NORTH LINCOLNSHIRE GREEN ENERGY PARK

Planning Act 2008

Infrastructure Planning (Applications Prescribed Forms and Procedure) Regulations 2009

North Lincolnshire Green Energy Park

Volume 9

9.31 Applicant's responses to RIES

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Contents

Acronyms and Abbreviations

Name	Description
AGI	Above Ground Installations
CBMF	Concrete Block Manufacturing Facility
CCUS	Carbon Capture, Utilisation and Storage
CO2	Carbon Dioxide
CoCP	Code of Construction Practice
COMAH	Control of Major Accident Hazards
DAS	Design and Access Statement
dDCO	Draft Development Consent Order
DHPWN	District Heat and Private Wire Networks
EIA	Environmental Impact Assessment
ERF	Energy Recovery Facility
ES	Environmental Statement
EV	Electric Vehicle
ExA	Examining Authority
H_2	Hydrogen
IEMA	Institute of Environmental Management and Assessment
LAQM	Local Air Quality Management
MW	Megawatt
NE	Natural England
NLC	North Lincolnshire Council
NLGEP	North Lincolnshire Green Energy Park
NSIP	Nationally Significant Infrastructure Project
OEMP	Outline Environmental Management Plan
PRF	Plastic Recycling Facility
RDF	Refuse Derived Fuel
RHTF	Residue Handling and Treatment Facility
RIES	Report on the Implications for European Sites
SMP	Soil Management Plan
SoCG	Statement of Common Ground
SSSI	Site of Special Scientific Interest
SUDs	Sustainable Drainage System

1. INTRODUCTION

1.1 Overview

1.1..1 This report responds to the Examining Authority's (ExA) Report on the Implications for European Sites (RIES) dated 6th April 2023.

1.1..2 The report responds to each of the observations / questions raised by the ExA in this report.

1.2 The Proposed Development

1.2..1 The North Lincolnshire Green Energy Park (NLGEP), located at Flixborough, North Lincolnshire, comprises an ERF capable of converting up to 760,000 tonnes of residual non-recyclable waste into 95 MW of electricity and a CCUS facility which will treat a proportion of the excess gasses released from the ERF to remove and store CO2 prior to emission into the atmosphere. The design of the ERF and CCUS will also enable future connection into the Zero Carbon Humber pipeline to be applied for, when this is consented and operational, to enable the possibility of full carbon capture in the future.

1.2..2 The NSIP incorporates a switchyard, to ensure that the power created can be exported to the National Grid or to local businesses, and a water treatment facility, to take water from the mains supply or recycled process water to remove impurities and make it suitable for use in the boilers, the CCUS facility, concrete block manufacture, hydrogen production and the maintenance of the water levels in the wetland area.

1.2..3 The Project will include the following Associated Development to support the operation of the NSIP:

- A bottom ash and flue gas residue handling and treatment facility (RHTF);
- A concrete block manufacturing facility (CBMF);
- A plastic recycling facility (PRF);
- A hydrogen production and storage facility;
- An electric vehicle (EV) and hydrogen (H2) refuelling station;
- Battery storage;
- A hydrogen and natural gas above ground installations (AGI);

- A new access road and parking;
- A gatehouse and visitor centre with elevated walkway;
- Railway reinstatement works including, sidings by Dragonby, reinstatement and safety improvements to the 6km private railway spur, and the construction of a new railhead with sidings south of Flixborough Wharf;
- A northern and southern district heating and private wire network (DHPWN);
- Habitat creation, landscaping and ecological mitigation, including green infrastructure and 65-acre wetland area;
- New public rights of way and cycle ways including footbridges;
- Sustainable Drainage Systems (SuDS) and flood defence; and,
- Utility constructions and diversions.

1.2..4 Additional information regarding the proposed development can be found in Chapter 1 and Chapter 3 of the submitted Environmental Statement (APP-049 and APP-051).

1.3 Structure of the Responses to Written Questions

1.1.1 The remainder of this report has been structured to set out clearly all responses to the EXA's questions. These responses are set out in two tables, as this was how the questions were set out in the RIES.

2. RESPONSES TO EXAMINING AUTHORITY RIES QUESTIONS

Table 1 Responses to Questions in body of Report

ID	TO	QUESTION	RESPONSE
Q2.1.1	Natural England	Can Natural England confirm that all relevant European sites and or European site features that could be affected by the project have been identified by the Applicant?	
Q2.5.1	Natural England	Can NE confirm that it is satisfied with the Applicant's approach to use air quality modelling results for the Humber Estuary SPA and SAC in respect of the Humber Estuary Ramsar?	
Q2.5.2	Environment Agency	Can the EA comment on whether it considers that the use of ERF performance data 2021 Incineration Monitoring Reports is a reasonable proxy for the expected emissions' limits for NOx and NH3 that would be established through a future environmental permitting process?	
Q2.5.3	Applicant	Can the Applicant define the term HCl	HCl would be Hydrogen Chloride when discussed in relation to Air Quality.

Q2.5.4	Applicant	Can the Applicant explain why the reasonable case emissions' values for NOx and NH3 (set out in Table 2.1 of Appendix 1 to [AS-016]) cannot be secured in the DCO? What would be the implications if they were?	Following discussions in the public hearing, the Reasonable Operating Case (ROC) for the NLGEP has been assessed. The ROC captures the most likely activities and impacts of the project in respect of the most likely modal split, emissions from the ERF plant and hours of operation. The purpose of the ROC is to illustrate to Natural England the likely impacts of the project on ecological receptors, as opposed to the Reasonable Worst Case impacts presented in the DCO. The ROC was always intended to be presented for information only for Natural England, and not to secure any conditions. In practice, the project will require a degree of headroom in emissions limits to avoid exceeding these within the normal fluctuations of plant operations. The project also needs to maintain flexibility around the modal split for material transport. Securing the emissions from the ERF and/or modal split would unduly constrain the operation of the project, and risk non-compliance with emission limits, should these be set at the expected level of emissions. Rather, some headroom needs to be included in the set emission limits. These will be secured within the Environmental Permit during which the HRA will be updated and agreed with Natural England and the Environment Agency.
Q2.5.5	Applicant	Can the Applicant confirm whether the ROC still assumes a worst case of 100% of material movements during operation being by road? If not, what has been assumed about the number of traffic movements?	The ROC includes the most likely modal split. This does not have 100% movements by road as the expectation is that materials will also be moved by rail and ship. The ROC uses the likely split of 290 ship movements per year; 1 train per day; and the remaining 50% of material movements by road. This would be further improved if vehicle movements were optimised with return loads.

Q2.5.6	Applicant	In response to ExQ2 (Q2.5.1.2) the Applicant [REP6-032] stated it 'would not be appropriate to secure any one parameter, as at any one time one parameter might exceed the value used in the reasonable operating case, while another may be below the value.' The ExA remains unclear as to how this approach would ensure that the assessed parameters are not exceeded, potentially giving rise to LSE that have not been assessed in the HRA, noting that the dDCO [REP6-004] limits effects by reference to the ES (not the Report to Inform HRA) and that the ES has not been updated to reflect the ROC modelling. Can the Applicant provide further explanation? In its response, it should comment on whether any of the parameters could be secured in the DCO and what the implications would be if they were secured. It should also explain why ES Chapter 5 [REP4-009] has not been updated and submitted into the Examination.	As noted in the response to Q2.5.4, assessing the ROC was agreed in discussion with Natural England during the public hearing. The understanding reached during the public hearing was that the ROC would be for illustrative purposes only and was designed to inform Natural England about the likely impacts of the project. This was agreed due to the sizable difference between the Reasonable Worst Case presented in the ES, and the ROC case, particularly the difference between the emission limits that would be in the Environmental Permit, and the actual emissions from the ERF. In addition to the HRA, information in the ES is being updated to take account of the findings of the ROC. An assessment of the findings based on the ROC show that the PCs as % of the CLs have decreased compared with those presented in the original ES for the worst-case.. The outputs of the modelling of the ROC have identified ecological sites where it is likely that significant residual effects may remain still (i.e. Risby Warren SSSI). Discussions are ongoing with Natural England to define suitable compensation for the effects on Risby Warren SSSI. An updated Appendix A: Effects of Air Quality on European, Nationally and Locally Designated Sites (which is attached to Chapter 10: Ecology and Nature Conservation) has been produced based on the modelled ROC outputs and provided to Natural England. This provides an updated assessment of the effects of the Project alone on designated sites. Further information for submission on cumulative impacts is being produced.

Q2.5.7	Natural England	Can NE comment on the acceptability of the ROC modelling parameters as a basis for assessment and identification of LSE from operational emissions to air, given that these parameters are not proposed to be secured in the DCO?	
Q2.5.8	Applicant	The Applicant is requested to submit the detailed air quality modelling at D8.	This will be provided at DL8.

Q2.5.9	Applicant	Can the Applicant provide further clarification as to why the use of the revised standard for short term NOx emissions is appropriate given that the original standard represents the critical level as identified in APIS?	Guidance from the Institute of Air Quality Management (A guide to the assessment of air quality impacts on designated nature conservation sites, May 2020) states: *D.4.9 The long term (annual mean) concentration of NOx is most relevant for its impacts on vegetation, as the effects, particularly through the nitrogen deposition pathway, are additive over months and years. This is reflected in the adoption of the long term guideline in the EU Air Quality Directive as a limit value for vegetation. However, atmospheric exposure to very high concentrations of NOx for short periods (hours/days) may also have an adverse effect under certain conditions even if the long term concentrations are below the limit value. The WHO guidelines include a short term (24-hour average) NOx critical level of 75 µg/m^3. Originally set at 200 µg/m^3 as a four-hour mean, the more detailed CD-ROM version of the 2000 WHO guidelines comments: "Experimental evidence exists that the CLE decreases from around 200 µg/m^3 to 75 µg/m^3 when in-combination with O3 or SO_2 at or above their critical levels. In the knowledge that short-term episodes of elevated NOx concentrations are generally combined with elevated concentrations of O3 or SO_2, 75 µg/m^3 is proposed for the 24 h mean." Ozone and SO_2 concentrations are typically low in the UK compared to many other countries. If a regulator does require the use of the short term NOx critical level, given the low UK SO_2 concentrations IAQM consider it is most appropriate to use 200 µg/m^3 as the short term critical load.* On this basis the air quality standard for 24 hour NOx has been amended to 200 *µg/m^3.*

Q2.5.10	Natural England	Can NE comment on the use of the revised standard for short term NOx emissions and whether it considers this to be appropriate as a standard to measure air quality impacts?	
2.5.11	Applicant	Can the Applicant clarify its conclusion for nitrogen deposition in combination to the Humber Estuary SPA, as paragraph 4.6.3.15 of [AS016] suggests that the combined PC is 0.9 – 1.02% (minimum), ie potentially above the 1% critical level.	Paragraph 4.6.3.15 of the updated HRA outlines the range of the combined PCs for the Project in combination with Keadby 2 and Keadby 3. The data from the ROC (the Project) and the 4000-hour model (Keadby 2) were used for this assessment rather than the data modelled on a worst-case basis. Data used from Keadby 3 is likely to be worse case. The outputs predicted loads of ≤1% against the minimum critical load in combination. Given that the Keadby 3 data are likely to have applied the worst-case assumptions, it has been assumed that the in-combination levels are likely to be <1% and hence no likely significant effect has been concluded. As referenced in ES - Chapter 18 - Cumulative Effects (APP-066), the Keadby 3 data was considered worst case for several reasons, including: (a) the values referred to are generally the highest that occur anywhere within a protected site; (b) predictions are usually from the worst-case year for meteorological data input to the dispersion model; and (c) predictions are based on worst-case operating hours scenarios. NE has confirmed in the updates to the SoCG (an update to be submitted for Deadline 9) that these findings have resolved their concerns about effects on the SPA.

2.5.12	Natural England	Can NE confirm if it is content with the Applicant's revised screening conclusions in [AS-016] in respect of operational emissions to air from the Proposed Development alone and in-combination? If not, please explain for which pollutants and qualifying features there are outstanding concerns.	

Table 2: Responses to Questions in Table 2.3

ID	TO	QUESTION	RESPONSE
Humber Estuary SAC, SPA and Ramsar			
2.1.1	Natural England	Q. Following review of [AS-016], can NE either (i) confirm whether it is content that there is no impact pathway and as such the potential for LSE does not need to be considered or, if not, (ii) confirm the qualifying features for which it considers this potential impact pathway to be relevant. If this includes qualifying features of the Humber Estuary SPA, can NE explain why it considers this potential impact pathway to also be relevant to the SPA, noting the distance between it and the Proposed Development?	

2.1.2	Natural England	Q. Following review of [AS-016], can NE either (i) confirm whether it is content that there is no impact pathway and as such the potential for LSE does not need to be considered or, if not, (ii) confirm the qualifying features for which it considers this potential impact pathway to be relevant. If this includes qualifying features of the Humber Estuary SPA, can NE explain why it considers this potential impact pathway to also be relevant to the SPA, noting the distance between it and the Proposed Development?	
2.1.3	Natural England	Q. Does NE consider that LSE has been identified for the correct qualifying features for this impact pathway?	

2.1.4	Natural England, Applicant	Q. Following review of [AS-016], can NE confirm that it is content that there is no impact pathway and as such the potential for LSE does not need to be considered? Q. If NE considers that this impact pathway should be assessed at appropriate assessment stage, can it advise what additional information it requires as part of the assessment and clarify whether comments about mitigation in (Q2.5.1.6 in [REP6-041]) apply to lamprey qualifying features? Q. Can the Applicant explain how use of percussive/ impact piling would be controlled through the DCO to ensure that it would only be used exceptionally and for a duration of a few hours. Q. Can the Applicant explain on what basis the ExA can be satisfied that LSE to lamprey from use of percussive/ impact piling can be excluded, given that an assessment of impacts has not been provided.	Q. Can the Applicant explain how use of percussive/ impact piling would be controlled through the DCO to ensure that it would only be used exceptionally and for a duration of a few hours? As described in the Code of Construction Practice [Doc Ref] the Construction Contractor will be required to prepare a Construction Environmental Management Plan (CEMP) for the relevant parts of the Project. The CEMP will be submitted to North Lincolnshire Council (NLC) for their review and approval. The review and approval process will involve other agencies including Natural England (NE) and the Environment Agency (EA). The CEMP will include a Piling and Foundation Works Management Plan. The plan will set out how the management of risks to the environment during piling will involve two main steps: • a risk assessment; and • developing appropriate method statements on the basis of the risk assessment findings. The Construction Contractor will undertake the risk assessments and prepare the method statements for the approval of NLC, in consultation with the EA and NE. The method statement will also consider interfaces with other management plans (notably the Construction Noise and Vibration Management Plan and the Construction Ornithology Management Plan). As stated in the outline Piling and Foundation Works Management Plan, the need for and use of driven techniques (i.e. techniques that could potentially result in noise and vibration levels at source above those assessed in the EIA) is not anticipated but may possibly be required in the exceptional circumstances that a sheet pile met an obstacle that needed to be cleared. The likelihood of needing to use impact piling as a contingency in the event of encountering an obstacle to the sheet piling is

			anticipated to be very low and, in the event it was needed, the duration of the activity would be brief (i.e. in the order of a few hours to one working day). To address the event that driven piling may be required as a rare contingency, the scope of the risk assessment will pay especial attention to noise and vibration effects of contingency driven piling on people, interest species and heritage assets within the impact zones of where sheet piling is planned. The CEMP will set out suitable procedures and restrictions to be applied in the unlikely event that contingency driven piling is required such as: • in the first instance investigate alternatives; • acoustic screening of the activity; • restrictions on the duration of the activity; and • restrictions on the hours of the day and days of the week in which the activity could take place. These measures and procedures would be incorporated into the CEMP to be approved by NLC, with input as necessary from EA and NE. Since encountering an obstacle during sheet piling, which in turn necessitates impact piling to clear it, is a presently unpredictable event, the focus of the CoCP (and therefore the CEMP and its relevant subsidiary plans: Piling and Foundation Works Management Plan, Construction Noise and Vibration Management Plan and the Construction Ornithology Management Plan) is on managing the impacts of the activity as opposed to attempting to limit the number of times it can occur over the construction phase and the duration of any one occurrence. The Piling and Foundation Works Management Plan will set out and agree in advance with NLC, NE and EA the conditions under which it could occur. The Construction Noise and Vibration Management Plan and the Construction Ornithology Management Plan would both come into play in

			the event impact piling was needed and both plans will include triggers for pausing or stopping work. Q. Can the Applicant explain on what basis the ExA can be satisfied that LSE to lamprey from use of percussive/ impact piling can be excluded, given that an assessment of impacts has not been provided. It is possible that sheet piling may be required where there are large excavations for permanent / temporary works (eg excavations for the Bunker Hall). The planned technique to install any sheet piling required is a hydraulic, silent piling technique, with low noise and vibration and will not be perceptible at the river bank and beyond with the separation distance of the river from the bunker hall (approximately 110 m at its closest point to the river). In the unlikely event that the planned technique cannot install the sheet piling, then impact (driven / percussive) piling may be required. Vibration effects of impact piling may be perceptible up to approximately 100 m from the source. Allowing for installation of the sheet piles around the building footprint, it is likely that any piling will be approximately 100 m from the river. Hence there are a number of reasons why significant effects on the lamprey species in the River Trent are predicted not to occur: • it is likely that the river will be unaffected or the area affected will be small and at the extremity of the likely area of effect; • effects will only occur if driven piling occurs (unlikely); • the installation will be temporary over a short time period; • the location of the effects incudes areas that are used by boats already including at the existing quay; and

			• lamprey species will need to be present in the small areas where effects could occur.
2.1.5	Natural England	Q. Does NE agree with the Applicant regarding impacts on migrating sea and river lamprey from vessel movements? Is it content a LSE can be screened out?	
Humber Estuary Ramsar			

2.1.7	Natural England, Applicant	Q. Following review of [AS-016], can NE confirm that it is content that there is no impact pathway and as such the potential for LSE does not need to be considered, other than for mallard as part of the assemblage feature? Q. If not content, can NE confirm for which other qualifying interest features/ criterion of the Humber Estuary Ramsar site it has concerns and in relation to which impact pathway? *The ExA notes the following mitigation, which the Applicant has proposed to minimise disturbance to mallard (as part of the waterbird assemblage feature of the Humber Estuary Ramsar site):* • *the timing of construction activities would be undertaken to avoid effects where possible (ie October and March) [REP4-021];* • *hoardings would reduce noise levels [REP4-021];* • *the Outline Piling and Foundation Works Management Plan (Appendix K of the CoCP) [REP6-024] contains mitigation measures*	Q. With this in mind, can the Applicant and NE comment on whether a LSE should be screened in for this potential impact pathway? Potential disturbance from noise to mallard on the River Trent Ramsar site and on functionally linked land associated with the Humber Estuary SPA was included as part of the AA (Section 5.3) as a LSE could not be screened out. Q. Can the Applicant explain whether the use of percussive/ impact piling would result in any change to the predicted noise levels and therefore the conclusion that LSE can be excluded to bird qualifying features of the Humber Estuary Ramsar. Please provide evidence to support the response. British Standard (BS) 5228 includes a database of measured noise levels from percussive piling. The database includes wide a range of levels, which are affected by a number of factors such as pile diameter, depth and ground type. Based on the library of data in BS 5228 (tables C3 and C12), typical noise from driven piling techniques such as hydraulic hammer or cast in situ piling generate average noise levels in a similar range to concrete breaking. For example Table C3.1 gives a level of 89 dB(A) at 10 m for a hydraulic hammer rig which is slightly quieter than the level of 92 dB(A) at 10 m for a breaker mounted on wheeled backhoe used to assess the effects of the demolition at non-residential (office) receptors within the Flixborough Industrial Estate. Although maximum noise levels are likely to be somewhat higher, the use of mitigation measures such as an acoustic shroud or introducing a non-metallic dolly between the hammer and the driving helmet would reduce this. Concrete breaking activities are discussed in the updated HRA (REP6-014) and the noise contours show that even in the unmitigated case, predicted noise levels above 55 dB LAeq,12 hr are likely to be restricted to within approximately 500 m of the work and with mitigation will be reduced

		should impact piling be required; • *the COMP (Appendix M of the CoCP [REP6-024]); and* • *the indicative lighting strategy avoids light spill onto the River Trent [REP4- 021]. Case law has established that mitigation should not be considered during screening (European Court of Justice case in People Over Wind and Sweetman v Coillte Teoranta (Case 323/17).* Q. With this in mind, can the Applicant and NE comment on whether a LSE should be screened in for this potential impact pathway? Q. Can the Applicant explain whether the use of percussive/ impact piling would result in any change to the predicted noise levels and therefore the conclusion that LSE can be excluded to bird qualifying features of the Humber Estuary Ramsar. Please provide evidence to support the response. Q. Can the Applicant provide a complete version of paragraph 4.5.1.2 of [AS-016] as there is missing text, which appears to cross-	further to around 225 m (see Section 5.3 and Figure 3 of the HRA). Adverse effects on birds are therefore not predicted. Q. Can the Applicant provide a complete version of paragraph 4.5.1.2 of [AS-016] as there is missing text, which appears to cross-refer to relevant information in other assessments. “The construction and operation of the Project including road and rail traffic, increased vessel movements along the River Trent will result also in increased noise. This has the potential to lead to disturbance to, or displacement of, bird species from foraging or roosting habitats. An assessment of artificial lighting and human activities”

		refer to relevant information in other assessments.	
Humber Estuary SPA and Ramsar			
2.1.8	Natural England, Applicant	Q. Further to the Applicant's additional survey information, can NE confirm whether it considers there to be a LSE in respect of loss of FLL, and if so, for which qualifying interest features/criterion of the Humber Estuary SPA and Ramsar site? Q. Can the Applicant provide the quantum of FLL that will be lost as a result of temporary and permanent land take for the Proposed Development?	Q. Can the Applicant provide the quantum of FLL that will be lost as a result of temporary and permanent land take for the Proposed Development? As described in the HRA report (Paragraph 4.5.1.4), the FLL comprises areas that are regularly used by significant numbers of qualifying bird species i.e. greater than 1% of the qualifying population of the SPA and as such was focussed on the River Trent corridor which lies outside the Red Line Boundary (RLB).Areas of land to the east of the river within the RLB were not used regularly by significant numbers of birds. There will be no direct / permanent losses in the River Trent. As reported in the HRA (see Section 5.3), mitigation is expected to reduce noise levels in the River Trent such that the main areas used by mallard are not significantly affected.

2.1.9	Applicant, Natural England	Q. Can the Applicant confirm that its updated assessment in [AS-016] considers impacts to bird features using FLL of the Humber Estuary Ramsar site (as well as the Humber Estuary SPA), as this is not clear from the current drafting? Q. Following review of the additional information on noise levels, does NE consider there to be a LSE in respect of noise/ vibration/ light disturbance to birds using FLL during construction and operation, and if so, for which additional qualifying interest features/criterion of the Humber Estuary SPA and Ramsar site? *The ExA notes changes to the structure of [AS-016] so that assessment of noise/ vibration/ light disturbance impacts to bird features using FLL of the Humber Estuary SPA (and Ramsar site) are considered together with the same impacts to bird qualifying features of the Humber Estuary Ramsar, all within section 4.5.1. When responding to the questions posed in ID 2.1.7 about mitigation and piling, can the Applicant address impacts to all relevant Humber Estuary sites and bird qualifying features.*	Q. Can the Applicant confirm that its updated assessment in [AS-016] considers impacts to bird features using FLL of the Humber Estuary Ramsar site (as well as the Humber Estuary SPA), as this is not clear from the current drafting? Yes, the Applicant can confirm that consideration has been given to bird species of both the SPA and Ramsar site and their use of FLL.

2.1.10	Natural England	Q. Can NE confirm, following the Applicant's responses [REP4-021][REP4-028][AS-016], whether it considers a LSE should be screened in for recreational disturbance? If LSE cannot be excluded, can NE confirm for which qualifying interest features/ criterion of the Humber Estuary SPA and Ramsar site would be affected? *The ExA notes that recreational disturbance is now considered under the impact pathway of disturbance, inclusive of visual impacts from increased recreational use, rather than a separate impact pathway.*	

Table 3: Responses to Questions in Table 3.1

ID	TO	QUESTION	RESPONSE	RESPONSIBILITY
Humber Estuary SAC / Ramsar				
3.1.2	Natural England, Applicant	Q. Following review of [AS-016], can NE confirm whether it agrees with the Applicant's conclusion of no AEoI from operational air quality emissions in combination with Keadby 2 and 3? Q. What is the Applicant's response to NE's concerns that nitrogen deposition could undermine the conservation objectives of the sites?	Q. What is the Applicant's response to NE's concerns that nitrogen deposition could undermine the conservation objectives of the sites? NE has confirmed in the updates to the SoCG (an update to be submitted for Deadline 9) that these findings have resolved their concerns about effects on the SAC / Ramsar site.	Q2 EERM Andy Coates, Kate O'Connor
3.1.3	Natural England	Q. Following review of [AS-016], does NE consider that AEoI can be excluded? If not, can NE advise what further information it considers is required from the Applicant?		
Humber Estuary Ramsar				

3.1.4	Applicant, Natural England	Q. What is the Applicant's response to NE's suggestion that the timing of construction activities be secured within the DCO? Q. What is the Applicant's response to NE's suggestion that Appendices K and M of the CoCP [REP6-024] should be updated to incorporate clearer references to trigger points for mitigation based on the evidence used in its assessment? Q. Does NE agree with the Applicant's conclusion of no AEoI, irrespective of whether the timing of construction activities can be secured?	Q. What is the Applicant's response to NE's suggestion that the timing of construction activities be secured within the DCO? The findings of the assessment have not indicated a need for the timing of construction to be managed at this stage. However, it has been identified that in extreme circumstances, percussive/driven piling may be required. To address this requirement, the Applicant has committed to developing a Construction Ornithological Management Plan (COMP), the detail of which will be agreed with NE. It will be implemented when specific construction activities (to be agreed with NE also) are to occur (*eg* piling). The implementation of the COMP will be overseen by an Ecological Clerk of Works (ECoW), who will determine if effects are occurring / likely to occur and if necessary, will stop work to allow appropriate measures to be taken. Such measures could include controls around the timing of construction activities. The current outline COMP is being updated with more detail for Deadline 9. Q. What is the Applicant's response to NE's suggestion that Appendices K and M of the CoCP [REP6-024] should be updated to incorporate clearer references to trigger points for mitigation based on the evidence used in its assessment? As stated above, the COMP is being updated with further details and its purpose will be to identify specific construction activities where its use will be required and trigger points that will require mitigation to be implemented.	Q1, Q2 Andy Coates, Kate O'Connor
Humber Estuary SPA and Ramsar				

3.1.5	Applicant, Natural England	Q. The ExA's questions in ID 3.1.4 are also relevant to this impact pathway and the Applicant and NE are requested to respond on that basis.	The response above to ID 3.1.4 in respect of the Ramsar site applies to the SPA.	Andy Coates, Kate O'Connor
Thorne Moor SAC				
3.1.6	Applicant, Natural England	Q Can the Applicant and NE comment on whether measures to improve SSSI units would be viewed as mitigation or compensation and provide reasoning for the response?	The assessment for Thorne Moor SAC has been updated to reflect the modelled predictions based on the ROC. Following this update, no LSE were identified at Thorne Moor SAC and as such, no further assessment or action to improve SSSI units are proposed by the Applicant at this site. NE has confirmed in the updates to the SoCG (an update to be submitted for Deadline 9) that these findings have resolved their concerns about effects on the SAC.	Andy Coates, Kate O'Connor

APPENDIX A - Air Quality Reasonable Operating Case

CONTENTS

List of Tables

Acronyms and Abbreviations

Name	Description
ACC	Air Cooled Condensers
AGI	Above Ground Installation
BAT	Best Available Techniques
BEIS	Department for Business, Energy and Industrial Strategy
BGS	British Geological Society
BMVL	Best and Most Versatile Land
BREF	EU Best Available Techniques reference notes
C4SL	Category 4 Screening Levels
CBMP	Concrete Block Manufacturing Plant
CBR	California Bearing Ratio tests
CDM	Construction Design and Management
CHP	Combined Heat and Power
CIEH	Chartered Institute of Environmental Health
CIfA	Chartered Institute for Archaeologists
CIRIA	Construction Industry Research and Information Association

CLEA	Contaminated Land Exposure Assessment
CO_2	Carbon Dioxide
CoCP	Code of Construction Practice
CSM	Conceptual Site Model
DCLG	Department for Communities and Local Government
DCO	Development Consent Order
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DHN	District Heat Network
DHPWN	District Heat and Private Wire Network
dML	deemed Marine Licence
DMRB	Design Manual for Roads and Bridges
DoW:CoP	Definition of Waste: Code of Practice
DQRA	Detailed Quantitative Risk Assessment
EIA	Environmental Impact Assessment
EMFs	Electric and Magnetic Fields
EPA	Environmental Protection Act
EPH	Extractable Petroleum Hydrocarbons
EPR	Environmental Permitting Regulations
ERF	Energy Recovery Facility
ERM	Environmental Resources Management
ES	Environmental Statement
EU	European Union
EUS	Extensive Urban Survey
EV	Electric Vehicle
FGTr	Flue Gas Treatment residue
GAC	Generic Assessment Criteria
GI	Ground Investigation
GQRA	General Quantitative Risk Assessment
H_2	Hydrogen
HE	Historic England
HER	Historic Environment Record
HRA	Habitat Regulations Assessment
HSE	Health and Safety Executive

IBA	Incinerator Bottom Ash
IED	Industrial Emissions Directive
IPC	Integrated Pollution Control
IPPC	Integrated Pollution and Prevention Control
LDF	Local Development Framework
LPA	Local Planning Authority
LQM	Land Quality Management
M bgl	Metres below ground level
MCA	Mineral Consultation Area
MCAA	Marine and Coastal Access Act
MHCLG	Ministry for Housing, Communities and Local Government
MMO	Marine Management Organisation
MSA	Mineral Safeguarding Area
MWHe	Electrical generation in megawatt-hours (electric)
MWhth	Heat generation in megawatt-hours (thermal)
NHLE	National Heritage List for England
NLC	North Lincolnshire Council
NLGEP	North Lincolnshire Green Energy Park
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
PA	Planning Act
PAC	Potential Area of Concern
PAH	Polycyclic Aromatics Hydrocarbons
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PPE	Personal Protective Equipment
PPG	Planning Practice Guidance
PRF	Plastic Recycling Facility
PV	Photovoltaic
PWN	Private Wire Network
QRA	Qualitative Risk Assessment
RDF	Refuse Derived Fuel

RHTF	Residue Handling and Treatment Facility
S21	Solar 21
S4UL	Suitable 4 Use Levels
SAC	Special Area of Conservation
SGV	Soil Guideline Value
SI	Site Investigation
SOCC	Statement of Community Consultation
SoS	Secretary of State
SPA	Special Protection Area
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
TCPA	Town and Country Planning Act
UAD	Urban Archaeological Database
UK	United Kingdom
WFD	Waste Framework Directive
WMP	Waste Management Plan
WID	Waste Incineration Directivesha

1. INTRODUCTION

1.1 Overview

In support of the Planning Application for the North Lincs Green Energy Park (NLGEP), an Air Quality Impact Assessment (AQIA) was prepared (REP9-011). This initial AQIA followed the Rochdale Envelope approach and included a number of conservative assumptions. These included:

- Assumption that the ERF plant emits at emission limits
- 100% transport by road
- 100% transport by ship
- 100% transport by rail

The initial AQIA identified potentially significant impacts to ecology. Of note is that several of these impacts are marginal and are unlikely to arise in practice. Therefore, to provide more detailed information this supplementary report has been produced to assess the 'Reasonable Operating Case' (ROC) operations and impacts of the Project. The purpose is to allow a more refined understanding of the actual likely impact on ecological receptors.

This supplementary report should be read in line with the original AQIA. Information already presented has not been repeated, and instead this report focusses only on where there are changes to operating conditions, emissions data and subsequent impacts.

2. CHANGES TO ASSESSMENT PARAMETERS

This updated AQIA utilises detailed dispersion modelling to predict the potential impacts on air quality as a result of emissions from the process and associated transport. Two models have been used: ADMS-5 for point source emissions; and ADMS-Roads for road traffic sources. The results of these models are then combined to provide a comprehensive understanding of air quality impacts at sensitive receptors. All model parameters are unchanged from the AQIA set out in the EIA, unless specifically noted below as having been changed:

- ERF plant changes:
  - Emissions of HCl, NO_x, SO_2 and NH_3 amended. In the EIA these were assumed to arise at emission limits, whereas in the ROC these are modelled at the likely actual emissions.
  - Reasonable case emissions are based on Environment Agency annual ERF performance data [1], and extrapolated for NO_x and NH_3 emissions data pro-rated to meet the upcoming Bref emissions limits [2].
- Back-up generator - there are no changes to emissions data.
- ERF boilers - there are no changes to emissions data.
- RDF delivery ship changes are based on 24% of Project material movements (including RDF, aggregate, blocks) being by ship:
  - 290 ships per year.
  - Ships on the wharf for 9 hours each day a ship is on berth (this is the period between high tides).
  - Ship engine is running at 30% of full power when at the wharf-side to provide ship electrical power.
- RDF and aggregate delivery trains:
  - One train per day hauled by one class 66 locomotive.
- Operational road traffic changes are:
  - In the EIA case only traffic using the new access road was modelled. No account was taken for the reduction in impacts at River Trent ecological receptors due to the severance of the current access road past Neap House.
  - The updated assessment:
    - Modelled the existing road via Neap House, 2028 base case.
    - Modelled new access road, 2028 with project case.
    - Amended traffic data to reflect reasonable case traffic, capturing reasonable case ship and rail movements.
    - Modelling assessed net change in impacts with severing of Neap House access road and opening of new access road, noting that the new access road is to the east of the existing route and further inland from ecological receptors at the River Trent.

[1] Environment Agency (accessed February 2023) 2021 Incineration Monitoring Reports https://environment.data.gov.uk/portalstg/home/item.html?id=50518e4e4c8a4d81b029281a89202d34

[2] Hitach Zosen Inova (accessed February 2023) DyNOR® The SNCR Process That Fulfils Europe's Strict Nitrogen Oxide Standards https://www.hz-inova.com/files/2018/05/DyNOR_EN_online.pdf

Table 2.1 sets out the changes made in the 'Reasonable Case' AQIA compared to the Planning Case AQIA.

Table 2.1 Comparison of EIA and 'Reasonable Case' Model Basis

Item	Planning Case	Reasonable Case
ERF emissions		
SO_2 emissions (mg/Nm^3)	30	17.02
SO_2 emissions (g/s)	1.7	0.962
NO_x emissions (mg/Nm^3)	120	120
NO_x emissions (g/s)	6.78	6.78
HCl emissions (mg/Nm^3)	6.0	4.3
HCl emissions (g/s)	0.339	0.242
NH_3 emissions (mg/Nm^3)	10	4.0
NH_3 emissions (g/s)	0.565	0.226
Ship	50% of year, ship on wharf 30% engine load	290 days/year, 9 hours per day ship on wharf 30% engine load
Rail	3 trains per day	1 train per day
Road	100% material transport by road	Traffic remodelled to take into account transport on ship and rail
		LDV AADT: 5362
		HGV AADT: 1119

AADT: Annual Average Daily Traffic

3. TRANSPORT MODELLING FOR ROC CASE

3.1 Assumptions

Throughputs did not change from the planning case carried out previously, but did include for the maximum scale of carbon capture (100% treatment at 95% capture rate).

Modelling of the realistic operating case was based on the following assumptions, provided by Buro Happold based on modelling of the capacity of the railway and port.

1. 580 vessel movements per annum through the port, split as follows.
    a. 350 vessels offloading containerised RDF.
    b. 180 vessels offloading bulk materials.
    c. 50 vessels collecting captured carbon dioxide.
2. One train per day which offloads containerised RDF.
3. The remaining materials are transported by road.
4. The payloads of river vessels/trains are as follows.
    a. RDF train – 1,015 tonnes.
    b. RDF vessel – 1,040 tonnes.
    c. Bulk materials vessel – 2,900 tonnes.
    d. Concrete block vessel – 2,900 tonnes.
    e. Carbon dioxide vessel – 2,179 tonnes.

3.2 Results

Results from the modelling are presented in the following tables.

Table 3 : Overall modal split

Material	Total throughput	% deliveries by road	% deliveries by rail	% deliveries by river
Fuel	758,376	36%	40%	24%
Sand	119,823	52%	0%	48%
Cement	68,254	50%	0%	50%
Concrete blocks	330,652	50%	0%	50%
Carbon dioxide	536,029	83%	0%	17%
Hydrogen	1,356	100%	0%	0%

Table 4: Road vehicle movements

Item	Tonnes delivered/collected					Payload (tonnes)	Tonnes delivered/collected				
	Per year	Per day		Per hour			Per year	Per day		Per hour	
		Average	Peak	Average	Peak			Average	Peak	Average	Peak
Fuel - bulkers	273,774	957	1,053	68.4	136.8	24.0	11,407	39.9	43.9	2.8	5.7
Slave Vehicles - Rail	303,350	1,061	1,167	75.8	151.5	13.0	23,320	78.0	156.0	17.3	22.3
Slave Vehicles - river	181,252	634	697	45	91	13.0	13,934	48.7	53.6	3.5	7.0
Total fuel	758,376	2,652	2,917	189	379		48,662	166.6	253.5	23.7	34.9
Hydrated lime (Ca(OH)2(s))	10,263	35.9	39.5	2.6	5.1	27.5	373	1.30	2.0	0.093	1.0
PAC	296	1.0	1.1	0.1	0.1	21.0	14	0.05	1.0	0.004	0.5
Ammonia (25%)	3,382	11.8	13.0	0.8	1.7	10.0	338	1.18	2.0	0.084	1.0
Total consumables	13,941	48.7	53.6	3.5	7.0		725	2.54	5.0	0.18	2.5
Boiler and bottom ash - road	2,718	10	10	0.7	1.4	22.0	123	0.4	1.0	0.0	0.5
Ferrous	3,747	13	14	0.9	1.9	17.0	220	0.8	1.0	0.1	0.5
Total ash/residues	6,465	23	25	1.6	3.2		344	1.20	2.00	0.10	1.00
Sand - road	62,308	218	240	27.2	30.0	28.0	2,225	7.8	8.0	1.0	1.0
Cement - road	34,127	119	131	14.9	16.4	28.0	1,218	4.3	5.0	0.5	0.5

Item	Tonnes delivered/collected					Payload (tonnes)	Tonnes delivered/collected				
	Per year	Per day		Per hour			Per year	Per day		Per hour	
		Average	Peak	Average	Peak			Average	Peak	Average	Peak
Concrete blocks - road	165,326	578	636	72.3	79.5	27.0	6,123	21.4	22.0	2.7	2.7
Total concrete block materials	518,729	1,814	1,995	227	249		23,610	82.6	85.0	10.3	10.3
Plastic - road	50,000	175	192	12.5	13.7	20.0	2,500	8.7	9.0	0.6	0.6
Plastic - rejects	1,000	3	4	0.2	0.3	20.0	50	0.2	1.0	0.0	0.0
Plastic - oversize	1,000	3	4	0.2	0.3	20.0	50	0.2	1.0	0.0	0.0
Hydrogen buses	-	-	-	-	-			30.0	30.0	1.9	1.9
Carbon dioxide	536,029	1,874	2,062	133.9	267.7	27.0	19,852	69.4	76.4	5.0	9.9
Hydrogen	1,356	5	5	0.3	0.7	1.0	1,355	4.7	5.2	0.3	0.7
Total extras	589,385	2,061	2,267	147	283		23,809	113	123	8	13
Total vehicles	1,145,325	4,005	4,405	335	555		45,852	190	208	15	26

4. OVERALL RESULTS AND SUMMARY

The results of the ROC air quality model are not set out here. Instead, they have been used to inform a more detailed analysis of the potential impacts on ecological receptors (Appendix A (Appendix 1 of Effects of Air Quality on European, Nationally and Locally Designated Sites) of the revised Chapter 10 - Ecology and Nature Conservation (APP-058)).