropriate Assessment. Temporary loss of functionally linked land is discussed in Section 6 of the Appropriate Assessment. Annex J of the updated Report to Inform HRA [REP6a-012] contains the Assessment of impacts upon the waterbird assemblage of the Teesmouth and Cleveland Coast SPA/Ramsar accounting for project works phases. To secure the restoration of temporary losses of FLL, which NE deems sufficient, the Applicant has secured this commitment within the Outline Landscape and Biodiversity Management Plan (5.9), which will be submitted at Deadline 7.

	construction teams have been demobilised and all construction/working areas have been removed.		
NE5: Noise Impact Assessment	The revised bird count methodology developed in relation to NE2 will be used alongside noise contours showing the noise attenuation provided by the proposed barriers to update the HRA by Deadline 6A. The LA Max contours from impulsive noise are being produced and will be considered in the updated the HRA submitted by Deadline 6A.	Natural England has discussed this matter with the Applicant but is yet to review the final modelling outputs. We will review this and provide comments at Deadline 7.	Annex K of the updated Report to Inform HRA [REP6a-012] contains the Response to Natural England Relevant Representation NE5 regarding L_{Amax}. The L_{Amax} contours from impulsive noise are shown in Figures K.1a to K.6d. Annex L of the updated Report to Inform HRA [REP6a-0012] contains the Response to Natural England Relevant Representation NE5 regarding modelling of acoustic barriers to provide confidence to NE on the modelling parameters used to generate the noise contours.
NE6: Visual Screening	As outlined in NE5, the Noise Technical Note will be submitted by Deadline 6A, providing the noise contours for the proposed barriers including the extended noise and visual barrier at Greatham Creek. Additionally, as noted in NE2, the reviewed bird count methodology—developed with Natural England prior to Deadline 5 through ongoing discussions—will be applied alongside the noise contours, demonstrating the attenuation and protection offered by the proposed barriers. Together, these will inform the updated HRA, which will be submitted by Deadline 6A. If further updates to the noise and visual assessment are required, we will continue liaising with Natural England to fully resolve the matter.	Natural England will review this and provide comments at Deadline 7.	Annex K of the updated Report to Inform HRA [REP6a-012] contains the Response to Natural England Relevant Representation NE5 regarding L_{Amax}. The L_{Amax} contours from impulsive noise specific to Greatham Creek are shown in Figures K.4b (Setup/Anchors for the Greatham Creek Trenchless Crossing Drilling Site LAmax Noise Contours with Mitigation), K.5a (Breaking Concrete, LAmax Noise Contours AGI 1 With No Mitigation), and K.6a (Breaking Concrete, LAmax Noise Contours AGI 1 With Mitigation). Annex L of the updated Report to Inform HRA [REP6a-0012] contains the Response to Natural England Relevant Representation NE5 regarding modelling of acoustic barriers to provide confidence to NE on the modelling parameters used to generate the noise contours. With regards to the point on NE2, please refer to the Applicant's response at NE2 of this document. With reference to the original NE06 point, indicative locations for screening have been reviewed and provided in Figure 14a and 14b within the D6A Report to Inform HRA [REP6a-012].
NE7: Quantification of operational visual disturbance sources	Further to the response provided at D2, the Applicant makes reference to NatureScot Research Report 1283 - Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species (Goodship and Furness, 2022) 2 . This review notes that an assessment of bird disturbance needs to be on a site-specific basis, taking into account the context.	Natural England acknowledges that there are current levels of visual and noise disturbance at Teesside due to the industrial nature of the area. However, we do not agree with the Applicant's approach that	Section 4.2.25 of the updated Report to Inform HRA [REP6a-012] discusses noise disturbance and Table 4-3 provides the baseline sound levels recorded. Baseline noise levels were not recorded from within the Main Site itself as the demolition of the former Redcar Steelworks was being undertaken and access was

	It was noted in that report that all bird species assessed in the review were, to some degree, likely to habituate to disturbance and were therefore likely to vary in their response to human disturbance in different areas. The report further notes that if birds are present in a highly disturbed area, then it is likely that these birds will show a high degree of habituation to disturbance and tolerate a shorter disturbance distance (referencing Keller, 1989; Baudains and Lloyd, 2007; Ellenberg et al., 2009; Ross et al., 2015; Vincze et al., 2016). As outlined by the Applicant at D1, the land within and around the Site has been subject to high levels of anthropogenic disturbance for many years. As such, the Applicant concludes that it is appropriate to screen out visual disturbance during operation as no LSE will occur due to habituation and because noise levels during operation have been modelled and indicate that this will be within acceptable levels. The Applicant is continuing to discuss this point with Natural England to reach agreement.	operational noise and visual disturbance on SPA birds can be ruled out on the grounds that the birds will be habituated to the existing noise and activity. We advise that additional information is provided on the scale and nature of the operational noise and visual disturbance, how this compares with baselines levels of disturbance, and how the development has been designed in order to avoid impacts on SPA birds. The Applicant has already provided information on the sightlines impacts on Blast Furnace Pools which may help inform this. In addition, we advise more information is provided on the operational and maintenance works in close proximity to the SPA, in particular the River Tees crossing, due to the proximity to the site.	restricted for safety reasons (planning application ref R/2021/0608/PND). Other activities which have been taking place within the Main Site include land remediation (including the use of concrete breakers). As such, noise within the Main Site has been considerably higher during remediation works than would arise from operation of the Proposed Development. Sections 4.3.1 to 4.3.5 discuss noise and visual disturbance during operation. Disturbance within the Main Site will be limited once the Proposed Development becomes operational. Typical activities will include the arrival and departure of site staff. The average daily operational traffic will comprise fewer than 15 Heavy Goods Vehicles (HGVs) and approximately 50 light vehicles during regular operations [REP6a-012]. Some external lighting would be required to ensure that the Hydrogen Production Facility can operate safely at all times. This is defined in the Indicative Lighting Strategy (Operation) [APP-038]. It would be at the appropriate luminance required to provide safe working conditions. Lighting would be designed, positioned and directed to prevent or minimise light disturbance to sensitive receptors (human and ecological) and low-energy fittings would be used where possible. Paragraph 4.3.3. states that operational requirements in the pipeline corridor will be limited, requiring occasional arrival by LGV and walkover visual inspection. Plant or equipment would, in the main, not be required, but there may be isolated incidents where unplanned/emergency repair is required where they may be necessary. Such isolated activities would not lead to likely significant effects. As such, noise and visual disturbance during operation is anticipated to be lower than that historically or currently experienced within the site and no LSE can be concluded.
NE12: Sources of Operational Pollutants	Overall: All emissions from the plant will be controlled by the Environment Agency via an Environmental Permit. The Applicant would note that is the appropriate regulatory process for Natural England to provide input on this	We are continuing in our discussions with the applicant regarding NE12 and NE18. We hope to meet with them on Monday 27th January to discuss this	It is understood from the discussion with Natural England on 27th January that Natural England reviewed the description of the closed-cycle process

	aspect. The Applicant has provided responses below to the specific points raised to assist Natural England's understanding in this area. Maintenance: Typically the plant will be shut down when maintenance is conducted on the process systems. Any liquids contained within the plant will be drained and stored for re-use, or removed off site for disposal at end of life. Any unplanned releases will be contained by hard standing within a bunded area, captured into the site closed drains system and won't be released to the environment. Any CO2 venting will be limited and infrequent in nature and conducted in a controlled manner. Unplanned events: In the event of an unplanned shutdown of the plant, hydrogen gas will be routed to the flare. The system includes a mechanism to prevent amines from reaching the flare and instead are recycled into the system. Flaring emissions have been assessed in the Air Quality assessment [APP-060] and [CR1-045]. Inputs/Outputs: Natural gas comes into the plant as the feedstock. Heat, water and oxygen are used to reform the natural gas into hydrogen and CO2. Excess water that cannot be recycled into the process goes to the waste-water treatment plant and is treated prior to discharge via the outfall to sea. CO2 is captured by the amine that is contained within a closed loop system so there are no emissions. Amine is cycled round the process between the carbon capture system and the regeneration system. It is not an output from the system, hence the description as 'closed loop'. CO2 liberated from the regenerated amine is routed onwards to the NEP CO2 pipeline. The plant will be shut down when amine is changed out. The waste amine is contained and taken off site for disposal. The produced hydrogen is routed to storage and onwards to the hydrogen distribution network. The system does not capture 100% of the CO2 resulting from the input gas because the boiler used to generate steam burns a mixture of natural gas and hydrogen without all CO2 removed, and exhaust emissions from this boiler are not captured. Amine waste: Where amine cannot be regenerated and re-used this will be drained from the process and taken off site for disposal. Hence this is not relevant to the Air Quality assessment. Chemical storage: No emissions are anticipated from chemical storage. Again, in the unlikely event of an unplanned release this will be captured by the closed drain system. Waste from pre-treatment of natural gas: Sulphur removed from natural gas will be trapped within removal beds. The filter material used to capture this sulphur will be routinely replaced and the spent material removed and taken off site for disposal.	subject further and will provide updated comments regarding this at Deadline 7.	submitted by the applicant at Deadline 5, as well as the subsequent materials provided during the subject-specific hearing. This includes the diagram summarising the process in Appendix 1 of Summary of Applicant's Oral Submissions at ISH3 [REP6a-019]. In the Applicant's DL5 response to NE12, it was stated that there is no viable pathway for amine emissions to reach the atmosphere. This conclusion is based, in part, on the physical and chemical properties of the amine solution used within the closed-loop process. The amines are present in liquid form and are not volatile, meaning they remain in liquid form even if the process is shut down for maintenance or cleaning. If necessary, the amine solution would be drained from the plant into an enclosed storage system and can be transferred to vacuum tankers for offsite removal. At no stage is the amine solution directly exposed to the atmosphere. Additionally, due to its low vapour pressure, even if exposed to air under environmental conditions, the amine would not rapidly become a gaseous emission. It is possible that some amine could be entrained in gases directed to the flare, but this material would be captured and returned for use in the closed loop or combusted in the flare. The combination of the amine's properties and the design of the process ensures that there is no atmospheric pathway for amines. Consequently, Natural England can be confident that there is no pathway to habitat sites. During discussions, the Applicant also referenced the Environmental Permit for HyNet, which employs a very similar closed-loop method. The Environment Agency recognises the absence of a pathway for amine emissions to the atmosphere, as demonstrated by the lack of emission limit values or monitoring requirements for amine emissions in that granted permit for a similar operation. Under the site operator's Duty of Care obligations and the site environmental permit, existing mechanisms ensure that waste is managed appropriately. The Environment Agency will conduct audits to verify compliance with permit requirements regarding waste

	Major Overhaul: See information provided regarding maintenance above.		and effluent. As is to be expected at this stage of the DCO process, the organisation or site that will be used to recycle or dispose of amine wastes is not yet known. However, Applicant will identify licensed outlets that can accept this waste and are appropriately permitted to handle the relevant EWC code. Please see sections 9.5.86, 9.6.45, 9.3.47 (7th bullet point), and 9.5.77 (relating to the use of vacuum tankers) in Chapter 9 Surface Water, Flood Risk and Water Resources [APP-061]. The matter has been finalised in accordance with Natural England's feedback at Deadline 7.
NE18: Operational Emission of amine and amine degradation products	See response to NE12	See our comments to NE12 above	See response to NE12
NE19: Update in-combination assessment	The Report to Inform HRA has been updated to include the additional projects and will be submitted at Deadline 5. Figure 17 shows the spatial overlap between the boundary of the Proposed Development, the Other Developments and the SPA and Ramsar sites; temporal overlap is inherent within the shortlisting process in the Cumulative Chapter so all Other Developments shown on the figure can be considered to have temporal overlap with the Proposed Development. The spatial / temporal relationship between the Proposed Development and the Other Developments has been considered within the in-combination assessment section of the HRA, as updated at Deadline 5. The locations of bird roosts are shown on Figures 13-A-9, 13-A-10 and 13-A-11, and supporting narrative on these locations is provided in Tables 13A-9, 13A-10 and 13A-11 within the Ornithology Baseline Report. The use of habitats by birds has been considered within the in-combination assessment of the HRA. Impact pathways have been considered along with temporal overlaps, but the Applicant notes that it is not possible to include numbers of birds impacted for the Proposed Development and in combination because data will have been collected at different times, following different methods; this makes them incomparable. This has been discussed with NE on calls.	We note and welcome the presentation of location information for the relevant developments in Figure 17 (RtiHRA). The comments regarding spatial/temporal relationship (see left) are acknowledged and we welcome the precautionary approach whereby all developments are considered to have temporal overlap. It is not clear whether our advice on 18.12.24 has been fully considered e.g. whether, given the approach described (at left), consideration of info at fig 17 (RtiHRA - development locations in relation to SPA and one another), together with Fig 23-1 [REP5-019] showing 'zones of influence' applied for noise, and a consideration of CEMP material for relevant developments – would help to indicate the level of risk of residual noise/visual impacts. However we would emphasise the need for further consideration of NE5 and NE6 (Noise and visual disturbance) in order to establish the scheme's effects 'alone'. This will further inform consideration of in combination effects.	Annex J of the updated Report to Inform HRA [REP6a-012] contains the Assessment of impacts upon the waterbird assemblage of the Teesmouth and Cleveland Coast SPA/Ramsar accounting for project works phases. Annex L of the updated Report to Inform HRA [REP6a-0012] contains the Response to Natural England Relevant Representation NE5 regarding modelling of acoustic barriers to provide confidence to NE on the modelling parameters used to generate the noise contours. Annex K of the updated Report to Inform HRA [REP6a-012] contains the Response to Natural England Relevant Representation NE5 regarding L_{Amax}. The L_{Amax} contours from impulsive noise are shown in Figures K.1a to K.6d. There can be a cumulative effect of noise from multiple sites, but as noise is measured on a logarithmic scale, the combined noise is logarithmically added together. For two equal noise sources there would be a 3 dB increase. Given the generally localised nature of noise effects associated with the construction of each scheme, and provided each scheme complies with assigned noise and

			vibration limits and follows the general guidance contained within BS 5228-1 with respect to noise mitigation and the measures that have been identified as being committed to for those developments within the Report to Inform HRA, it is considered unlikely that significant cumulative construction noise effects will occur. Section 7 of the updated Report to Inform HRA [REP6a-012] presents the in-combination assessment. In combination effects set out in this section have been assessed based upon the project information available on planning portals. However, it should be noted that the Applicant does not have access to detailed and/or up to date construction schedules, predicted noise levels or limits, or data such as bird counts for other developments either at all, or to the level of detail requested, unless these have been published on those planning portals. The Applicant considers that a robust in-combination assessment has been completed and there will be no adverse effect on integrity from the Proposed Development in combination with other plans and projects.
NE26 - Seals	The Applicant will submit a Technical Note by Deadline 6A in response to the two rounds of comments provided by Natural England on 29th October 2024 and 19th November 2024. The Applicant has updated the modelling to provide M-weighted adjusted results. To do this, an M-weighted curve has been generated using data provided by Southall et al. (2019). Values have also been updated to use Eb6 as the estimated ambient sound level at the Greatham Creek noise modelling location (in the absence of baseline noise monitoring). The updated M-weighted modelling indicates that, even without noise abatement barriers in place, the M- weighted SELs at Greatham Creek (104 dB, using Eb6 as the ambient) are 30 dB below the TTS threshold (134 dB, per Southall et al., 2019) in a worst-case scenario. Furthermore, the M-weighted SEL value at Greatham Creek is only 4 dB above the ambient sound level (100 dB), a difference unlikely to be perceptible to seals or sufficient to cause disturbance. However, additional modelling is being explored to consider the change in SEL (using M-weighted noise contours) from the use of noise abatement barriers around the Greatham Creek HDD Venator Site. The addition of noise abatement barriers around the entire HDD site is expected to further reduce the SELs below ambient. The approach to these barriers, and therefore the updated modelling, has been refined. The updated approach using Natural England's methodology, still	Natural England will provide comments on this matter at Deadline 7 once we have had the opportunity to review the Technical Note.	Annex I of the updated Report to Inform HRA [REP6a-012] contains the Second Technical Note produced for response to Natural England Relevant Representation NE26. The matter has been finalised in accordance with Natural England's feedback at Deadline 7.

	highlights the minimal potential for disturbance to seals during the HDD works. Therefore, additional monitoring of noise and seal behaviour before and during the works is not considered necessary.		
NE28: Consideration of ammonia and acid deposition in the traffic assessment	See response to NE10	It is not clear that the impact on the SSSI features has been adequately assessed. The protected features of the SSSI are different to the SPA and includes for example the dune grassland vegetation communities in their own right. The impact on these from N deposition, NOx and ammonia therefore needs to be assessed. This comment relates to the traffic assessment (which was scoped into the HRA - and could potentially result in harm to the SSSI as well). The applicant has confirmed that they will prepare a report on the implications for the SSI and we will comment further at D7 accordingly.	The applicant has prepared Document 8.41 Report to Inform Assessment of Air Quality Impacts on Teesmouth and Cleveland Coast SSSI and submitted it at Deadline 7, which deals with these matters.
NE29: Scope of Pollutants considered in the construction and operational assessments	See responses to NE10 and NE15	As above, it is not clear that a revised assessment in respect of the SSSI has been prepared addressing our earlier comments on the scope of the pollutants. We await the applicant's Report on the implications for the SSSI and will comment further at D7 accordingly.	The applicant has prepared Document 8.41 Report to Inform Assessment of Air Quality Impacts on Teesmouth and Cleveland Coast SSSI and submitted it at Deadline 7, which deals with these matters.
NE31: Impact of pollutants at SSSIs including SSSIs underlying European designations	With regard to impacts on the SSSI, the applicant had meetings with Natural England on 28th November and 4th December. At those meetings the applicant clarified that the dunes at Teesmouth & Cleveland Coast SSSI are calcareous as demonstrated by the presence of calcareous vegetation on the dunes. As set out in Bobbink et al 2022 surveys have indicated that calcareous, iron-rich dunes exhibit co- limitation of nitrogen and phosphorus and that phosphorus limitation is a factor in calcareous dunes and 'may lead to fewer botanical responses in calcareous dunes compared with acidic or decalcified dune sites'. There is therefore a justification for considering that the lowest critical load of 5kgN/ha/yr is less appropriate than a slightly higher critical load of 10 kgN/ha/yr as was used on APIS for calcareous dune systems before the critical loads reported on APIS were updated in 2023. Notwithstanding any change in the critical load applied, the Applicant's view remains that if the total nitrogen deposition rate will remain lower with the Proposed Development consented (even allowing for other plans and projects) than it has been historically it cannot be argued that our scheme will be harming the interest of the SSSI, even by impeding restoration. That is particularly the case given the contribution of the Proposed Development is at the '1% of the upper critical load' level for dismissal as imperceptible	We await the applicant's report on the implications for the SSSI and will submit further comments at D7	The applicant has prepared Document 8.41 Report to Inform Assessment of Air Quality Impacts on Teesmouth and Cleveland Coast SSSI and submitted it at Deadline 7, which deals with these matters.

4.0 RESPONSE TO CEPP'S DEADLINE 6A SUBMISSIONS

4.1.1 CEPP's Deadline 6A submission (REP6a-028) is focussed on two key issues[3]:

- 'securing' a 95% carbon capture rate (Issue One); and
- the interaction of the Hydrogen Production Facility and the carbon capture store and how that is dealt with in the DCO (Issue Two).

4.1.2 This response focusses on those issues.

4.1.3 The Applicant notes CEPP's commentary on the LCHS in section 3.4 but this does not raise any new points of substance. It therefore refers to and relies on its previous submissions in paragraphs 7.1.16 to 7.1.40 of REP5-051 and section 3 of AS-040.

4.1.4 Those submissions explain why the Applicant's approach to assessment is reasonable and robust in the context of the role of the LCHS and LCHA. The assumptions reflect Government policy and compliance with LCHS is a pre-requisite for receiving support under the LCHA, which the Applicant will need to enter into for the Proposed Development. Any DCO Requirement would therefore be a duplication of other controls.

Issue One

4.1.5 CEPP's submissions comment on the status of the EA's Emerging Techniques Guidance document[4] and its status within the permitting system.

4.1.6 For the reasons set out below, the 'status' of this Emerging Techniques Guidance as 'BAT' or 'not BAT' is not relevant to the question of whether the permitting system is the appropriate mechanism to regulate the capture rate. Nor is it likely to affect the percentage capture rate that will be identified in the permit and thus the reasonableness of the assumption made for the purposes of EIA.

4.1.7 The Emerging Techniques Guidance document states that "*When you apply for an environmental permit for this activity, you must tell your regulator whether you are going to follow this guidance".* The Applicant has made clear in its Environmental Permit application that it intends to follow the guidance. In any event the EA has stated in (AS-044) that "*if we decide to grant the permit, we will set conditions in line with our guidance".*

[3] The Applicant sought to address point raised in section 3.3 in respect of Drax in REP5-051. This provided clarity as to which submissions made by CEPP to the Drax examination it had in mind when it referred to similar submissions having been made, namely those submitted at Deadline 9 of that Examination. Those submissions cast doubt on the Applicant's calculation based on an assumed likely capture rate, as CEPP do for the Proposed Development. In that case CEPP argued that: '*I take the precautionary approach that 95% is unproven, and ridiculously optimistic. 90% is also unproven for full production levels of operation, but I base my calculation on it'*. https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010120/EN010120-001518-D9_Climate%20Emergency%20Policy%20and%20Planning_Deadline%209%20Submission.pdf The specific point raised in paragraph 23 of [REP6a-028] concerns whether CEPP's submissions to the Drax examination also sought changes to the draft DCO in respect of capture rate. Having reviewed the material put before that examination the Applicant can confirm that CEPP did not make that specific point in its submissions. It remains the case that neither the examining authority nor the Secretary of State considered it necessary or appropriate to impose any such controls in the Drax case, but it is acknowledged that CEPP did not consider it appropriate to invite them to do so.

[4] EA Guidance: Hydrogen production with carbon capture: emerging techniques

4.1.8 The ExA and Secretary of State can therefore be satisfied that the permitting system will include controls on the operation of the Hydrogen Production Facility designed to achieve an overall capture rate of at least 95%.

4.1.9 As the Applicant has consistently maintained, the permitting regime is the appropriate means of regulating the level of carbon capture and it would be unnecessary and inappropriate in principle to duplicate those controls in the DCO (see e.g. [AS-040] at paras. 1.1.5-1.1.7 and 5.2.1-5.2.25; [REP2-023] (response to EXQ1.5.6), paragraphs 7.1.3 to 7.1.15 of [REP4-014] [REP4-016] at pp.4-5, and [REP6a-019] at Item 7 pp. 10-11) and paragraphs 7.1.3 to 7.1.15 of [REP4-014]. If that were done, it would either introduce inconsistency between the controls set by the two regulatory regimes or (if the controls are identical) serve no proper purpose and thus be entirely otiose. When this issue was discussed at ISH3, leading counsel for the Applicant re-emphasised this key point and drew attention to the fact that CEPP had so far failed to provide any proper answer to it. As explained further below, that remains the case.

4.1.10 Further and in any event, it is important to have regard to the following points in respect of BAT status.

- Prior to the UK leaving the EU techniques could only 'officially' be BAT, once a 'BAT conclusion' had been reached by the committee procedure under the Industrial Emissions Directive. Post leaving the EU, the UK Government is working with the devolved administrations to create a new process for BAT Conclusions to be reached. In the meantime, the Industrial Emissions Directive continues as 'assimilated law'. No 'official' BAT exists for blue hydrogen facilities under either the EU or any replacement UK procedure.

- However, as the Emerging Guidance Techniques Guidance document sets out:

    - the Hydrogen Production Facility is a permittable installation covered by the Industrial Emissions Directive;

    - where BAT do not apply, regulators must follow Article 14(6) of the Industrial Emissions Directive, which states that "*the competent authority shall, after prior consultations with the operator, set the permit conditions on the basis of the best available techniques that it has determined for the activities or processes concerned, by giving special consideration to the criteria listed in Annex III";*

    - the criteria in Annex III include 'the nature, effects and volume of the emissions concerned' and 'the need to prevent or reduce to a minimum the overall impact of the emissions on the environment and the risks attached to it'; and

    - the EA consulted potential operators when developing the review of emerging techniques on which the Emerging Techniques guidance is based.

4.1.11 As such, it is correct for the EA to say that it will consider if the Proposed Development has achieved best available techniques, pursuant to article 14(6) of the Industrial Emissions Directive. The Emerging Techniques Guidance sets out the techniques that the EA 'has determined for the activities concerned'.

4.1.12 As that Emerging Techniques Guidance explains, the technique that the EA has decided to employ is that blue hydrogen projects should be designed to achieve an overall CO_2 capture rate of at least 95%.

4.1.13 In this context, the historical performance of previous carbon capture facilities are not relevant. The EA has followed the process required by the Industrial Emissions Directive, and made its decision that 95% should be the capture rate that blue hydrogen projects (and indeed, in separate guidance, that post-combustion carbon capture projects) should be designed to meet. The ExA and Secretary of State can therefore be confident that this is the rate that will form the basis of the permit conditions for the Proposed Development. The Applicant would also note, as outlined in the Applicant's earlier response to CEPP [AS-040], the Proposed Development will utilise autothermal reforming (ATR) for the syngas production, which is a fundamentally different technology to the Steam Methane Reformers (SMR) that are the basis of CEPP's examples. There is no furnace and associated flue gas with an ATR technology. Comparison of the Proposed Development's design to existing projects which capture CO2 is not a direct likeness, as H2Teesside is an optimised new build with a specific high capture rate design target, whereas existing projects are generally retrofits where existing constraints may necessitate lower capture rate design targets and/or they may have been specifically designed to only meet lower capture rates.

4.1.14 The Applicant has provided evidence (including at ISH3 (see REP6A-019)) to explain why it considers that 95% is practically achievable, and has in its permit application[5] (REP6a-021) set out that it considers that a 97.1% capture rate is achievable for the Proposed Development (which is also the case for the Hynet blue hydrogen production facility (REP6a-019).

4.1.15 CEPP's submissions about 'regulatory entanglement' are misconceived. NPS EN-1 is clear that the Secretary of State 'should work on the assumption that the relevant pollution control regime and other environmental regulatory regimeswill be properly applied and enforced by the relevant regulator' (paragraph 4.2.10). Given the application of the Guidance as set out above, the Secretary of State can and should assume for the purposes of determining this application that the EA will apply the Emerging Techniques Guidance in its decision making on the environmental permit.

4.1.16 This applies generally to the consideration of the DCO application, but also in considering the 'environmental information' that is before him pursuant to Regulation 21 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. There is nothing in CEPP's submission which refutes this.

4.1.17 As was explained by Counsel at ISH2 (REP4-016), it is not necessary that an ES must 'secure' each of the assumptions made for the purposes of assessment (as opposed

[5] The Applicant notes that the permit consultation will end on 19 February.

to parameters which define the development proposed to be authorised, or specified mitigation measures). In respect of assumptions such as this, the Secretary of State will need to form a judgment as to whether they are reasonable and realistic as a basis for assessment. The Applicant's assessment, based on that 95% capture rate, is both reasonable and realistic and can therefore be taken into account when reaching a reasoned conclusion on the likely significant effects of the Proposed Development pursuant to Regulation 21.

4.1.18 CEPP suggests that the environmental permitting regime does not secure the carbon capture rate (paras. 59-62) and describes this as a "loophole". That is not correct. In particular, it is noted the Hynet blue hydrogen permit, as submitted in REP6a-019, and which is more akin to the Proposed Development than NZT, includes:

- a condition (IC59) which requires the operator to propose remedial actions where a 95% capture rate is not achieved. There is no 'get out' or 'loophole' as suggested by CEPP; and

- conditions POC5 and POC11 which, read together, show that the operator must demonstrate pre and post commissioning that the plant is able to meet carbon capture efficiency specifications (i.e. the 95% required by the Emerging Techniques Guidance), to remediate where it does not and that it will continue to monitor performance.

4.1.19 It is therefore clear that the EA would be able to enforce against a breach of permit conditions if the Applicant did not bring forward the required remedial actions. The EA would also be able to require remedial action to be taken if the monitoring demonstrates that the carbon capture efficiency specification is not being met.

4.1.20 Furthermore, CEPP's focus on the specific measures contained in environmental permits to control the capture rates, and the staged process that they put in place to achieve this, only serves to underline his failure to acknowledge and address the fundamental problem this creates for his submission that the description of the authorised development in Schedule 1 of the DCO should provide that each hydrogen unit "will capture a minimum rate of 95%" (emphasis in original):

- If the stipulation is expressed in different terms to the controls on the environmental permit, it will create directly overlapping and inconsistent controls on the same process. The EA, as the expert regulator, can be relied upon to frame the permit, and any conditions imposed on it, in a manner that is clear, enforceable and reasonable having regard both to the importance of protecting the environment and the practicalities of operation. It would be wrong in principle and manifestly unreasonable to amend the draft DCO so as to create a situation in which the operator could commit a criminal offence pursuant to section 161(1) of the Planning Act 2008 (if, for some reason, the capture rate temporarily fell below 95% at a particular point in time) in circumstances where it was nevertheless operating in compliance with the environmental permit (because, for example, it had proposed and was implementing remedial actions to restore that capture rate).

- If it is expressed in identical terms to the permit, it simply duplicates the controls and serves no proper purpose.

4.1.21 For those reasons the amendment proposed by CEPP in Appendix Z of its submission, that the Hydrogen Production Facility 'will' capture a minimum rate of 95%, is plainly not appropriate. Not only is it seeking to duplicate a function of the permitting regime, contrary to the clear submissions made by the EA as the regulatory body with responsibility for that regime, it also proposes a control which would be inconsistent with the staged approach adopted in that regime to reflect the practical realities of operation and enforcement.

4.1.22 In short, no further control is necessary or appropriate.

Issue Two

4.1.23 Chapter 19 of the ES (APP-072) already accounts for a certain amount of T&S unavailability – see table 19-7 and paragraph 19.5.66. This has assumed unavailability for 6.5% of operating time (for e.g. maintenance) which is a worst-case scenario. It is a worst case scenario as it is understood that the transport and storage system will have 95% availability

4.1.24 It is a worst-case scenario as the Endurance store has assumed 95% availability at all times on a precautionary basis.

4.1.25 The Secretary of State is therefore able to consider the impact of unavailability upon the GHG performance of the Proposed Development in making his decision and determine whether that is acceptable as part of the overall balance of his decision making.

4.1.26 No DCO Requirement is necessary, as the question is whether the development is acceptable accounting for the likelihood that there will be periods of unavailability.

4.1.27 Furthermore, the EA has clearly accepted that T&S unavailability can properly be excluded from the consideration of the performance of the carbon capture rate– see table 3.5(a) of the Hynet blue hydrogen plant permit.

4.1.28 CEPP have in any event misconstrued the documents it refers to and these have been superseded by the storage permit application that was approved on 10th December 2024. CEPP submission Appendix AA (bp, 2022, "Multi-store development philosophy") and Appendix AB (bp, 2022, "Endurance Storage Development Plan",) are documents based on studies conducted during 2019–2021 for the pre-FEED phase of the project. They were not part of the formal documentation used to determine the award of the store permit.

4.1.29 The storage site has received a storage permit from the NSTA that allows storage of 4Mt of CO2 per year to a maximum of 100Mt. The storage site will have five installed injection wells, each capable of injecting up to 1.5 Mt of CO2 per year. This means that the installed injection capacity is up to 7.5 Mt per year; although the operational strategy will be to run four out of the five wells, allowing one well to be shut-in at any time (e.g. for maintenance) while maintaining a peak injection rate of 6 Mt per year, well in excess of the requirements of the identified emitters for the times when all are operational. This is more than the expected CO2 profile from all

three identified emitter projects to date (NZT Power, H2Teesside and Teesside Hydrogen CO2 Capture). The permitted volumes equate to only 3 to 4% of the total storage volume available. The storage site, as currently permitted, therefore has substantial excess capacity both in terms of rate and volume.

4.1.30 Dynamic appraisal is not required to confirm the permitted rates. Dynamic appraisal is the process of learning about the connectivity of the wider geological storage system, requiring a sufficient volume to be injected over a period of time (3-5 years at the assumed store permitted rates) to enable meaningful extrapolation of results, which will be used to inform any potential for expansion above 4 Mt CO2 per year. Dynamic appraisal will be undertaken using supplied emitter volumes, it does not require or expect changes to emitter operations in order to perform dynamic appraisal.

4.1.31 The Applicant would note that Sleipner injection rates referred to by CEPP approached 1 Mt CO2 per year for many years. As can be clearly seen in the DeSmog paper (CEPP Appendix AC) attached to CEPP's submission it is only in recent years, with the declining gas production rate of the Sleipner gas fields, that the CO2 injection rate has diminished. The reduced rate of Sleipner to which CEPP refers is due to a lack of available CO2 rather than the failure of the store as CEPP seeks to infer.

4.1.32 The storage site will therefore be able to provide the storage for the carbon captured by the Applicant, from the outset – it does not need to be 'expanded' to meet the Proposed Development's demand. The Government has given its regulatory support to the Endurance store, and it now has the planning and environmental consents required to progress. It is therefore being brought forward and it will support H2T's requirements.

4.1.33 There is therefore no need for the Requirement drafting suggested by CEPP as:

- the store will be functional and operational;
- post opening, the Proposed Development will be connected to that store; and
- unavailability has been quantified and its likely implications assessed, and these can be taken into account by the Secretary of State.

4.1.34 The Applicant would also highlight that the suggested wording:

- is unenforceable – as the LPA is the enforcing authority, they would not be able to ascertain if the carbon store is operational or 'fully functional' – that is something regulated by NSTA; and
- not appropriate in planning terms – once operational, the Hydrogen Production Facility will be providing hydrogen to offtakers to enable them to decarbonise and move away from natural gas fuel supplies. To avoid breach of this Requirement, the Applicant would have to 'switch off' the facility at any time the store is unavailable, for whatever reason (noting that any store maintenance would be well planned and arrangements made with offtakers to also undertake maintenance during that period). This would remove the fuel

supply to facilities across Teesside, potentially causing knock on effects to the operation of those facilities. Such uncertainty regarding security of fuel supply may discourage offtakers entering into supply agreements in the first place and/or reduce the carbon efficiency of those facilities, meaning that the benefits of the Proposed Development would not be able to be realised. That would be wholly inimical to the achievement of the Government's objectives for hydrogen, which necessarily depend on offtakers having confidence in security of supply.

4.1.35 For these reasons, the Applicant rejects the proposed wording put forward by CEPP in Deadline Z in respect of Issue Two.

APPENDIX 1: ASSESSMENT OF POTENTIAL LOSSES OF FUNCTIONALLY LINKED LAND (FLL) WITHIN TERRESTRIAL HABITAT AT NAVIGATOR TERMINAL

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1.1 This technical note summarises the known baseline conditions with respect to the terrestrial habitats within Navigator Terminal, at the western landfall of the Proposed H2 Teesside crossing of the River Tees in order to determine whether any of the habitat losses arising from the proposed development will result in losses of Functionally Linked Land (FLL) for qualifying species of Teesmouth and Cleveland Coast SPA.

2.0 DATA SOURCES

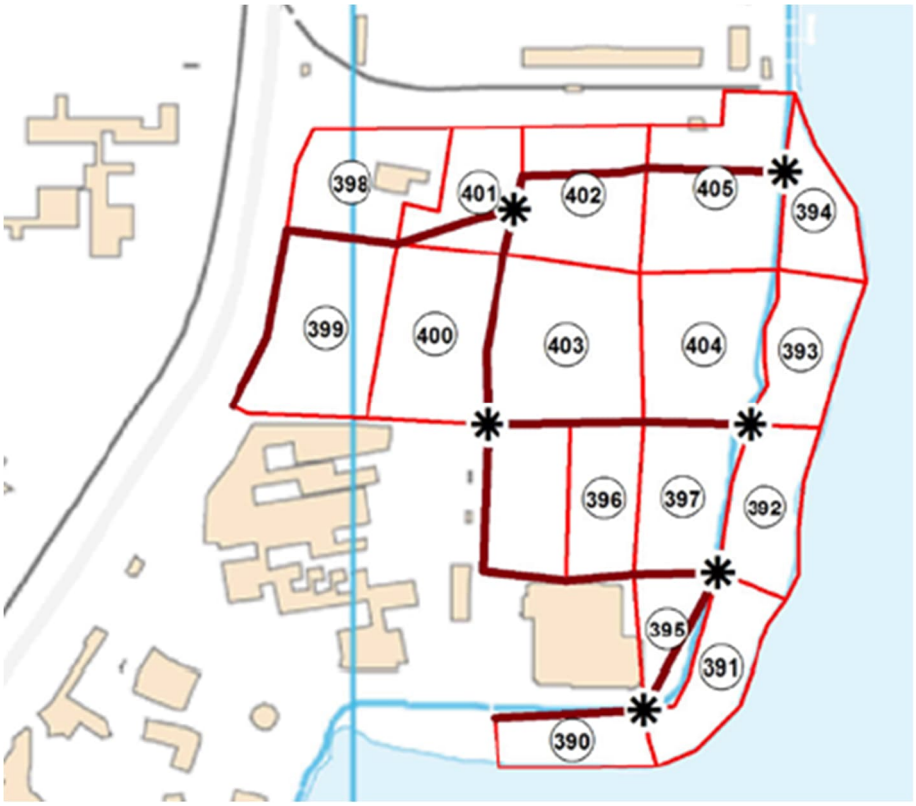
2.1.1 AECOM gained access to this land to carry out three breeding bird surveys over part of the northern half of the site in April – June 2022, to inform the ornithological assessments for Net Zero Teesside (NZT). At that time, basic observations on habitat type and structure were compiled [APP-097, EN010103].

2.1.2 WSP (2024) have recently compiled baseline data that provides a basic description of the habitats there for inclusion in a scoping report for Teesside Flexible Regas Port. The Teesside Flexible Regas Port development is considered in the Report to Inform HRA as ID236 and shown in Figure 17 - Spatial overlaps between the Proposed Development, Other Developments and Special Protection Areas and Ramsars [REP6a-012].

2.1.3 Industry Nature Conservation Association (INCA, 2024) carried out habitat surveys across the northern half of the Navigator Terminal site, and counts of wetland birds using the adjacent intertidal habitat, to support the assessment of a new Carbon Dioxide storage terminal at the existing Navigator Terminals UK, Seal Sands Terminal Facility.

2.1.4 Ecology Consulting (2015) carried out bird surveys of an area that they referred to as Vopak Foreshore and Brownfield (which includes the land north of and immediately adjacent to the River Tees) as part of a suite of bird surveys more widely across Teesside from November 2014 to March 2015, to support Natural England's review of Teesmouth and Cleveland Coast protected sites. This, to date, is the only significant body of bird count data that the Applicant is aware of for the terrestrial land at Navigator Terminal. The surveys were carried out across all terrestrial habitat and the adjacent intertidal habitats as shown in Image 1. The survey area was divided into sub-compartments for (presumably) the purposes of improving the spatial resolution of the survey data and/or the ease of delivering the surveys, however the results of the surveys are reported only at the whole-site scale.

Image 1: Area surveyed by Ecology Consulting, showing survey sub-compartments (red numbered polygons), vantage points (*) and transect route (solid black line) (reproduced from Ecology Consulting, 2015). The proposed boundary and key elements of the H2 Teesside development are shown in the second image for reference.



2.1.5 The narrative below provides a summary of the baseline gathered followed by narrative regarding habitat use by birds in relation to the occurrence of different habitat types, to put into context the potential habitat losses resulting from construction and operation of H2 Teesside. For reference, Image 1 also shows the location and spatial extent of the H2 Teesside proposed development boundary and the following proposed infrastructure and work locations:

- Permanent (Operational Phase) AGI (pale blue polygon). This would be the only location of permanent habitat loss;
- Temporary (construction phase) construction compound (purple polygon); and
- Temporary (construction-phase) trenchless crossing area HDD exit (yellow polygon).

2.1.6 The proposed H2 Teesside project boundary overlaps the northern half of the expanse of terrestrial habitat. It is located adjacent to a development which involves the installation of a new Carbon Dioxide storage terminal at the existing Navigator Terminals UK, Seal Sands Terminal Facility (SSTF) (24/1208/FUL). The assessment for this site concluded that the SSTF site is not FLL and was therefore screened out, as stated in the Shadow Habitats Regulations (Report ID: INCA 2024-26). The SSTF development is considered in the Report to Inform HRA as ID419 and shown in Figure 17 - Spatial overlaps between the Proposed Development, Other Developments and Special Protection Areas and Ramsars [REP6a-012].

3.0 HABITATS

3.1.1 The entire site was described by Ecology Consulting as “brownfield grassland”, however this broad term does not adequately describe the structural variety or species composition of the habitats present. The land supports neutral semi-improved grassland across its northern half, beneath the footprint of the H2 Teesside proposed development boundary. WSP undertook a habitat survey to map and describe the distribution of UKHabs habitat types on 22 and 26 January 2024, with the following key conclusions:

- Grassland was the dominant habitat, predominantly neutral;
- Bramble (*Rubus fruticosus* agg.) and dog rose (*Rosa canina*) scrub occurred throughout the grasslands; and
- Areas of bare ground/mud and gravel with a sparse layer of mosses and frequent common whitlow grass (*Draba verna*) were present in the south-eastern area of the Site.

3.1.2 INCA (2024) described the northern half of the Navigator Terminal site as “Other Neutral Grassland” in which the main species were cocksfoot (*Dactylis glomerata*) and False oat-grass (*Arrhenatherum elatius*) in which was growing loosely dispersed but increasing areas of bramble. The report notes that there were some small areas grassland dominated by Marram grass (*Ammophila arenaria*) and some further

areas of shorter-growing vegetation on the peripheries of the grassland that were too small to map as separate habitats .

3.1.3 AECOM's direct observations from the site visits carried out in 2022 to inform the assessment for NZT are that the northern half of the site, which lies within the proposed H2 Teesside project boundary, supports an unmanaged grassland sward. The grass sward here is approximately knee-height and punctuated by colonising scrub. This is visible in the aerial view of the site provided in Image 2 and lies within Ecology Consulting's survey compartments 398 to 405 (Image 1). These observations are consistent with the habitat types recorded by WSP (2024) and INCA (2024) in this part of the site.

3.1.4 The southern half of the site, which aligns with Ecology Consulting survey compartments 395 to 397 and is outside of the H2 Teesside Project Boundary, supports a vegetation type that is visibly different from the grassland described above, and this coincides with the description of a sparse vegetation layer and areas of bare ground described by WSP for the "south-eastern area of the Site", as set out above. The appearance of the habitat in this area is of a much shorter and more open vegetation type.

Image 2: Aerial view of habitats within Navigator Terminal site, showing two distinct habitat types. Foreground shows small section of intertidal habitat on the right, adjacent to which is short ephemeral and early succession grassland vegetation. Beyond this is "brownfield" grassland with patches of colonising scrub, where the grass sward is approximately knee height; the H2 Teesside boundary overlaps this part of the site, as represented by the red line overlaid on to the image. (Image reproduced from WSP, 2024).

4.0 OCCURRENCE OF BIRDS ON NAVIGATOR TERMINAL TERRESTRIAL HABITATS

4.1.1 The surveys by Ecology Consulting identified a range of water birds using the adjacent intertidal and rocky shore habitats, which is consistent with the bird counts carried out by AECOM as described in the H2 Teesside ES and supporting Appendices, and with the counts carried out by INCA (2024).

4.1.2 Ecology Consulting also recorded use of the terrestrial habitats by two wetland bird species (all other species occurring on the rocky shore, intertidal habitats or open water):

- Lapwing – a regular roost occurred "mainly on the mudflats, but also occasionally on the grassland"; and
- Curlew – the site was used "through the tide by small numbers of curlew (mostly feeding, and on both the grassland and mudflat habitats)".

4.1.3 AECOM recorded a single breeding pair of lapwing on the terrestrial habitat in 2022, on a narrow strip of thinly vegetated land adjacent to the riverbank in the northern half of the site. Other than this, the only occurrences of habitat use by wetland birds at this time was by occasional black headed gulls feeding on the site in ones and twos.

4.1.4 INCA (2024) did not record wetland birds on the terrestrial habitats within Navigator Terminal and screened out likely significant effects on Functionally Linked Land as a potential impact pathway relevant to Teesmouth and Cleveland Coast SPA, on the basis that the habitats there were not suitable for qualifying species of the designated site.

5.0 INTERPRETATION OF RESULTS IN RELATION TO HABITAT LOSSES FROM H2 TEESSIDE

5.1.1 Openness is a key determinant of a habitat's use by some wading birds. Non-breeding lapwing and curlew require open habitats on relatively level unenclosed ground to maintain sightlines between terrestrial habitats and intertidal or other wetland habitats; to enable them to move unimpeded on foot; and to enable them to detect predators. Sightlines also enable them to maintain visual contact with other individuals within a flock. The habitat preferences for these species in Birds of the Western Palaearctic (NatureGuides Ltd., 2023) include the following narrative:

- Lapwing "invariably chooses unenclosed terrain affording unbroken all-round views, and avoids..... Savanna types of grassland"; and
- Curlew "prefers open landscapes with wide visibility".

5.1.2 The vegetation in the south-eastern part of the Navigator Terminal site is low-growing and provides a habitat structure favourable to wading birds coming on land

to roost and feed. In contrast, the knee-high grasslands across the northern half of the site are largely unsuitable for wading birds as the presence of a tall grassland sward and encroaching scrub will erase sightlines for any bird that is not physically tall enough to elevate its line of site above the top of the sward and/or that is not willing or able to move through such vegetation.

5.1.3 It is therefore entirely reasonable to assume that curlew and lapwing would occur predominantly on the shorter-growing habitats within the south-eastern part of the site, that overlap one or more of survey compartments 395 – 397, while occurrence of these species in other parts of Navigator Terminal, where these overlap the proposed footprint of H2 Teesside, is highly unlikely to have been any more than occasional and fleeting. On this basis it is concluded that any losses of terrestrial habitat within Navigator Terminal resulting from H2 Teesside will not constitute losses of Functionally Linked Land for qualifying species of Teesmouth and Cleveland Coast SPA. This position aligns with the decision made by Natural England for the planning application referenced above, in December 2024.

6.0 REFERENCES

- Ecology Consulting (2015). Wintering Bird Surveys 2014-15 at Teesside to inform Natural England review of protected sites: Final report. Technical report submitted to Natural England, April 2015.
- INCA (2024). Navigator Terminals CO_2 Reception and Storage Facility and Connecting Pipeline. Shadow Habitats Regulations Assessment: Stage 1 Screening and Stage 2 Appropriate Assessment. FINAL. INCA Report ID 2024-26 (April 2024).
- INCA (2024). Ecological Impact Assessment: Carbon Storage Facility, Navigator Terminals. INCA Report ID 2024-16 (June 2024).
- NatureGuides Ltd. (2023). Birds of the Western Palaearctic: App Edition for iPhone and iPad.
- WSP (2024). Teesside Flexible Regas Port: Environmental Impact Assessment Scoping Report, Volume I – Main Text. PINS Reference Number EN040001. Scoping report submitted to the Secretary of State on 12 March 2024.