



Department for
Business, Energy
& Industrial Strategy

The VPI Immingham Open Cycle Gas Turbine Project

Development Consent Order

Regulation 63 of the Conservation of Habitats and
Species Regulations 2017



July 2020

Contents

1	Introduction	3
2.	Project Description	5
3.	Statutory Consultation	7
4.	Likely Significant Effects Test	8
5.	Appropriate Assessment Methodology	18
	Appropriate Assessment: Humber Estuary SAC	19
	Appropriate Assessment: Humber Estuary SPA and Ramsar site	30
6.	Habitats Regulations Assessment Overall Conclusions	40

1 Introduction

Background

- 1.1 This is a record of the Habitats Regulations Assessment (“HRA”) that the Secretary of State for Business, Energy and Industrial Strategy has undertaken under the Conservation of Habitats and Species Regulations 2017¹ (“the Habitats Regulations”) and relevant parts of the Birds Directive² in respect of the Development Consent Order (“DCO”) for the VPI Immingham Open Cycle Gas Turbine Project and its associated infrastructure (the “Project”). For the purposes of these Regulations the Secretary of State is the competent authority.
- 1.2 The project will comprise an Open Cycle Gas Turbine power station with a gross electricity generating capacity of up to 299 megawatts (“MW”) along with ancillary works including new connections to the gas and electricity networks, access, services and utilities connections and temporary construction and laydown areas. The Project application is described in more detail in Section 2.
- 1.3 The Project constitutes a nationally significant infrastructure project (“NSIP”) as defined by section 14(1)(a) of the Planning Act 2008 as it is for an onshore generating station of over 50MW.
- 1.4 The Project was accepted by the Planning Inspectorate (“PINS”) on 9 May 2019 and a single appointed person was appointed as the Examining Authority (“ExA”) for the application. The examination of the Project application began on 8 August 2019 and completed on 8 February 2020. The ExA submitted its report of the examination, including its recommendation (“the ExA’s Report”), to the Secretary of State on 7 May 2020.

Habitats Regulations Assessment

- 1.5 Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (“the Habitats Directive”) and Council Directive 2009/147/EC on the conservation of wild birds (“the Birds Directive”) aim to ensure the long-term conservation of certain species and habitats by protecting them from possible adverse effects of plans and projects.
- 1.6 The Habitats Directive provides for the designation of sites for the protection of habitats and species of European importance. These sites are called Special Areas of Conservation (“SACs”). The Birds Directive provides for the classification of sites for the protection of rare and vulnerable birds and for regularly occurring migratory species within the EU. These sites are called Special Protection Areas (“SPAs”). SACs and SPAs are collectively termed European sites and form part of a network of protected sites across Europe. This network is called Natura 2000.
- 1.7 The Convention on Wetlands of International Importance 1972 (“the Ramsar Convention”) provides for the listing of wetlands of international importance. These sites are called Ramsar sites. Government policy is to afford Ramsar sites in the United Kingdom the same protection as Natura 2000 sites.
- 1.8 In the UK, the Habitats Regulations and the Wildlife and Countryside Act 1981 transpose the Habitats and Birds Directives into national law as far as the 12 nautical mile (“nm”) limit of territorial waters.

¹ The Conservation of Habitats and Species Regulations 2017. SI 2017/1012.

² Council Directive 2009/147/EC of 3 November 2009 on the conservation of wild birds.

- 1.9 Regulation 63 of the Habitats Regulations provides that “....before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which (a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and (b) is not directly connected with or necessary to the management of that site, [the competent authority] must make an appropriate assessment of the implications of the plan or project for that site in view of that site’s conservation objectives”. It also provides that “In the light of the conclusions of the assessment, and subject to regulation 64 [IROPI], the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be).”
- 1.10 This application is not directly connected with, or necessary to, the management of a Natura 2000 site. The Habitats Regulations require the Secretary of State to consider whether the project is likely to have a significant effect (“LSE”) on any such site, alone or in combination with other plans and projects. Where the potential for LSE cannot be excluded, an appropriate assessment (“AA”) of the implications of the project for that site in view of its conservation objectives must be completed. In light of that, the Secretary of State must determine whether or not the project will have an adverse effect on the integrity (“AEol”) of the site(s). In this document, the first stage assessment as to whether there is LSE at a site and, where required, the second stage assessment (“the AA”) to determine whether there is an AEol of the site, are collectively referred to as the Habitats Regulations Assessment (“HRA”). The HRA refers only to sites within UK jurisdiction.
- 1.11 The Secretary of State’s conclusions on habitats and wild bird issues contained in this report have been informed by evidence from the application and examination which are available on the Planning Inspectorate’s National Infrastructure Project web pages³. Key information from these documents is summarised and referenced in this report⁴. In particular the:
- Examining Authority’s (“ExA”) Report [ExA]
 - No Significant Effects Report (NSER) [APP-027]
 - Applicant’s EIA Scoping Report [APP-075]
 - Statement to Inform Appropriate Assessment (“SIAA”) [REP4-009]
 - Applicant’s Environmental Statement (“ES”) [APP-029 - APP106]
 - NE Relevant Representation (RR) [RR-014]
 - Applicant’s Statement of Common Ground (“SoCG”) with Natural England (“NE”) (“NE SoCG”) [September 2019 - REP2-015] and [November 2019 - REP4-011]

³ <https://infrastructure.planninginspectorate.gov.uk/projects/north-east/vpi-immingham-ocgt/>

⁴ Individual document references to the Examination Library in this Report are enclosed in square brackets ‘[...]’. For this reason, this Report does not contain extensive summaries of all documents and representations, although the Secretary of State has given full regard to them and has considered all important and relevant matters arising from them.

2 Project description

Project Infrastructure

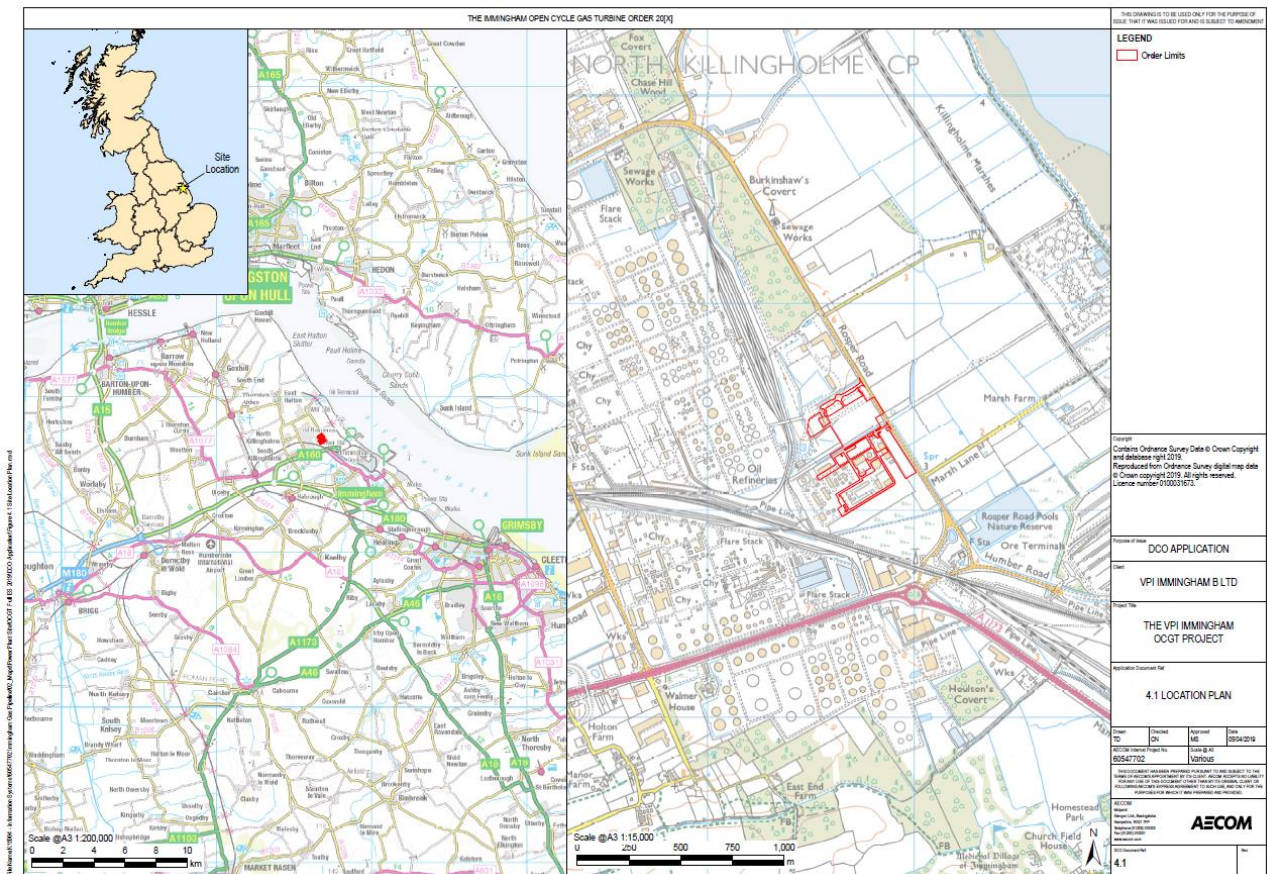
- 2.1 The project comprises the construction and operation of an Open Cycle Gas Turbine (“OCGT”) power station with a gross electrical output of up to 299 MW. It consists of:
- (Work No.1) an OCGT power station (the ‘OCGT Power Station’) with a gross capacity of up to 299MW, consisting of:
 - a gas turbine and turbine hall buildings;
 - an electrical generator;
 - a stack;
 - auxiliary cooling equipment or system;
 - gas turbine air intake filters;
 - banks of finfan coolers;
 - nitrogen oxide emissions control equipment;
 - transformers;
 - a switchyard, associated switch gear and ancillary equipment; a gas receiving area, gas control facilities and gas reception building;
 - lubricating oil, hydraulic oil and chemical storage tanks and equipment;
 - a continuous emissions monitoring system;
 - raw water and fire water storage tanks;
 - water treatment facilities, demineralised water treatment works, including storage tanks;
 - oily water treatment plant building and basin;
 - firefighting equipment, buildings and distribution pipework;
 - permanent plant laydown area;
 - auxiliary plant, buildings, enclosures and structures;
 - mechanical, electrical, gas, telecommunications and water networks, pipework, cables, racks, infrastructure, instrumentation and utilities, including connections between parts of this Work No. 1 and Work Nos 4, 5 and 6;
 - workshop buildings and stores;
 - electrical, control, administration and welfare buildings; and
 - a storm water attenuation system;
 - (Work No.2) access works comprising access to the main OCGT Power Station site and access to Work Nos. 3, 4, 5 and 6;
 - (Work No.3) a temporary construction and laydown area comprising hard standing, laydown and open storage areas, contractor compounds and staff welfare facilities, vehicle parking, roadways and haul routes, security fencing and gates, gatehouses, external lighting and lighting columns;
 - (Work No.4) gas supply connection works comprising an underground and overground gas pipeline of up to 600 millimetres (nominal internal diameter) and approximately 800 metres (‘m’) in length for the transport of natural gas from an existing gas pipeline (“the Existing Gas Pipeline”) to Work No. 1 (the ‘Gas Connection’);
 - (Work No.5) an electrical connection of up to 400 kilovolts with a total length of around 300m and control systems (the ‘Electrical Connection’); and
 - (Work No.6) utilities and services connections (the ‘Utilities and Services Connections’).
 - In addition, the application includes provision for the use of the Existing Gas Pipeline to provide fuel (natural gas) to the Proposed Development. The Existing Gas Pipeline was originally constructed in 2003 to provide fuel to the neighbouring VPI Immingham Combined Heat and Power Plant (the ‘Existing VPI CHP Plant Site’). The route of the pipeline runs from a connection point at an above ground installation (the ‘Existing AGI’) within the Existing VPI CHP Plant Site’ to a tie in point at the existing National Grid Feeder No.9 pipeline located to the west of South Killingholme.

2.2 Full details of the infrastructure to be used in the Development are detailed in Schedule 1 of the DCO.

Project Location

2.3 The Project is located in an area with existing mixed industrial and agricultural usage, and the Site is primarily located on land immediately to the north of the Existing VPI CHP Plant Site. Immingham Dock is located approximately 1.5 kilometres ('km') to the south east of the Site at its closest point. The Humber ports facility is located approximately 500m north and the Humber Refinery is located approximately 500m to the south. The villages of South Killingholme and North Killingholme are located approximately 1.4 km and 1.6 km to the west of the Site respectively, and the town of Immingham is located approximately 1.8 km to the south east. The location of the project is shown in Figure 1.

Figure 1: Location Plan [APP-010]



3 Statutory Consultation

- 3.1 Under regulation 63(3) the Habitats Regulations the competent authority must, for the purposes of an AA, consult the appropriate nature conservation body and have regard to any representation made by that body within such reasonable time as the authority specifies. Natural England (“NE”) is the Statutory Nature Conservation Body (“SNCB”) for England and for English waters within the 12nm limit.
- 3.2 Where likely significant effects upon Natura 2000 sites have been identified a Report on the Implications for European Sites (“RIES”) is provided by the ExA, with support from the Planning Inspectorate’s Environmental Services Team. It is based on matrices provided by the Applicant and relevant information provided by Interested Parties. The RIES is designed to document the information received during the examination up until that point and presents the ExA’s understanding of the main facts regarding the HRA to be carried out by the Secretary of State.
- 3.3 The ExA wrote to Interested Parties (“IPs”) on 26 November 2019 [PD-010] to inform them that it did not consider it would be necessary to issue a RIES. The ExA states that ‘this decision was taken having considered the issues arising from the representations received at that date’ [ExA: 1.4.7].
- 3.4 As the examination progressed, the ExA identified the potential for LSEs at multiple sites. A RIES was not produced but the ExA states [ExA: 6.1.3] that it has *‘been mindful throughout the Examination of the need to ensure that the SoS BEIS has sufficient information required to carry out their duties as the competent authority. Evidence was sought from the Applicant and the relevant IPs, including NE as the SNCB, through written questions and ISHs.’*
- 3.5 The Secretary of State is content that IPs, including NE, were consulted formally on Habitat Regulations matters, as required under regulation 63(3) of the Habitats Regulations via the examination process. The Secretary of State is also content that information submitted by IPs, including NE, and the ExA’s Report represents an appropriate body of information to enable him to fulfil his duties in respect of Natura 2000 sites.

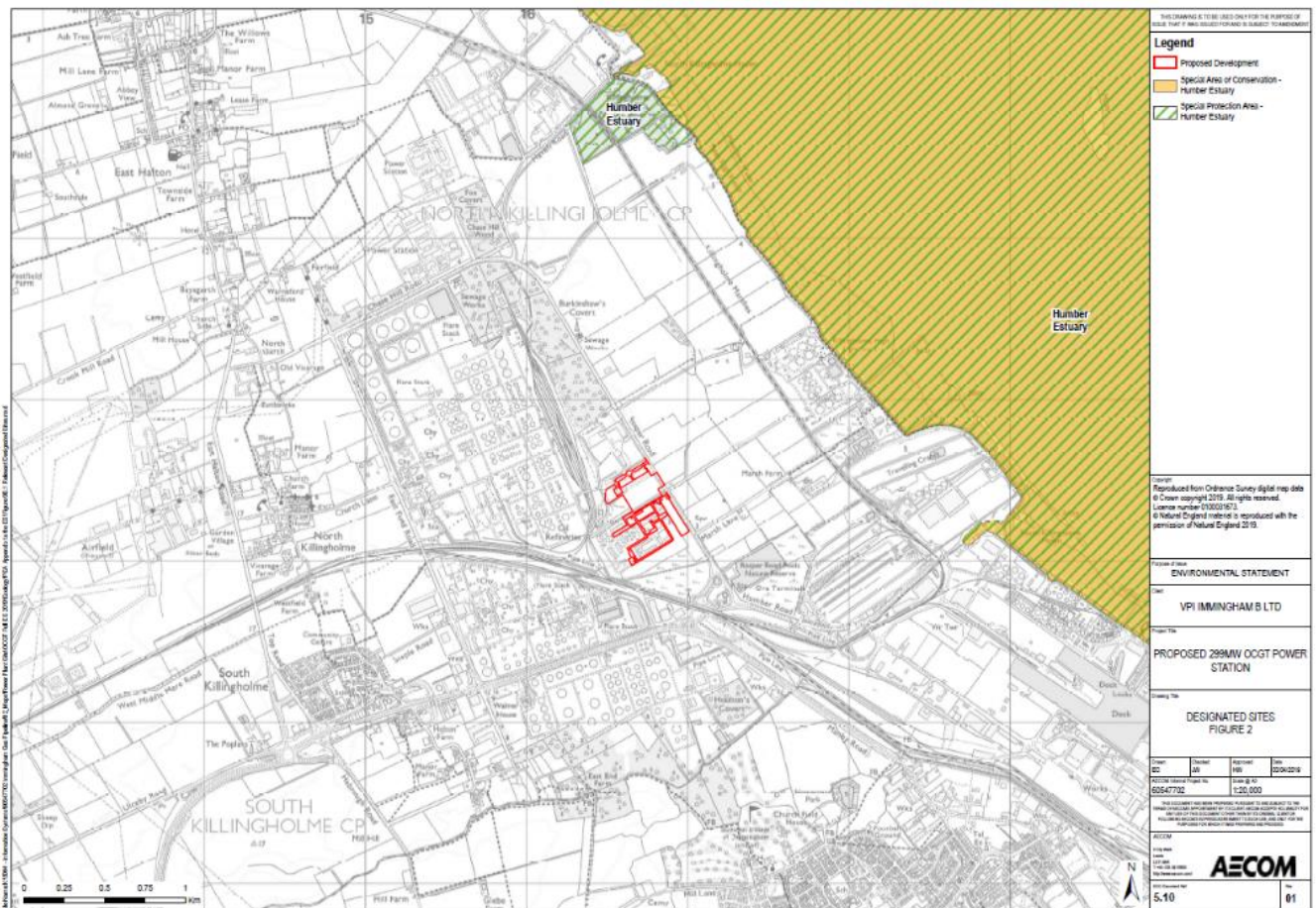
4 Likely Significant Effects Test

4.1 Under regulation 63 of the Habitats Regulations the Secretary of State must consider whether a development will have an LSE on a Natura 2000 site, either alone or in combination with other plans or projects. Where significant effects are likely and are not directly connected with or necessary to the management of that site, an AA is required of the implications of the plan or project for that site in view of its conservation objectives. The purpose of this section of the HRA is to identify any LSEs on Natura 2000 sites that may result from the Project and to record the Secretary of State's conclusions on the need for an AA.

Natura 2000 Sites

4.2 The Applicant produced a No Significant Effects Report (NSER) [APP-027] which applied a 15km search radius for Natura 2000 sites and identified two designated sites: the Humber Estuary SPA and the Humber Estuary SAC [APP-027: 3.2.3]. The Applicant also identified the Humber Estuary Wetland of International Importance ("Ramsar site") within the 15km search radius, the boundary of which is coincident with the Humber Estuary SPA and Humber Estuary SAC. The Applicant noted that although Ramsar sites are not part of the Natura 2000 network of designated sites, National Planning Policy Framework ('NPPF') in England requires that Ramsar sites are given the same level of protection as SPAs and SACs [APP-027: 3.2.3]. All three sites are located approximately 1.4km north-east of the Project. Figure 2 shows the location of Project in relation to these three Natura 2000 sites.

Figure 2: Designated Sites within 15km search radius of the Project



- 4.3 NE in its RR [RR-014] did not raise any issues with the identified European Sites, or state whether any European sites had been omitted from the NSER. No other IP raised objections in this regard.
- 4.4 The ExA confirmed the Applicant had correctly identified all the relevant Natura 2000 sites and qualifying features and interests for consideration stating it is *'satisfied that the Applicant has considered the relevant European sites and no evidence was presented during the Examination that any other European site could be impacted by the Proposed Development'* [ExA: 6.5.2].
- 4.5 The Secretary of State is satisfied that all the relevant Natura 2000 sites and relevant qualifying features have been identified for consideration.
- 4.6 The Applicant stated in its Scoping Report [APP-075] that the impacts associated with decommissioning would be the same as those for construction, and that decommissioning would take place approximately 40 years from the start of operation. This approach was agreed by the Planning Inspectorate on behalf of the Secretary of State for Housing, Communities and Local Government within the Scoping Opinion [APP-076]. As a result, the Applicant's assessment of construction effects has been used as a proxy for decommissioning effects [ExA: 6.3.5].

Impact pathways

- 4.7 The Applicant's NSER [APP-027] provided information as to the potential impact pathways from the Project to the qualifying features of the Natura 2000 sites, categorising these as:
- **Noise Disturbance:** Potential pathway for noise emission during construction and operation to impact qualifying features of the Humber Estuary SPA.
 - **Changes to surface water quality:** Potential pathway for surface water pollution to surrounding drainage regimes which could reach the European sites and potentially affect qualifying species during construction, operation and decommissioning.
 - **Changes to air quality:** Potential pathway for emissions to air during the operational phase causing an increase in the concentrations of NO_x and nitrogen deposition to the European sites.
- 4.8 The Applicant's NSER [APP-027: 4.2.1-4.2.3] explained that the following impacts were screened out of its assessment:
- Direct habitat loss from physical damage to the European sites during construction, operation and decommissioning.
 - Impacts to groundwater and dependant terrestrial ecosystems at the European sites during construction, operation and decommissioning.
 - Noise and visual impacts to qualifying bird species within the Humber Estuary SPA and Ramsar site during construction, operation and decommissioning.
 - Noise impacts to marine qualifying species within the Humber Estuary SAC and Ramsar site during construction, operation and decommissioning.
- 4.9 The ExA notes [ExA: 6.3.6] that NE's RR [RR-014] raised no objections with the Applicant's list of impacts and pathways to the European sites from the Proposed Development, nor did they suggest any new or different impacts and pathways not already included in the Applicant's NSER and that no other IP raised objections in this regard.
- 4.10 The Applicant initially provided a NSER [APP-027] which concluded that there was no potential for LSE on the qualifying features of any Natura 2000 site, either from the effects of the Project alone or in combination with other plans or projects, from the three impact pathways identified.
- 4.11 NE confirmed in its SoCG with the Applicant [REP4-011: 4.1.3] signed 11 November 2019 that there was no potential for LSE, stating: *'It is also agreed that, in line with the conclusions of Chapter 9 of the ES, the Proposed Development would not result in significant effects upon statutory and/or*

nonstatutory sites, habitats or protected species. In particular it is agreed that the Proposed Development will have no significant effects on any European designated sites.'

- 4.12 However, throughout the examination (8 August 2019 - 8 February 2020), IPs and the ExA raised concerns that there was potential for LSE from the three impact pathways to multiple features of three Natura 2000 sites. The Secretary of State's views on the potential for these impact pathways to lead to LSE at Natura 2000 sites are discussed below.

1) Noise Disturbance

- 4.13 The Applicant identified within the NSER [APP-027] that the Project has the potential for noise emission during construction and operation to impact bird interest features of the Humber Estuary SPA and Ramsar site which use the Rosper Road fields (which act as functionally linked habitat for feeding, roosting and/or loafing). The Applicant's NSER however provided reasoning as to why noise emissions would not lead to a LSE on the bird features of the Natura 2000 sites [APP-027: 4.3.26-4.3.39; 4.4.7-4.4.13; Annex A].
- 4.14 NE advised [RR-014: 3.1] that in their view *'the Applicant has provided insufficient evidence to establish that there will be no impact on the wintering bird assemblage of the Humber Estuary SPA and Ramsar site'* due to the impact on qualifying bird species using the Rosper Road fields. This is also the view expressed in the NE SoCG [REP4-011].
- 4.15 The Applicant subsequently produced a Statement to Inform Appropriate Assessment ("SIAA") [REP4-009]. The SIAA considers potential for LSE from noise disturbance to qualifying species of the Humber Estuary SPA and Humber Estuary Ramsar site using functionally linked habitat during project construction. The SIAA concludes that only noise impacts at Rosper Road fields arising from construction piling activities at the Project have potential to result in a LSE both alone and in combination with other plans and projects on the qualifying features of the Humber Estuary SPA and Ramsar. The SIAA includes consideration of the different construction techniques and measures that could be implemented in an effort to reduce or avoid effects. The ExA states [ExA: 6.5.11] that *'accordingly, I consider that an AA is required'*.
- 4.16 The Applicant stated [REP4-009: 3.1.4] that only the bird interest features of the SPA and Ramsar site have the potential for LSE since *'the other faunal and habitat interest features are remote from the Proposed Development Site'*. It also states [REP4-009: 3.1.3] that *'interest features of the Humber Estuary SAC will not be affected by noise disturbance or visual impacts due to their remoteness from the development site and lack of sensitivity to these impact pathways'*. The Applicant stated that this is because there is no noise impact pathway to the Humber Estuary SAC qualifying features including the estuarine habitats, grey seal, river lamprey and sea lamprey and, as such, the Humber Estuary SAC has been screened out by the Applicant. The ExA stated [ExA: 6.5.8] *'I am content with this approach and agree with the conclusion that impacts to the Humber Estuary SAC marine qualifying species will not be significantly affected by noise impacts from the Proposed Development alone or in-combination with other projects'*.
- 4.17 The Secretary of State has considered the information provided by the Applicant and IPs including NE, as well as the recommendation by the ExA on the matter of noise disturbance. He concludes that there is potential for LSE to the bird features of the Humber Estuary SPA and Ramsar site from the impact of construction noise and that accordingly an AA is required of the potential for the Project, both alone and in combination with other plans or projects, to lead to an AEoI. He is content to rule out LSE from noise disturbance to the Humber Estuary SAC and to all non-bird features of the Humber Estuary SPA and Ramsar site.

2) Changes to surface water quality

- 4.18 The Applicant's NSER [APP-027] identified potential impacts to surface water quality at the Humber Estuary SAC, SPA and Ramsar site should accidental pollution events occur which allow contaminated water to flow through the existing drainage regime and to the Natura 2000 sites. The Applicant's NSER however provided reasoning as to why changes to surface water quality would not lead to a LSE on the features of the Natura 2000 sites [APP-027: 4.35-4.39].
- 4.19 The Applicant's position was also reflected in the ES Chapter 12 (Surface Water, Flood Risk and Drainage) [APP-041] which states that during construction and operation there are potential pathways through the localised drainage regime for pollutants to migrate to the Natura 2000 sites. The document goes on to describe the best practice industry measures that can be used to prevent such incidents from surface runoff, with details of these measures being found within ES Chapter 12, Appendix 12.A Flood Risk Assessment [APP-068] and the framework Construction Environment Management Plan ("CEMP") [APP-077].
- 4.20 The Applicant's position was that although it has considered mitigation at the screening stage this is appropriate because the mitigation is embedded and therefore in compliance with the recent 'People Over Wind'⁵ ruling. The Applicant stated [NSER: 2.2.5] *'the recent ruling by the Court of Justice of the European Union (CJEU) in the case of People Over Wind, Peter Sweetman v Coillte Teoranta (C-323/17) has been taken into account'*. The Applicant stated [NSER: 5.1.2] that its *"assessment has taken into account embedded mitigation measures that have been designed in to the Proposed Development to reduce the likelihood of water quality impacts on the drainage ditch to the south of the Proposed Development. This ditch is outside the boundary of the SAC / SPA / Ramsar site, and the embedded mitigation has not been included primarily to mitigate for potential effects on the designated site, but because the measures are required to comply with other relevant legislation. Therefore the consideration of this embedded mitigation at the HRA screening stage is considered acceptable in light of the People over Wind ruling."*
- 4.21 The Applicant stated [NSER: 2.2.6] that *'this case held that; "it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site". This establishes that 'mitigation measures' cannot be taken into account at the screening stage, but it is important to note that not all mitigation measures are excluded from consideration, only those; "intended to avoid or reduce the harmful effects of the... project on that site". Mitigation measures which are, for example, intended to avoid effects on a local watercourse outside a European site designated boundary but which outfalls into the European designated site, can be taken into account as the benefit conveyed to the European site is coincidental and the measures would be delivered to ensure compliance with other legislative requirements relating to pollution of the water environment, irrespective of whether or not a European designated site was present. It is reasonable for a competent authority to consider such mitigation at the screening stage of HRA, when determining the requirement for further Appropriate Assessment.'* The Applicant asserts [NSER: 2.2.7] that *'where mitigation measures are mentioned in this report, they are therefore those which may reduce or avoid harmful effects on certain (local) habitats or species, but are not relied upon to directly avoid or reduce harmful effects on the European sites that are the subject of this Report'*.
- 4.22 With regard to LSE from the Project alone the ExA considered [EXA: 6.5.6] that *'without implementation of the surface water drainage measures, significant effects may occur, and that reasonable scientific doubt exists in relation to the Applicants preferred conclusion of no likely significant effect. Furthermore, in light of this conclusion and having regard to the findings in relation to People over Wind, I am of the view that an appropriate assessment (AA) is required'*.

⁵ People Over Wind, Peter Sweetman v Coillte Teoranta (C-323/17).

- 4.23 With regard to LSE in combination, the ExA considered [EXA: 6.5.7] that *'the NSER did not explicitly address in-combination effects in this regard and no separate HRA assessment has been undertaken. However, the "cumulative and in-combination" assessment within the ES was undertaken and concluded that there would be no significant cumulative effect. The conclusions stated in ES Chapter 17 (Cumulative and Combined Effects) [APP-046] are established on a similar basis to those above, for example, taking account of measures to avoid or reduce effects. In my view, this conclusion is also based on the implementation of the drainage measures and, as such, I consider an AA is required'*.
- 4.24 The Secretary of State has considered the Applicant's interpretation of the People over Wind ruling and the recommendation of the ExA. He considers that the mitigation proposed by the Applicant to avoid or reduce the risk of changes to surface water quality should not have been considered at the LSE screening stage.
- 4.25 The Secretary of State has considered the information provided by the Applicant and IPs including NE, as well as the recommendation by the ExA on the matter of changes to surface water quality. He concludes that in the absence of mitigation there is potential for LSE to the features of the Humber Estuary SAC, SPA and Ramsar site and that accordingly an AA is required of the potential for the Project, both alone and in combination with other plans or projects, to lead to an AEol.

3) Changes to air quality

- 4.26 The Applicant undertook an air quality impact assessment which is presented in Chapter 6: Air Quality of ES Volume I [APP-035]. The Applicant identified within the ES and other supporting documentation contained in [APP-056], [APP-057] and [APP-078] and the NSER [APP-027] that the operation of the Project will result in an increase in atmospheric NO_x concentrations which will result in an increase of nitrogen and acid deposition at surrounding habitats. The Applicant stated that the Project's NO_x emissions are likely to result in a direct impact pathway to the qualifying features of the Humber Estuary SAC, and an indirect impact on the qualifying features at the Humber Estuary SPA and Ramsar site as these qualifying features are themselves dependent on the Humber Estuary SAC habitat's qualifying features. The Applicant's NSER however provided reasoning as to why changes to air quality would not lead to a LSE on the features of the Natura 2000 sites [APP-027: 4.3.10-4.3.25; 4.4.4-4.4.6].
- 4.27 The Applicant's air quality impact assessment was undertaken by evaluating the Project's NO_x process contribution ("PC") in comparison to the NO_x critical level, and the Project's PC for nitrogen and acid deposition in relation to their critical levels. The Applicant concluded [APP-027] that since all increases were below 1% of the critical thresholds, in accordance with EA guidance⁶, these impacts would not result in a significant effect on the Humber Estuary SAC qualifying features nor indirectly affect the Humber Estuary SPA and Ramsar site.
- 4.28 The Applicant notes [NSER: 4.3.10] that *'changes in air quality are only relevant to the operational phase of the Proposed Development as there will be no significant changes to air quality beyond a distance of 350m from the Site during the construction phase, based on the screening distances for construction air impacts set out in appropriate guidance'* (referred to in Chapter 6 of the ES [APP-035]).
- 4.29 The Applicant's air quality impact assessment identified that the Humber Estuary SAC is already in exceedance of its NO_x critical level (ES Volume I [APP-035: Table 6.21]) and that some qualifying features of the Humber Estuary SAC are also in exceedance of their nitrogen and acid deposition

⁶ Department for Environment, Food & Rural Affairs and Environment Agency (2016). Air emissions risk assessment for your environmental permit: <https://www.gov.uk/government/collections/risk-assessments-for-specific-activities-environmentalpermits>

critical loads in terms of the “baseline” conditions (ES Volume III [APP-078: Table 6A.19 and 6A.20]).

- 4.30 NE advised in its RR [RR-014] that it was satisfied that *“there are not likely to be significant air quality impacts on the Humber Estuary, SPA, SAC or Ramsar site as a result of the project”*. NE agreed with the Applicant’s air quality assessment and its conclusions in [RR-014], [REP2-015], [REP3-016] and [REP4-011] which all state: *“It is agreed that impacts on European designated sites (including the Humber Estuary) as a result of emissions to air arising from the operation of the Proposed Development, alone or in-combination with other know plans/ projects, have been adequately assessed in the ES and the magnitude of the impact on all ecological receptors are considered to be not significant.”*
- 4.31 However, despite the Applicant’s conclusion of no LSE and NE’s advice that impacts are not likely to be significant, the ExA considered that [ExA: 6.5.16] *‘as the Humber Estuary SAC is already in exceedance of its NOx critical level, it could be construed that any increase in NOx concentrations - even a very small one - could worsen the NOx impact to the Humber Estuary SAC. This impact has the potential to result in a likely significant effect to the Humber Estuary SAC and subsequently the Humber Estuary SPA and Ramsar site.’* The ExA also considered that for similar reasons the Project *‘in-combination with other projects, has potential to result in significant effects to the Humber Estuary SAC and subsequently the Humber Estuary SPA and Ramsar’*. [ExA: 6.5.19]
- 4.32 The Secretary of State has considered the information provided by the Applicant and IPs including NE, as well as the recommendation by the ExA on the matter of changes to air quality. He considers that there may be the potential for LSE to features of the Humber Estuary SAC, SPA and Ramsar site and that accordingly to ensure a robust assessment is undertaken an AA is required of the potential for the Project, both alone and in combination with other plans or projects, to lead to an AEol.

LSE: alone assessment

4.33 The Secretary of State has reviewed the information provided by the Applicant and information from IPs including NE and concludes that there is potential for LSEs from the Project alone, on the qualifying features of three Natura 2000 sites. Table 1 summarises the sites and features for which LSEs cannot be excluded from the effects of the Project alone.

Table 1: Natura 2000 sites and features for which LSEs cannot be excluded alone

C = construction and decommissioning; O = operations and maintenance

Designated Site	Qualifying feature/s	Changes to surface water quality	Changes to air quality	Noise disturbance
The Humber Estuary SAC	Estuaries	CO	O	
	Mudflats and sandflats not covered by seawater at low tide	CO	O	
	Sandbanks which are slightly covered by seawater all the time	CO	O	
	Coastal lagoons	CO	O	
	Salicornia and other annuals colonizing mud and sand	CO	O	
	Atlantic salt meadows	CO	O	
	Embryonic shifting dunes	CO	O	
	Shifting dunes along the shoreline with European marram grass (white dunes)	CO	O	
	Fixed coastal dunes with herbaceous vegetation (grey dunes)	CO	O	
	Dunes with common sea buckthorn	CO	O	
	River lamprey	CO	O	
	Sea lamprey	CO	O	
	Grey seal	CO	O	
The Humber Estuary SPA	Populations of European importance of Annex I and Annex II non-breeding wildfowl and wading birds	CO	O	C
	Internationally important assemblage of migratory and wintering birds	CO	O	C
The Humber Estuary Ramsar	Estuarine habitats including dune systems, intertidal mud and sand flats, saltmarshes and brackish lagoons	CO	O	
	Grey seal	CO	O	
	Natterjack toad	CO	O	
	Internationally important populations of nonbreeding wildfowl and waders	CO	O	C
	Migrating river lamprey and sea lamprey	CO	O	

LSE: in combination assessment

4.34 The Applicant identified twelve plans and projects as being relevant to the LSE in combination assessment. The Applicant's NSER [APP-027: Table Annex C.1] lists the twelve plans and projects identified, and concludes that there is no potential for the Project to have LSEs in combination with these plans or projects on the features of the Natura 2000 sites. The twelve projects relevant to the in combination assessment are listed in Table 2.

Table 2: Projects with the potential for likely significant effects in combination

Plan or project	Description	The Humber Estuary SPA	The Humber Estuary Ramsar	The Humber Estuary SAC
VPI Immingham Energy Park A (consented) PA/2018/918	49.9MW gas fired power station	noise disturbance changes to air quality changes to water quality	noise disturbance changes to air quality changes to water quality	changes to air quality changes to water quality
Killingholme Power Station (consented) PA/2016/1240	14 gas reciprocating engine generators with electrical output of 23Mwe	changes to air quality	changes to air quality	changes to air quality
North Killingholme Power Project (consented)	Combined Cycle Gas Turbine (CCGT) power plant with 470MWe output	changes to air quality	changes to air quality	changes to air quality
Reserve Power Plant at Land South Side of Queens Road, Immingham (decision pending) DM/0100/18/FUL	12 gas reciprocating engine generators	changes to air quality	changes to air quality	changes to air quality
Energy Recovery Facility at Land South of Queens Road, Immingham (decision pending) DM/0026/18/FUL	Energy recovery facility	changes to air quality	changes to air quality	changes to air quality
Able Marine Energy Park (AMEP) Development Consent Order (under construction)	New deepwater quay and terrestrial facilities	noise disturbance	noise disturbance	
Marsh Lane Car Storage Area for Able UK (pending decision) PA/2017/141	Car storage and distribution facility, port related storage	noise disturbance	noise disturbance	
Land off Marsh Lane – Change of Use for Temporary Car Storage (pending decision) PA/2018/114	Application for change of use from that previously consented under AMEP DCO (and enabling works, which have been implemented) to temporary car storage, construction and operation of electricity substation and new junction off Rosper Road	noise disturbance	noise disturbance	
Land east of Rosper Road – Change of Use for Temporary Car Storage PA/2017/27 (consented)	Application for change of use from that previously consented under AMEP DCO (and enabling works, which have been implemented) to temporary car storage	noise disturbance	noise disturbance	
Fields north of Chase Hill Road, fields west of East Field Road and land east and west of Top Road, South Killingholme (consented) PA/2018/155	Surface water storage lagoons (associated with the dewatering of cable trenches for the Hornsea Project One Offshore Windfarm Project)	noise disturbance	noise disturbance	

Land north of Chase Hill road (consented) PA/2017/1745 PA/2017/1927	Two applications for a minor extension to the Hornsea Project One Offshore Windfarm DCO area	noise disturbance	noise disturbance	
Demolition of North Killingholme A Power Station (consented) PA/2017/189	Power station demolition	noise disturbance	noise disturbance	

4.35 The Secretary of State has reviewed the information provided by the Applicant and information from IPs including NE and concludes that there is potential for LSEs from the Project in combination with other plans and projects on the qualifying features of three Natura 2000 sites. Table 3 summarises the sites and features for which LSEs cannot be excluded from the effects of the Project in combination with other plans or projects.

Table 3: Natura 2000 sites and features for which LSEs cannot be excluded in combination
C = construction and decommissioning; O = operations and maintenance

Designated Site	Qualifying feature/s	Changes to surface water quality	Changes to air quality	Noise disturbance
The Humber Estuary SAC	Estuaries	CO	O	
	Mudflats and sandflats not covered by seawater at low tide	CO	O	
	Sandbanks which are slightly covered by seawater all the time	CO	O	
	Coastal lagoons	CO	O	
	Salicornia and other annuals colonizing mud and sand	CO	O	
	Atlantic salt meadows	CO	O	
	Embryonic shifting dunes	CO	O	
	Shifting dunes along the shoreline with European marram grass (white dunes)	CO	O	
	Fixed coastal dunes with herbaceous vegetation (grey dunes)	CO	O	
	Dunes with common sea buckthorn	CO	O	
	River lamprey	CO	O	
	Sea lamprey	CO	O	
Grey seal	CO	O		
The Humber Estuary SPA	Populations of European importance of Annex I and Annex II non-breeding wildfowl and wading birds	CO	O	C
	Internationally important assemblage of migratory and wintering birds	CO	O	C
The Humber Estuary Ramsar	Estuarine habitats including dune systems, intertidal mud and sand flats, saltmarshes and brackish lagoons	CO	O	
	Grey seal	CO	O	
	Natterjack toad	CO	O	
	Internationally important populations of nonbreeding wildfowl and waders	CO	O	C
	Migrating river lamprey and sea lamprey	CO	O	

LSE conclusion

- 4.36 The Secretary of State has considered the potential effects of the Project on all relevant sites and features to determine whether there is potential for LSE from the Project either alone or in combination with other relevant plans and projects. His findings are recorded in Table 1 (alone) and 3 (in combination).
- 4.37 The Secretary of State considers that sufficient information has been provided to inform a robust assessment in line with his duties under the Habitats Regulations. He is satisfied to rely on the information provided by the Applicant, the advice of NE and other IPs, and the recommendations of the ExA to inform his view. He considers that the evidence behind these judgements has been fully tested as part of the examination process.
- 4.38 The Secretary of State notes NE's agreement that the correct qualifying features have been identified and that no other Natura 2000 sites are relevant. He notes too the ExA's recommendation that the Applicant has correctly identified all of the relevant Natura 2000 sites and the relevant qualifying features. The Secretary of State is satisfied that all the relevant Natura 2000 sites and relevant qualifying features have been considered.
- 4.39 Having given due consideration to the information and analysis presented to him, the Secretary of State agrees with the recommendations of the ExA and concludes that LSEs cannot be excluded for the Humber Estuary SAC, SPA and Ramsar for those features listed in Tables 1 (alone) and 3 (in combination). These sites and features are now taken forward to the AA stage to consider whether the effects of the Project, either alone or in combination with other plans or projects, would result in an adverse effect upon the integrity of these sites.

5. Appropriate Assessment

Methodology

- 5.1 The requirement to undertake an AA is triggered when a competent authority, in this case the Secretary of State, determines that a plan or project is likely to have a significant effect on a Natura 2000 site either alone or in combination with other plans or projects. Guidance issued by the European Commission states that the purpose of an AA is to assess the implications of the plan or project in respect of the site's conservation objectives, either individually or in combination with other plans and projects, and that the conclusions should enable the competent authority to ascertain whether the plan or project will adversely affect the integrity of the site concerned. The focus is therefore specifically on the species and/or habitats for which the Natura 2000 site is designated⁷.
- 5.2 The purpose of this AA is to assess the implications of the Project in respect of the conservation objectives of the three Natura 2000 sites where LSEs have been identified to ascertain whether the Project will adversely affect the integrity of those sites. It aims to use the best scientific evidence available to identify all aspects of the Project which can, either individually or in combination with other plans or projects, affect those conservation objectives.
- 5.3 If the competent authority cannot ascertain the absence of an AEoI without reasonable scientific doubt, then under the Habitats Regulations, alternative solutions should be sought. In the absence of an acceptable alternative, the project can proceed only if there are imperative reasons of overriding public interest ("IROPI") and suitable environmental compensation measures are secured.

Conservation Objectives

- 5.4 Guidance from the European Commission indicates that disturbance to a species or deterioration of a Natura 2000 site must be considered in relation to the integrity of that site and its conservation objectives⁸. Section 4.6.4 of that guidance defines site integrity as "*...the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated.*"
- 5.5 Conservation objectives outline the desired state for a Natura 2000 site, in terms of the interest features for which it has been designated. If these interest features are being managed in a way which maintains their nature conservation value, they are assessed as being in a 'favourable condition'. An adverse effect on integrity is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of its designation.
- 5.6 There are no set thresholds at which impacts on site integrity are considered to be adverse. This is a matter for interpretation on a site-by-site basis, depending on the designated feature and nature, scale, and significance of the impact. Conservation objectives have been used by the Secretary of State to consider whether the Project has the potential for having an AEoI, either alone or in combination.
- 5.7 The Secretary of State considers there to be a LSE at the Humber Estuary SAC, SPA, and Ramsar site, requiring an AA to be undertaken to assess the implications of the Project and determine whether there is potential for AEoI at these sites.

⁷ "Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC", European Commission (2018), paragraph 4.6.1

⁸ Ibid., paragraph 4.6.3

Appropriate Assessment: The Humber Estuary SAC

- 5.8 The Humber Estuary SAC has an area of 36,657.15 ha⁹ and extends about 70km from the mouth of the Humber, past the ports of Grimsby, Immingham, Hull and Goole and up to the limit of saline intrusion on the rivers Ouse and Trent. The Humber Estuary is a large estuary with a high tidal range (macro-tidal). The high suspended sediment loads in the estuary feed a dynamic and rapidly changing system of accreting and eroding intertidal and sub-tidal mudflats and sandflats as well as saltmarsh and reedbeds. Other notable habitats include a range of sand dune types in the outer estuary, together with sub-tidal sandbanks and coastal lagoons. A number of developing managed realignment sites on the estuary also contribute to the wide variety of estuarine and wetland habitats. The estuary supports a full range of saline conditions from the open coast to the limit of saline intrusion. As salinity declines upstream tidal reedbeds and brackish saltmarsh communities fringe the estuary. Significant fish species include river lamprey and sea lamprey which migrate through the estuary to breed in the rivers of the Humber catchment. Grey seals come ashore in autumn to form large breeding colonies on the sandy shores of the south bank around Donna Nook¹⁰. The SAC is approximately 1.4km northeast of the Project site. The location of the Project in relation to the SAC is shown in Figure 2.
- 5.9 The Humber Estuary SAC was designated in 2009 and the conservation objectives for the site are set out in Table 4.

Table 4: Conservation Objectives for the Humber Estuary SAC

Conservation Objectives	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the favourable conservation status of its qualifying features, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of qualifying natural habitats and habitats of qualifying species; • The structure and function (including typical species) of qualifying natural habitats; • The structure and function of the habitats and qualifying species; • The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; • The populations of qualifying species; and • The distribution of qualifying species within the site.
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- 5.10 LSEs upon the interest features of the Humber Estuary SAC were identified because of the potential for the Project, both alone and in combination with other plans and projects, to impact site features via changes to surface water quality and changes to air quality. The impacts upon each of the features for which LSE was identified are set out in Table 5.

⁹ <https://sac.jncc.gov.uk/site/UK0030170>

¹⁰

<https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK0030170&SiteName=humber&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&HasCA=1&NumMarineSeasonality=8&SiteNameDisplay=Humber%20Estuary%20SAC>

Table 5: Impacts upon each feature of the Humber SAC for which LSE was identified
(C = construction and decommissioning; O = operation and maintenance)

Qualifying feature/s	Changes to surface water quality		Changes to air quality	
	alone	in combination	alone	in combination
Estuaries	CO	CO	O	O
Mudflats and sandflats not covered by seawater at low tide	CO	CO	O	O
Sandbanks which are slightly covered by seawater all the time	CO	CO	O	O
Coastal lagoons	CO	CO	O	O
Salicornia and other annuals colonizing mud and sand	CO	CO	O	O
Atlantic salt meadows	CO	CO	O	O
Embryonic shifting dunes	CO	CO	O	O
Shifting dunes along the shoreline with European marram grass (white dunes)	CO	CO	O	O
Fixed coastal dunes with herbaceous vegetation (grey dunes)	CO	CO	O	O
Dunes with common sea buckthorn	CO	CO	O	O
River lamprey	CO	CO	O	O
Sea lamprey	CO	CO	O	O
Grey seal	CO	CO	O	O

Changes to surface water quality

- 5.11 The Applicant's NSER [APP-027: 4.35-4.39] identified potential impacts to surface water quality at the Humber Estuary SAC should accidental pollution events occur which allow contaminated water to flow through the existing drainage regime and to the Natura 2000 sites. The Applicant's ES [APP-041] also states that during construction and operation there are potential pathways through the localised drainage regime for pollutants to migrate to the Natura 2000 sites.
- 5.12 The Secretary of State considers that in the absence of mitigation there is the potential for LSE to the features of the Humber Estuary SAC from the effects of changes to surface water quality and that accordingly an AA is required of the potential for the Project, both alone and in combination with other plans or projects, to lead to an AEol.

Alone Assessment

- 5.13 To address the potential impacts to surface water quality and the effect on qualifying features of the Humber Estuary SAC, the Applicant proposed a number of measures set out in the Framework Construction Environmental Management Plan ("fCEMP") [APP-077]. These measures, the details of which are outlined in Table 6, are secured through Requirements 10 and 14 of the DCO. Requirement 14 of the DCO specifies that consultation on the final CEMP must be carried out with NE, EA, and North East Lindsey Drainage Board ("NELIDB") prior to its approval by the local planning authority.

Table 6: Framework Construction Environmental Management Plan [APP-077]

Mitigation/ Enhancement Measure
<ul style="list-style-type: none"> • The contractor(s) will be required to minimise adverse land contamination effects on sensitive receptors by implementing good operational practices (e.g. employing suitable surface water drainage control). • Construction workers will be protected from contact with hazardous materials through use of personal protective equipment, hygiene facilities and the implementation of dust control where necessary. • Health and safety measures will be assessed under the Control of Substances Hazardous to Health (COSHH) Regulations 2002. • The contractor(s) will ensure all material is suitable for its proposed use. • Any material moved onto or off the site will need to comply with a Materials Management Plan. • An emergency spillage action plan will be produced and provisions made to contain any leak/spill. • All plant and machinery will be checked regularly and, where possible, the use of drip trays will be employed, should vehicles be parked on unsurfaced areas of the site. • The contractor(s) will be required to investigate any potentially contaminated ground, including any 'hotspots' of contamination encountered and then to assesses whether there is a need for containment or disposal of any contaminated material. • The contractor(s) will brief construction workers as to the possibility of the presence of contaminants. • Stockpiles will be bunded and/or temporary drainage systems will be put in place, following guidelines and obtaining relevant licences and consents. • Waste arisings and temporary stockpiles will be placed away from watercourses and drainage systems, whilst surface water will be directed away from stockpiles. • Any waters removed from excavations by dewatering will be appropriately discharged, according to the relevant permit being obtained. • A dust management system will be implemented in order to control the potential risk from any airborne contamination migrating off-site.

- The construction laydown area site office supervisor will be notified of any potential flood occurring by use of Floodline Warnings Direct service.
- The Contractor will be required to produce a Flood Risk Management Action Plan/ Method Statement which will provide details of the response to an impending flood and include:
 - A 24 hour availability and ability to mobilise staff in the event of a flood warning;
 - The removal of all plant, machinery and material capable of being mobilised in a flood for the duration of any holiday close down period;
 - Details of evacuation and site closedown procedures; and
 - Arrangements for removing any potentially hazardous material and anything capable of becoming entrained in floodwaters from the temporary works area.
- Contractors will comply with relevant guidance during construction, including, but not limited to, Environment Agency and Defra guidance, and IDB byelaws.
- Piling design and construction works will be completed following preparation of a piling risk assessment, in accordance with EA guidance.
- Site personnel will be made fully aware of the potential impact to water resources associated with the proposed construction works and procedures to be followed in the event of an accidental pollution event occurring.
- Plans to deal with accidental pollution will be drawn up and agreed with the Environment Agency and North East Lindsey IDB (NELIDB), prior to works commencing.
- Plans for the discharge and/or disposal of potentially contaminated water will be agreed in advance with the EA, NLC and NELIDB.
- Arisings and temporary stockpiles will be placed away from drainage systems, and surface water will be directed away from temporary stockpiles to prevent erosion.
- If areas located within Flood Zone 3 are to be utilised for the storage of construction materials, then a permit will be obtained from the EA.
- Containment measures will be implemented, including drip trays, bunding or doubleskinned tanks of fuels and oils.
- All chemicals will be stored in accordance with their COSHH guidelines, whilst spill kits would be provided in areas of fuel/ oil storage.
- An Emergency Spillage Plan will be produced, which site staff would have read and understood.
- The mixing and handling of materials will be undertaken in designated areas and away from surface water drains.
- Plant and machinery would be kept away from surface water bodies where possible and will have drip trays installed beneath oil tanks/engines/gearboxes and hydraulics, which will be checked and emptied regularly. Refuelling and delivery areas would be located away from surface water drains.
- Exposed ground and stockpiles will be protected as appropriate and practicable to prevent windblown migration of potential contaminants.
- Water suppression will be used if there is a risk of fugitive dust emissions.
- All foul water from any site compound (including temporary toilets) will either be tankered away to an appropriate disposal facility by a licensed waste disposal contractor or treated on site in a septic tank.
- Any potentially contaminated water will be tested, and if it is not of suitable quality, agreed disposal procedures will be followed.
- Construction drainage details will be developed in consultation with the EA.
- Pre-construction sediment contamination testing will be undertaken prior to works commencing. If material is considered to be contaminated, it will be disposed of in a licensed facility.
- All waters removed from excavations by dewatering will be discharged appropriately, in accordance with the relevance licenses being obtained.
- No discharges from any wheel wash will be permitted to discharge into any surface water system without appropriate prior treatment.

- Temporary drainage facilities will be provided during the construction phase to ensure controlled discharge of surface water runoff.
- The contractor will be required to ensure that runoff from the Site does not cause pollution or flooding. Measures that will be considered include:
 - Installation of measures such as swales, silt fences and appropriately sized tanks/ponds to reduce sediment load;
 - Cut-off ditches or geotextile silt-fences, installed around excavations, exposed ground and stockpiles to prevent uncontrolled release of sediments from the Site;
 - Site access points will be regularly cleaned to prevent build-up of dust and mud;
 - A valve will be installed to isolate the settlement tank/ponds in the event of a polluted discharge;
 - All potentially polluted waters (including washdown areas, stockpiles and other areas of risk for water pollution) to have separate drainage and to be tankered away from the Site; and
 - If monitoring demonstrates unsatisfactory levels of solids or other pollutants, measures will be implemented to control suspended solids or other polluted discharge to watercourses.
- Measures will also be incorporated to prevent an increase in flood risk during the construction works, including: If areas within Flood Zone 2 are to be utilised for the storage of construction materials, then a permit will be obtained from the EA.

5.14 The SoCG between the Applicant and NE [REP2-015] and the Applicant and the EA [REP2-014] record that all matters relating to the fCEMP, surface water drainage and accidental pollution events have been agreed and are considered resolved. In addition, the EA's Deadline 2 response [REP2-028] states that: *'the issues/ concern relating to foul water disposal have now been resolved'*. Furthermore, NELIDB confirm in their response at Deadline 2 [REP2-031] that they are content with the drainage measures stated in the fCEMP. The ExA notes that no concerns regarding the deterioration to surface water at the Humber Estuary SAC, SPA or Ramsar site were raised by NE in their subsequent SoCG [REP4-011] and NE's RR [RR-014] records that it is satisfied that there are not likely to be significant water quality impacts on the Humber Estuary SSSI, SPA, SAC or Ramsar as a result of the project. The ExA records [ExA: 6.4.4] that *'no further issues regarding the potential for the deterioration of surface water to the Humber Estuary SAC, SPA and Ramsar site were raised during the Examination'*.

5.15 The ExA states [ExA: 6.7.4] that it has *'confidence that the measures proposed are appropriate to prevent the deterioration of the surface water quality at the European sites'* and *'that these measures are appropriately secured through Requirements 10 and 14 of the DCO'*. The ExA also states [ExA: 6.7.5] that *'with these measures in place, I am of the view that it is unlikely that polluted/ contaminated water would/ could reach the Humber Estuary SAC. I am therefore content that the Proposed Development would not have an adverse effect on the integrity of the European site alone'*.

In combination Assessment

5.16 No HRA surface water in combination assessment was completed by the Applicant but a cumulative assessment addressing changes to surface water in connectivity with the European sites was undertaken within ES Chapters 12 [APP-041] and 17 [APP-046]. The Applicant's assessment considered the impact of the Project in combination with other plans and projects and concluded that: *'with the exception of VPI Immingham Energy Park A, there is a lack of hydrological connectivity between schemes listed in Table 17-2 and the Site'*. The Applicant further states that with the implementation of the drainage measures within the proposed fCEMP [APP-077], no contaminated/ polluted water would be able to migrate off-site. Therefore, no pathway to the European sites would occur which would result in no cumulative or in combination effects to the European sites. The Applicant's NSER [NSER: 4.4.2] states that *'there is no possibility of in*

combination effects from changes to water quality as water quality will be protected by the implementation of standard pollution prevention techniques, ensuring compliance with relevant legislation’.

- 5.17 As outlined in the alone assessment, the ExA states [ExA: 6.7.4] that it has “*confidence that the measures proposed are appropriate to prevent the deterioration of the surface water quality at the European sites*” and “*that these measures are appropriately secured through Requirements 10 and 14 of the DCO*”. The ExA also states [ExA: 6.7.5]. that “*with these measures in place, I am of the view that it is unlikely that polluted/ contaminated water would/ could reach the Humber Estuary SAC. I am therefore content that the Proposed Development would not have an adverse effect on the integrity of the European site alone or in-combination with any other plan or project. I am also content that sufficient information has been provided throughout the Examination for an AA to be conducted in this regard’.*

Conclusion

- 5.18 The Secretary of State has considered the information provided by the Applicant and other IPs in light of the conservation objectives for the Humber Estuary SAC and made a full assessment of the potential for AEoI at each of these sites from the potential for changes to water quality during project construction and operation. Having given due consideration to the information and analysis presented to him, the Secretary of State concludes in line with the recommendation of the ExA, that changes to water quality from the Project, either alone or in combination with other plans or projects, would not adversely affect the integrity of the Humber Estuary SAC. His conclusion is dependent upon mitigation measures secured through Requirements 10 and 14 of the DCO.

Changes to air quality

Alone Assessment

- 5.19 The Applicant identified [APP-035; APP-056; APP-057; APP-078; APP-027] that the operation of the Project would result in an increase in atmospheric NO_x concentrations which would result in an increase of nitrogen and acid deposition at surrounding habitats. The Applicant identified that the Project's NO_x emissions are likely to result in a direct impact pathway to the qualifying features of the Humber Estuary SAC, and an indirect impact on the qualifying features at the Humber Estuary SPA and Ramsar site as these qualifying features are themselves dependent on the Humber Estuary SAC habitats qualifying features.
- 5.20 The Applicant undertook an air quality assessment, the results of which are set out in the Applicant's ES Chapter 6 and accompanying appendix [APP-035, APP-078]. The Applicant's air quality impact assessment evaluated the Project's NO_x process contribution ("PC") in comparison to the NO_x critical level, and the Project's PC for nitrogen and acid deposition in relation to their critical levels:
- the process contribution resulting from the maximum annual mean NO_x emissions from the stack would be 0.3% of the critical level for the Humber Estuary SAC. This is well below the 1% screening threshold below which an adverse effect on the designated habitats (and therefore the species they support) is considered to be insignificant [APP-027: 4.3.16].
 - the annual nitrogen deposition rate would be substantially below 1% of the critical load (<0.1%), and therefore well below the 1% screening threshold below which adverse effects on habitats is considered to be insignificant [APP-027: 4.3.17].
 - for acid deposition, the process contribution of sulphur deposition is expected to be negligible because emissions of SO₂ from natural gas combustion are negligible [APP-027: 4.3.18].
- 5.21 The Applicant obtained the air quality critical levels and critical load thresholds for NO_x concentrations and nitrogen deposition by utilising the Air Pollution Information System (APIS) [APP-035: 6.2.5; Reference 6-1]. The nitrogen deposition critical load differs depending on the type of habitat, and as such, each qualifying feature for the Humber Estuary SAC's critical load threshold is different.
- 5.22 The Applicant undertook its assessment in accordance with EA permitting guidance¹¹ which states that emissions are considered to be "insignificant" where the PCs of the Project equate to less than 10% of the short-term or less than 1% of the long-term critical levels respectively for protected conservation areas. The Applicant's assessment of air quality emissions as presented within [APP-035 and APP-078] show that the maximum PC and predicted environmental concentration ("PEC") for the Humber Estuary SAC, SPA and Ramsar site are all below the 10% short term threshold and the 1% long term threshold. The PEC is calculated from the baseline/ background concentration plus the PC of the Project. The Applicant concluded [APP-027: 4.3.10-4.3.25; 4.4.4-4.4.6] that therefore these impacts would not result in a significant effect on the Humber Estuary SAC qualifying features.
- 5.23 The Applicant's ES air quality impact assessment [APP-035: Table 6.21] identified that the Humber Estuary SAC is already in exceedance of its NO_x critical level and that [APP-078: Table 6A.19 and 6A.20] some qualifying features of the Humber Estuary SAC are also in exceedance of their nitrogen and acid deposition critical loads. However, the Applicant stated that none of the qualifying features already experiencing an exceedance of nitrogen deposition are located in proximity to the Project. This is expanded on in the NSER [APP-027: 4.3.19] which records that the most sensitive habitat for which the Humber Estuary SAC is designated is various forms of sand dune however

¹¹ Department for Environment, Food & Rural Affairs and Environment Agency (2016). Air emissions risk assessment for your environmental permit: <https://www.gov.uk/government/collections/risk-assessments-for-specific-activities-environmentalpermits>

the closest area of this habitat is located over 10km from the Project. As well as this, the closest Rich Fens and Northern Wet Heath habitat is located west of the Humber Bridge at least 8km from the Proposed Development. The nearest air-quality sensitive habitat for which the Humber Estuary SAC and Ramsar site is designated is saltmarsh. The closest saltmarsh habitat within the boundary of the designated sites is approximately 1.5km from the Project.

- 5.24 The Applicant's air quality modelling [APP-056 and APP-057: Figures 6.1 and 6.2] show that as the distance from the Project increases, the increase in NO_x concentration decreases and that the increase to NO_x concentrations is negligible at distances greater than 2km from the Project. The figures show that outside of an approximate 2km radius from the Project the operational PC contributes ≤0.01 to the annual mean NO₂ concentration and the operational PC would not impact the daily mean NO₂ concentration at a distance of over 2km. The Applicant's NSER and ES [APP-078: Table 6A.19] show that apart from the '*Pioneer, low-mid, mid-upper saltmarshes*', a qualifying feature of the Humber Estuary SAC¹², located approximately 1.5km west of the Project, all other qualifying features for the Humber Estuary SAC are located at least 8km from the Project. The Applicant's assessment therefore focused on the *Pioneer, low-mid, mid-upper saltmarshes* qualifying feature.
- 5.25 The Applicant's ES appendix [APP-078: Table 6A.19] shows that the *Pioneer, low-mid, mid-upper saltmarshes* qualifying feature is currently at 75% of its nitrogen critical load. The Table shows that the PCs from the Project would only increase the nitrogen deposition at the *Pioneer, low-mid, mid-upper saltmarshes* by 0.01% which would not result in an exceedance of its nitrogen deposition critical load. The Applicant states [APP-027: 4.3.23] that the current deposition rate is therefore 25% below the minimum part of the critical load range. With the Project predicted to contribute a further 0.06kgN/ha/yr nutrient nitrogen deposition (against a background deposition level of 15.0kgN/ha/yr) this would be well within the normal variation expected in deposition rates, and would not result in the critical load of 20kgN/ha/yr for the saltmarsh being exceeded.
- 5.26 The Applicant's NSER concluded [APP-027: 4.3.24] that '*the predicted changes in critical level (NO_x) and critical load (N deposition) of less than 1% will be therefore be imperceptible and there will be no impacts to sand dunes from air quality changes*' and that [APP-027: 4.3.25] '*it is concluded that, in considering this potential impact pathway, there are no Likely Significant Effects from the Proposed Development on the Humber Estuary SAC*'.
- 5.27 NE advised in its RR [RR-014] that it was satisfied that '*there are not likely to be significant air quality impacts on the Humber Estuary SPA, SAC or Ramsar site as a result of the project*'. NE agree with the Applicant's air quality assessment and its conclusions in [RR-014], [REP2-015], [REP3-016] and [REP4-011]. The ExA notes [ExA: 6.7.10] that 'no evidence was provided during the Examination by NE or other IPs that raised concerns with the Applicant's argument that as the process contributions to these qualifying features are all <0.1% of the critical load, the actual impact on these features would be insignificant'.
- 5.28 Despite the Applicant's conclusion of no LSE and NEs advice that impacts are not likely to be significant, the ExA considered [ExA: 6.5.16] that '*as the Humber Estuary SAC is already in exceedance of its NO_x critical level, it could be construed that any increase in NO_x concentrations*

¹² '*Pioneer, low-mid, mid-upper saltmarshes*' is a sub-feature of the 'Atlantic Salt Meadow' feature of the Humber Estuary SAC. Saltmarsh ecology is underpinned by sedimentary and tidal processes which influence the pattern and development of vegetation. Low current velocities and limited wave action allow sediment to accrete vertically leading to vegetation establishment. In time, a typical saltmarsh zonation develops where frequency and duration of tidal inundation declines to landward as elevation rises. Although the succession is a gradual continuum, distinctive sub-features are reflected in the elevation of different sections of the marsh: from lower saltmarsh, lower-mid saltmarsh, mid-upper saltmarsh, upper saltmarsh, pioneer saltmarsh, to transition and driftline saltmarsh (although intermediate forms will occur). P8-13: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/520290/SAC-feature-descriptions.pdf

- even a very small one - could worsen the NOx impact to the Humber Estuary SAC. This impact has the potential to result in a likely significant effect to the Humber Estuary SAC and subsequently the Humber Estuary SPA and Ramsar site.' The ExA states that for similar reasons the Project 'in-combination with other projects, has potential to result in significant effects to the Humber Estuary SAC and subsequently the Humber Estuary SPA and Ramsar' [ExA: 6.5.19].

5.29 The ExA states [ExA: 6.7.7] that it notes the Project's PC would increase the NOx concentration at the Humber Estuary SAC by just 0.5% of its critical level which is less than the 1% increase suggested to be of likely significance by the EA guidance and that it notes that the increase in NOx concentrations would be negligible at distances greater than 2km from the Project. The ExA notes [ExA: 6.7.8] that the only Humber Estuary SAC qualifying feature within 2km of the Proposed Development is *Pioneer, low-mid, mid-upper saltmarshes* and that this feature is only sensitive to nitrogen deposition and the existing load is at 75% (Table 6A.19 [APP-078]) of the critical load. Table 6A.19 [APP-078] shows that the Proposed Development will increase the nitrogen deposition at *Pioneer, low-mid, mid-upper saltmarshes* by 0.01% which would not result in exceedance of its critical level and therefore will not significantly affect this qualifying feature. The ExA concludes [ExA: 6.7.9] that it is "therefore content that as *Pioneer, low-mid, mid-upper saltmarshes* will not be significantly impacted by the Proposed Development. All other qualifying features are located over 8km from the Proposed Development. With the Proposed Development's increases in NOx concentrations, nitrogen deposition and acid deposition all being less than their 1% critical thresholds, I am satisfied that the Proposed Development would not result in adverse impacts to the integrity of the Humber Estuary SAC".

In combination Assessment

5.30 The Applicant identified potential for LSE in combination with other plans or projects. Those plans and projects with potential for in combination LSE considered by the Applicant are listed in Table 7.

Table 7: In combination Assessment [NSER: Annex C: 1]

Plan or project	Description	Potential in combination impacts
VPI Immingham Energy Park A (consented) PA/2018/918	49.9MW gas fired power station	The impacts of the Project have been assessed through dispersion modelling together with the impacts of the adjacent VPI Gas Engine project, in order to determine the overall impacts of both developments. The results of the assessment showed that the short-term impacts at all receptors are dominated by the emissions from the gas engine sources, due to their lower stack heights, lower emission temperature and higher NOx emission concentration. No additional impact over that described in the ES submitted for the Gas Engine project is predicted for the Project.
Killingholme Power Station (consented) PA/2016/1240	14 gas reciprocating engine generators with electrical output of 23Mwe	The power station gas engines would be approximately 1.5km north of the Project, and would be of a similar nature and scale to the Project. The air quality impact assessment for Killingholme Power Station concluded that for all designated sites, the mean annual process contribution from NOx deposition was well below the screening threshold of 1% of the critical level. Similarly, for nitrogen deposition the mean annual change was well below the screening threshold of 1% of the critical load. The prevailing south-westerly wind direction means that peak emissions from both developments operating together would not impact upon the same parts of the European designated sites. There is therefore no reasonable pathway by which in combination effects could occur.
North Killingholme Power Project (consented)	Combined Cycle Gas Turbine	The CCGT would be approximately 2 km north of the Project. There is therefore the potential for in combination air quality effects resulting from acid and nitrogen deposition to the

	(CCGT) power plant with 470MWe output	European designated sites. As above, the prevailing wind and much higher stack than the Project means that any changes in NOx emissions, acid and nitrogen deposition would be imperceptible. There is therefore no reasonable pathway by which in combination effects could occur.
Reserve Power Plant at Land South Side of Queens Road, Immingham (decision pending) M/0100/18/FUL	12 gas reciprocating engine generators	This development is approximately 5km from Project, and the air quality impact assessment concluded that cumulative effects would be minimal based on distance. It is therefore reasonable to conclude that there is no potential for likely significant in combination effects on the Humber Estuary SPA /SAC /Ramsar site as a result of changes in air quality.
Energy Recovery Facility at Land South of Queens Road, Immingham (decision pending) DM/0026/18/FUL	Energy recovery facility	This development is approximately 5km from the Project, and the air quality impact assessment concluded that cumulative effects would be minimal based on distance. It is therefore reasonable to conclude that there is no potential for likely significant in combination effects on the Humber Estuary SPA / SAC / Ramsar site as a result of changes in air quality.

- 5.31 The Applicant predicted that the Project would result in an increase in nitrogen deposition of 0.06kgN/ha/yr. The Applicant's in combination assessment [NSER: 4.4.4] states that given that the size of the other developments in the vicinity of the Project are of a similar scale, it is likely that they will have similar level of impacts in terms of changes to air quality. Background deposition levels in the area are 15 kgN/ha/yr, therefore an increase of approximately 83 times the increase predicted from the Project would be required to reach the lowest critical load of 20kgN/ha/yr for nearby saltmarsh, the closest qualifying feature of the Humber Estuary SAC to the Proposed Development. The Applicant concluded that it is therefore highly improbable that there could be any in combination increase of such a magnitude from other projects in the vicinity of the Project. Also considering the locations of the other developments, and the prevailing wind direction, the worst case impacts for all the developments will occur at different locations and therefore the in combination impacts of the other developments would be lower at the point of worst case impact for the Project. The Applicant concluded that that there will be no Likely Significant Effects on any European designated site due to in combination changes to air quality.
- 5.32 The SOCG with NE [REP4-011: 4.2.1] records that: *'It is agreed that impacts on European designated sites (including the Humber Estuary) as a result of emissions to air arising from the operation of the Proposed Development, alone or in-combination with other know plans/ projects, have been adequately assessed in the ES and the magnitude of the impact on all ecological receptors are considered to be not significant'*. NLC's Local Impact Report (LIR) [REP2-033: 6.2.2] states that they agree with the Applicant's NSER and that the Proposed Development alone or in combination with other plans and projects is not likely to have a significant effect on the Humber Estuary SAC, SPA and Ramsar.
- 5.33 The ExA noted that [ExA: 6.5.18] *'no information has been provided throughout the Examination that contradicts the Applicant's in-combination assessment or its conclusions'*. The ExA concludes [ExA: 6.7.11] that *'I agree with the Applicant's logic that due to the nature and location of the other plans and projects assessed in the air quality in-combination assessment, the increase in NOx concentration and the resultant nitrogen deposition level from the Proposed Development in-combination with other projects, would not result in the exceedance of the nitrogen deposition critical load for Pioneer, low-mid, mid-upper saltmarshes. Therefore, I am content that the Proposed Development, in-combination with other plans and projects, is not likely to adversely affect the Humber Estuary SAC qualifying features'*. The ExA further concluded that [ExA: 6.7.12] *'I am satisfied that no adverse effects on the integrity of the Humber Estuary SAC qualifying features will arise from the Proposed Development alone or in-combination with other plans or projects. I am also content that sufficient information has been provided throughout the Examination for an AA to be undertaken'*.

Conclusion

- 5.34 The Secretary of State has considered the information provided by the Applicant and other IPs in light of the conservation objectives for the Humber Estuary SAC and made a full assessment of the potential for AEoI from the potential for changes to air quality during project operation. The Secretary of State is satisfied that the air emissions from the Project are *de minimus* and would fall well below the point at which one might observe a potentially adverse effect on the qualifying habitats at these sites. Having given due consideration to the information and analysis presented to him, the Secretary of State concludes in line with the recommendation of the ExA, that changes to air quality from the Project, either alone or in combination with other plans or projects, would not adversely affect the integrity of the Humber Estuary SAC.

Appropriate Assessment: The Humber Estuary SPA and Ramsar

- 5.35 The Humber Estuary SPA covers an area of 37,630.24 ha¹³ and extends from the mouth of the Humber and adjacent open coast, along the estuary (including the shoreline non-tidal habitats) to the limit of saline intrusion on the tidal river Ouse and to a point about 2km south of Trent Falls on the tidal river Trent. The range of habitats on the Estuary support a variety of wintering, passage and breeding birds, including internationally important populations of a number of species. Birds are widely distributed throughout the site, the distribution of individual species reflecting habitat distribution and species ecology. Adjacent inland terrestrial areas are used extensively as high tide roosts and also provide important supporting habitats for the some SPA bird species¹⁴.
- 5.36 The Humber Estuary SPA was classified in 2007 and updated conservation objectives were most recently published in 2019¹⁵ and are shown in Table 8.

Table 8: Conservation Objectives for the Humber Estuary SPA

Conservation Objectives	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.
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- 5.37 The Humber Estuary Ramsar site covers an area of 37,988 ha. It has a maximum 7.4 m tidal range exposing vast mud and sand flats at low tide. Vegetation includes extensive reedbeds, areas of mature and developing saltmarsh, backed by grazing marsh or low sand dunes with marshy slacks and brackish pools. The area regularly supports internationally important numbers of various species of breeding and wintering waterbirds. Many passage birds, notably internationally important populations of ringed plover, *Charadrius hiaticula*, and sanderling *Caldris alba* stage in the area. The site supports Britain's most southeasterly breeding colony of grey seal¹⁶.
- 5.38 The boundaries of the SPA and Ramsar site are coincident. The SPA and Ramsar are approximately 1.4km northeast of the Project site. The location of the Project in relation to these sites is shown in Figure 3.
- 5.39 Government Guidance states that: For Ramsar sites, a decision has been made by Defra and NE not to produce Conservation Advice packages, instead focussing on the production of High Level Conservation Objectives. As the provisions on the Habitats Regulations relating to HRAs extend to Ramsar sites, NE considers the Conservation Advice packages for the overlapping European Marine Site designations to be, in most cases, sufficient to support the management of the Ramsar

¹³ <https://natura2000.eea.europa.eu/Natura2000/SDF.aspx?site=UK9006111>

¹⁴ <https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9006111&SiteName=humber&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=&HasCA=1&NumMarineSeasonality=15&SiteNameDisplay=Humber%20Estuary%20SPA>

¹⁵ <http://publications.naturalengland.org.uk/file/5874535631159296>

¹⁶ <https://rsis.ramsar.org/ris/663>

interests¹⁷. The Applicant states that there “are no explicit conservation objectives available for the Humber Estuary Ramsar site, but these are assumed to be consistent with those described above for the SPA”. [NSER 3.2.7; SIAA: 3.1.7] The ExA states [ExA: 6.7.20] that “the Humber Estuary Ramsar site does not have its own set of conservation objectives. As such, the conservation objectives for the Humber Estuary SAC and SPA have been used as a proxy” and that “I am satisfied that the reasoning presented in the above paragraphs of this report apply to relevant criteria of the Humber Estuary Ramsar site.” The Secretary of State is therefore content that the impacts on the Humber Estuary Ramsar site have been adequately considered by the Applicant. The Secretary of State’s assessment of effect on Ramsar site integrity considers those features that overlap the Ramsar and SPA designation as one feature and those that overlap the Ramsar and SAC designation as one feature.

- 5.40 The ExA states [ExA: 6.7.20] that ‘the Humber Estuary Ramsar site does not have its own set of conservation objectives. As such, the conservation objectives for the Humber Estuary SAC and SPA have been used as a proxy’.
- 5.41 LSEs upon the interest features of the Humber Estuary SPA and Ramsar were identified because of the potential for the Project, both alone and in combination with other plans and projects, to impact site features via impacts to surface water quality, air quality and because of noise disturbance. The impacts upon each of the features for which LSE was identified are set out in Table 9.

Table 9: Impacts upon each feature of the Humber SPA and Ramsar for which LSE was identified (C = construction and decommissioning; O = operation and maintenance)

Designated Site	Qualifying feature/s	Changes to surface water quality		Changes to air quality		Noise disturbance	
		alone	in combination	alone	in combination	alone	in combination
The Humber SPA	Populations of European importance of Annex I and Annex II non-breeding wildfowl and wading birds	CO	CO	O	O	C	C
	Internationally important assemblage of migratory and wintering birds	CO	CO	O	O	C	C
The Humber Ramsar	Estuarine habitats including dune systems, intertidal mud and sand flats, saltmarshes and brackish lagoons	CO	CO	O	O		
	Grey seal	CO	CO	O	O		
	Natterjack toad	CO	CO	O	O		
	Internationally important populations of nonbreeding wildfowl and waders	CO	CO	O	O	C	C
	Migrating river lamprey and sea lamprey	CO	CO	O	O		

17

<https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK11031&SiteName=humber&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=&HasCA=0&NumMarineSeasonality=0&SiteNameDisplay=Humber%20Estuary%20Ramsar>

Changes to surface water quality

- 5.42 The Applicant's NSER [APP-027: 4.35-4.39] identified potential impacts to surface water quality at the Humber Estuary SPA and Ramsar site should accidental pollution events occur which allow contaminated water to flow through the existing drainage regime and to the Natura 2000 sites. The Applicant's ES [APP-041] also states that during construction and operation there are potential pathways through the localised drainage regime for pollutants to migrate to the Natura 2000 sites.
- 5.43 The Secretary of State considers that in the absence of mitigation there is potential for LSE to the features of the Humber Estuary SPA and Ramsar site from the effects of changes to surface water quality and that accordingly an AA is required of the potential for the Project, both alone and in combination with other plans or projects, to lead to an AEol.
- 5.44 To address the potential impacts to surface water quality and the effect on qualifying features of the Humber Estuary SAC, the Applicant proposed a number of measures set out in the fCEMP [APP-077] (see Table 6 of this HRA for details). These measures are secured through Requirements 10 and 14 of the DCO.
- 5.45 The Applicant considered the impact of the Project in combination with other plans and projects and concluded that: *"with the exception of VPI Immingham Energy Park A, there is a lack of hydrological connectivity between schemes listed in Table 17-2 and the Site"*. The Applicant's NSER [NSER: 4.4.2] states that *"there is no possibility of in combination effects from changes to water quality as water quality will be protected by the implementation of standard pollution prevention techniques, ensuring compliance with relevant legislation"*.
- 5.46 All IPs were content with the proposed mitigation (see paragraphs 4:36 of this HRA). The ExA stated [ExA: 6.7.4] that it has *"confidence that the measures proposed are appropriate to prevent the deterioration of the surface water quality at the European sites"*.
- 5.47 The ExA concluded [ExA: 6.7.13] that *'I accept that the reasons supporting the finding of no adverse effects on the integrity of qualifying features in the Humber Estuary SAC apply equally to those qualifying features in the SPA which are dependent upon the affected habitat types. I am also satisfied that the Proposed Development will not result in adverse effects on the integrity of the Humber Estuary SPA in regard to changes in surface water quality'* and with regard to impacts upon the Humber Estuary Ramsar the ExA states [ExA: 6.7.20] *'I am satisfied that the reasoning presented in the above paragraphs of this report apply to relevant criteria of the Humber Estuary Ramsar site'* and that therefore the Project would not result in adverse effects to the integrity of the Humber Estuary Ramsar site alone or in combination with other plans and projects.
- 5.48 The Secretary of State has considered the information provided by the Applicant and other IPs in light of the conservation objectives for the Humber Estuary SPA and Ramsar and made a full assessment of the potential for AEol at each of these sites from the potential for changes to water quality during project construction and operation. Having given due consideration to the information and analysis presented to him, the Secretary of State concludes in line with the ExA that changes to water quality from the Project, either alone or in combination with other plans or projects, would not adversely affect the integrity of the Humber Estuary SPA or Ramsar site. His conclusion is dependent upon mitigation measures secured through Requirements 10 and 14 of the DCO.

Changes to air quality

- 5.49 The Applicant identified [APP-035; APP-056; APP-057; APP-078; APP-027] that the operation of the Project would result in an increase in atmospheric NO_x concentrations which would result in an increase of nitrogen and acid deposition at surrounding habitats. The Applicant identified that the Project's NO_x emissions are likely to result in a direct impact pathway to the qualifying features of the Humber Estuary SAC (the Secretary of State's AA for which is at paragraphs 4.41-4.46), and an indirect impact on the qualifying features at the Humber Estuary SPA and Ramsar site as these qualifying features are themselves dependent on the Humber Estuary SAC habitats qualifying features.
- 5.50 As outlined in the Humber Estuary SAC AA, the Applicant undertook its assessment in accordance with EA permitting guidance¹⁸ which states that emissions are considered to be "insignificant" where the PCs of the Project equate to less than 10% of the short-term or less than 1% of the long-term critical levels respectively for protected conservation areas. The Applicant's assessment of air quality emissions as presented within [APP-035 and APP-078] show that the maximum PC and PEC for the Humber Estuary SAC, SPA and Ramsar site are all below the 10% short term threshold and the 1% long term threshold. The Applicant concluded [APP-027: 4.3.10-4.3.25; 4.4.4-4.4.6] that therefore these impacts would not result in a significant effect on the Humber Estuary SAC qualifying features and would therefore not indirectly affect the Humber Estuary SPA and Ramsar site.
- 5.51 The Applicant considered the impact of the Project in combination with other plans and projects. Those plans and projects with potential for in combination LSE from the effects of changes to air quality are listed in Table 7. The Applicant predicted that the Project would result in an increase in nitrogen deposition of 0.06kgN/ha/yr. The Applicant's in combination assessment [NSER: 4.4.4] stated that given that the size of the other developments in the vicinity of the Project are of a similar scale, it is likely that they will have similar level of impacts in terms of changes to air quality. Background deposition levels in the area are 15 kgN/ha/yr, therefore an increase of approximately 83 times the increase predicted from the Project would be required to reach the lowest critical load of 20kgN/ha/yr for nearby saltmarsh, the closest qualifying feature of the Humber Estuary SAC to the Proposed Development. The Applicant concluded that it is therefore highly improbable that there could be any in combination increase of such a magnitude from other projects in the vicinity of the Project.
- 5.52 The SOCG with NE [REP4-011: 4.2.1] recorded that: *'It is agreed that impacts on European designated sites ... as a result of emissions to air arising from the operation of the Proposed Development, alone or in-combination with other know plans/ projects, have been adequately assessed in the ES and the magnitude of the impact on all ecological receptors are considered to be not significant'*. NLC's Local Impact Report (LIR) [REP2-033: 6.2.2] states that they agree with the Applicant's NSER and that the Proposed Development alone or in-combination with other plans and projects is not likely to have a significant effect on the Humber Estuary SAC, SPA and Ramsar. The ExA noted that [ExA: 6.5.18] *'no information has been provided throughout the Examination that contradicts the Applicant's in-combination assessment or its conclusions'*.
- 5.53 The ExA concluded [ExA: 6.7.13] that *"I accept that the reasons supporting the finding of no adverse effects on the integrity of qualifying features in the Humber Estuary SAC apply equally to those qualifying features in the SPA which are dependent upon the affected habitat types. I am also satisfied that the Proposed Development will not result in adverse effects on the integrity of the Humber Estuary SPA in regard to ... increasing emissions of NO_x, nitrogen and acid deposition'* and with regard to impacts upon the Humber Estuary Ramsar the ExA states [ExA: 6.7.20] *"I am*

¹⁸ Department for Environment, Food & Rural Affairs and Environment Agency (2016). Air emissions risk assessment for your environmental permit. (Available at: <https://www.gov.uk/government/collections/risk-assessments-for-specific-activities-environmentalpermits>)

satisfied that the reasoning presented in the above paragraphs of this report apply to relevant criteria of the Humber Estuary Ramsar site' and that therefore the Project would not result in adverse effects to the integrity of the Humber Estuary Ramsar site alone or in combination with other plans and projects.

- 5.54 The Secretary of State has considered the information provided by the Applicant and other IPs in light of the conservation objectives for the Humber Estuary SPA and Ramsar and made a full assessment of the potential for AEol from the potential for changes to air quality during project operation. The Secretary of State is satisfied that the air emissions from the Project are *de minimus* and would fall well below the point at which one might observe a potentially adverse effect on the qualifying habitats at these sites. Having given due consideration to the information and analysis presented to him, the Secretary of State concludes in line with the recommendation of the ExA, that changes to air quality from the Project, either alone or in combination with other plans or projects, would not adversely affect the integrity of the Humber Estuary SPA or Humber Estuary Ramsar Site.

Noise disturbance

Alone Assessment

- 5.55 The Applicant's SIAA [REP4-009] identified the potential for noise disturbance to qualifying bird species of the Humber Estuary SPA and Humber Estuary Ramsar site using functionally linked habitat during project construction. The SIAA concludes that noise impacts at Rosper Road Fields (which act as functionally linked habitat for feeding, roosting and/or loafing) arising from piling activities at the Project have potential to result in a LSE both alone and in combination with other plans and projects on the qualifying features of the Humber Estuary SPA and Ramsar.
- 5.56 The Applicant's NSER [APP-027] presents noise impacts as those which are discernible and above the ambient noise level at the Rosper Road Fields specifically as a result of construction piling. The use of rotary and hydraulic jack piling techniques would not give rise to significant effects on any bird assemblage using the Rosper Road Fields, if present, even without noise-specific controls but the use of impact piling has the potential to cause disturbance to qualifying species of the SPA and Ramsar site that may be present in Rosper Road fields. Impact piling is considerably louder and contains a distinct impulsive sound element.
- 5.57 The NSER records that ambient noise levels for Rosper Road Fields range from 51dB(A) to 61dB(A). The SIAA [REP4-007] states that the Bird Disturbance Toolkit¹⁹ which is based upon studies around the Humber Estuary indicates that noise levels in excess of 84 dB(A) LA_{max} result in waterfowl being "*flushed away from the source entirely*" and noise levels of 55 dB(A) LA_{max} would result in no effect to the waterfowl²⁰. The SIAA also states [REP4-009: Section 4.1] that birds will habituate to regular noise of 70dB(A) LA_{eq} or below²¹, with 'regular noise' being defined in the SIAA as "*most frequently occurring noise level from the activity*". As such, the SIAA states that the regular noise levels emitted by the Project below 70dB(A) would not result in significant effects to bird species inhabiting Rosper Road Fields. The Applicant's SIAA also argues [SIAA REP4-009] that the qualifying bird species reacting to noise levels is not necessarily of concern as long as the birds are not permanently flushed away from the habitat and that the bird species are likely to move westward in the Rosper Road Fields, further away from the Project, if noise levels rise above the ambient noise level.
- 5.58 The SIAA includes figures which depict noise contours applicable to different piling methods on Rosper Road Fields and without any form of mitigation [REP4-009: Figures 1, 2 and 3]. These noise contours show that impact piling is likely to have an impact on the bird species. They show that the SPA and Ramsar site itself would not be directly affected, as even in an unmitigated situation the maximum sound pressure level would be 68 dB LA_{max} and 56 dB LA_{eq}. However, unmitigated impact piling would breach the 84 dB(A) LA_{max} threshold for flushing birds within an area of approximately 3ha at the western end of Rosper Road Fields. This totals approximately 4% of the total area of Rosper Road Fields²². Average noise levels within Rosper Road Fields would also breach the 70 dB(A) LA_{eq} threshold within approximately 4ha (5%) of the total area of Rosper Road Fields without mitigation. Rosper Road Pools would be subject to noise levels of 70-75 dB LA_{max} and 60-64 dB LA_{eq} and therefore would not breach the 84 dB(A) LA_{max} threshold for flushing birds, or the 70 dB LA_{eq} threshold.

¹⁹ https://www.tide-toolbox.eu/tidetools/waterbird_disturbance_mitigation_toolkit/

²⁰ Cutts N & Allan J. 1999. Avifaunal Disturbance Assessment. Flood Defence Works: Saltend. Report to Environment Agency.

²¹ Cutts, N., Phelps, A. and Burdon, D. 2009. Construction and waterfowl: Defining Sensitivity, Response, Impacts and Guidance. Report to Humber INCA, Institute of Estuarine and Coastal Studies, University of Hull.

²² Measured as being 78ha if the boundaries are taken to be Rosper Road, Station Road, Marsh Lane and the railway line.

- 5.59 The Applicant stated that [REP4-009: 4.4.2] based on the Bird Disturbance Toolkit, exposure of approximately 4-5% of Rosper Road Fields to noise levels exceeding 70 dB LA_{eq} and 84 dB LA_{max} may well cause waterfowl or waders within that area to move further into the fields for the duration of impact piling. However:
- Based on observations by the authors of waterfowl responses to noise disturbance in estuarine environments birds would also be very likely to return to their original location as soon as impact piling ceased;
 - The remaining 95-96% of Rosper Road Fields would be subject to regular (average) noise levels below 70 dB(A) LA_{eq} and thus remain available for roosting or foraging; and
 - Impact piling (if required at all) would only occur for short periods at a time during daylight hours and would not take place at all between dusk to early morning.
- 5.60 The Applicant's SIAA concluded [REP4-009] that even if piling were required, it would either not result in disturbing noise levels (vibro-piling or quieter techniques) or can be mitigated to be rendered non-disturbing (impact piling). The mitigation for impact piling would consist of either standard noise control methods as set out in British Standard BS5228 (such as enclosure of the hammer head and top of pile, acoustic damping of the pile itself, the use of a resilient 'dolly' between hammer and pile or use of acoustic fencing round the pile and rig) which would mean that noise from piling would reduce by 5 to 10dB(A), and/or a seasonal restriction on impact piling to April to September inclusive, thus avoiding the season when Rosper Road Fields is of significance as functionally-linked land for the SPA [REP4-009]: Annex A.2 Matrix; Annex A.4 Matrix Alone Assessment Ramsar].
- 5.61 With mitigation, the maximum noise impact to Rosper Road from piling would therefore be below the 84dB(A) threshold and reduce the area of Rosper Road fields that would experience noise above 70dB(A). The Applicant's analysis shows that a maximum of 5% of Rosper Road Fields would experience a noise level above 70dB(A) [REP4-009: 4.4.2]. The Applicant concluded that with the implementation of the mitigation measures and a seasonal restriction on piling, no discernible effect to the qualifying features at Rosper Road Fields is likely.
- 5.62 Mitigation is secured through Requirement 14(1) of the DCO which specifies that *'No part of the authorised development may commence, save for the permitted preliminary works, until a construction environmental management plan (CEMP) has been submitted to and, after consultation with Natural England, approved by the relevant planning authority'*. A framework CEMP was included with the Application (ES Volume III, Appendix 4A, Application Document Ref 6.4). The SoCG with NE [REP7-002: 4.3.15] confirms that it is agreed that NE is to be included as a consultee in respect of the final CEMP which must be prepared in accordance with the framework CEMP submitted with the application. Requirement 14(4) also specifies that *'the plan submitted must include information on the proposed piling methods, their approximate duration and timing, the likely sound power levels, and any necessary management measures or mitigation to ensure, taking into account the information in the statement to inform appropriate assessment, that there will be no adverse impact on any qualifying species of the Humber Estuary Special Protection Area and Ramsar Site'*.
- 5.63 Mitigation is further secured through Requirement 20(1) of the DCO which specifies that *'no part of the authorised development comprised within Work No. 1 may commence, save for the permitted preliminary works, until a written piling and penetrative foundation design method statement, informed by a risk assessment, for that part, has been submitted to and, after consultation with the Environment Agency, approved by the relevant planning authority'* and through Requirement 20(2) of the DCO which specifies that *'all piling and penetrative foundation works must be carried out in accordance with the approved method statement unless otherwise agreed with the relevant planning authority'*.
- 5.64 NE found the information within the SIAA to be adequate and stated in its SoCG with the Applicant [REP4-011] that, it is content with the proposed measures to avoid or reduce effects secured

through Requirements 14 and 20 of the dDCO concluding that [REP7-002:4.3.16]: *‘the risks of disturbance on the Humber Estuary bird species have been adequately assessed and that the Proposed Development would not result in any adverse effects on these species including those using the functionally linked fields of Rosper Road’*. The ExA states [ExA: 6.4.14] that *‘no further objections regarding the impact of piling on the qualifying species using Rosper Road fields were raised by IPs during the Examination’*.

In combination Assessment

- 5.65 The Applicant considered the potential for in combination noise disturbance effects to arise. The SIAA [REP4-009: 4.5.2] states that *‘there are several other projects either proposed, consented or under construction around this part of the estuary (including the adjacent consented VPI Immingham Energy Park A power plant). Disturbance / displacement caused by multiple projects therefore has the potential to result in adverse effects on waterbirds in high tide feeding, roosting and loafing habitat in fields bordering the estuary’*. The Applicant’s consideration of in combination impacts are outlined in the SIAA [REP4-009: 4.5]. Those plans and projects with potential for in combination LSE considered by the Applicant are listed in Table 10.

Table 10: In combination Assessment [NSER: Annex C: 1]

Plan or project	Description	Potential in combination impacts
VPI Immingham Energy Park A (consented) PA/2018/918	49.9MW gas fired power station	The Ecological Impact Assessment (EclA) and HRA for this project concluded that there would be no likely significant disturbance or displacement of waterbirds from adjacent Rosper Road Fields; the nature and scale of the development is the same as that which surrounds it (e.g. TLOR, Existing VPI CHP Plant), and construction and operational noise levels reaching the fields were predicted to be within ambient levels.
Able Marine Energy Park (AMEP) Development Consent Order (under construction)	New deepwater quay and terrestrial facilities	The AMEP development will result in the loss of large areas of farmland at North Killingholme adjacent to the North Killingholme mudflats, which support important assemblages of black-tailed godwits and other wintering / passage bird species. The delivery of mitigation at North Killingholme (or East Halton Skitter) is part of the South Humber Gateway mitigation strategy, that has developed requirements for a package of 80ha of wet grassland mitigation for waterbirds (four 20ha blocks with 150m ‘buffers’) to facilitate development in the South Humber Gateway region that is HRA compliant. For the AMEP DCO, a package of mitigation was agreed to be delivered at ‘Mitigation Area A’, which is at Rosper Road fields, to the east of the Proposed Development. However, the EclA for the Project concluded that there would be no noise or visual impacts resulting in displacement / disturbance of waterbirds from these fields, which are considered to be ‘functionally linked’ to the Humber Estuary. Therefore no likely significant in combination effects were identified. There is no potential for in combination effects on waterbirds in the AMEP DCO mitigation area, should this be delivered at East Halton Skitter, because this is several kilometres north of the Project.
Marsh Lane Car Storage Area for Able UK (pending decision) PA/2017/141	Car storage and distribution facility, port related storage	This development would result in the loss of fields currently proposed for the delivery of AMEP’s Mitigation Area A (i.e. which are mitigating for the loss of high tide feeding, roosting and loafing habitat within the AMEP footprint at North Killingholme). As part of the development, AMEP Mitigation Area A would be moved north to Halton Marshes (HMWGS) if the project is consented. There is therefore no potential for in combination disturbance with the Project, and in any case the

		EclA concluded that there would be no noise or visual disturbance of water birds from these fields.
Land off Marsh Lane – Change of Use for Temporary Car Storage (pending decision) PA/2018/114	Application for change of use from that previously consented under AMEP DCO	This development would result in the loss of fields between Rosper Road and the Estuary. However, all of the land is within the boundary of the consented AMEP DCO, and the application relates only to a change of use. Given that the loss of these fields to high tide feeding, roosting and loafing waterbirds has already been assessed (as part of the consented AMEP DCO), and mitigation agreed with Natural England and North Lincolnshire Council, there is no potential for in combination effects with the Project.
Land east of Rosper Road – Change of Use for Temporary Car Storage PA/2017/27 (consented)	Application for change of use from that previously consented under AMEP DCO (and enabling works, which have been implemented) to temporary car storage	This development would result in the loss of fields between Rosper Road and the estuary. However, all of the land is within the boundary of the consented DCO, and the application relates only to a change of use. Given that the loss of these fields to high tide feeding, roosting and loafing waterbirds has already been assessed (as part of the consented AMEP DCO), and mitigation agreed with Natural England and North Lincolnshire Council, there is no potential for in combination effects with the Project.
Fields north of Chase Hill Road, fields west of East Field Road and land east and west of Top Road, South Killingholme (consented) PA/2018/155	Surface water storage lagoons (associated with the dewatering of cable trenches for the Hornsea Project One Offshore Windfarm Project)	This development will extend the DCO area for the Hornsea Project One Offshore Windfarm (currently under construction) to include small temporary water storage lagoons for dewatering purposes. All works will be located on the west side of TLOR and therefore there is no potential for in combination noise and visual effects with the Project
Land north of Chase Hill road (consented) PA/2017/1745 PA/2017/1927	Two applications for a minor extension to the Hornsea Project One Offshore Windfarm DCO area	Both extension areas are more than 1 km from the Project, and on the western side of the LOR. There is therefore no potential for in combination noise and visual disturbance to waterbirds with the Project.
Demolition of North Killingholme A Power Station (consented) PA/2017/189	Power station demolition	HRA report concluded that there would be noise increases to the North Killingholme Haven Pits (NKHP) SSSI, which is an important high tide roost site for black-tailed godwits, and is within the SPA / Ramsar site boundary. However, given that no pathways for noise and visual disturbance to NKHP as a result of the Proposed Development have been identified, there is no potential for in combination effects on qualifying bird species as a result of noise and visual impacts.

5.66 The Applicant concluded that due to the locations of the other plans and projects, no in combination impacts to the qualifying species at Rosper Road fields would occur. The SIAA [REP4-009] states that *'there is no possibility of noise disturbance from the Project in combination with other plans or project, because all other development is of a similar scale and nature, because of the existing background levels of human activity and because piling will either not result in disturbing noise levels (vibro-piling or quieter techniques) or can be mitigated to be rendered non-disturbing (impact piling)'* [REP4-009: Annex A.2 Matrix; Annex A.4 Matrix].

5.67 The ExA stated [ExA: 6.7.19] that *'I am therefore of the opinion, based on the information provided in the application and Examination documents, that the Proposed Development would not result in adverse effects to the integrity of the Humber Estuary SPA alone or in-combination with other plans and projects due to noise from piling activities during construction. I am also content that sufficient*

information has been provided throughout the Examination to enable the SoSBEIS to undertake an AA'.

- 5.68 The ExA's recommendation of no adverse effects on the integrity of the SPA also applies to effects on the Ramsar site. The ExA stated: [ExA: 6.7.20] *'I am satisfied that the reasoning presented in... this report apply to relevant criteria of the Humber Estuary Ramsar site and that the Proposed Development would not result in adverse effects to the integrity of the Humber Estuary Ramsar site alone or in-combination with other plans and projects'.*
- 5.69 The Secretary of State has considered the information provided by the Applicant and other IPs in light of the conservation objectives for the Humber Estuary SPA and Ramsar site and made a full assessment of the potential for AEoI at each of these sites from the potential for noise disturbance to qualifying bird species using functionally linked habitat during project construction. Having given due consideration to the information and analysis presented to him, the Secretary of State concludes that noise disturbance from the Project, either alone or in combination with other plans or projects, would not adversely affect the integrity of either the Humber Estuary SPA or Ramsar site. His conclusion is dependent upon mitigation measures including a detailed CEMP secured through Requirements 14 and 20 of the DCO.

6 Habitats Regulations Assessment Overall Conclusions

- 6.1 The Secretary of State has considered the information provided by the Applicant and other IPs in light of the conservation objectives for each of the Natura 2000 sites and made a full assessment of the potential for AEoI at each of these sites.
- 6.2 The Applicant concluded that the Project would not adversely affect the integrity of either the Humber SAC, SPA, or Ramsar site, either alone or in combination with other plans or projects.
- 6.3 The recommendation of the ExA is that [ExA: 6.8.2] *'with implementation of avoidance and reduction measures ... secured through relevant Requirements to the DCO, there will be no adverse effects on the integrity of relevant European sites'*. The ExA further states that *'I am satisfied that the Proposed Development would not have any adverse effects on the integrity of the European sites considered, nor would it affect the ability of the conservation objectives for the sites to be delivered. I am also content that the information within the application and examination documents are sufficient for the SoSBEIS to undertake an AA for the Humber Estuary SAC, SPA and Ramsar site if required'*.
- 6.4 The Secretary of State concludes in line with the recommendation of the ExA, that, subject to the mitigation secured in the DCO, the effects of the Project, either alone or in combination with other plans and projects, on the features of the Humber SAC, SPA, or Ramsar site, would not lead to an adverse effect on the integrity of these sites.**

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