



The Planning Inspectorate
Yr Arolygiaeth Gynllunio

REPORT on the IMPLICATIONS for EUROPEAN SITES

Proposed North Lincolnshire Green Energy Park

An Examining Authority report prepared with the
support of the Environmental Services Team

Planning Inspectorate Reference: EN010116

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1 INTRODUCTION

1.1 Background

- 1.1.1 North Lincolnshire Green Energy Park Limited (the Applicant) has applied to the Secretary of State for a development consent order (DCO) under section 37 of the Planning Act 2008 (PA2008) for the proposed North Lincolnshire Green Energy Park (the Application). The Secretary of State has appointed an Examining Authority (ExA) to conduct an examination of the application, to report its findings and conclusions, and to make a recommendation to the Secretary of State as to the decision to be made on the Application.
- 1.1.2 The relevant Secretary of State is the competent authority for the purposes of the Habitats Directive¹ and the Habitats Regulations² for applications submitted under the PA2008 regime. The findings and conclusions on nature conservation issues reported by the ExA will assist the Secretary of State in performing their duties under the Habitats Regulations.
- 1.1.3 This Report on the Implications for European sites (RIES) documents and signposts information in relation to potential effects to European Sites³ that was provided within the DCO application and submitted throughout the Examination by the Applicant and interested parties (IPs), up to Deadline 6 (D6) of the Examination (20 March 2023)⁴. It is not a standalone document and should be read in conjunction with the examination documents referred to. Where document references are presented in square brackets [] in the text of this report, that reference can be found in the Examination library published on the National Infrastructure Planning website at the following link:
[North Lincolnshire Green Energy Park Examination Library](#)
- 1.1.4 It is issued to ensure that interested parties including the Appropriate Nature Conservation Body (ANCB), Natural England (NE), is consulted formally on Habitats Regulations matters. This process may be relied on by the Secretary of State for the purposes of Regulation 63(3) of the Habitats Regulations.

¹ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (as codified) (the 'Habitats Directive').

² The Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations).

³ For the purposes of this RIES, in line with the Habitats Regulations and relevant Government policy, the term "European sites" includes Special Areas of Conservation (SAC), candidate SACs, possible SACs, Special Protection Areas (SPA), potential SPAs, Sites of Community Importance, listed and proposed Ramsar sites and sites identified or required as compensatory measures for adverse effects on any of these sites. For ease of reading, this RIES also collectively uses the term "European site" for 'European sites' defined in the Habitats Regulations 2017 and 'European Marine Sites' defined in the Conservation of Offshore Marine Habitats and Species Regulations 2017, unless otherwise stated. "UK National Site Network" refers to SACs and SPAs belonging to the United Kingdom already designated under the Directives and any further sites designated under the Habitats Regulations.

⁴ The Applicant submitted a further iteration of the Report to inform HRA [REP6-014] at D6; however, this did not include updated screening and integrity matrices and was therefore superseded by [AS-016], which was submitted by the Applicant after D6 and accepted by the ExA as an additional submission on 23 March 2023.

- 1.1.5 The RIES also aims to identify and close any gaps in the ExA's understanding of IPs' positions on Habitats Regulations matters, in relation to all sites and features of interest as far as possible, in order to support a robust and thorough recommendation to the Secretary of State.
- 1.1.6 Following consultation, the responses will be considered by the ExA in making their recommendation to the Secretary of State and made available to the Secretary of State along with this report. The RIES will not be revised following consultation.

1.2 Documents used to inform this RIES

- 1.2.1 The Applicant submitted a Report to Inform HRA with its DCO application. This RIES will refer to two iterations of the report, as described below:
- the original Report to Inform HRA [APP-043] subsequently replaced by [REP2-019] to incorporate minor amendments, including insertion of HRA Screening and Integrity Matrices at Appendix 1 (the 'Original Report to Inform HRA'); and
 - the Report to Inform HRA [AS-016] accepted as an additional submission by the ExA, including the Applicant's revised air quality modelling based on the reasonable operating case (ROC) and amended conclusions on LSE from operational emissions to air (the 'ROC Report to Inform HRA').
- 1.2.2 The Report to Inform HRA is informed by information in the Environmental Statement (ES) Volume 6, including the following chapters:
- Chapter 5 Air Quality [APP-053], subsequently replaced by [REP4-009] and Appendix B [REP2-041];
 - Chapter 9 Water Resources [APP-057], subsequently replaced by [REP6-020];
 - Chapter 10 Ecology and Nature Conservation [APP-058];
 - Chapter 13 Traffic and Transport [APP-061] subsequently replaced by [REP2-021]; and
 - Chapter 18 Cumulative Effects [APP-066].
- 1.2.3 In addition to these documents, the ExA has used representations submitted to the Examination by IPs, Issue Specific Hearing (ISH) documents, Statements of Common Ground (SoCG) and other Examination documents as relevant. All documents can be found in the Examination Library.

1.3 RIES questions

- 1.3.1 This RIES contains questions predominantly targeted at the Applicant and NE, which are drafted in *[blue, underlined italic text](#)*. In responding to the

questions in Tables 2.3 and 3.1, please refer to the ID number in the first column.

1.3.2 The responses to the questions posed within the RIES and comments received on it will be of great value to the ExA in understanding IPs' positions on Habitat Regulations matters. However, it is stressed that responses to other matters discussed in the RIES are equally welcomed.

1.3.3 Comments on the RIES are timetabled for D8 (28 April 2023).

1.4 HRA Matters Considered During the Examination

1.4.1 The Examination to date has focussed on the following matters:

- Emissions to air (oxides of nitrogen (NO_x), ammonia (NH₃), nutrient nitrogen and acid deposition) during operation:
 - in the Original Report to Inform HRA, based on air quality modelling described in ES Chapter 5 [REP4-009], the Applicant could not exclude likely significant effects (LSE) from the Proposed Development alone and in-combination with Keadby 2 and 3 to the Humber Estuary Special Protection Area (SPA), Special Area of Conservation (SAC) and Ramsar, Thorne and Hatfield Moors SPA and Thorne Moor SAC; and
 - in the ROC Report to Inform HRA, based on the ROC modelling described in Appendix 1 of [AS-016], the Applicant excluded LSE to the Humber Estuary SPA, Thorne and Hatfield Moors SPA and Thorne Moor SAC but could not exclude LSE from the Proposed Development in combination with Keadby 2 and 3 developments to the Humber Estuary SAC and Ramsar.
- Traffic emissions during construction and operation to the Humber Estuary SAC, SPA and Ramsar.
- Potential disturbance to the migration route of the river lamprey and sea lamprey qualifying features of the Humber Estuary SAC and Ramsar from noise and vibration arising from piling activity and vessel movements.
- Dust emissions during construction to the Humber Estuary SAC and Ramsar.
- Noise, vibration and visual disturbance during construction and operation to the Humber Estuary Ramsar and to Functionally Linked Land (FLL) associated with the Humber Estuary SPA and Ramsar.
- Loss of FLL associated with the Humber Estuary SPA and Ramsar during construction.
- Recreational disturbance to the Humber Estuary SPA and Ramsar during operation.

2 LIKELY SIGNIFICANT EFFECTS

2.1 European Sites Considered

Introduction

- 2.1.1 The Proposed Development is not connected with or necessary to the management for nature conservation of any of the European sites considered within the Applicant's assessment.
- 2.1.2 The Applicant's Original Report to Inform HRA [REP2-019] assessed impacts on European sites within 15km of the main source of emissions to air at the Proposed Development (ie the energy recovery facility (ERF) stack). This was unchanged in the ROC Report to Inform HRA [AS-016].

Sites within the UK National Site Network

- 2.1.3 The Applicant's identified six European sites within the UK National Site Network for inclusion within the assessment, as detailed in Table 2.1 below.

Table 2.1: European sites identified in the Applicant's Report to Inform HRA

Name of European Site	Distance from ERF stack
Humber Estuary SAC	0.1km west
Humber Estuary SPA	6.5km north
Humber Estuary Ramsar	0.1km west
Thorne Moor SAC	10.1km west
Thorne and Hatfield Moors SPA	10.1km west
Hatfield Moor SAC	Just over 15km ⁵

- 2.1.4 The location of these sites relative to the Proposed Development were depicted in [REP2-015]. The qualifying features of these sites are detailed in Annex 1 of this RIES.
- 2.1.5 The Original Report to Inform HRA [REP2-019] confirmed that no SACs where bats are a qualifying feature are located within 30km of the Proposed Development. This was unchanged in the ROC Report to Inform HRA [AS-016].
- 2.1.6 No additional UK European sites have been identified by IPs for inclusion within the assessment in the Examination to date.

[Q2.1.1 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?](#)

⁵ Included within the Report to Inform the HRA following pre-application comments from NE.

Non-UK sites

- 2.1.7 The Applicant has not identified any potential impacts on European sites in other European Economic Area (EEA) States. Only UK European sites are addressed in this RIES.

2.2 Potential Impacts

- 2.2.1 Sections 3 and 4 of the Original Report to Inform HRA [REP2-019] detailed the potential impacts from the Proposed Development, along with the potential geographical extent of effects, and how these relate to the European sites and qualifying features assessed.
- 2.2.2 The impact pathways originally assessed by the Applicant are set out in paragraph 4.3.1.1 and Table 1 of Appendix 1 of [REP2-019] and included:
- emissions to air (operation)⁶;
 - disturbance or displacement of qualifying bird features (construction, operation and decommissioning);
 - disturbance or displacement of qualifying bird features using FLL (construction, operation and decommissioning);
 - recreational disturbance of qualifying bird features (construction, operation and decommissioning);
 - changes to water quality (construction, operation and decommissioning); and
 - changes to air quality (dust) (construction and decommissioning).
- 2.2.3 During the Examination, in response to comments from NE and a question from the ExA (see Table 2.3 of this RIES for further details), the Applicant considered the following additional pathways in the ROC Report to Inform HRA [AS-016]:
- construction and operational phase traffic emissions;
 - noise and vibration from construction activities and vessel movements on river and sea lamprey; and
 - loss of FLL.
- 2.2.4 These impact pathways were considered in addition to the pathways listed at paragraph 2.2.2.
- 2.2.5 The Applicant considered that all potential impacts during the decommissioning phase would be similar in approach and scale to those in the construction phase (paragraph 4.3.1.2 of [AS-016]).
- 2.2.6 Tables A.1 to A.4 in Annex 1 of this RIES detail the potential impact pathways considered in the ROC Report to Inform HRA [AS-016] by European site and qualifying features.

⁶ The qualifying interest features considered to be sensitive to nitrogen or acidity are detailed in Table 5 of the Original Report to Inform HRA [REP2-019]. These were unchanged in the ROC Report to Inform HRA [AS-016].

2.3 In-combination effects

- 2.3.1 Section 4.6 of the Original Report to Inform HRA [REP2-019] explained that the in-combination assessment followed the same approach to identifying other plans and projects as ES Chapter 18 [APP-066]. Paragraph 4.6.1.2 and Table 12 described the search area used to identify other plans and projects, which was set at:
- For operational emissions to air: 15km from the ERF stack, plus a further 15km from each European site within the initial 15km; and
 - For all other impact pathways: 0-2km from the Order limits, plus a further 2km from the parts of the European sites within the initial 2km.
- 2.3.2 Figures 5 and 6 of the Original Report to Inform HRA [REP2-019] identified these zones of influence and the other plans and projects located within them. Table 14 set out the short-listed developments that were considered in the screening for the assessment of in-combination effects. On completion of the screening exercise, the following projects were included in the assessment of in-combination effects:
- Keadby 2 Power Station Project, Combined Gas Fired Generating Station up to 910 megawatt (MW) (operational phase); and
 - Keadby 3 Low Carbon Gas Power Station Project, Combined Gas Cycle Turbine Power Station up to 910MW (operational phase).
- 2.3.3 The approach to assessment of in-combination effects was unchanged in the ROC Report to Inform HRA [AS-016]. Insertion of a new Appendix 1 resulted in Figures 5 and 6 being moved to Appendix 3 of the ROC Report to Inform HRA.
- 2.3.4 NE [RR-090] [REP2-100] [REP6-041] has not identified any additional plans or projects to be considered in the assessment in the Examination to date.
- 2.3.5 North Lincolnshire Council (NLC) (Q1.0.29 in [REP2-042]) did not highlight any specific additional projects or plans to be considered but suggested that the Applicant might want to check the Humber Nature Partnership in-combination database. The Applicant [REP3-021] responded that the database is not publicly available.

2.4 The Applicant's Assessment

- 2.4.1 The Applicant's conclusions in respect of screening for LSE and assessment of effects on integrity are presented in Sections 4 and 5 of the Original Report to Inform HRA [REP2-019], respectively. They are summarised in the screening and integrity matrices in Appendix 1 of [REP2-019]. The location of the assessments is unchanged in [AS-016] but the matrices now form Appendix 2. The conclusions of the screening assessment changed in [AS-016], resulting in two European sites no longer being considered in the assessment of effects on integrity, as detailed below.

Sites for which the Applicant concluded no LSE on all qualifying features

Hatfield Moor SAC

- 2.4.2 Hatfield Moor SAC is located just beyond 15km from the main ERF stack. Paragraph 4.2.1.4 of [REP2-019] stated that the air quality assessment (ES Chapter 5 [REP4-009]) concluded there would be no potential for LSE from operational emissions to air beyond 15km, therefore Hatfield Moor SAC was screened out and not considered further in the HRA. This position was unchanged in the ROC Report to Inform HRA [AS-016].
- 2.4.3 NE confirmed (Q5.0.2 of [REP2-100]) that it was satisfied with the Applicant's approach to assessment of air quality effects on the Hatfield Moor SAC and agreed that impacts can be scoped out.

Thorne Moor SAC and Thorne and Hatfield Moors SPA

- 2.4.4 The Original Report to Inform HRA [REP2-019] concluded that the Proposed Development would be likely to give rise to significant effects in combination with Keadby 2 and 3 developments from operational emissions to air on the qualifying features of the Thorne Moor SAC and Thorne and Hatfield Moors SPA. LSE from the Proposed Development alone were excluded by the Applicant.
- 2.4.5 NE [RR-090] agreed that LSE from the Proposed Development alone could be excluded for these sites. NE [RR-090] also agreed that LSE from in-combination effects arising from NH₃ and nutrient nitrogen deposition could not be excluded based on exceedances of the site critical loads identified in [REP2-019].
- 2.4.6 The Applicant subsequently undertook revised air quality modelling, which was reported in the ROC Report to Inform HRA [AS-016]. As a result of this modelling (discussed in detail under Section 2.5 of this RIES), the Applicant concluded that there was no potential for LSE from operational emissions to air on the qualifying features of the Thorne Moor SAC and Thorne and Hatfield Moors SPA (as described in Table A.4 of Annex 1 of this RIES) and screened these European sites out.

Sites for which the Applicant concluded LSE on some or all qualifying features

- 2.4.7 The ROC Report to Inform HRA [AS-016] concluded that the Proposed Development would be likely to give rise to significant effects, either alone or in-combination with other projects or plans, on one or more of the qualifying features of:
- Humber Estuary SAC;
 - Humber Estuary SPA; and
 - Humber Estuary Ramsar.
- 2.4.8 The LSE pathways screened in and out by the Applicant are identified in Annex 1 Tables A.1 to A.3 of this RIES.

2.5 Examination matters

- 2.5.1 Matters raised in the Examination to date, or for which the ExA seeks clarity, in relation to LSEs screened out by the Applicant are summarised in this section.
- 2.5.2 Of particular relevance to a number of European sites and features was the matter of operational air quality emissions, and these are addressed separately under *Operational air quality*.
- 2.5.3 Other matters are addressed in Table 2.3.

Operational air quality

- 2.5.4 The Applicant's assessment in both [REP2-019] and [AS-016] used atmospheric modelling to predict short and long-term process contributions (PC) and predicted environmental contributions (PEC) from the Proposed Development. These were compared against the critical level and load for each habitat, as reported in Defra background mapping and the Air Pollution Information System (APIS) (provided in [REP2-041]).
- 2.5.5 It is stated in both Reports to Inform HRA (paragraph 3.4.1.5) that APIS does not cover Ramsar sites and therefore the modelling results for the Humber Estuary SAC and SPA were applied to the Ramsar, which protects the same habitats and species.

[Q2.5.1 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?](#)

The Applicant's original approach to operational air quality assessment

- 2.5.6 The Applicant's screening assessment for operational emissions to air was set out in Chapter 4 of [REP2-019].
- 2.5.7 Section 4.2.2 of [REP2-019] comprises an initial review of qualifying features of the European sites considered. It concluded that several qualifying features can be discounted from detailed modelling due to their distance from the Proposed Development and/ or because they are not sensitive to changes in air quality. This conclusion is unchanged in the ROC Report to Inform HRA [AS-016], although the information is now presented in Section 4.2.1.
- 2.5.8 Section 4.4 of [REP2-019] summarises the predicted effects of air pollutants on qualifying features of the European sites that were subject to detailed modelling, from the Proposed Development alone. It is stated that the assessment is informed by the results of the Applicant's air dispersion modelling, described in ES Chapter 5 [REP4-009].
- 2.5.9 The predicted PCs and percentage of critical level for each pollutant at each relevant site is presented in Section 4.4 of [REP2-019]. The conclusions can be summarised as follows:
 - Table 6 – NO_x (annual mean and 24 hour):

- Paragraph 4.4.2.2 states that for annual mean NO_x, the PEC was below the threshold of 70% and LSE could therefore be excluded for all sites;
 - Paragraph 4.4.2.4 states that for 24 hour NO_x, the PC is >10% of the critical level at the Humber Estuary SAC and Ramsar. LSE could not be excluded;
 - Table 7 –NH₃: paragraph 4.4.3.3 states that levels exceeded the PC threshold of 1% and the PEC threshold of 70% at the Humber Estuary SAC and Ramsar. LSE could not be excluded;
 - Table 8 – sulphur dioxide (SO₂): the PC was <1% of the critical level at all sites⁷ and therefore LSE were excluded;
 - Table 9 – hydrogen fluoride (HF): the PC was <10% of the critical level for both weekly and 24 hour emissions at all sites and therefore LSE were excluded;
 - Table 10 – nitrogen deposition: paragraph 4.4.6.1 states that the PC exceeds 1% of critical load and the PEC exceeds the 70% thresholds for Atlantic salt meadow and estuary habitat types at the Humber Estuary SAC and Ramsar. LSE could not be excluded; and
 - Table 11 – acid deposition: the PC did not exceed 1% of the critical load at Thorne Moor SAC⁸ and therefore LSE were excluded.
- 2.5.10 Section 4.6.3 of [REP2-019] summarised the predicted effects of air pollutants from the Proposed Development in combination with Keadby 2 and 3. The assessment is stated to be based on the following information:
- Keadby Power Station – Environmental Permit Variation Application, Air Quality Impact Assessment and Habitats Regulations Assessment (2019);
 - Keadby 2 Environmental Permit application (2019); and
 - Keadby 3 ES (2021).
- 2.5.11 The assessments are stated to be worst case for several reasons, including use of the highest stated emissions occurring anywhere across the European sites considered, and use of the worst case meteorological data and operating hours' scenarios.
- 2.5.12 [REP2-019] concluded that when considering the combined PC of the projects, there is potential for exceedances of the 1% critical level/ load for NH₃ and nitrogen deposition at the Humber Estuary SAC, Ramsar and SPA, and the Thorne Moor SAC and Thorne and Hatfield Moors SPA. Similarly, for acid deposition, the combined PC of the projects could exceed

⁷ Paragraph 4.4.4.1 states that this is based on using the more stringent level for lichen or bryophote presence at Thorne Moor SAC (10 µg m⁻³) and the critical load of 20 µg m⁻³ being applied at all other sites.

⁸ Thorne Moor SAC is the only site considered in the HRA that has qualifying features sensitive to acid deposition.

the 1% critical load at Thorne Moor SAC. LSE could therefore not be excluded.

NE's response to the original air quality assessment

- 2.5.13 NE's relevant representation [RR-090] highlighted concerns regarding impacts from NH₃ emissions and nutrient nitrogen deposition from the operation of the Proposed Development. It noted specific concerns regarding in combination effects with Keadby 2 and Keadby 3.
- 2.5.14 The Applicant [REP2-034][REP4-021][REP4-028] responded that its air quality impact assessment was precautionary as it included a number of worst case assumptions and that the actual impacts of operation would be substantially lower than those in the ES. The Applicant noted that:
- the modelling assumed the project will operate at BREF⁹ limits, however plants do not operate at emission limits;
 - planned maintenance will account for downtime of approximately 10% of the plant lines;
 - the assessment is based on meteorological data that produces the highest impacts;
 - the assessment of impacts of nutrient nitrogen and acid deposition on habitats utilises Low Range critical loads; and,
 - NH₃ levels are based on new emission limits in BREF, but the Applicant would select and achieve specific levels for NH₃ that avoid adverse effects as part of the environmental permitting process (and that a reduction in NH₃ would also result in reduction of nitrogen deposition).
- 2.5.15 The Applicant (Q2.5.1.2 in [REP6-032]) also noted that air quality impacts has been assessed based on 100% of deliveries by road plus 100% of deliveries by ship and 100% of deliveries by rail.

The Applicant's revised air quality assessment

- 2.5.16 As a result of the concerns raised by NE, the Applicant indicated that it would undertake a revised assessment of what it described as a reasonable operating case (ROC) for both the Proposed Development and Keadby 2 (the main influence in-combination) and Keadby 3 developments.
- 2.5.17 The ExA (Q2.5.1.2 in [PD-012]) sought clarification from the Applicant about its approach, how any parameters relied upon in the modelling could be secured through the DCO and the weight to be given to submissions regarding NH₃ operating levels in advance of an environmental permit application.
- 2.5.18 The Applicant (Q2.5.1.2 in [REP6-032]) responded that [REP2-019] had assessed air quality impacts using several worst case scenarios, which represented an unrealistic worst case when considered together. The

⁹ BREF refers to EU Best Available Techniques Reference Documents (see Acronyms and Abbreviations in [REP2-019][AS-016])

Applicant stated that to address this, it had modelled the ROC, which is a more realistic and likely prediction of impacts to represent the environmental performance of the Proposed Development averaged over a typical year. It stated that it would not be appropriate to secure any one parameter, as at any one time one parameter might exceed the value used in the ROC whilst another might be below the value. The Applicant stated that the ExA could attach considerable weight to the ROC '*when looked at in the round.*'

- 2.5.19 Regarding NH₃ emissions' values, the Applicant (Q2.5.1.2 in [REP6-032]) responded that the ROC modelling was based on EA annual ERF performance data, 2021 Incineration Monitoring Reports, which it had extrapolated for NO_x and NH₃ emissions to meet upcoming BREF limits. The Applicant considered that these are likely to be the limits that the EA expects the Proposed Development to perform to (as part of the environmental permitting process), and that reasonable weight can therefore be attached to them.

[Q2.5.2 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 NO_x and NH₃ that would be established through a future environmental permitting process?](#)

- 2.5.20 Appendix 1 of [AS-016] sets out the parameters of the ROC, upon which the updated air dispersion modelling has been based. Section 2 states that two models were used: ADMS-5 for point source emissions and ADMS-Roads for road traffic sources. The modelling has continued to use worst case meteorological data. The parameters included:

- Emissions of HCl, NO_x, SO₂ and NH₃ amended from BREF emissions limits to likely actual emissions, based on EA annual energy recovery facility (ERF) performance data. Appendix 1, Table 2.1 presents a comparison of the emissions for each pollutant between the original modelling in ES Chapter 5 [REP4-009] and [AS-016] modelling. Some values (eg NO_x) have not changed but others (eg SO₂, NH₃ and HCl) have significantly reduced in [AS-016].

[Q2.5.3 Can the Applicant define the term HCl.](#)

- Operating hours reduced from 24 hours per day all year at full load to 8,000 hours per annum at full load.
- 24% of operational material (refuse derived fuel (RDF), aggregate, blocks) movement by vessel, equating to 290 ships per year, with ships on the wharf for 9 hours per day and engines running at 30% of full power.
- RDF and aggregate delivery trains, assuming one train per day, class 66 locomotive.
- Road traffic modelling to include reduction in impacts arising from removal of the existing Flixborough Industrial Estate access road with the proposed new access road in use, and a reasonable case

traffic scenario, ie proportion of road movements reduced reflecting proportion made by ship and rail.

- 2.5.21 For in-combination effects, paragraph 4.6.1.9 of [AS-016] states that the ROC modelling for Keadby 2 is based on the more likely operating scenario of 4,000 hours modelled at the permit application stage for that project. Paragraph 4.6.3.2 states that the Environmental Permit was issued in November 2020.

Q2.5.4 Can the Applicant explain why the reasonable case emissions' values for NO_x 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?

Q2.5.5 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?

Q2.5.6 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.

Q2.5.7 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?

- 2.5.22 Section 3 of Appendix 1 states that results of the ROC modelling are not set out in [AS-016] but have informed detailed analysis of impacts. The predicted PCs and percentage of critical loads for each pollutant at each European site for the Proposed Development alone are provided in Tables 6, 7 and 10 of [AS-016]. The outcome for the Proposed Development in combination with Keadby 2 and 3 is described at section 4.6.3.

Q2.5.8 The Applicant is requested to submit the detailed air quality modelling at D8.

- 2.5.23 Paragraph 3.2.1.3 of [AS-016] states that a revised standard for NO_x has also been used in the assessment, comprising short-term NO_x emissions considered against a standard of 200 µg m³ instead of a daily NO_x (24 hours) against a standard of 75 µg m³. The Applicant states that this is consistent with Institute of Air Quality Management (IAQM) guidance¹⁰,

¹⁰ IAQM, A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites, version 1.1 (May 2020)

and it is more appropriate to use 200 µg m³ because of existing lower levels of SO₂ concentration in the UK.

Q2.5.9 Can the Applicant provide further clarification as to why the use of the revised standard for short term NO_x emissions is appropriate given that the original standard represents the critical level as identified in APIS?

Q2.5.10 Can NE comment on the use of the revised standard for short term NO_x emissions and whether it considers this to be appropriate as a standard to measure air quality impacts?

Summary of Applicant's LSE conclusions

- 2.5.24 As described above and summarised in Table 2.2, the Applicant revised its screening conclusions in [AS-016].
- 2.5.25 The Applicant concluded that operational emissions to air from the Proposed Development alone could be screened out for all qualifying features of the below sites:
- Humber Estuary SAC and Ramsar site (NO_x (24 hour), NH₃ and nitrogen deposition);
 - Humber Estuary SPA (NO_x (24 hour), NH₃ and nitrogen deposition) (no change from the Original Report to Inform HRA [REP2-019]);
 - Thorne & Hatfield Moors SPA (nitrogen deposition) (no change from the Original Report to Inform HRA [REP2-019]); and
 - Thorne Moor SAC (nitrogen and acid deposition) (no change from the Original Report to Inform HRA [REP2-019]).

Table 2.2 Summary of ExA's understanding of Applicant's conclusions on LSE arising from operational emissions to air (blue highlight denoting change from the original conclusions)

Conclusion in [REP2-019]	Basis for excluding LSE	Conclusion in [AS-016]	Basis for excluding LSE
Humber Estuary SAC			
Excluded LSE for coastal habitat, and qualifying features not sensitive to changes in air quality (alone and in-combination).	Site feature more than 15km from the Proposed Development and/ or is not sensitive to changes in air quality.	No change from [REP2-019].	No change from [REP2-019].
Could not exclude LSE (NO _x , NH ₃ and nitrogen deposition) to estuaries and Atlantic salt meadows (alone and in-combination).	N/A	Excluded LSE (all pollutants) to estuaries and Atlantic salt meadows (alone) and NO _x (in-combination).	For the Proposed Development alone, and for NO _x in combination, ROC found emissions to be insignificant (PC of <1% or PC <10% of critical level/ load).
		Could not exclude LSE (NH ₃ and nitrogen deposition) to estuaries and Atlantic salt meadows (in-combination).	N/A – in combination effects taken forward to appropriate assessment (see Table 3.1 of this RIES).
Humber Estuary Ramsar			
Excluded LSE for all qualifying features for the Proposed Development alone, aside from saltmarsh habitat (Criterion 1).	Site feature more than 15km from the Proposed Development and/ or not sensitive to changes in air quality and/ or PC <1% of critical level/ load or PEC <70% of critical level/ load.	No change from [REP2-019].	No change from [REP2-019].

Conclusion in [REP2-019]	Basis for excluding LSE	Conclusion in [AS-016]	Basis for excluding LSE
Could not exclude LSE (NO _x , NH ₃ and nitrogen deposition) to saltmarsh habitat (Criterion 1) (alone and in-combination).	N/A	Excluded LSE (all pollutants) for saltmarsh habitat (alone) and NO _x (in-combination).	For the Proposed Development alone, and NO _x in combination, ROC found emissions to be insignificant (PC of <1% or PC <10% of critical level/ load).
		Could not exclude LSE (NH ₃ and nitrogen deposition) to saltmarsh habitat (in-combination).	N/A - in-combination effects taken forward to appropriate assessment (see Table 3.1 of this RIES).
Could not exclude LSE (NH ₃ and nitrogen deposition) to Criterion 5 and Criterion 6 (in-combination).	N/A	No change from [REP2-019].	No change from [REP2-019].
Humber Estuary SPA			
Excluded LSE for all qualifying features for the Proposed Development alone, and the qualifying features not referenced below for in-combination.	Birds' broad habitat type not sensitive to changes in air quality/ no expected negative effects from effects on broad habitat type and/ or PC <1% of critical level/ load and/ or PEC <70% of critical level/ load.	No change from [REP2-019].	No change from [REP2-019].
Could not exclude LSE (NH ₃ and nitrogen deposition) to avocet, bittern, black-tailed godwit, golden plover, little tern and marsh harrier (in-combination).	N/A	Excluded LSE for all qualifying features, including avocet, bittern, black-tailed godwit, golden plover, little tern and marsh harrier (in-combination).	In the ROC, operational emissions were found to be insignificant (PC of <1% of the critical level).

Conclusion in [REP2-019]	Basis for excluding LSE	Conclusion in [AS-016]	Basis for excluding LSE
Thorne Moor SAC			
Excluded LSE for all qualifying features (alone).	Operational emissions found to be insignificant (PC of <1% or PC <10% of critical level/ load).	No change from [REP2-019].	No change from [REP2-019].
Could not exclude LSE (NH ₃ , nitrogen deposition and acid deposition) (in-combination).	N/A	Excluded LSE for all qualifying features (in-combination).	In the ROC, operational emissions found to be insignificant (PC of <1% or PC <10% of critical level/ load).
Thorne and Hatfield Moors SPA			
Excluded LSE for all qualifying features (alone).	Operational emissions found to be insignificant (PC of <1% or PC <10% of critical level/ load).	No change from [REP2-019].	No change from [REP2-019].
Could not exclude LSE (NH ₃ and nitrogen deposition) (in-combination).	N/A	Excluded LSE for all qualifying features (in-combination).	In the ROC, operational emissions found to be insignificant (PC of <1% or PC <10% of critical level/ load).
Hatfield Moor SAC			
Excluded LSE for all qualifying features (alone and in-combination).	Location of Hatfield Moor SAC at a distance greater than 15km from the proposed main stack.	No change from [REP2-019].	No change from [REP2-019].

2.5.26 The Applicant concluded that operational emissions to air from the Proposed Development in combination could be screened out for all qualifying features of the following sites:

- Humber Estuary SPA (NH₃ and nitrogen deposition); and
- Thorne & Hatfield Moors SPA and Thorne Moor SAC (NH₃, nitrogen and nitrogen deposition).

Q2.5.11 Can the Applicant clarify its conclusion for nitrogen deposition in combination to the Humber Estuary SPA, as paragraph 4.6.3.15 of [AS-016] suggests that the combined PC is 0.9 – 1.02% (minimum), ie potentially above the 1% critical level.

2.5.27 As in [REP2-019], LSE could not be excluded from operational emissions to air from the Proposed Development in combination with Keadby 2 and 3 developments to the Humber Estuary SAC and Ramsar. Section 4.6.3 acknowledged the potential for impacts from NH₃ and nitrogen deposition but did not identify specific qualifying features that would be potentially affected. Tables 2 and 3 of Appendix 2 of [AS-016] indicate a LSE is screened in for areas of upper saltmarsh reedbed along the River Trent and screened in a LSE for:

- Humber Estuary SAC:
 - 1130 Estuaries; and
 - 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*).
- Humber Estuary Ramsar
 - Criterion 1 (saltmarsh habitats), 5 (waterfowl assemblage of international importance) and 6 (bird species/ populations occurring at levels of international importance).

Q2.5.12 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 2.3: Other issues raised in the Examination to date by the ExA and NE in relation to the Applicant's screening of LSEs (alone and in-combination), as set out in the ROC Report to Inform HRA [AS-016]

ID	Potential impact pathway	Details of issue	ExA observation/ question
Humber Estuary SAC, SPA and Ramsar			
2.1.1	Construction phase traffic emissions	<p>The Applicant applied DEFRA and IAQM screening criteria to conclude that likely impacts of increased traffic emissions during construction are negligible. It therefore excluded LSE (Section 4.5.5 and Screening Matrices 1 to 3 of [AS-016]). NE [RR-090, Part II Table 1 Ref 6] advised that:</p> <ul style="list-style-type: none"> • the thresholds in its guidance document NEA001 should be used to determine significant effect; and • NH₃ from vehicle exhaust emissions should be considered. <p>In responses, the Applicant [REP4-021] provided further explanation as to the approach to assessment, as described in ID 2.1.2. The ExA noted that this information appeared to relate to operational phase traffic emissions and sought clarification in [PD-012].</p> <p>NE (Q2.5.1.3 in [REP6-041]) stated that the Applicant had confirmed that there would be no vehicle movements within 200m of the Humber Estuary sites due to relocation of the access road. NE indicated that if this was correct, the impact pathway could be screened out. However, NE was not in a position to confirm until an updated HRA reflecting this detail had been provided.</p> <p>The Applicant (Q2.5.1.5 in [REP6-032]) confirmed that the existing access road to the Flixborough Industrial Estate,</p>	<p><i><u>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.</u></i></p> <p><i><u>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?</u></i></p> <p>The ExA notes that the Applicant assessed this potential impact pathway for the Humber Estuary SAC and Ramsar only.</p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>which is within 100m of the Humber Estuary SAC and Ramsar, would be stopped up and a new access road would be constructed that is more than 200m from the sites for the entirety of its length. The Applicant (Q2.5.1.3 in [REP6-032]) stated that the Humber Estuary SAC and Ramsar are located more than 200m from the new access road so there would be no risk of significant effects during construction.</p> <p>[AS-016] includes this information; paragraph 4.2.2.8 stated that the approach is consistent with NEA001.</p>	
2.1.2	Operational phase traffic emissions	<p>[REP2-019] did not assess the potential impacts of operational phase traffic emissions on European sites. NE [RR-090, Part II Table 1 Ref 8] queried whether:</p> <ul style="list-style-type: none"> the thresholds in its guidance document NEA001 had been adhered to; and NH₃ from vehicle exhaust emissions should be considered. <p>The Applicant [REP4-021] explained that the modal split of RDF deliveries is unknown therefore each mode was assigned 100% capacity (ie total modelled capacity is 300%), overstating the impacts of transportation. It noted that the number of HGVs does exceed the NEA001 annual average daily traffic (AADT) threshold of 200HGVs, but the overall contribution is <1% of NO_x critical level. It further confirmed that NH₃ was not included based on IAQM guidance and that it is proposing to use hydrogen for its trucks, which would have zero emissions of NO_x and NH₃.</p> <p>The Applicant confirmed that the existing access road to the Flixborough Industrial Estate will be stopped up and a new</p>	<p><u><i>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.</i></u></p> <p><u><i>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?</i></u></p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>access road would be located 200m east of designated sites. As a result, the draft SoCG at D4 [REP4-021] indicated that NE agreed that this matter could be screened out of the HRA. NE (Q2.5.1.4 in [REP6-041]) stated that the Applicant had confirmed that there would be no vehicle movements within 200m of the Humber Estuary sites due to relocation of the access road. NE stated that if this was correct, the impact pathway could be screened out. However, NE awaited an updated HRA reflecting this detail.</p> <p>NE advised that, if the Proposed Development leads to an increase in vehicle movements within 200m of the Humber Estuary sites, there is a requirement to assess potential emissions from NH₃ and NO_x, even if use of hydrogen vehicles is the Applicant's preferred option. NE noted that the ability to enforce use of hydrogen vehicles only is not clear.</p> <p>The Applicant (Q2.5.1.5 in [REP6-032]) confirmed that the existing access road to the Flixborough Industrial Estate, which is within 100m of the Humber Estuary SAC and Ramsar, would be stopped up and a new access road would be constructed that is more than 200m from the sites for the entirety of its length. The Applicant (Q2.5.1.4 in [REP6-032]) confirmed that the assessment does not rely on use of hydrogen vehicles.</p> <p>[AS-016] included this information; paragraph 4.2.2.8 stated the approach is consistent with NEA001.</p>	<p>The ExA notes that the Applicant assessed this potential impact pathway for the Humber Estuary SAC and Ramsar only.</p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
Humber Estuary SAC and Ramsar			
2.1.3	Construction phase dust	<p>NE [RR-090, Part II Table 1 Ref 12] stated that the Applicant concludes no LSE for this impact pathway and advised that a 200m buffer to screen in ecological receptors should be used. Section 4.5.5 of [AS-016] acknowledged potential for impacts from construction dust. Appendix 2, Tables 2 and 3 of [AS-016] identified that LSE were screened in for 'areas of upper saltmarsh of reedbed along the River Trent', ie:</p> <ul style="list-style-type: none"> • Humber Estuary SAC: <ul style="list-style-type: none"> - 1130 Estuaries; and - 1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>). • Humber Estuary Ramsar <ul style="list-style-type: none"> - Criterion 1 (saltmarsh habitats), 5 (waterfowl assemblage of international importance) and 6 (bird species/ populations occurring at levels of international importance). 	<p><u>Q. Does NE consider that LSE has been identified for the correct qualifying features for this impact pathway?</u></p>
2.1.4	Noise and vibration impact to migrating river and sea lamprey – construction	<p>[REP2-019] did not assess noise and vibration impacts on migrating river and sea lamprey from construction activities. NE [RR-090, Part II Table 1 Ref 14] advised that the potential impact for disturbance due to maximum noise levels should be considered. It noted (Q5.1.9 in [REP2-100]) that bored piling at the River Trent could have potential impacts on development, physiology and behaviour including disruption to migration routes.</p>	<p><u>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?</u></p> <p><u>Q. If NE considers that this impact pathway should be assessed at appropriate</u></p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>The Applicant (Q5.1.5 of [REP2-033])[REP2-041] confirmed that there would be no piling in the River Trent and hence considered there would be no effects on lamprey species. It stated that piling on land would be bored and barely perceptible even at 10-20m away from the source; it noted that the nearest building to be piled (the carbon capture building) is >40m from the River Trent. Furthermore, it stated that the River Trent already experiences vibration from existing industrial activities. The Applicant stated this information was sent to NE who have indicated it is satisfactory and should be included in the updated HRA.</p> <p>However, at D5, the Applicant acknowledged the potential for impact piling to be undertaken for short durations [REP5-001 and REP5-021]. It did not comment on the potential implications for sea and river lamprey.</p> <p>NE (Q2.5.1.6 in [REP6-041] advised that the updated HRA was required for it to assess the impacts of piling to lamprey. NE confirmed that noise impacts of percussive/ impact piling should be assessed where it may be required, in addition to bored piling. It advised that the assessment should include predicted construction noise levels against current background levels. NE advised that suitability of proposed mitigation should be assessed at appropriate assessment stage; however, the ExA is unclear as to whether these comments relate to both birds and lamprey, or just birds.</p> <p>[AS-016] includes predicted vibration levels for bored piling based on measurements taken from another project; the highest measurement is estimated to reduce to below</p>	<p><u><i>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?</i></u></p> <p><u><i>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.</i></u></p> <p><u><i>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.</i></u></p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>0.14mm s⁻¹ at 20m. It referenced technical guidance by the California Department of Transportation¹¹, which described benefits of undertaking piling on land to avoid effects on fish in water. The Applicant (Q2.5.1.6 in [REP6-032]) stated that driven piling is not proposed, or expected, unless there are exceptional circumstances; in this case, driven piling would be for a short duration (eg a few hours).</p>	
2.1.5	<p>Noise and vibration impact to migrating river and sea lamprey – vessel movements</p>	<p>The Original Report to Inform HRA [REP2-019] did not assess noise and vibration impacts on migrating river and sea lamprey from vessel movements. The ExA requested consideration of this potential impact pathway (Q5.1.5 of [PD-007]).</p> <p>The Applicant (Q5.1.5 of [REP2-033]) noted the number of vessel movements on the River Trent have declined in recent years. It stated that the Proposed Development could result in an additional 580 vessel movements at Flixborough Wharf per year, but the total number of movements would be within recent baseline levels; it therefore considered effects against background fluctuations would be indiscernible.</p> <p>[AS-016] incorporated this information.</p>	<p><i><u>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?</u></i></p>
2.1.6	<p>Impacts on coastal/marine qualifying features</p>	<p>The Applicant discounted the possibility of LSE for a number of the qualifying features of the Humber Estuary SAC and Ramsar criterion, on the basis that they comprise coastal and/ or marine features that do not occur within 15km of the Proposed</p>	<p>The ExA notes that NE [RR-090][REP4-021] has not disputed the Applicant’s approach.</p>

¹¹ California Department of Transportation, Technical Guidance for the Assessment of the Hydroacoustic Effects of Pile Driving on Fish’ (2020)

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>Development, and in many instances are located at least 45km away (Section 4.2.2 of [AS-016]).</p> <p>NE [RR-090] did not dispute the Applicant's approach.</p>	
Humber Estuary Ramsar			
2.1.7	Noise/ vibration/ light disturbance to bird features	<p>[REP2-019] screened out a LSE from disturbance to Criteria 5 and 6 of the Humber Estuary Ramsar, aside from mallard (as part of the Criterion 5 waterfowl assemblage feature) (Section 4.5.1 and HRA Screening Matrix 2).</p> <p>NE [RR-090, Part II Table 1 Ref 16] did not agree with the Applicant's conclusion that there would be no LSE as a result of low numbers of qualifying feature bird species. It requested:</p> <ul style="list-style-type: none"> • an assessment of noise impacts from construction works such as piling; • assessment of visual disturbance during operation; • information on disturbance from traffic and human presence on wintering birds; • reinstatement of a Construction Ornithological Monitoring Plan (COMP). <p>The Applicant [REP4-028] confirmed that the embankments along the Humber Estuary and River Trent are 2-3m high which should provide screening for birds.</p> <p><u>Construction phase</u></p>	<p><i><u>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?</u></i></p> <p><i><u>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?</u></i></p> <p>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):</p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>The Applicant appended an outline COMP to the CoCP at D3 (Appendix M of [REP3-016]), which was welcomed by NE [REP4-021].</p> <p>The Applicant considered [REP4-021] that bored piling would not result in significant vibration effects and that construction noise levels are expected to be consistent. It stated that construction noise levels along the River Trent would be approximately 50dB_{L_{Aeq, 12hr}} which is unlikely to result in significant effects on birds. In the Applicant's view, some elevated noise levels may be experienced from specific activities eg breaking of concrete, but hoardings would reduce noise levels.</p> <p>However, at D5, the Applicant acknowledged the potential for impact piling to be undertaken for short durations [REP5-001 and REP5-021]. The Outline Piling and Foundation Works Management Plan (Appendix K of the CoCP) was revised [REP5-021] to require the CEMP to set out procedures and restrictions to be applied if piling is required with input from NE as necessary.</p> <p>NE (Q2.5.1.6 in [REP6-041]) advised that an updated HRA was awaited before it could assess the impacts of piling to birds. NE confirmed that noise impacts of bored and percussive/ impact piling should be assessed and noted that the latter was of more significant concern for birds than vibration-based piling because it involves loud bangs that are more disturbing than continuous noise. NE advised that a measure of maximum noise level should be included to determine the potential for disturbance.</p>	<ul style="list-style-type: none"> • 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 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]. <p>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).</p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>[AS-016] incorporated additional description of bird species, locations and numbers identified during surveys, together with a summary of the background noise levels based on data collected for the ES and the predicted distances for unmitigated construction noise to reduce to 50dB_{L_{Aeq}, 12hr}, including noise from bored piling (paragraphs 4.5.1.1 to 4.5.1.17, and Figures 1.1 to 1.3 in Appendix 3). Aside from the waterbird assemblage feature, it concluded that LSE can be excluded as bird records are in areas where predicted noise levels are less than 50dB_{L_{Aeq}, 12hr}.</p> <p><u>Operational phase</u></p> <p>The Applicant stated [REP4-021] that noise levels would exceed 55dB _{L_{Aeq}} only in areas adjacent to works.</p> <p>In respect of visual disturbance, the Applicant stated [REP4-021] that the indicative lighting strategy avoids light spill onto the River Trent.</p> <p>NE (Q2.5.1.8 in [REP6-041]) advised that these matters (construction and operational phase) are outstanding pending an updated HRA with the requested information.</p>	<p><u>Q. With this in mind, can the Applicant and NE comment on whether a LSE should be screened in for this potential impact pathway?</u></p> <p><u>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.</u></p> <p><u>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.</u></p>
Humber Estuary SPA and Ramsar			
2.1.8	Loss of FLL	<p>[REP2-019] did not assess the potential for loss of FLL. NE [RR-090, Part II Table 1 Ref 18] could not rule out LSE due to the proximity of the application site to European sites;</p>	<p><u>Q. Further to the Applicant's additional survey information, can NE confirm whether it</u></p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>the potential habitat suitability for SPA/Ramsar birds; the scale of Proposed Development; and the bird records returned. NE specifically:</p> <ul style="list-style-type: none"> • sought clarity regarding the ornithological survey results; • advised that impacts on pink-footed goose and redshank component species of the Humber Estuary SPA and Ramsar be assessed; and • queried if water drains and arable farmland within the Order Limits that are used by mallard birds would be lost. <p>The Applicant [REP4-028] stated that 'very little' FLL would be lost. It provided further survey information to justify its conclusions [REP4-021], explaining that:</p> <ul style="list-style-type: none"> • pink-footed goose was not recorded using the project site or immediate surrounds and no FLL was identified for the species; • only one redshank was recorded within the area of the red line boundary where loss of land will occur and small numbers were recorded around Lysaght's Drain which is an area that would not be developed; and • the majority of mallard records were in habitat outside the Project Red Line Boundary and will not be lost, or in areas within it that will remain undeveloped. <p>NE [REP4-021] advised that this information should be incorporated in the HRA. NE (Q2.5.1.8 in [REP6-041]) stated the matter remains outstanding pending receipt of an updated HRA.</p>	<p><u><i>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?</i></u></p> <p><u><i>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?</i></u></p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>[AS-016] incorporated a description of survey outcomes in section 4.5.1 and bird record locations in Figures 1.1 and 1.2 (Appendix 3). Paragraph 4.5.1.17 stated that the proposed access road would cross Lysaght’s Drain and pass through a field, where small numbers of mallard were recorded.</p>	
2.1.9	<p>Noise/ vibration/ light disturbance to bird features using FLL during construction and operation</p>	<p>[REP2-019] screened out a LSE from disturbance to bird features of the Humber Estuary SPA using FLL, with the exception of mallard from the waterbird assemblage (Section 4.5.2 and HRA Screening Matrix 3). It did not assess this potential impact pathway on the Humber Estuary Ramsar. NE [RR-090, Part II Table 1 20] requested this potential impact pathway be included in the appropriate assessment with further assessment of impacts for both the Humber Estuary SPA and Ramsar.</p> <p>The Applicant [REP4-021] stated that few birds associated with the FLL were recorded and the majority were some distance from the Proposed Development or in areas where there would not be a significant risk of disturbance. It stated that bored piling would be barely perceptible even 10-15m from the source.</p> <p>NE’s (Q2.5.1.6 in [REP6-041]) comments on noise from bored and percussive/ impact piling, as summarised at ID 2.1.7, also apply to this impact pathway.</p> <p>NE (Q2.5.1.8 in [REP6-041] advised that this matter is still outstanding pending receipt of an updated HRA.</p> <p>Additional information was provided in [AS-016] (see ID 2.1.7) but not in relation to percussive/ impact piling. The</p>	<p><u><i>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?</i></u></p> <p><u><i>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?</i></u></p> <p>The ExA notes changes to the structure of [AS-016] so that assessment of noise/ vibration/</p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>Applicant's conclusion regarding LSE was unchanged, ie LSE are screened out aside from mallard of the waterbird assemblage.</p> <p>At ISH4, the ExA asked the Applicant to explain the relationship between the extent of defined operational land under Article 43 of the dDCO [REP6-004], to which permitted development rights would apply, and the location of FLL. The Applicant (Item 14 of [REP6-034]) confirmed that it intended to exclude Work Nos. 12 and 12A, which cover the area of FLL located to the west of the proposed new access road, from the definition of operational land.</p>	<p>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.</p>
2.1.10	Recreational disturbance	<p>The Original Report to Inform HRA [REP2-019] screened out a LSE to all qualifying bird species from recreational disturbance (Section 4.5.3).</p> <p>NE [RR-090, Part II Table 1 Ref 22] requested:</p> <ul style="list-style-type: none"> • the potential for bird flushing due to disturbance be considered; • information on lighting and predicted visitor numbers be provided; and • clarification of the height of the embankment. <p>The Applicant [REP4-021][REP4-028] confirmed that the embankments along the Humber Estuary and River Trent are 2-3m high which would provide screening to birds on the River Trent from operational activities and visitors to the new</p>	<p><i><u>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?</u></i></p> <p>The ExA notes that recreational disturbance is now considered</p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>visitor centre. It stated [REP4-021] that the indicative lighting strategy avoids light spill onto the River Trent. [AS-016] incorporated information about embankments and lighting at section 4.5.2. It stated that the lighting strategy is an integral part of the project design and that the proposed visitor centre and wetland area are in areas where no birds were recorded. As described at ID 2.1.7 above, a description of the bird species, locations and numbers identified during the Applicant's surveys is provided in [AS-016] but information about potential for bird flushing or predicted visitor numbers is not.</p> <p>NE advised (Q2.5.1.8 in [REP6-041]) that the matter of recreational disturbance is still outstanding pending receipt of an updated HRA.</p>	<p>under the impact pathway of disturbance, inclusive of visual impacts from increased recreational use, rather than a separate impact pathway.</p>

2.6 Summary of Examination outcomes to date in relation to screening

- 2.6.1 To date in the Examination, there has been no agreement between the Applicant and NE to screen in any additional LSEs over and above those confirmed within [REP2-019].
- 2.6.2 [AS-016] included a revised assessment of operational emissions to air based on ROC for the Proposed Development. The parameters of the ROC are described in Appendix 1 of the ROC Report to Inform HRA.
- 2.6.3 As a result of the new air quality modelling submitted in [AS-016], the Applicant revised its screening conclusions and stated that operational emissions to air from the Proposed Development alone and in-combination could be screened out for some European sites (see Section 2.5 and Table 2.2 of this RIES).
- 2.6.4 Due to the timing of submission of [AS-016], IPs did not have an opportunity to comment on these changes prior to publication of this RIES.
- 2.6.5 The ExA's understanding of the Applicant's position as described [AS-016] and NE's position at D6 (20 March 2023) of the Examination in relation to LSEs is set out in Tables A.1 to A.4 of Annex 1 of this RIES. The matters raised at Section 2.5, including in Table 2.3, of this RIES are shaded orange in these tables, for ease of reference.
- 2.6.6 For the avoidance of doubt, where there is dispute or where it is not clear to the ExA whether a LSE should be screened in, the ExA has taken a precautionary approach in this RIES and considered the matter in respect of adverse effects (ie Section 3 of this RIES). This conclusion is not final and could be subject to change further to any additional representations received during the Examination.

3 ADVERSE EFFECTS ON INTEGRITY

3.1 Conservation Objectives

- 3.1.1 Paragraph 4.2.1.5 of [REP2-019] provides a general summary of the conservation objectives relevant to the European sites included in the assessment of effects on integrity. The Report to Inform HRA references NE's supplementary guidance.
- 3.1.2 Neither NE's relevant representation [RR-090] nor [REP2-019] stated whether the sites were in favourable or unfavourable condition.
- 3.1.3 In response to ExQ1 [PD-007], NE (Q5.1.8 in [REP2-100]) confirmed that all European sites considered in the Report to Inform HRA are currently in unfavourable condition and provided a link to information about individual units of the underpinning SSSIs.

3.2 The Applicant's assessment

- 3.2.1 The European sites and relevant qualifying features for which LSE were identified were further assessed by the Applicant to determine if they could be subject to Adverse Effects on Integrity (AEoI) from the Proposed Development, either alone or in-combination with other plans and projects.
- 3.2.2 The Applicant's assessment was presented in Section 5 of both [REP2-019] and [AS-016]. As described in Section 2.5 and summarised in Table 2.2 of this RIES, the European sites assessed for AEoI changed in [AS-016].

Mitigation measures

- 3.2.3 [REP2-019] identified mitigation measures for surface water quality (section 5.2.4) and construction dust (section 5.2.5). [AS-016] retained these measures (now in sections 5.2.1 and 5.2.2 respectively) and added measures for noise disturbance to mallard (section 5.3). These were considered in the Applicant's assessment of effects on integrity.

Sites for which the Applicant concluded no AEoI

- 3.2.4 The Applicant [AS-016] concluded that the project would not adversely affect the integrity of any of the sites and features assessed.

3.3 Examination matters

Matters raised in the Examination to date, or for which the ExA seeks clarity, in relation to AEoIs are summarised in Table 3.1 below.

Table 3.1: Issues raised in the Examination to date by the ExA and NE in relation to the Applicant's assessment of effects on integrity (alone and in-combination) as set out in the ROC Report to Inform HRA [AS-016]

ID	Potential impact pathway	Details of issue	ExA observation/ question
Humber Estuary SAC/Ramsar			
3.1.1	Operational stack emissions – in-combination	<p>ES Chapter 19 [APP-067], Table 1 referred to Best Available Technique (BAT) abatement systems.</p> <p>NE initially requested [RR-090, Part II Table 1 Ref 1] that an air quality assessment should be presented without the BAT mitigation included; however it subsequently acknowledged [REP4-021] that meeting BAT emission limits is a legal obligation therefore further modelling was not required.</p>	n/a – resolved.
3.1.2	Operational stack emissions – in-combination	<p>The Applicant screened in an LSE for:</p> <ul style="list-style-type: none"> • Humber Estuary SAC: <ul style="list-style-type: none"> - 1130 Estuaries; and - 1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>). • Humber Estuary Ramsar <ul style="list-style-type: none"> - Criterion 1 (saltmarsh habitats), 5 (waterfowl assemblage of international importance) and 6 (bird species/ populations occurring at levels of international importance). <p>Section 5.2.3 of [REP2-019] concluded that only small areas of the Humber Estuary SAC would be impacted by NO_x, NH₃</p>	<p><u>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?</u></p> <p><u>Q. What is the Applicant's response to NE's concerns that nitrogen deposition could undermine the conservation objectives of the sites?</u></p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>and deposited nitrogen from the Proposed Development alone.</p> <p>NE [REP2-100] confirmed that the sites are in unfavourable ecological condition. It requested [RR-090 Part II Table 1 Ref 2] further justification that the additional contribution from the Proposed Development would not undermine the conservation objectives of the site, and that consideration be given to reedbed habitat as part of the saltmarsh feature of the Humber Estuary SAC.</p> <p>In respect of NH₃, the Applicant [REP4-021] stated it would set out and achieve specific levels for NH₃ (see Section 2.5 of this RIES).</p> <p>The Applicant [REP4-021] also noted that reedbed is a common, transitional community at upper end of saltmarsh that can tolerate additional nutrient input and is unlikely to be affected by additional levels of deposited nitrogen. It further noted that areas of affected saltmarsh would be small. However, NE [REP4-021] queried whether this input has the potential to undermine conservation objectives.</p> <p>As described in Section 2.5 of this RIES, the Applicant's ROC modelling in [AS-016] resulted in LSE from NO_x being excluded. The Applicant [AS-016] retains its original conclusion that there would be no AEoI of the European sites from NH₃ and nitrogen deposition, with the PCs from both the Proposed Development and Keadby 2 reduced based on the parameters used in the ROC modelling.</p>	

ID	Potential impact pathway	Details of issue	ExA observation/ question
3.1.3	Construction dust	<p>NE [RR-090, Part II Table 1 Ref 12] welcomed the proposal to develop a dust management plan as part of the final CEMP but considered the measures should be informed by a 200m screening distance for ecological receptors.</p> <p>The Applicant [REP4-021] subsequently confirmed that the measures would prevent any significant effects along the River Trent within 200m of the red line boundary, which the Applicant stated that NE had advised was acceptable.</p> <p>NE (Q2.5.1.8 in [REP6-041]) stated that this matter is still outstanding pending receipt of an updated Report to Inform HRA with the requested information.</p> <p>[AS-016] stated at paragraph 5.2.2.3 that the measures in the final CEMP will prevent any adverse effects within 200m of the DCO boundary.</p>	<p><u>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?</u></p>
Humber Estuary Ramsar			
3.1.4	Noise/ vibration/ light disturbance to bird features - construction	<p>The LSE screening conclusion is unclear to the ExA, see ID 2.1.7 of Table 2.3.</p> <p>The Applicant [REP4-021] stated that the timing of construction activities would be undertaken to avoid effects where possible (ie October and March) and NE queried whether this mitigation could be secured within the DCO.</p> <p>The Applicant (Q2.5.0.4 in [REP6-032]) stated that the COMP is not intended to secure control over loud construction activities through timing to avoid certain times of year, but to provide a mechanism for responding to and managing disturbance-causing events. It stated that the detailed CEMP</p>	<p><u>Q. What is the Applicant's response to NE's suggestion that the timing of construction activities be secured within the DCO?</u></p> <p><u>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</u></p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>(secured through Requirement 4 of the dDCO [REP6-004]) would specify trigger levels.</p> <p>NE (Q2.5.1.6 in [REP6-041]) stated that measures described in Appendix K and M of the CoCP [REP6-024] were vague and it was not clear what mechanism would trigger the requirement of measures to be undertaken. NE is not satisfied with the mitigation measures for piling as currently described. NE stated that the measures needed to be evidence based.</p>	<p><i><u>based on the evidence used in its assessment?</u></i></p> <p><i><u>Q. Does NE agree with the Applicant's conclusion of no AEoI, irrespective of whether the timing of construction activities can be secured?</u></i></p>
Humber Estuary SPA and Ramsar			
3.1.5	Noise/ vibration/ light disturbance to bird features using FLL - construction	<p>The LSE screening conclusion is unclear to the ExA, see ID 2.1.9 of Table 2.3.</p> <p>Please refer to the comments in ID 3.1.4.</p>	<p><i><u>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.</u></i></p>
Thorne Moor SAC			
3.1.6	Operational stack emissions – in-combination	<p>NE [RR-090] noted that Thorne Moor SAC is underpinned by the Thorne Crowle and Goole Moors SSSI, which is recovering from unfavourable condition. The Applicant [REP4-021] confirmed it would discuss opportunities to improve the condition of units within the SSSI to offset potential effects of small increases in nitrogen. NE [REP4-021] queried whether the Proposed Development could undermine the 'restore' conservation objective.</p>	<p><i><u>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?</u></i></p>

ID	Potential impact pathway	Details of issue	ExA observation/ question
		<p>The ExA (Q2.5.1.7 in [PD-012]) sought clarification from the Applicant as to progress of discussions with NE about Thorne Moor SAC, and whether measures to improve the condition of the SSSI units are mitigation or compensation.</p> <p>The Applicant (Q2.5.1.7 in [REP6-032]) responded to the ExA's request for clarification to confirm that, as Thorne Moor SAC is now screened out of further assessment, there is no longer a requirement for site management measures.</p>	

3.4 Summary of Examination outcomes to date in relation to adverse effects on integrity

- 3.4.1 To date in the Examination, the matters identified in Table 3.1 of this RIES in respect of disputed AEOIs remain unresolved. The ExA seeks responses from the Applicant and NE, where indicated, to provide clarity on the outstanding matters.
- 3.4.2 The ExA's understanding of the Applicant's and NE's positions as at D6 (20 March 2023) in relation to AEOI is set out in Annex 1 Tables A.1 to A.4 of this RIES.
- 3.4.3 As a result of the concerns raised by NE regarding the potential for AEOI of European sites (see Section 2.5 and Table 3.1 of this RIES), the ExA sought NE's view as to whether there was a need to consider alternatives and imperative reasons of overriding public interest (IROPI) and the need for compensatory measures (Q2.5.1.8 in [PD-012]).
- 3.4.4 NE advised (Q2.5.1.8 in [REP6-041]) that the matters raised in [RR-090, Part II Table 1, items 2, 4, 6, 8, 12, 14, 18, 18, 20 and 22] are outstanding pending receipt of an updated HRA with the requested information.
- 3.4.5 NE stated that it cannot change its position that there is potential for AEOI of European sites until it has seen the revised report but noted that it *'does not consider that it is at the stage where an assessment in accordance with the derogations should be commenced, as there is still a significant amount of assessment outstanding.'*
- 3.4.6 Due to the timing of submission of [AS-016], NE did not have an opportunity to provide an updated position prior to publication of this RIES.

[Q3.4.1 Can the Applicant provide a summary of all mitigation measures it seeks to rely on to avoid AEOI and explain how these would be secured in the DCO?](#)

[Q3.4.2 Aside from the matters raised in \[REP6-041\] and summarised in Table 3.1 of this RIES, does NE have any outstanding concerns about mitigation measures and how these are proposed to be secured? If so, please provide further details.](#)

4 CONCLUDING REMARKS

- 4.0.1 This RIES is based on information submitted throughout the Examination by the Applicants and IPs, up to D6 (20 March 2023) (together with the additional submission of [AS-016]), in relation to potential effects on European sites. It should be read in conjunction with the Examination documents referred to throughout.
- 4.0.2 The RIES has identified gaps in the ExA's understanding of IPs' positions on Habitats Regulations and comments on the RIES will be of great value to the ExA in order to support a robust and thorough recommendation to the Secretary of State. In particular, the ExA seeks:
- responses to the questions identified in Sections 1 to 4 of this RIES (in particular Section 2.5, and Tables 2.3 and 3.1); and
 - confirmation whether the ExA's understanding of screening and adverse effects conclusions at point of RIES publication (Tables A.1 to A.4 in Annex 1) is correct.
- 4.0.3 Comments on the RIES must be submitted for D8 (28 April 2023).

ANNEX 1 SUMMARY OF SCREENING AND ADVERSE EFFECTS CONCLUSIONS AT POINT OF RIES PUBLICATION

Key to tables 1 to 4:

- Lilac shaded cell = Coastal/marine qualifying features of the Humber Estuary SAC and Ramsar – all LSE impact pathways screened out by the Applicant in [AS-016].
- Orange shaded cell = Potential impact pathway either not considered, or LSE screened out, in [AS-016]. The matter has been discussed during the Examination; see Table 2.3 of this RIES for further details.

*Annex Q.1.1. Following review of the ROC Report to Inform HRA [AS-016], NE is requested to confirm whether there are any site/features/impact pathways shaded orange and denoted with a '?' for which it **does not agree** with the Applicant's conclusion.*

- Light green shaded cell = The Applicant's conclusion regarding the impact pathway has not been explicitly disputed or agreed with by NE. In the absence of a clear dispute, the ExA has assumed that NE agrees with the Applicant's conclusion.

*Annex Q.1.2. NE is requested to confirm whether there are any site/features/impact pathways shaded light green and denoted with a '?' for which it **does not agree** with the Applicant's conclusion.*

- Red shaded cell = Impact pathway where conclusion is disputed by NE (see Tables 2.3 and 3.1 of this RIES for further details).

Table A.1: The ExA’s understanding of the Applicant’s screening exercise and assessment of effects on integrity for Humber Estuary SAC based on [AS-016], and agreement with NE at time of publication of this RIES

TABLE A1: HUMBER ESTUARY SAC					
Feature	Potential impact (C, O and D unless otherwise stated)	LSE?		AEoI?	
		Applicant’s conclusion (alone or in combination)	Agreement with NE?¹²	Applicant’s conclusion (alone or in combination)	Agreement with NE?¹³
Sandbanks which are slightly covered by sea water all the time (H1110) / Mudflats and sandflats not covered by seawater at low tide (H1140)	Operational stack emissions	X	?	N/A	?
	Changes to water quality	X	?	N/A	?
	Changes to air quality during construction (including traffic emissions)	X	?	N/A	?
	Operational traffic emissions	X	?	N/A	?

¹² Applies to impacts from the Proposed Development alone and in combination, unless otherwise stated. Note that where a LSE has been screened in, the ExA has assumed NE’s agreement.

¹³ Applies to impacts from the Proposed Development alone and in combination, unless otherwise stated.

TABLE A1: HUMBER ESTUARY SAC					
Feature	Potential impact (C, O and D unless otherwise stated)	LSE?		AEoI?	
		Applicant's conclusion (alone or in combination)	Agreement with NE?¹²	Applicant's conclusion (alone or in combination)	Agreement with NE?¹³
Estuaries (H1130) / Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) (H1330)	Operational stack emissions	X (alone)	?	N/A	No [RR-090]
		✓* (in combination)	Yes	X	
	Changes to water quality	✓**	Yes [RR-090]	X (alone)	Yes [RR-090]
		X (in combination)		N/A (in combination)	
	Changes to air quality during construction	✓***	Yes [RR-090]	X (alone)	No (alone) [RR-090]
		X (in combination)		n/a (in combination)	Yes (in combination) [RR-090]
	Construction traffic emissions	X	?	N/A	?
	Operational traffic emissions	X	?	N/A	?
Coastal lagoons (H1150) /	Operational stack emissions	X	?	N/A	?

TABLE A1: HUMBER ESTUARY SAC					
Feature	Potential impact (C, O and D unless otherwise stated)	LSE?		AEoI?	
		Applicant's conclusion (alone or in combination)	Agreement with NE?¹²	Applicant's conclusion (alone or in combination)	Agreement with NE?¹³
<i>Salicornia</i> and other annuals colonising mud and sand (H1310) / Embryonic shifting dunes (H2110) / Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (marram grass) ("white dunes") (H2120) / Fixed coastal dunes with herbaceous vegetation ("grey dunes") (H2130) / Dunes with <i>Hippophae rhamnoides</i> (sea buckthorn) (H2160)	Changes to water quality	X	?	N/A	?
	Changes to air quality during construction	X	?	N/A	?
	Construction traffic emissions	X	?	N/A	?
	Operational traffic emissions	X	?	N/A	?
Sea lamprey / River lamprey	Operational stack emissions	X	?	N/A	?

TABLE A1: HUMBER ESTUARY SAC					
Feature	Potential impact (C, O and D unless otherwise stated)	LSE?		AEoI?	
		Applicant's conclusion (alone or in combination)	Agreement with NE?¹²	Applicant's conclusion (alone or in combination)	Agreement with NE?¹³
	Disturbance to habitat	X	?	N/A	?
	Changes to water quality	X	?	N/A	?
	Changes to air quality during construction	X	?	N/A	?
	Noise and vibration disturbance from construction activities	X	No [RR-090] [REP2-100]	N/A	?
	Noise disturbance from vessels	X	?	N/A	?
	Construction traffic emissions	X	?	N/A	?
	Operational traffic emissions	X	?	N/A	?

TABLE A1: HUMBER ESTUARY SAC					
Feature	Potential impact (C, O and D unless otherwise stated)	LSE?		AEoI?	
		Applicant's conclusion (alone or in combination)	Agreement with NE?¹²	Applicant's conclusion (alone or in combination)	Agreement with NE?¹³
Grey seal	Operational stack emissions	X	?	X	?
	Disturbance to habitat	X	?	X	?
	Changes to water quality	X	?	X	?
	Changes to air quality during construction	X	?	X	?
	Construction traffic emissions	X	?	N/A	?
	Operational traffic emissions	X	?	N/A	?

* [REP2-019] screened in the following pollutants: NO_x (24 hour) (alone), NH₃ and nitrogen deposition (alone and in-combination) (see sections 4.4 and 4.6.3, and Table 2 of Appendix 1). [AS-016] screened out effects from operational emissions to air, aside from in-combination effects from NH₃ and nitrogen deposition (see sections 4.4 and 4.6.3 and Table 2 of Appendix 2).

**For potential for contaminated surface water to enter the River Trent, which is located downstream of the Proposed Development (alone), see [AS-016], section 4.5.4 and Table 2 of Appendix 2.

***For construction dust (alone), see [AS-016], section 4.4.8 and Table 2 of Appendix 2.

Table A.2: The ExA’s understanding of the Applicant’s screening exercise and assessment of effects on integrity for Humber Estuary SPA based on [AS-016], and agreement with NE at time of publication of this RIES

TABLE A2: HUMBER ESTUARY SPA					
Feature	Potential impact (C, O and D unless otherwise stated)	Applicant’s conclusion of LSE alone or in combination	Agreement with NE¹⁴	Applicant’s conclusion of AEoI alone or in combination	Agreement with NE¹⁵
Avocet / Great bittern / Black-tailed godwit / Golden plover / Eurasian marsh harrier / Little tern	Operational stack emissions	X (alone)	Yes [REP2-100]	N/A (alone)	N/A (alone)
		X* (in combination)	?	N/A	No (in combination) [RR-090] [REP2-100]
	Disturbance or displacement from FLL (noise, lighting and human disturbance, including vessel movements)	X	No [RR-090]	N/A	?
	Construction traffic emissions	X	?	N/A	?
	Operational traffic emissions	X	?	N/A	n/a
	Loss of FLL	X	No	N/A	?

¹⁴ Applies to impacts from the Proposed Development alone and in combination, unless otherwise stated. Note that where a LSE has been screened in, the ExA has assumed NE’s agreement.

¹⁵ Applies to impacts from the Proposed Development alone and in combination, unless otherwise stated.

TABLE A2: HUMBER ESTUARY SPA					
Feature	Potential impact (C, O and D unless otherwise stated)	Applicant's conclusion of LSE alone or in combination	Agreement with NE¹⁴	Applicant's conclusion of AEOI alone or in combination	Agreement with NE¹⁵
			[RR-090]		
	Recreational disturbance during operation	X	?	N/A	?
Hen harrier / Bar-tailed godwit / Ruff	Operational stack emissions	X (alone)	Yes [REP2-100]	N/A	n/a
		X (in combination)	?	X (in combination)	?
	Disturbance or displacement from FLL (noise, lighting and human disturbance, including vessel movements)	X	No [RR-090]	N/A	?
	Construction traffic emissions	X	?	N/A	?
	Operational traffic emissions	X	?	N/A	?
	Loss of FLL	X	No [RR-090]	N/A	?
	Recreational disturbance during operation	X	?	N/A	?
Assemblage – the site	Operational stack emissions	X	Yes (alone) [REP2-100]	N/A	?

TABLE A2: HUMBER ESTUARY SPA					
Feature	Potential impact (C, O and D unless otherwise stated)	Applicant's conclusion of LSE alone or in combination	Agreement with NE¹⁴	Applicant's conclusion of AEOI alone or in combination	Agreement with NE¹⁵
qualifies under article 4.2 of the Birds Directive because it regularly supports 153,934 individual waterbirds in the non-breeding season			? (in combination)		
	Disturbance or displacement from FLL (noise, lighting and human disturbance, including vessel movements)	✓**	No*** [RR-090]	X	?
	Loss of FLL	X	No [RR-090]	N/A	?
	Recreational disturbance during operation	X	?	N/A	?
	Construction traffic emissions	X	?	N/A	?
	Operational traffic emissions	X	?	N/A	?

* [REP2-019] screened in the following pollutants: NH₃ and nitrogen deposition (in-combination) (see section 4.6.3 and Table 2 of Appendix 1). [AS-016] screened out effects from operational emissions to air (see section 4.6.3 and Table 2 of Appendix 2).

**For the following qualifying features: wintering mallard, as part of the waterbird assemblage (alone), see [AS-016], sections 4.5.1 and 4.5.2 and Table 4 of Appendix 2. The potential for in-combination effects was discounted, see [AS-016], section 4.6.4 and Table 4 of Appendix 2.

*** NE did not dispute a LSE being screened in for wintering mallard, however implied that additional species should be assessed - see ID 2.1.9 of Table 2.1 of this RIES.

Table A.3: The ExA’s understanding of the Applicant’s screening exercise and assessment of effects on integrity for Humber Estuary Ramsar based on [AS-016], and agreement with NE at time of publication of this RIES

TABLE A3: HUMBER ESTUARY RAMSAR						
Feature		Potential impact (C, O and D unless otherwise stated)	Applicant’s conclusion of LSE alone or in combination	Agreement with NE?¹⁶	Applicant’s conclusion of AEoI alone or in combination	Agreement with NE?¹⁷
Ramsar criterion 1	Representative example of a near natural estuary	Operational stack emissions	X (alone)	?	N/A	No [RR-090]
			✓* (in combination)	Yes	X	
		Changes to air quality during construction	✓**	Yes [RR-090]	X	No (alone) [RR-090]
		Changes to surface water quality	✓***	Yes [RR-090]	X	Yes [RR-090]
		Construction traffic emissions	X	?	N/A	?
		Operational traffic emissions	X	?	N/A	?

¹⁶ Applies to impacts from the Proposed Development alone and in combination, unless otherwise stated. Note that where a LSE has been screened in, the ExA has assumed NE’s agreement.

¹⁷ Applies to impacts from the Proposed Development alone and in combination, unless otherwise stated.

TABLE A3: HUMBER ESTUARY RAMSAR						
Feature		Potential impact (C, O and D unless otherwise stated)	Applicant's conclusion of LSE alone or in combination	Agreement with NE?¹⁶	Applicant's conclusion of AEoI alone or in combination	Agreement with NE?¹⁷
Ramsar criterion 3	Breeding colony of grey seals <i>Halichoerus grypus</i> / Natterjack toad <i>Bufo calamita</i>	Operational stack emissions	X	?	N/A	?
		Changes to air quality during construction	X	?	N/A	?
		Changes to surface water quality	X	?	N/A	?
		Construction traffic emissions	X	?	N/A	?
		Operational traffic emissions	X	?	N/A	?
Ramsar criterion 5	Assemblages of non-breeding waterfowl	Operational stack emissions	X (alone)	No [RR-090] [REP6-041]	N/A (alone)	No [RR-090] [REP6-041]
			✓**** (in combination)	Yes	X (in combination)	
		Disturbance or displacement (noise,	✓***** (alone)	Yes	X (alone)	?

TABLE A3: HUMBER ESTUARY RAMSAR					
Feature	Potential impact (C, O and D unless otherwise stated)	Applicant's conclusion of LSE alone or in combination	Agreement with NE?¹⁶	Applicant's conclusion of AEoI alone or in combination	Agreement with NE?¹⁷
	lighting and human disturbance)	X (in combination)	?	N/A (in combination)	?
	Changes to air quality during construction	✓**	Yes [RR-090]	X	No (alone) [RR-090]
	Changes to surface water quality	✓***	Yes [RR-090]	X	Yes [RR-090]
	Construction traffic emissions	X	?	N/A	?
	Operational traffic emissions	X	?	N/A	n/a
	Loss of FLL	X	No [RR-090] [REP6-041]	N/A	?
	Vessel movements	X	?	N/A	?
	Disturbance or displacement (noise, lighting and visual disturbance) on FLL	X	No [RR-090]	N/A	?

TABLE A3: HUMBER ESTUARY RAMSAR						
Feature		Potential impact (C, O and D unless otherwise stated)	Applicant's conclusion of LSE alone or in combination	Agreement with NE? ¹⁶	Applicant's conclusion of AEoI alone or in combination	Agreement with NE? ¹⁷
		Recreational disturbance during operation	X	?	N/A	?
Ramsar criterion 6: species/ populations occurring at levels of international importance	European golden plover <i>Pluvialis apricaria apricaria</i> /	Operational stack emissions	X (alone)	?	N/A	?
			✓***** (in combination)	Yes	X	No (in combination) [RR-090]
	Red knot <i>Calidris canutus islandica</i> /	Disturbance or displacement (noise, lighting and human disturbance, including vessel movements)	X	No [RR-090]	N/A	TBC
	Black-tailed godwit <i>Limosa limosa islandica</i> /	Changes to air quality during construction	✓** (alone)	Yes [RR-090]	X	No [RR-090]
			Changes to surface water quality	✓*** (alone)	Yes [RR-090]	X
Common redshank	Construction traffic emissions	X	?	N/A	?	

TABLE A3: HUMBER ESTUARY RAMSAR						
Feature		Potential impact (C, O and D unless otherwise stated)	Applicant's conclusion of LSE alone or in combination	Agreement with NE?¹⁶	Applicant's conclusion of AEOI alone or in combination	Agreement with NE?¹⁷
	<i>Tringa tetanus tetanus</i> / Common shelduck <i>Tadorna tadorna</i> / Bar-tailed godwit <i>Limosa lapponica lapponica</i>	Operational traffic emissions	X	?	N/A	?
		Loss of FLL	X	No [RR-090]	N/A	?
		Disturbance or displacement (noise, lighting and visual disturbance) on FLL	X	No [RR-090]	N/A	?
		Recreational disturbance during operation	X	?	N/A	?
Ramsar criterion 8	River lamprey <i>Lampetra fluviatilis</i> / Sea lamprey <i>Petromyzon marinus</i>	Operational emissions to air	X	?	N/A	?
		Changes to air quality during construction	X	?	N/A	?
		Disturbance to habitat	X	?	N/A	?
		Changes to surface water quality	X	?	N/A	Yes [RR-090]

TABLE A3: HUMBER ESTUARY RAMSAR						
Feature		Potential impact (C, O and D unless otherwise stated)	Applicant's conclusion of LSE alone or in combination	Agreement with NE?¹⁶	Applicant's conclusion of AEOI alone or in combination	Agreement with NE?¹⁷
		Noise and vibration disturbance from construction activities	X	No [RR-090] [REP2-100]	N/A	?
		Noise disturbance from vessels	X	?	N/A	?
		Construction traffic emissions	X	?	N/A	?
		Operational traffic emissions	X	?	N/A	?

* [REP2-019] screened in the following pollutants: NO_x (24 hour) (alone), NH₃ and nitrogen deposition (alone and in-combination) on saltmarsh habitat (see sections 4.4 and 4.6.3, and Table 3 of Appendix 1). [AS-016] screened out effects from operational emissions to air, aside from NH₃ and nitrogen deposition (in-combination) (see section 4.6.3 and Table 2 of Appendix 2).

**For construction dust (alone) on upper saltmarsh or reedbed, see [AS-016], section 4.4.8 and Table 3 of Appendix 2.

***For potential for contaminated surface water to enter the River Trent, which is located downstream of the Proposed Development (alone), see [AS-016], section 4.5.4 and Table 3 of Appendix 2.

****For the following pollutants: NH₃ and nitrogen deposition (in-combination), see [AS-016], Table 3 of Appendix 2. It states that the following species within the assemblage have broad habitat types that are sensitive to emissions to air: great bittern, marsh harrier, avocet, little tern, dark-bellied brent goose, wigeon and curlew.

***** For the following qualifying features: wintering mallard, as part of Ramsar Criterion 5 (alone), see [AS-016], sections 4.5.1 and 4.5.2 and Table 3 of Appendix 2. The potential for in-combination effects was discounted, see [AS-016], section 4.6.4 and Table 3 of Appendix 2.

*****For the following pollutants: NH₃ and nitrogen deposition (in-combination), see [AS-016], Table 3 of Appendix 2. Table 5 states that the following species within Criterion 6 have broad habitat types that are sensitive to emissions to air: golden plover and black-tailed godwit.

Table A.4: The ExA’s understanding of the Applicant’s screening exercise and assessment of effects on integrity for Thorne Moor SAC, Thorne & Hatfield Moors SPA and Hatfield Moor SAC based on [AS-016], and agreement with NE at time of publication of this RIES

TABLE A4: THORNE MOOR SAC AND THORNE & HATFIELD MOORS SPA						
European site	Feature	Potential impact (C, O and D unless otherwise stated)	Applicant’s conclusion of LSE alone or in combination	Agreement with NE?¹⁸	Applicant’s conclusion of AEoI alone or in combination	Agreement with NE?¹⁴
<u>Thorne Moor SAC</u>	Degraded raised bogs still capable of natural regeneration (7120)	Operational emissions to air	X (alone)	Yes [RR-090]	N/A	N/A
			X (in-combination)*	?	N/A	No (in-combination) [RR-090]
<u>Thorne & Hatfield Moors SPA</u>	European nightjar (breeding) <i>Caprimulgus europaeus</i>	Operational emissions to air	X (alone)	Yes [RR-090]	N/A	N/A
			X (in-combination)*	?	N/A	No (in-combination) [RR-090]
<u>Hatfield Moor SAC</u>	All qualifying features	Operational emissions to air	X	Yes [REP2-100]	N/A	N/A

* [REP2-019] screened in the following pollutants: NH₃, nitrogen and acid deposition (see section 4.6.3 and Tables 4 and 5 in Appendix 1). [AS-016] screened out in-combination effects from operational emissions to air as the PC was concluded to be <1% of the critical level/ load (see section 4.6.3 and Tables 5 and 6 of Appendix 2)

¹⁸ Applies to impacts from the Proposed Development alone and in combination, unless otherwise stated.

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North Lincolnshire Green Energy Park