

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

Document Reference: 8.15 Natural England Habitats Regulations Assessment Written Responses Response Table

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



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1.0 INTRODUCTION

1.1.1 This document is Natural England Habitats Regulations Assessment Written Responses.

Table 1.1 – Natural Engalnd Habitats Regulations Assessment Written Responses

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NE1: Risk of HDD Collapse/Leakage of Drilling Fluid to SPA Sites	<p>We note that Paragraph 4.2.2 of the Report to Inform Habitats Regulations Assessment states that 'The Teesmouth and Cleveland Coast SPA and Ramsar are within the boundary of the Proposed Development Site. The Proposed Development has been designed to avoid the direct loss of habitat within the SPA and Ramsar site boundaries through use of HDD. However, direct habitat loss could occur in the event of HDD collapse. The risk of HDD collapse / leakage of drilling fluid was considered in the Secretary of State's HRA for the Net Zero Teesside (Department for Energy Security and Net Zero (DESNZ), 2024) (which is adjacent to the Proposed Development) project following concerns by Natural England raised by NE in Relevant Representation and during Examination. It has therefore also been considered here.' For the Net Zero Teesside project commitments were logged in a framework CEMP [APP-043] to address NE concern regarding direct loss to sites in the event of HDD collapse. NE advise that a similar solution should apply to H2Teesside and be considered within the HRA.</p>	<p>Available soils data, (refer doc NS051-CV-REP-OA1-00008 Preliminary Onshore Ground Investigation for NZT Ground Investigation Report which covers an adjacent HDD crossing ca 85m to the north, but subject to confirmation from the H2T Ground Investigation works and reporting to confirm this assumption) suggests the ground conditions are suitable for current HDD technology giving confidence a successful HDD can be undertaken subject to further GI and detailed design. Methods will be applied, such as using a conductor pipe, to reduce the risk of frac out off-shore as part of standard design. Confirmatory ground investigation is being undertaken later this year to optimise the drilling programme, design and methodology and the selection of drilling fluids to reduce the consequence and probability of a frac-out. The Applicant confirms that water based drilling fluids that are inert in the marine environment will be used during HDD operations to minimise any potential effects on the marine SPA. These will also disperse readily in the marine environment.</p> <p>All of these measures are inherently taken into account in designing and delivering a robust HDD irrespective of the designation status of the surface environment. Natural England, confirmed during NZT Examination their agreement that there is unlikely to be a significant effect from HDD collapse for the NZT HDD work. However, they did request that a 'clean-up plan' is produced in the very unlikely event that a collapse did occur. The contractor will also undertake analysis to identify key parameters to be monitored during installation and subsequently monitor the drilling operations to ensure parameters remain within safe operating envelope. A review of the works for the NZT HDD will be undertaken to assess the effectiveness of site procedures and whether any 'lessons learned' would be beneficial to the H2T HDD. Given these integral elements of HDD design and delivery it is not considered that an adverse effect on integrity would arise due to HDD collapse and associated SPA habitat loss.</p>	<p>At this stage, Natural England's position broadly remains as set out in our Relevant Representations.</p> <p>Discussions with the Applicant are ongoing on this matter. Natural England are waiting for an updated framework CEMP to reflect 'lessons learned' from the NZT 'frac out' provisions, which is currently being prepared by the Applicant.</p> <p>Pending receipt of the revised fCEMP we would add the following provisions, consistent with our Statement of Common Ground for the NZT project, as follows:</p> <p><i>If a frac out were to occur within the designated site, Natural England would expect to be notified and that the clean-up be agreed in consultation with Natural England. This is because in some cases the clean-up itself can create an impact and we would like to avoid this.</i></p> <p><i>Access routes to the intertidal should be agreed ahead of the use of any equipment (i.e. tractor) mobilising, ensuring sensitive features are not impacted.</i></p> <p>Regarding soils (Soil resources and Best and Most Versatile land) we can confirm that we do not anticipate the HDD part of the scheme resulting in material impacts on soils resources.</p>	<p>The Framework CEMP was updated at Deadline 2 [REP2-011] to take account of Natural England's Relevant Representation. Reference to a clean-up plan has been added to the list of plans to be produced as part of the Final CEMP (Paragraph 2.3.2 and Table 7-2). This has also been updated in the HRA as part of the Proposed Change Application [EN070009/EXAM/7.3], see Paragraph 6.1.8.</p> <p>The specific wording proposed by Natural England has not been included as the Applicant did not have sight of this prior to the submission of the updated Framework CEMP at Deadline 2. However, the principles of what NE are seeking have been incorporated in the wording proposed. The Proposed Development does not involve access to the intertidal environment.</p> <p>In addition, consultation with Natural England regarding HDD works is already secured in the water REAC table (Table 7-2), contained within the Framework CEMP [REP2-011], as follows:</p> <p><i>"Natural England, and any landowner of land crossed by the HDD, would be consulted on the effectiveness of the proposed measures in reducing effects on designated sites."</i></p> <p>1.1.2</p>

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		The Applicant will introduce a commitment to produce a 'clean-up plan' and to learn the lessons from NZT within the Framework CEMP [APP-043]. This plan will be (or has been) discussed with Natural England and will be incorporated into an updated Framework CEMP at Deadline 2.		
NE2: Impact Assessment on Birds	Natural England notes that in the Report to Inform a Habitats Regulations Assessment the Applicant has ruled out Adverse Effect On Integrity (AEOI) or SPA bird species (which are either designation features alone or part of the waterbird assemblage) based on their numbers for each sector and what percentage of the SPA population this represents. Natural England does not agree with this approach to ruling out AEOI on SPA species. Natural England advises that the impacts on individual bird species are assessed for the project site as a whole rather than on a sector-by-sector basis. This should be presented for different stages of the project (taking account of when multiple activities are likely to occur at the same time) as well as for the project as a whole. In the current reports data are presented for individual species. These data should also be combined to provide a 'waterbird total' in analyses (to enable better understanding of impacts on the >20K waterbird feature). See NE Issue Refs 03 to 08 for additional information that is required to assess the impact on SPA/Ramsar features .	Impacts upon birds have been assessed on a field by field basis due to the complexity of the project, extent of the development boundary and the expected duration of the programme of works and in acknowledgement that works are not likely to occur across all parts of the Proposed Development simultaneously. The approach chosen was considered to be the most appropriate way of identifying the peak counts of qualifying bird species in specific locations which could be impacted. The Applicant has not added up the peak counts of birds for the Proposed Development as a whole, as the Proposed Development Site covers a large area, and birds will use different locations at different times throughout the day, week, month and year and in response to changing tidal state, weather conditions and other environmental factors not under control of the Applicant. Thus, the Applicant considers that sufficient conservatism is built in to the assessment by considering the peak counts that are spatially relevant to the extent of the Proposed Development, recorded from multiple sources of data, and the frequency of occurrence of a given species at a given location. Adding up the peak counts of birds for the whole Site would inflate the number of birds considered in the assessment of disturbance of any particular activity. The Applicant will discuss this further with NE and progress will be reported within the SoCG over the course of the Examination.	At this stage, Natural England's position broadly remains as set out in our Relevant Representations. Discussions with the Applicant are ongoing on this matter. Natural England are waiting for an updated Report to inform HRA to reflect a review of the bird survey data. This is currently being prepared by the Applicant. In addition we anticipate the need for an explicit consideration of the scheme's work phases in order to assess satisfactorily the potential for impacts on the SPA's classified bird species.	The Ornithology Supplementary Baseline Report [EN070009/EXAM/6.2.13AA] has been submitted alongside the Proposed Change Application [EN070009/EXAM/7.3]. The Report to Inform HRA [EN070009/APP/5.10] has been updated alongside the Proposed Change Application with the updated bird survey results and to reflect the changes to the scheme design outlined in the Change Application Report [EN070009/EXAM/7.3]. The Applicant will discuss consideration of the Proposed Development's expected work phases further with NE and progress will be reported within the SoCG over the course of the Examination. Any updates needed to the HRA will form part of these discussions.
NE3: Functionally Linked Land (FLL)	SPAs are classified for rare and vulnerable birds. Many of these sites are designated for mobile species that may also rely on areas outside of the site boundary (referred to as 'functionally linked land' (FLL)). 'Functional linkage' refers to the role or 'function' that land or sea beyond the boundary of a European site might fulfil in terms of ecologically supporting the populations for which the site was designated or classified. Such land is therefore 'linked' to the European site in question because it provides an important role in maintaining or restoring the	The baseline report describes in some detail where birds were recorded roosting and/or were already known to roost, and went on to identify key locations for SPA species and the function of those locations. The limitation with any set of data is that each bird count is a point in time or snapshot of numbers and activity . However, the data presented are sufficiently robust for the Applicant to be confident about where roosting occurs and by which species. In particular, the	At this stage, Natural England's position broadly remains as set out in our Relevant Representations. Discussions with the Applicant are ongoing on this matter. Natural England understands that bird survey data is available to address this point. The Report to inform HRA should be revised accordingly.	The Ornithology Supplementary Baseline Report [EN070009/EXAM/6.2.13AA] has been submitted alongside the Proposed Change Application [EN070009/EXAM/7.3] and the Report to Inform HRA [EN070009/APP/5.10] has been updated to reflect this.

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	<p>population of qualifying species at favourable conservation status. These supporting habitats may be used by SPA bird populations or some individuals of the population for some or all of the time. These supporting habitats can play an essential role in maintaining SPA species populations, and proposals affecting them may therefore have the potential to affect the designated site. FLL is to be lost during the construction of the main site and connection corridor. It is unclear what losses of FLL are to be temporary or permanent, and what the specific function of the land to be lost serves to SPA birds (i.e. foraging or roosting habitat). We advise that the losses of FLL are quantified by type (permanent or temporary) and function (roosting, foraging etc) for birds. In addition, further information on the phasing of works and how much functionally linked land will be unavailable to birds at any one time during the construction and operational phases should be provided, and how long it will be until any temporary losses will be restored and functional for bird use again. We note that some mitigation for avoidance of disturbance impacts to SPA birds during the construction of specific sectors of the connection corridor is the timing for these works to occur outside the overwintering period. Natural England generally supports this measure, however it is unclear when the land will be restored and by when it will be functional again i.e. to provide the sector-specific use to birds that it did previously. This includes sectors 18, G4, B4, B5 and B6. We advise that further information is provided on the timescales for restoration.</p>	<p>Applicant built the recording of bird activity through coded metrics into the baseline surveys precisely for this reason. The OLBMP confirms that habitats that would be temporarily lost or damaged during construction would be reinstated on a like-for-like basis. There will be no temporary habitat losses during the operational phase. The time required for habitats to reach target condition is considered to be the same as the timescales used in the DEFRA metric. However, habitats will be available for birds to use for foraging before they reach target condition. Birds will be able to use areas of bare ground to forage once excavations are backfilled. Given that much of the temporary habitat loss will be linear (where pipelines will be installed), the original habitat type will remain available on either side of the construction area so functionality will be retained. Furthermore, RSPB indicated during consultation in November 2023 that its habitat restoration goals across Cowpen Bewley included breaking up of the soils in some areas to improve habitat for foraging birds, which supports the notion that the areas of bare ground left temporarily by pipeline installation across several areas of existing grassland would not be detrimental to the utility of these broad areas of habitat for foraging SPA birds.</p> <p>The Applicant will discuss this further with NE and progress will be reported within the SoCG over the course of the Examination. Any updates needed to the HRA will form part of these discussions.</p>		<p>Section 13-3 of ES chapter 13 (Ornithology) stated that survey areas were identified:</p> <ul style="list-style-type: none"> to cover all potential functionally linked land up to approximately 500m from the Proposed Development and set out the underlying reasons for identifying these areas as functionally linked to the SPA; and to take account of other areas where ornithological features may be affected by the proposed development <p>The baseline report provides supporting information that clearly identifies bird roosts. All other areas surveyed in which SPA birds were recorded (other than breeding SPA bird locations, which are discussed under NE11) principally support foraging birds, although occurrences of occasional roosting by individuals or small parties of birds cannot be ruled out at any location. The location of roosts and breeding locations of SPA birds maps closely to the extent of the SPA and adjacent habitats across Seal Sands and the North Tees Marshes north of the river and this is where the surveys identify the vast majority of functionally linked land that overlaps the Proposed Development.</p> <p>The Applicant has reviewed the information in the baseline report and ES Chapter 13 and agree that, while this is not explicitly stated, essentially all of the habitats surveyed north of the River Tees that lie outside of the SPA boundary have been regarded in our assessments as functionally linked land and the results of the bird surveys carried out by AECOM corroborate this.</p> <p>The Applicant will discuss consideration of the Proposed Development's expected work phases further with NE, including restoration, and progress will be reported within the SoCG over the course of the</p>

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				Examination. Any updates needed to the HRA will form part of these discussions.
NE4: Use of IECS 2013 'Waterbird disturbance mitigation toolkit'	Natural England does not support the use of IECS 2013 'Waterbird disturbance mitigation toolkit' as we do not consider the evidence to have been collected in a rigorous way, and the results have not been peer reviewed. Therefore, any assessment that relies on the toolkit may be inaccurate. Paragraph 4.2.23 of the Report to inform Habitats Regulations Assessment [APP-040] references the IECS toolkit and the thresholds for noise levels for bird disturbance. We advocate a precautionary approach to assessing disturbance to waterbirds, and advise that further work is required to inform impacts on SPA bird populations (see comments in key issue ref NE5 below).	Paragraphs 4.2.23 and 4.2.24 of the report to inform HRA [APP-040] make reference to literature where noise disturbance thresholds are discussed. The IECS waterbird mitigation toolkit states ' <i>generic guidelines at present are precautionary for consenting requirements and employ an approach distance to 300 m and a low noise threshold figure of 55 dB (possibly based upon research by Wintermans in 1991 which recorded no effect on shooting or roosting waders where noise levels did not exceed 55 dB. E.g. a level where no effect occurred rather than a threshold where effect commenced). A 70 dB noise threshold has however been developed over a period of years, based upon published data as well as findings from primary observations (e.g. Cutts and Allen, 1999, Cutts, Phelps & Burdon, 2008 and Cutts and Hemmingway, 2010).</i> ' Paragraph 4.2.26 notes that as part of discussions involving the adjacent Net Zero Teesside Project, Natural England officers advised that a 70 dB metric was appropriate to use for impact assessment regarding the Teesmouth and Cleveland Coast SPA / Ramsar and hence this approach was also applied here. Additionally, for this project, the Applicant also considered the potential change in baseline noise. A change in noise levels of 3 dB at locations where predicted noise levels will exceed 55 dB has been used to screen the potential for LSE within this HRA. 3 dB is the smallest change in noise that can be perceived as a change; it is not a damage or impact threshold but merely identifies the need for further consideration as there is a considerable difference between a sound being perceptible and it being disturbing. Therefore, the Applicant considers that potential noise impacts have been assessed robustly.	At this stage, Natural England's position broadly remains as set out in our Relevant Representations. Discussions with the Applicant are ongoing on this matter. Please refer to NE5 below for more detailed explanation of the approach needed to measure and assess noise arising from the project.	Please refer to the Applicant's response to NE5 below.
NE5: Noise Impact Assessment	Natural England notes that the noise modelling figures presented only includes average noise levels for the construction and operational phases of the development and there is little reference to the existing noise environment. In order to inform assessment of the potential impacts on SPA birds from noise disturbance it is essential to understand changes from the baseline noise environment and also the magnitude and frequency of occurrence of impulsive noise (such as that produced	A change in noise levels of 3 dB at locations where predicted noise levels will exceed 55 dB has been used to screen the potential for LSE within the HRA. Baseline sound survey data is provided in Table 4-3 within the report to inform HRA [APP-040]. As it is not possible to model baseline noise as contour plans, so the nearest noise monitoring locations representative of the area have been used when assessing the baseline. The LAeq2	At this stage, Natural England's position broadly remains as set out in our Relevant Representations. Discussions with the Applicant are ongoing on this matter. When assessing noise disturbance thresholds, it is imperative to note the type of measurement, otherwise the decibel level is somewhat meaningless. The	Please see the further detail on this point provided in the text following this table. The Applicant will discuss consideration of the scheme's work phases further with NE

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	<p>by percussive piling) at bird receptors. We therefore advise that change in noise levels as well as absolute noise levels are presented for all areas which SPA birds utilise (functionally linked land and SPA habitat) and that impulsive noise is also quantified. L_{max} (fast) and L_{peak} are useful metrics to describe impulsive noise. We note that the Applicant has outlined mitigation for noise impacts in the form of noise barriers, noise abatement measures and timings of works. Natural England is generally supportive of these types of mitigation for noise impacts associated with construction, however it is unknown if such measures will be sufficient without a better understanding of changes to the noise environment and phasing of work across the whole development. We note in Paragraph 6.5.6 of the Report to Inform Habitats Regulations Assessment [APP-040] that 'It has been assumed that installation of noise barriers will result in a 10 dB reduction in noise levels'. It is unclear if the noise modelling levels presented in the ES include the 10dB reduction associated with the mitigation or not. This needs to be clarified. We advise that figures on noise levels are presented both without and then with mitigation in order to allow for an assessment of whether the mitigation is sufficient, or if there will be residual effects. We also note that in several paragraphs of the Report to Inform Habitats Regulations Assessment [APP-040] that the Applicant states that birds on or adjacent to the development site will already be habituated to noise and visual disturbance (e.g. 6.5.25, 6.6.0, Table E-1). Natural England does not agree with this statement and advises that if noise levels are assessed to impact on SPA bird populations that avoidance or mitigation measures should be provided. Natural England also note that the location for the pipeline crossing of the Tees is a critical area for waterbirds. Natural England advise that further assessment of noise impacts to birds across the 50 week programme is undertaken to ensure that the timings of noisy works is designed to minimise impacts. For instance, the timing of the above-ground component of the works should be outlined. Mitigation opportunities such as timing noisy works during less sensitive periods within this long work programme and/or to specific sides of the river should be appraised.</p>	<p>values presented combine all measurements taken in each time period (day/night). The LAF Max level is the maximum sound level with 'A' frequency weighting and Fast Time weighting during the measurement period. Figures 7 to 10 within the report to inform HRA [APP-040] show predicted noise levels in the absence of mitigation and a reduction of 10 dB can be achieved with mitigation.</p> <p>The Main Site has been subject to disturbance for a number of years with works including the demolition of the former buildings and structures and site remediation. Habituation to noise was discussed within the NZT HRA when agreeing appropriate noise disturbance thresholds.</p> <p>Construction of the River Tees HDD crossing is estimated to take approximately 50 weeks. Acoustic barriers and visual screening are proposed to mitigate the effects of noise and visual disturbance during this time. Due to the duration of proposed works and a detailed construction programme not being available until post-consent, it is not possible to use timings to minimise disturbance and impacts have been assessed based upon on a worst case scenario, works taking place across the full 50 week programme.</p> <p>As per Section 6.5 of the Report to Inform HRA [APP-040], noise disturbance at the Teesmouth and Cleveland Coast SPA was scoped into Appropriate Assessment. A suite of measures designed to reduce noise have been proposed in the Framework CEMP [APP-043], these are listed at Paragraph 6.5.4. With the mitigation measures in place, a conclusion of no adverse effect on integrity at this location could be drawn.</p> <p>The Applicant will discuss this further with NE and progress will be reported within the SoCG over the course of the Examination</p>	<p>appropriate threshold is a 55-70 db L_{max}. Measurement of a maximum level is necessary to assess the loud bangs and impulsive noise that can disturb non-breeding waterbirds during construction and operation. If not clarified, the level stated is likely to be an average, which could mask potentially damaging effects of noise on birds.</p>	<p>and progress will be reported within the SoCG over the course of the Examination. Any updates needed to the HRA will form part of these discussions.</p>
NE6: Visual Screening	<p>Natural England notes that screening is proposed (Paragraphs 13.7.1 and 13.7.2 describe relevant locations) to mitigate visual disturbance. Impacts of visual disturbance on SPA birds may be compounded by other factors, such as noise disturbance. The interaction</p>	<p>The visual and noise assessments have been undertaken on a worst case scenario based upon available information at the time of undertaking the assessment. These assessments have subsequently been used to inform the HRA [APP-</p>	<p>At this stage, Natural England's position remains as set out in our Relevant Representations.</p>	<p>Indicative locations for screening have been provided in Figure 14a and 14b within the Report to Inform HRA [EN070009/APP/5.10]. These locations</p>

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	<p>between different factors can be complex and depends on aspects such as the proximity of the disturbance events to the receptor, sightlines from the receptor, etc. The areas proposed for visual screening may therefore need to be modified/expanded following the further analysis of noise and other impacts requested in NE refs NE7 & NE8.</p>	<p>040] and the need for any mitigation accounting for the interaction between different factors, e.g. the proposed location of noise barriers also accounts for visual considerations.</p> <p>The Applicant will discuss the need for any amendments to the visual screening proposals with NE as part of its discussions on the wider issues set out in rows 7 and 8 below.</p>	<p>Note that this representation is linked with NE7 and NE8 due to the cumulative effects of visual and noise impacts pathways.</p>	<p>will be updated when further detailed assessments are undertaken, if required.</p> <p>The sound/noise reduction caused by a barrier depends on two factors, the path difference of the sound wave as it travels over the barrier compared with the direct transmission to the receiver, and the frequency content of the sound. A broad rule of thumb for sound/noise barriers is that where the sound/noise source is totally obscured from the receiver position, an approximate 10 dB reduction in sound level can be achieved at the receiver. Where the sound/noise source is partially obscured such that the top of the source is just visible to the receiver over the barrier, a 5 dB reduction in sound/noise level can be achieved at the receiver.</p> <p>The Applicant will discuss this further with NE and progress will be reported within the SoCG over the course of the Examination. Any updates needed to the HRA will form part of these discussions.</p>
<p>NE7: Quantification of operational visual disturbance sources</p>	<p>Natural England notes that visual disturbance during operation has been screened out as no Likely Significant Effect (LSE) due to habituation. Natural England do not agree with this approach because there are very few instances where habituation with no negative impacts occurs. In most cases of apparent habituation birds are still suffering negative impacts, such as elevated stress levels or reduced foraging rates from increased vigilance. Natural England also note that there is no reference to potential activities along the pipeline corridor during operation, such as inspection visits and maintenance. Natural England request that likely sources of visual disturbance during operation are better quantified and that a robust analysis of impacts is undertaken. This analysis would inform whether any mitigation is required.</p>	<p>The land within and surrounding the Main Site has been subject to anthropogenic disturbance historically as it was the site of the former Redcar Steel Works. There are ongoing industrial activities within Teesworks including demolition and site remediation activities and movement of materials and machinery. As such, the bird assemblage in this area is likely to be habituated (to some extent) to the industrial landscape and activity.</p> <p>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. Some external lighting would be required to ensure that the Hydrogen Production Facility can operate safely at all times. It would be at the appropriate luminance required to provide</p>	<p>At this stage, Natural England's position remains as set out in our Relevant Representations.</p>	<p>The Applicant will discuss this further with NE and progress will be reported within the SoCG over the course of the Examination. Any updates needed to the HRA will form part of these discussions.</p>

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		<p>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. As such, visual disturbance during operation is anticipated to be lower than that historically or currently experienced within the site.</p> <p>Operational requirements in the pipeline corridor will be limited, requiring 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.</p> <p>An additional consideration relevant to the operation of the Main Site is that habitats immediately adjacent to it are sand dunes containing dune ponds, all but one of which are choked with swamp vegetation and therefore unsuitable for SPA birds. The remaining habitats within much of the dune system are also topographically "enclosed" and therefore suboptimal for most SPA birds, which is reflected in the baseline survey and desk study data presented to support the HRA. The dune system physically separates the main site from the open habitats of Coatham Sands and Bran Sands Bay, which are more readily used by SPA birds.</p> <p>The Applicant will discuss this further with NE and progress will be reported within the SoCG over the course of the Examination</p>		
NE8: Sightlines from the Blast Furnace Pool	It appears that the new hydrogen production facility will reduce sightlines from the Blast Furnace Pool (sector 3a) and the area will become less 'open'. This could have a number of negative impacts on waterbirds ranging from increased vigilance when using the pool and increased predation risk to direct avoidance of the pool. These impacts have not been adequately addressed in the assessment.	There is currently little evidence that this pool or any part of the dune system in the vicinity of the Proposed Development is used in any more than an occasional way by SPA birds, although it is likely to be targeted for measures to improve SPA condition by NE in attempts to reverse this. Across all of the high and low tide surveys of this sector (which collectively number 24) 4 SPA species occurred and none of them occurred more than twice, nor did any occur in numbers significant in the context of the SPA populations. Sightlines may be reduced to the south-west by the Proposed Development, an area that has previously	At this stage, Natural England's position broadly remains as set out in our Relevant Representations. Discussions with the Applicant are ongoing on this matter. The applicant has undertaken to review the building layout and to illustrate the vertical scale of the main site buildings in relation to Blast Furnace Pool to inform assessment of the scheme's impacts.	It is noted that the changes to Main Site elevations considered under Change 7 would not make any change to the conclusions with regards to visual disturbance in the Report to Inform HRA. Until recently, significant steelworks structures and conveyors occupied the Main Site, resulting in a lack of sight lines for many years prior. If any sight lines have opened up, this was a recent development that has only occurred in the last few

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		accommodated infrastructure and buildings albeit not of the same specification or layout. Sightlines to the north (Coatham Sands) and west (Bran Sands Bay) will not be affected.		months due to the ongoing demolition of structures on the Main Site by STDC. The Applicant will discuss this further with NE and progress will be reported within the SoCG over the course of the Examination. Any updates needed to the HRA will form part of these discussions.
NE9: Construction Dust Assessment and Monitoring	Without mitigation there could be a potential significant/adverse effect on the Teesmouth and Cleveland Coast SSSI/SPA/Ramsar, as a result of construction dust. The applicant indicates standard mitigation would be sufficient to reduce this to non-significant – though assessment of the efficacy of each of the measures is not provided. Similar approaches are provided for operation (e.g. travel management) and decommissioning. For example, with reference to para 6.6.38 of the HRA, is unclear exactly which measures in the DEMP would reduce the air quality impacts at Teesmouth SPA/ Ramsar – and whether they could prevent any otherwise adverse effects on the qualifying features. A more robust assessment should be provided, with a commitment to monitoring.	The FCEMP includes mitigation measures relating to potential dust impacts within Table 7-1. The proposed good practice dust control measures selected originate from the 'high risk' site guidance published by the Institute for Air Quality Management. The control measures were selected based on decades of successful adoption at UK construction sites with the primary aim of minimising emissions at source and thereby minimising the transfer of dust beyond the site boundary. It is assumed that the same measures would be applied as part of the DEMP at decommissioning. All measures deployed to limit dust beyond the boundary of the construction area would protect the Teesmouth & Cleveland Coast SPA/SAC/SSSI as they are proven measures to protect human health and would therefore also protect ecological receptors (which are less sensitive). Table 9-1 within the Framework CEMP [APP-043] contains a commitment to monitor dust during earth moving activities. This table will be reviewed and updated in the Final CEMP once construction details have been fully defined.	At this stage, Natural England's position remains as set out in our Relevant Representations. Without mitigation there could be a potential significant/adverse effect on the Teesmouth and Cleveland Coast SSSI/SPA/Ramsar Site, as a result of construction dust. It is accepted that standard dust management techniques are generally effective at minimising dust beyond the site boundary. However, as the protected sites are very close/ adjacent to the site boundary, it is not accepted that measures designed for protection of human health would automatically protect sensitive ecosystems, given the different mechanisms of impact and the differential proximity. Demolition dust mitigation works within the fCEMP and PPW CEMP are likely to be generic, but as long as justification is provided that there will be no impact on the integrity of the protected sites, it is considered appropriate to rely on these as compliance with the CEMPs will form part of the DCO consent. As well as the mitigation, monitoring of dust is proposed/ committed in Table 9.1 of the Framework CEMP. Therefore it is accepted that construction dust would not result in an AEOI to the Teesmouth protected sites as long as ecological receptors are included in the monitoring scheme and there is a mechanism to ensure any dust beyond the site boundary is mitigated (by cessation of works in that area if necessary).	Human receptors are generally more sensitive to dust than ecosystems because of particulates in atmosphere that can be breathed into the lungs. In contrast, for ecosystems the main concern of dust is coating of vegetation (i.e. much larger than the particles that can be breathed into the lungs). Therefore, measures that will control dust emissions to such an extent that small particulate release is minimised will certainly be sufficient to prevent significant dust coating of vegetation. It is noted that the Framework CEMP [REP2-011] at Section 9 sets out that one of the main aims of the monitoring regime to be included in the Final CEMP is vegetation protection. Noting the above, and the commitment to consult with Natural England on the effectiveness of any proposed measures (including monitoring) in reducing effects on designated sites (see Table 7-2 of the Framework CEMP [REP2-011]), the Applicant considers this matter to be closed.
NE10: Ammonia emissions from vehicle and Acid Deposition	Ammonia emissions have not been considered within the assessment of construction traffic (and traffic in the in-combination aspect for operational consideration). Ammonia is a pollutant in its own right, and also a component of nitrogen deposition (Ndep). Para 8.3.22 in the Air Quality (AQ) ES chapter indicates the traffic assessments consider NOx (and Particulate Matter - PM) and this is used to calculate Ndep. However, Ndep levels in the assessment will be lower than reality as they do	It is noted that FAQ 143 confirms there is currently no agreed guidance for the assessment of road traffic ammonia emissions or statutory criteria for establishing the need for such an assessment. Defra and NE are at an early stage in developing this guidance. In discussion with NE, construction traffic air quality modelling will be updated using the CREAM emissions database to account for ammonia emissions and acid deposition from	At this stage, Natural England's position broadly remains as set out in our Relevant Representations. Discussions with the Applicant are ongoing on this matter. It is noted and welcomed that ammonia concentrations will be reported and included in the updated Report to Inform the HRA. It is understood that CREAM will be updated late Summer 2024 so the version used should be noted.	1.1.3 The HRA has been amended to address these points alongside the Proposed Change Application - see paragraph 4.2.85 onwards and 4.3.6 onwards. 1.1.4 Further details on the assessment of cumulative road traffic emissions impacts using the NAE001 Methodology

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	<p>not include the ammonia component. Acid deposition is also not considered for the traffic assessments (though it is for the operational assessment). Para 8.3.21 notes SO2 will be emitted from traffic but is not considered further as relevant AQ objectives are not exceeded and concentrations will be low. However, SO2 is an important component of acidifying pollution alongside NOx, and can locally be important even if its concentration does not exceed its critical level. Without this information it is not possible to conclude there would be no adverse effect on the integrity (AEOI) of the Teesmouth and Cleveland Coast SPA/Ramsar. The assessment should model ammonia emissions from vehicles. Further information on this is available FAQ 143 – Assessment of Ammonia LAQM (defra.gov.uk). Ammonia levels should be given as a concentration and compared against the relevant critical level for the qualifying features (where relevant) and should be included in the calculation of Ndep levels. Acid deposition (including any sulphur input) should also be considered in the assessment.</p>	<p>traffic as part of the updating the Report to Inform HRA. Although it is expected that the contribution will not be material, the calculations will be reported for completeness.</p> <p>Note that the only SPA/Ramsar interest features of concern regarding atmospheric pollutants are the nesting terns and nesting avocet. According to APIS even the nesting terns and avocet are not sensitive to NOx, acid deposition or ammonia in atmosphere. Therefore, for the SPA/Ramsar the only pollutant that needs exploring is nitrogen deposition at the avocet/tern nesting locations. Moreover, for avocet the impacts of N deposition are as likely to be positive as negative according to APIS. While ammonia will contribute to nitrogen deposition, it should be noted, as per paragraph 4.2.94 of the HRA, 'Moreover, there are no tern or avocet nesting locations within 200 m of the affected roads' [the only European site relevant to traffic emissions being Teesmouth & Cleveland Coast SPA]. The traffic routes are entirely to the east of the Main Site (via A66 and A174) whereas the nesting areas are all west of the Main Site.</p> <p>Based on data from INCA, the main nest areas are a minimum of 2.9km west of the Main Site (for avocet) and 2.8km west of the Main Site (for little tern). The nearest historic location (South Gare) is a little closer, 1.7km from the Main Site, but there has been no successful nesting there since before 2018.</p> <p>Additionally, paragraph 4.3.3 in the operational emissions section of the Report to Inform HRA [APP-040] explains why acid and ammonia are not considered for Teesmouth & Cleveland Coast SPA. The interest features are not sensitive to acid deposition according to APIS. While their habitats may be sensitive to ammonia, the nesting terns and avocet of the SPA/Ramsar will only be affected by changes in broad habitat structure rather than by relatively subtle changes in botanical composition. This rationale was also included in the HRA for the granted Net Zero Teesside DCO, and Natural England expressed no disagreement. This section on operational traffic</p>	<p>Comments on tern and avocet locations are noted and accepted, but the arguments for the broad habitat structure rather than subtle changes in botanical composition being relevant should be included clearly in the summary table.</p> <p>Natural England agrees that the assessment of construction traffic emissions should be introduced earlier for clarity.</p>	<p>are included in Annex G of the updated HRA.</p>

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		emissions applies equally to construction emissions and can be introduced earlier for clarity.		
NE11: Construction Emissions	<p>It is not clear that all sources of construction pollutants have been considered in the construction emission section. These include:</p> <p>1) Construction emissions from non-road mobile machinery (NRMM) such as generators on the main site or in the 7 construction compounds or for access/highway works. Para 8.3.2 in the AQ chapter indicates the study area for this source was 50 m from the Proposed Development Site (250 m from the Proposed Development Site entrances). Teesmouth and Cleveland Coast SPA and Ramsar Site are within 50m but were scoped out of the assessment (para 8.3.19). Depending on the fuel type to be used, NRMM could emit NOx, SO2 and ammonia, resulting in acid deposition and nitrogen deposition to nearby habitats including at Teesmouth and Cleveland Coast SPA and Ramsar Site. It is not clear that 50m is a sufficient distance to disperse to negligible levels – so evidence should be provided why this distance is used – or modelling undertaken to cover a wider area.</p> <p>2) Construction emissions from traffic on internal roads/haul roads – it is not clear if emissions from the main site include these (for ecological receptors within 200m of the site boundary including Teesmouth and Cleveland Coast SPA and Ramsar Site) – See NE10.</p> <p>3) Emissions associated with landscaping around Cowpen Bewley Open Space replacement have not been considered. Para 4.8.3 indicates traffic impacts are expected to be minimal and below thresholds – but this is not confirmed.</p> <p>4) Emissions (dust) from demolition and site clearance which would take place before the main works. Clarification that impacts will be subject to their own assessment and mitigation of impacts is required. See NE9. Without this information it is not possible to conclude there would be no AEOL on the Teesmouth and Cleveland Coast SPA/Ramsar.</p>	<p>1)The assessment has taken into account the presence of designated ecological sites and distance to them from the application site boundary using the methods proposed by the Institute for Air Quality Management referenced within the assessment. It is noted that actual works and associated emissions from NRMM are transient and the location of emissions move around the site. Consequently the site boundary is the theoretical closest distance between any emission and a receptor and is a conservative approach. Moreover, these sources are mainly within the main construction site which is more than 200 m away from tern and avocet nesting areas.</p> <p>2)The assessment considers the movement of road going vehicles at the site boundary and on the public highway. Trucks that only operate onsite (NRMM) are not considered separately, see 1) with respect to distances.</p> <p>3)The minimal amount of works required (mainly tree planting) means that traffic flows associated with landscaping around Cowpen Bewley Open Space replacement will be significantly below assessment thresholds.</p> <p>4)Demolition and clearance works prior to main works will be controlled by the measures included in the FCEMP. Works undertaken prior to main works are listed in Chapter 5 (5.3.7) as Permitted Preliminary works and will be subject to a PPW CEMP (5.3.120). The fCEMP [APP-043] includes mitigation measures relating to potential dust impacts within Table 7-1.</p>	<p>No significant impacts are anticipated for the international designated sites listed. It is accepted that NRMM sources were considered, but were not within 200m of nesting sites (from the site boundary at the theoretical closest points) - assuming the nesting site locations etc are included in the HRA no further assessment for AQ is required. It is also acknowledged that traffic numbers for tree planting/ landscaping would be <1000AADT/200AADT HDV and therefore no assessment of traffic air quality impacts arising from these works are necessary. Demolition dust mitigation works within the fCEMP and PPW CEMP are likely to be generic, but as long as justification is provided that there will be no impact on the integrity of the protected sites, it is considered appropriate to rely on these as compliance with the CEMPs will form part of the DCO consent</p>	<p>The locations of tern and avocet nest sites were provided in table 13A-5 of the ornithology baseline report, as supplied by INCA. Further locations were recorded during AECOM surveys and are described in the report narrative, and these map fairly closely to some of the INCA locations. Mapping can be provided to Natural England if considered helpful.</p>
NE12: Sources of Operational Pollutants	<p>It is not clear that all sources of operational pollutants, as outlined in Chapter 4 of the ES [APP-056] have been considered in the operational emission section (EN070009 – 000239). In particular, sources of ammonia appear to have been missed (as well as not having been</p>	<p>Natural England's observations about the likely release points for substances such as carbon dioxide, hydrogen, oxygen, and nitrogen gases are correct; however these emissions are not directly relevant to the designated sites' air quality</p>	<p>At this stage, Natural England's position broadly remains as set out in our Relevant Representations.</p> <p>Discussions with the Applicant are ongoing on this matter. It is accepted that the environmental permit will address</p>	<p>The HRA has been amended to address points in relation to traffic as part of the Proposed Change Application [EN070009/EXAM/7.3] see Paragraphs</p>

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	<p>considered in the traffic assessment and excluded from the assessment of the auxiliary boiler emissions – AQ chapter para 8.4.7) which could underestimate impacts of this pollutant alone and its contribution to Ndep. These potential sources include:</p> <p>1) Various effluent treatments (for example –bio-treatment plant, effluent treatment plant). Venting (or diversion to flare?) of some gases is assumed to be necessary. The biotreatment plant in particular is considered likely to emit ammonia as it is used to treat process condensate to reduce nitrogen concentration, using nitrification and denitrification (para 4.3.10).</p> <p>2) Pipework (venting, fugitive emissions from valves and flanges etc). It is assumed emissions would be largely CO2, H2, N2, O2 and methane (so not of direct relevance to the designated sites AQ assessment, although potential explosion/ fire risk, and in some cases greenhouse gases) and reactive emissions would be limited, but this should be clarified.</p> <p>3) Amine emissions are usually a byproduct of carbon capture systems. It is accepted that this process may avoid these by having a novel closed system (e.g. Para 8.3.35). Further information on this is required – including clarification of treatment of (presumably amine-rich) waste materials and how any fugitive gasses would be dealt with.</p> <p>4) Dedicated vent stack – for venting CO2 from the carbon capture units in contingency situations (para 4.3.6) – it is not clear if this could include venting of gases arising from the amine solvent or other pollutants.</p> <p>5) Chemical storage – in particular, storage of the amine-based solvent used to absorb CO2 produced by the H2 production process, and aqueous ammonia imported by tanker (para 4.3.10). Other chemicals listed in para 4.7.4 of the ES should also be considered.</p> <p>6) Air Separation Unit (or alternative O2 and N2 supply lines)– assumed emissions of N2, O2 or H2, though reactions could occur resulting in emissions of NOx or NH3.</p> <p>7) Indirect emissions – including emissions arising from any “waste” removed from the site, including amine-</p>	<p>assessment since this is focussed on assessment of NOx, ammonia, nitrogen deposition and acid deposition in line with guidance. Through the Environmental Permit application process, the Environment Agency will address the issue of total emissions on a mass balance basis, with any fugitive emissions included within those calculations. This assessment assumes that the total mass of emissions will be released to the air at the stated release locations, providing a conservative basis for evaluation.</p> <p>Further information will be provided to NE regarding operational traffic flows and combined impacts of ammonia emissions from road traffic and onsite operational plant and will be incorporated into updates to the Report to Inform HRA.</p> <p>All other potential emissions have been assessed or screened out of the impact assessment as insignificant based on release rates and locations.</p> <p>Amines associated with the carbon capture facility are not released to atmosphere – this is a closed loop process unlike that used for carbon capture from combustion sources such as power stations and EFW plants.</p>	<p>emissions, including fugitive emissions but this will not cover the entire red line boundary, including e.g. traffic emissions – and the full extent of emissions should be considered in the DCO application, not wait for the environmental permit, as otherwise there cannot be sufficient confidence that there will not be harm to the protected sites.</p> <p>It is acknowledged that further information on ammonia from traffic and operational emissions (as in our RR questions) will be provided, and used to inform updates to the HRA. NE will comment on these when available.</p> <p>Further information should also be provided on the “closed loop” carbon capture process, including the treatment of any amine rich wastes. Any offsite treatment should be noted, and impacts considered.</p>	<p>4.3.6 to 4.3.14 and 6.6.2 to 6.6.9 of the updated Report to Inform HRA [EN070009/APP/5.10] regarding atmospheric pollution.</p> <p>The carbon capture system to be installed on the hydrogen production facility is closed loop, meaning that the amines and associated degradation products are kept in a closed system and not discharged to atmosphere. The amine solution is recycled through a reclaiming system and returned for reuse. This is possible in chemical production processes such as the hydrogen production process, but is not possible in, for example, post combustion carbon capture on a power station, since the flue gas from the power station has to eventually be discharged to atmosphere and therefore can carry some amine and amine degradation products entrained in that flue gas. There is therefore no emission of amine and amine degradation products to atmosphere during normal operation. Any amine wastes that could arise are therefore minimal.</p> <p>It is noted that the Air Quality chapter of the ES (APP-060) (whose conclusions are not changed by the updates set out in the Change Application Report [EN070009/EXAM/7.3]) considers all emissions arising from the Proposed Development in the operational phase. While the non-Nitrogen and Acid deposition figures are only presented for Human Health, they lead to a conclusion of negligible adverse effects. As such, all relevant emissions have been presented to allow for full</p>

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	<p>based waste from the amine based solvent used in the Carbon Capture process (eg segregated drain system?), or waste from the pre-treatment of natural gas to remove sulphur species. Emissions may occur from these off-site, even if outwith the direct control of the applicant/environmental permit.</p> <p>8) Emissions from the 4-yearly major overhaul – although emissions would be temporary (over 28 days) and infrequent, there will be substantially higher operational emissions for their duration, particularly in terms of traffic. This should be accounted for in the assessment.</p> <p>9) Clarification of operational traffic including 4-yearly maintenance) - these have been excluded from the assessment as they fell below the Annualised Average Daily Traffic (AADT) thresholds. The applicant should clarify that this is the case when applied in-combination with other traffic from in-combination projects/plans as well as the project alone. The implication of traffic associated with the 4-yearly maintenance should also be considered. Without this information it is not possible to conclude there would be no AEOI on the Teesmouth and Cleveland Coast SPA/Ramsar.</p>			<p>consideration of effects at this DCO stage.</p> <p>The ES Traffic and Transport Chapter (APP-068) concludes that operational traffic movements are expected to be very low, which given the conclusions in respect of construction, means no likely significant emission related effects to ecological receptors would arise as they are below the screening threshold for further assessment. This includes in relation to periodic maintenance periods.</p>
NE13: Stack Height Determination	The Rochdale Envelope included a minimum stack height (para Clarification of the sensitivity testing undertaken should be provided to NE 4.6.5). It is understood that a lower stack will result in lesser dispersion so potentially higher concentrations/ deposition at affected protected sites. Clarification that testing of alternative stack heights was undertaken to ensure that greater dispersion from a taller stack (up to the maximum) would not impact additional sites further from the site should be provided.	The stack height determination has considered the likely impacts on human health and all designated ecological sites within the study area, within and at the upper and lower bounds of the Rochdale Envelope. Please refer to Section 8B.7 of Appendix 8B: Air Quality – Operational Phase of the ES [APP-191].	Following discussion with the applicant NE accepts that the approach used is acceptable to establish a reasonable worst case in terms of the stack height, and that relevant ecological sites were considered.	Following discussions with Natural England this matter is now considered to be concluded.
NE14: Cumulative and combined effects	Para 8.3.33 in the Air Quality Chapter [APP-060] indicates that potential cumulative traffic emissions from the construction of the Proposed Development as well as the contribution from traffic associated with other committed schemes in the area, is reflected in the 2026 scenario. Further information about the traffic model should be provided – for example whether it includes allocations in the Local Plan and is therefore a worst case. It is not clear what search terms were used in establishing the long list of other plans/ projects included in Chapter 23 [APP-076] (e.g. para 23.3.14) - for example, no agricultural developments appear to have been listed in Appendix 23A [APP-221] which could have a local impact on Ndep or ammonia concentrations. The approach to identifying in-combination projects relevant to the HRA is also	<p>TEMPRO has been used to include for Local Plan sites along with the combined impact from other cumulative sites as set out in Table 15A-42 of the Transport Assessment.</p> <p>As per the Applicant's responses to NE10 and NE12, traffic contributions for all traffic scenarios (operational traffic flows and combined impacts of ammonia emissions from road traffic and onsite operational plant) will be included for completeness within the in-combination assessment, forming part of the update to the Report to Inform HRA. Operational traffic movements are significantly lower than construction traffic movements for the Proposed</p>	<p>At this stage, Natural England's position remains as set out in our Relevant Representations.</p> <p>Discussions with the Applicant are ongoing on this matter. We await a revised Report to Inform HRA.</p>	<p>The HRA has been amended as part of the Proposed Change Application see Paragraphs 4.3.6 to 4.3.14 and 6.6.2 to 6.6.9 of the updated Report to Inform HRA [EN070009/APP/5.10] regarding atmospheric pollution.</p> <p>The in-combination assessment has been reviewed and updated in the Report to Inform HRA [EN070009/APP/5.10] to provide updates on Hygreen, York Potash and Teesside Flexible Regas Port.</p> <p>The Applicant will review the list of additional projects provided by Natural</p>

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	<p>unclear. For example, it seems the in-combination assessment for traffic includes only other vehicle emissions, and not emissions from the (point) sources outlined in Chapter 23 of the ES [APP-076]. In addition, some projects are not included in the in-combination assessment in the HRA (Table 5.1) as their individual assessments did not highlight significant impacts at European sites. However, at screening the requirement is to assess whether several non-significant impacts could add up to a significant one.</p>	<p>Development. Therefore, it is expected that the contribution will not be material.</p> <p>The general contribution of agriculture to N deposition is captured through the use of background contribution to deposition rates. The planning regime does not provide a useful basis for understanding how individual farm operations and associated emissions to air, might vary year to year.</p> <p>A standard approach to assessing cumulative and combined effects has been undertaken, considering sources with the potential to be considered cumulatively based on location, emissions profiles and where appropriate emissions estimates or data exist, considering the developments identified through the ES cumulative process.</p> <p>The Applicant will undertake a review of the in-combination assessment to determine if there is a need to include any projects that have been dismissed on the basis that their own HRA identified no in-combination effects. This will be included in the anticipated update to the HRA, alongside other updates to the in-combination assessment to account for the on-going work to update the ES cumulative assessment [APP-076].</p>		<p>England at D2. The Applicant will discuss this further with NE and progress will be reported within the SoCG over the course of the Examination. Any updates needed to the HRA will form part of these discussions.</p>
<p>NE15: Approach to HRA (Air Quality)</p>	<p>Relevant habitat types/qualifying features and their associated critical loads (and critical levels for NOx, SOx and ammonia) should be provided for each site/receptor. Para 8.3.63 of Chapter 8: Air Quality [APP-060] indicates that "the impact of point source emissions on ecological receptors, through deposition of nutrient nitrogen or acidity, can be evaluated using the Environment Agency and Natural England's threshold for insignificance criterion of 1% of the long-term objective." It must be noted that Natural England requires this threshold to be an in-combination one (if the project alone does not meet it). It also applies to critical levels as well as critical loads for Ndep and acidity. The screening/ LSE stage should follow the approach to assessment laid out in NE's AQ guidance NEA001. If the process contribution from a project alone exceeds 1%, there is an LSE and appropriate assessment is required. This does not depend on background or PEC. These considerations and ecological considerations about the sensitivity of qualifying features</p>	<p>Relevant habitat types, qualifying features, and their associated critical loads (and critical levels for NOx, SOx, and ammonia) for each site and receptor will be clarified. The methodology applied for the Report to Inform Habitats Regulations Assessment [APP-040] for H2Teesside, including the assessment of whether the critical level for NOx would be exceeded in the LSE section, aligns with the approach used for the Net Zero Teesside HRA. It also reflects the fact that according to APIS the only SPA/Ramsar interest features of concern regarding atmospheric pollutants are the nesting terns and nesting avocet which are not sensitive to NOx, acid deposition or ammonia. Therefore, for the SPA/Ramsar the only pollutant that needs exploring is nitrogen deposition at the avocet/tern nesting locations. The project air quality modelling has forecast the effects 'alone' (Table 8B-29 to 8B-</p>	<p>Discussions with the Applicant are ongoing on this matter.</p> <p>Assuming the information requested is provided in the updated HRA report, NE would be content with the methodology. We will review the assessment when provided.</p>	<p>The HRA has been amended to address these points as part of the Proposed Change Application see Paragraphs 4.2.85 to 4.2.90, 4.3.6 to 4.3.14 and 6.6.2 to 6.6.9 of the updated Report to Inform HRA [EN070009/APP/5.10] regarding atmospheric pollution. Further details on the assessment of cumulative road traffic emissions impacts using the NAE001 Methodology are included in Annex G of the updated HRA.</p>

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	are relevant, but should be addressed in the appropriate assessment as LSE cannot be excluded. If a project generates <1% alone, an in-combination assessment is required to see if 1% is exceeded in-combination prior to being able to conclude no LSE. At present the information provided in the HRA does not give sufficient information to be able to exclude AEOL. NE disagrees with the conclusion that there is no LSE arising from construction or operational NOx or Ndep at Teesmouth and Cleveland Coast SPA/Ramsar. It would also be helpful to follow the HRA process to include a table (relating to the assessment undertaken in Chapter 8 [APP-060]) outlining modelling results for each phase (construction/ operation), designated site, and project alone/ in-combination results. At present, reference has to be made to the appendices of Chapter 8 [APP-060].	32) and 'in combination' (Tables 8B-40 to 8B-43) as presented in ES Appendix 8B (Air Quality). Updates will be made to the Report to inform Habitats Regulations Assessment [APP-040] to ensure that factors beyond whether the 1% of the critical level and load metric is exceeded alone or in combination are addressed in the appropriate assessment. However, it should be noted that for the only pollutant to which the key interest features of Teesmouth & Cleveland Coast SPA/Ramsar is designated (nitrogen deposition on the nesting terns and avocet) an LSE from operational nitrogen deposition in combination with other projects and plans has been identified at Teesmouth & Cleveland Coast SPA/Ramsar, which was taken forward to Appropriate Assessment in the Report to Inform Habitats Regulations Assessment [APP-040], where other factors were discussed to inform the conclusion of no adverse effect on integrity. This will be reviewed and expanded upon in the update to the HRA. Additionally, supplementary air quality data including the in-combination traffic and operational plant emissions will be provided once available, as referred to in NE10 above.		
NE16: Construction Dust Assessment and Monitoring	Without mitigation there could be a potential significant/ adverse effect on the Teesmouth and Cleveland Coast SSSI/SPA/Ramsar, as a result of construction dust. The applicant indicates standard mitigation would be sufficient to reduce this to non-significant – though assessment of the efficacy of each of the measures is not provided. Similar approaches are provided for operation (e.g. travel management) and decommissioning. For example, para 6.6.38 of the HRA is unclear exactly which measures in the DEMP would reduce the air quality impacts at Teesmouth SPA/ Ramsar – and whether it could prevent any otherwise adverse effects on the qualifying features. A more robust assessment should be provided, with a commitment to monitoring.	Please see responses provided under NE Ref 9	At this stage, Natural England's position remains as set out in our Relevant Representations.	Please refer to our response under NE9.
NE17: Nitrogen Deposition (Ndep)	Para 12.6.16 in the ES Ch12 [APP-064] indicates that historic nitrogen deposition (Ndep) levels were higher than at present, and have declined. Although trends in NOx (as shown on APIS) have declined since 2015 – levels of Ndep have varied, with an overall limited decrease since 2015 while ammonia has increased dramatically. It is therefore not possible to indicate that pollution levels	With regard to the SSSI, paragraph 12.6.16 shows that 'in combination' nitrogen deposition is forecast to be 13.89 kgN/ha/yr, whereas N deposition in 2003 was up to 14.77 kgN/ha/yr. Therefore a net improvement in nitrogen deposition is forecast and nitrogen deposition rates are forecast to be materially lower than they	At this stage, Natural England's position broadly remains as set out in our Relevant Representations. Discussions with the Applicant are ongoing on this matter. Although the points made relating to historic nitrogen levels are relevant, it must be recognised that levels are	The HRA has been amended as part of the Proposed Change Application see Paragraphs 4.3.6 to 4.3.14 and 6.6.2 to 6.6.9 of the updated Report to Inform HRA [EN070009/APP/5.10] regarding atmospheric pollution. The HRA concludes

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	<p>are declining, and the proposed development will not reverse this trend. The proposed development in-combination with other plans and projects, could delay any recovery.</p> <p>Section 6.6.3 in the HRA indicates that terns are sensitive to nitrogen deposition. Natural England agree that increases in nitrogen deposition can make nesting areas unsuitable for terns by promoting vegetation growth (in general terns favour sparsely vegetated areas to nest in). One historic site (around an area called 'the Ducky') is considered to have changed so much (from natural hydrodynamic changes) that it is no longer suitable for nesting, but other former nest sites around South Gare remain viable. Natural England also advise that there are a number of actions that could be taken to improve opportunities for nesting along this stretch of the coast (e.g. management of recreational disturbance).</p> <p>The addition of further Ndep may undermine the suitability of nest sites along the coast and therefore attempts to improve conditions. Overall, it is considered there is insufficient information at present to be able to exclude an adverse effect on the terns or avocets.</p>	<p>were when the habitat in question established at a time when there were industrial emissions in the area that have since ceased. This same argument presented in Chapter 12 [APP-064] was also submitted to the consented Net Zero Teesside DCO and was taken into consideration in the decision to consent the project.</p> <p>With regard to Teesmouth & Cleveland Coast SPA (as opposed to the SSSI), the point the Applicant is making is that despite the very elevated N deposition rates the nesting locations are nonetheless extremely sparsely vegetated. That indicates that N deposition is in practice having little effect on vegetation encroachment and therefore the small increase due to this project or in combination won't affect it. This identical argument was accepted by Natural England for the NZT DCO. Nonetheless, this will be revisited as the assessment presented in the HRA was very precautionary. The submitted HRA used the boundary of the SPA as the assessment location rather than the actual location of the nesting terns and avocet, which are much further from the Main Site (c. 2.8km west). As such nitrogen deposition to these areas is much lower than was reported in the submitted HRA. At these nearest tern/avocet nest locations (used since 2018) operational 'in combination' nitrogen deposition is modelled to be below 1% of the critical load. This will be added to the HRA.</p> <p>The reference to the historic nesting location at South Gare will be checked and confirmed but even this is 1.7km from the Main Site. Furthermore, while the historic occurrence of nesting on South Gare is well known and described in the supporting baseline report to the ES, the Cleveland Little Tern Report 2019 (Bell and Leakey, 2019) describes the availability of suitable nesting habitat on South Gare as "severely limited".</p>	<p>still above the critical load, and therefore the protected site is at risk of harm – even if historic levels were higher. The decline of <1kgN/ha/yr over 20 years indicates levels are still high with no rapid decline in nitrogen levels, and in-combination projects in the Teesside area coming forward are a risk to this slow decline.</p> <p>It is accepted that the impact of air pollution on the SPA will depend on the impacts on the bird qualifying features – largely as a result of ensuring vegetation encroachment does not adversely affect the nest sites. This argument can be made in the appropriate assessment, alongside the consideration of historic nesting locations as proposed.</p> <p>NE will review the updated shadow HRA when available. The location of the qualifying features of the SPA are relevant in establishing whether the conservation objectives are undermined. An in combination PC of <1% is sufficient to conclude no LSE and therefore no AEOI.</p> <p>We attach separately a map illustrating breeding site record for It terns close to the main site to inform the applicant's updated air quality modelling and Report to inform HRA.</p>	<p>no AEOI via Atmospheric pollution at Operation.</p> <p>With respect to little tern nesting locations, it is not clear if the plan supplied by Natural England is intended to show only little tern colony locations, or if it shows the locations of other species as well. The Applicant would also draw attention to the extent of the SPA shown on the plan, which appears to be based on the SPA boundary prior to the reclassification of the SPA that was adopted in 2020. If the plan is intended to show only little tern breeding locations, then the Applicant would question the validity some of the records. Little tern breed on open shorelines close to high tide mark. Some of the locations shown in Natural England's plan include inland areas such as Brinefields and Saltholme RSPB Reserve Pools north of the River Tees, where common tern and avocet are known to breed but there are no reliable records of breeding little tern, and where breeding habitats for this species are not found.</p> <p>It is also noted that, while in theory Coatham Sands provides suitable breeding habitat, the breeding site provided by Natural England at this location may be an error. The majority of publicly available historic breeding records for little tern are available from INCA, who were involved in the monitoring of little tern nests across Teesside and the publication of reports setting out historic and current breeding records (e.g. Bell and Leakey, 2019). None of those reports include records of breeding anywhere across Coatham Sands since around 1995, and this has been confirmed in recent correspondence with INCA. The baseline reported submitted by the Applicant was based on data from BTO WeBS, INCA and RSPB, none of which identified nesting at Coatham Sands or at any inland locations.</p>

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				<p>Furthermore, studies commissioned by Natural England to inform the updates made to the extent of the SPA that were adopted in 2020 included the determination of foraging ranges from nest sites for terns, including little tern. This included shore and boat-based monitoring of tern activity based upon the identification of active nest sites. That study was based on the location of the breeding colony at Crimdon Dene and the Departmental Brief for the reclassification of the SPA states <i>"Virtually all breeding birds are currently located at Crimdon Dene, north of Hartlepool. The feeding grounds of the little terns that nest at Crimdon Dene lie predominantly in marine areas within 5 km alongshore of the colony and within 3.5 km offshore"</i> (Natural England, 2018).</p> <p>Taking all of the above into account the cumulative evidence base is contrary to some of Natural England's suggested breeding locations for little tern, including at Coatham Sands and these were clearly not the basis for the delineation of the SPA boundary in its current form. However, regardless of any of the narrative provided above, the Applicant does not regard breeding records from 2005 as sufficiently contemporary to inform a robust impact assessment or HRA.</p>
NE19: Update in-combination assessment	We advise that the developments scoped in for potential impacts in-combination in Table 5-1 of the Report to Inform Habitats Regulations [APP-040] is comprehensive, in terms of inclusion of the correct types of development. We also note that Table 7-1 details the projects taken to Appropriate Assessment stage and the potential for in-combination effects with H2 Teesside. Further information is required from the Applicant for a number of thematic areas including ornithology, water quality and air quality, and we note that there is a temporal overlap between H2Teesside and a number of the neighbouring schemes which should be considered within the in-combination assessment. Without this information NE do	Chapter 23 of the ES [APP-076] identifies the long and short lists of developments considered for their potential to have cumulative and combined effects with the Proposed Development. Table 5-1 summarises the plans and projects which have been considered within this HRA and whether there is potential for LSE upon the European designated sites in combination with the Proposed Development. The potential for all aspects of the Plans and Projects to have in combination effects has been considered. This includes ornithology, water quality, air quality and temporal overlaps. Where the potential for in-	<p>At this stage, Natural England's position remains as set out in our Relevant Representations.</p> <p>We note the applicant and ExA's request (relevant ExA Q ref) for clarification on the information we seek.</p> <p>Natural England offers a copy of construction phase overlap in Gantt chart format for context at Annex A</p> <p>Further information sought = Boundaries of schemes with temporal overlap (construction phase) relative to SPA/Ramsar Site – Reason – To illustrate proximity</p>	<p>The HRA has been amended as part of the Proposed Change Application. The in-combination assessment has been reviewed and updated to provide updates on Hygreen, York Potash and Teesside Flexible Regas Port.</p> <p>Please also refer to the Applicants response to NE3.</p> <p>The Applicant will review the list of additional projects provided by Natural England at D2. The Applicant will discuss</p>

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	not yet fully understand the impacts of H2Teesside on the designated site. We advise that the in-combination assessment is updated once this outstanding information is received, as this may impact the overall conclusion of the assessment.	combination effects has been identified, those projects have been taken forward to Appropriate Assessment. Table 7-1 within the Appropriate Assessment summarises the plans and projects with the Potential for 'in-combination' Effect with the Proposed Development and any residual effects identified after mitigation is applied. The Applicant would like further clarification from Natural England on the additional information they require to inform the in-combination assessment to help inform the anticipated update to the HRA, which will include updates to the in-combination assessment to account for the on-going work to update the ES cumulative assessment.	<p>Consideration of bird spp records (breeding, roosting and feeding locations) relative to scheme works phases</p> <p>Consideration of impact pathways and resulting impacts through time for relevant schemes – to include numbers of birds likely to be affected by the project alone and in combination.</p>	this further with NE and progress will be reported within the SoCG over the course of the Examination. Any updates needed to the HRA will form part of these discussions.
NE24: Impact of acid deposition	Acid deposition exceeds 1% of the acid critical load at North York Moors in-combination so should be considered in the appropriate assessment. (Table 8B-43). These issues could be resolved in a final version of the shadow HRA document. Further discussion with NE may confirm requirements.	However, paragraph 4.3.8 of the submitted HRA makes it clear that the contribution of H2Teesside to the in combination impact is effectively zero for nitrogen and the same is true for acid. Review of ES Appendix 8B [APP-191] Tables 8B-31 and 8B-32 shows that the contribution of H2Teesside is less than 0.01kgN/ha/yr for nitrogen (i.e. too small to show in the model) and less than 0.000 for acid).	<p>At this stage, Natural England's position remains as set out in our Relevant Representations.</p> <p>Discussions with the Applicant are ongoing on this matter.</p> <p>NE will review the revised Report to inform HRA when available. In principle, there is no lower level at which a project may not result in an in-combination impact to a protected site. However, given the distance and differential impacts from other in-combination projects, it is accepted that the impact could be negligible in practice – subject to review of the revised shadow HRA.</p>	<p>The HRA has been amended to address this point as part of the Proposed Change Application see Paragraphs 4.3.13 to 4.3.15 of the updated Report to Inform HRA [EN070009/APP/5.10] regarding acid deposition.</p> <p>1.1.5 While the 'in combination' impact on North York Moors SAC/SPA exceeds 1% of the critical load, the contribution of H2T is less than 0.001 i.e. effectively zero. As such it is considered reasonable to dismiss the contribution of H2T to the modelled in combination impact as imperceptible.</p>
NE25: Impact of Nitrogen deposition on qualifying species	It is not clear why a critical load of 10kgN/ha/yr is used for Durham Coast, when APIS indicates the most sensitive habitat type (Coastal dune grasslands (grey dunes) - acid type) has a lower critical load of 5kgN/ha/yr. Therefore, it would seem precautionary to include this site in the appropriate assessment and justify why use of the calcareous grassland critical load is considered appropriate. In addition, these levels do not include any contribution from ammonia. Therefore it is unclear at present whether the applicant is correct to conclude no LSE at these sites for Ndep in-combination. The justification around location of nesting terms may be relevant (HRA para 4.3.9) but it should be made in the appropriate assessment rather than at the screening	Durham Coast SAC doesn't have any dune grasslands as it is a cliff site. This is why the 5 kgN/ha/yr critical load would not be appropriate for this SAC. The cliffs are magnesian limestone and flushed with calcareous water (Durham Coast - Special Areas of Conservation (jncc.gov.uk)), and therefore the cliff vegetation is calcareous.	<p>Natural England's position has changed from that set out in our Relevant Representations.</p> <p>We have had discussions with the Applicant on this matter.</p> <p>Grey sand dunes do not form a feature of the Durham Coast SAC. Natural England Accepts the use of the 10kg N/Ha/Yr critical load value for XYZ habitat accordingly.</p>	Noted, the Applicant welcomes agreement with Natural England on this issue.

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	<p>stage. These issues could be resolved in a final version of the shadow HRA document. Further discussion with NE may confirm requirements.</p>			
<p>NE26: Noise disturbance - Seals</p>	<p>Report to inform HRA [APP-040] - Section 6.5.20 The report notes that Permanent Threshold Shifts (PTS) and Temporary Threshold Shifts (TTS) are 34 and 154 dB in air. NE confirms that TTS for seals is 134 dB and PTS is 154. Furthermore, NE advise that these are injury thresholds and that disturbance can occur at levels lower than these. Table 6-7At model locations 1 and 2 (south-east and south-west corners of seal sands intertidal area) SEL totals are expected to be 127 dB and 125 dB respectively. These levels are close to the TTS threshold. NE require the cumulative noise level from ambient noise plus main site construction and compound plus pipeline construction at model location 1. NE advise that even if the TTS threshold is not reached, there may still be a disturbance effect from the noise.</p> <p>6.5.23 The document states that HDD works at Greatham Creek may affect seal movement NE advise that further mitigation is required to further reduce the disturbance effect and impacts on seal movements.</p> <p>6.5.24 The document states that during the 10 weeks of HDD works at Greatham Creek, seals disturbed from Greatham Creek are expected to haul-out on Seal Sands. NE queries the justification for this on two counts:</p> <ul style="list-style-type: none"> • Will there be enough space on Seal Sands – that area is used by other individuals? • Will the seals from upstream of Greatham Creek be able to get to Seal Sands? <p>NE is concerned that the noise from the HDD works will present a barrier to seals moving down the creek and out to sea and the Seal Sands haul-out. The applicant needs to consider any barrier effect as that would seriously impact any individual that are “trapped” upstream of the HDD works.</p> <p>NE advise that further mitigation is required to ensure there is no barrier effect from the noise of HDD at Greatham Creek.</p> <p>6.5.27 The document recognises that disturbance may occur at Greatham Creek during the important moulting and breeding season.</p>	<p>Please refer to Appendix 2: Technical Note in response to Natural England’s Relevant Representation (NE26). The information provided concludes that considering the very limited potential for disturbance to seals during the works, the noise from the pipeline construction is not considered to result in a barrier to seal movement between Greatham Creek and Seal Sands. Therefore, a pre-construction monitoring plan is not considered appropriate. The mitigation recommended is considered sufficient to reducing any noise produced during construction to below ambient (as per the updated noise modelling), even without considering the avoidance of the most sensitive period for seals at Seal Sands.</p>	<p>Discussions with the Applicant are ongoing on this matter.</p> <p>Following a conversation with AECOM, Natural England advises that provided HDD operations last no longer than 3 weeks in October, and noise abatement barriers reduce noise by 10dB, there is unlikely to be a significant impact on the seal population of the Teesmouth and Cleveland Coast SSSI from the HDD works at Greatham Creek. Natural England would welcome securing these mitigations through conditions to any licence granted.</p> <p>Natural England’s advice remains that pre-construction monitoring is carried out to assess the behaviour of seals in the area under “normal” conditions. Further monitoring should be carried out during construction to assess the efficacy of mitigation measures. If behaviour indicating disturbance is noted, further mitigation must be put in place. This may include more effective sound barriers further muffling of machinery. If monitoring shows that disturbance is not occurring, further mitigation is unlikely to be necessary.,</p>	<p>The HRA has been amended to address these points as part of the Proposed Change Application see Paragraphs 6.5.15 to 6.5.38 of the updated Report to Inform HRA [EN070009/APP/5.10] regarding noise disturbance of seals.</p> <p>Regarding pre-construction monitoring the Applicant will discuss this further with NE and progress will be reported within the SoCG over the course of the Examination. Any updates needed to the HRA will form part of these discussions.</p> <p>-</p>

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	<p>6.5.28 The applicant has committed to using noise abatement barriers at Greatham Creek. NE welcome this commitment but require further confidence that these will be a suitable and sufficient mitigation.</p> <p>NE advise that pre-construction monitoring is carried out to assess the behaviour of seals in the area under "normal" conditions. Further monitoring should be carried out during construction to assess the efficacy of mitigation measures. If behaviour indicating disturbance is noted, further mitigation must be put in place. This may include more effective sound barriers, further muffling of machinery. If monitoring shows that disturbance is not occurring, further mitigation is unlikely to be necessary.</p>			
<p>NE31: Impact of pollutants at SSSIs including SSSIs underlying European designations</p>	<p>The same issues as raised for international sites would apply. Please see NE Refs 11 & 12.</p> <p>In addition, acid deposition exceeded 1% of the acid critical load at Hart Bog SSSI so should be considered. (Table 8B-43).</p> <p>Furthermore, Natural England do not agree with the statement in section 12.6.16 about Teesmouth and Cleveland Coast SSSI that 'The calcareous dune habitat has thus developed and persisted in close proximity to an operational steel works and other industrial facilities when nitrogen deposition rates were considerably higher than the lower critical load of 10 kgN/ha/yr.' This statement suggests that the dune system is of recent origin, which is not the case. It also fails to recognise that damage is likely to be occurring under the current levels of nitrogen deposition (that exceed the critical load for calcareous dune habitat). Although the SSSI was notified at a time when nitrogen deposition levels exceeded the critical load for sand dune habitat, this does not mean that damage was not and is not still occurring. Natural England do not therefore consider that assessment demonstrates no damage to Teesmouth and Cleveland Coast SSSI.</p>	<p>ES Appendix 8B shows that In combination acid deposition at Hart Bog SSSI is 0.005 keq which is over 1% of the critical load, and PEC is exceeded. However, the contribution of H2Teesside is 0.000 i.e. effectively zero at the distance at which Hart Bog is situated.</p> <p>With regard to the Teesmouth and Cleveland Coast SSSI, paragraph 12.6.16 shows that 'in combination' nitrogen deposition is forecast to be 13.89 kgN/ha/yr, whereas N deposition in 2003 was up to 14.77 kgN/ha/yr. Therefore, a net improvement in nitrogen deposition is forecast and nitrogen deposition rates are forecast to be materially lower than they were when the habitat in question established. While the dune system is not 'new', the habitat structure has extensively changed due to slag deposition and movement from at least the 1940s to the early 2000s. In these decades N deposition will have been higher than it is now due to much higher NOx emissions (and was certainly higher in 2003 than it is now according to APIS). For example, UK N deposition reduced from 465 kt N in 1990 to 278 kt N in 2017 (Tomlinson <i>et al</i>, 2021)¹.</p> <p>This identical argument was submitted into the Examination for the consented Net Zero Teesside DCO to enable no likely significant effects to be reported for this site. Given it was accepted by the Examining Authority/Secretary of State for that</p>	<p>At this stage, Natural England's position broadly remains as set out in our Relevant Representations.</p> <p>Discussions with the Applicant are ongoing on this matter. Update on NE17 (above) refers</p> <p>Comments are as for NE24 - it is accepted that the contribution of H2Teesside to an in-combination impact of >1% may be negligible, but this argument requires to be made in the shadow HRA.</p> <p>The comments on Ndep at the SSSI are the same as for NE17 – the site is still exceeding its critical load, and the proposed development is adding to this. There has been a <1kgN/ha/yr decline in Ndep over approximately 20 years, and the applicant would need to justify that the proposed development would not undermine any environmental improvement in recent years.</p>	<p>The HRA has been amended as part of the Proposed Change Application see Paragraphs 4.3.6 to 4.3.14 and 6.6.2 to 6.6.9 of the updated Report to Inform HRA [EN070009/APP/5.10] regarding atmospheric pollution.</p> <p>The Change Application report [EN070009/EXAM/7.3] concludes that no likely significant effect will arise on Teesmouth & Cleveland Coast SSSI, based on the small contribution of the proposed project, the fact that nitrogen deposition is modelled to remain below historic levels (thus denoting a net improvement even when cumulative deposition is considered), and the fact that much of the dune interest developed when pollution levels were higher than at present.</p>

¹ Tomlinson, S. J., Carnell, E. J., Dore, A. J., Dragosits, U. (2021). *Nitrogen deposition in the UK at 1 km resolution from 1990 to 2017*. Earth System Science Data, 13(10), 4677 – 4692.

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		DCO it would be inconsistent to take a different approach for this DCO.		