Department for
Business, Energy
& Industrial Strategy

DRAX POWER STATION
RE-POWER PROJECT

Record of the Habitats Regulations Assessment undertaken under Regulation 63 of the Conservation of Habitats and Species Regulations 2017

24 September 2019

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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 2017 ("the Habitats Regulations") in respect of the Development Consent Order (DCO) for Drax Power Station Re-power Project and its associated infrastructure (the "Project"). For the purposes of these Regulations the Secretary of State is the competent authority.

1.2 The Applicant is Drax Power Limited. The Project will comprise up to four generating stations with a combined gross electrical output capacity of up to 3,800MW. 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 s.14(1)(a) of the Planning Act 2008 as it includes one or more generating stations in England each with a capacity of over 50MW.

1.4 The Project was accepted by the Planning Inspectorate (PINS) on 26 June 2018 and a two-member Panel of Inspectors ("the Panel") was appointed as the Examining Authority ("ExA") for the application. The examination of the Project application began on 4 October 2018 and completed on 4 April 2019. The Panel submitted its report of the examination, including its recommendation ("the ExA's Report"), to the Secretary of State on 4 July 2019.

1.5 The Secretary of State's conclusions on habitats and wild birds issues contained in this report have been informed by the ExA's Report, and further information and analysis, including the ExA's Report on the Implications for European Sites (RIES) and written responses to it.

Habitats Regulations Assessment

1.6 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.

1.7 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.

1.8 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 European sites.

1.9 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 12nm limit of territorial waters. Beyond

territorial waters, the Conservation of Offshore Marine Habitats Species Regulations 2017 ("the Offshore Habitats Regulations") serve the same function for the UK's offshore marine area. The Project covers only onshore sites, so the Offshore regulations do not apply.

1.10 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 for that site in view of that site's conservation objectives.*

1.11 And 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).*

1.12 *This application* is not directly connected with, or necessary to, the management of a European site. The Habitats Regulations require that, where the project is likely to have a significant effect (LSE) on any such site, alone or in-combination with other plans and projects, an appropriate assessment (AA) is carried out to determine whether or not the project will have an adverse effect on the integrity of the site in view of that site's Conservation Objectives. In this document, the assessments as to whether there are LSEs, and, where required, the AAs, are collectively referred to as the Habitats Regulations Assessment (HRA).

1.13 This HRA has been undertaken using evidence from the application and examination which are available on the Planning Inspectorate's National Infrastructure Planning web pages[1]. Key information from these documents is summarised and referenced in this report.

RIES and Statutory Consultation

1.14 Under the Habitats Regulations and the Offshore 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 12 nm limit.

1.15 The ExA prepared a RIES, with support from the Planning Inspectorate's Environmental Services Team. The RIES was based on matrices provided by the Applicant and relevant information provided by Interested Parties (IPs). The RIES documented the information received during the examination (up until 20 February) and presented the ExA's understanding of the main facts regarding the HRA to be carried out by the Secretary of State.

1.16 The RIES was published on PINS planning portal website and the ExA notified IPs that it had been published. Consultation on the RIES was undertaken between 28 February and 21 March 2019.

[1] https://infrastructure.planninginspectorate.gov.uk/projects/yorkshire-and-the-humber/drax-re-power/

The RIES was issued to ensure that IPs, including NE, were consulted formally on habitat regulations matters, as required under regulation 61(3) of the Habitats Regulations and regulation 25(3) of the Offshore Habitats Regulations. The only comments provided on the RIES were received from the Applicant and the RIES was not updated following consultation.

1.17 The Secretary of State is content to accept the ExA's recommendation that the RIES, and consultation on it, represents an appropriate body of information to enable the Secretary of State to fulfil her duties in respect of European sites.

2. The Project

Project description

2.1 The Project is for up to four generating stations with a combined gross electrical output capacity of up to 3,800MW, comprising:

- Work No 1 – an electricity generating station (Unit X) fuelled by natural gas and with a gross electrical output capacity of up to 1,800MW including up to two gas turbines, one turbine hall, a new main pipe rack, modifications to the existing steam turbine, generating plant and turbine hall building, a new underground gas pipeline, and associated works (ground preparation, lighting, roadways and car parking, drainage and waste management, and landscaping);
- Work No 2 – an electricity generating station (Unit Y) fuelled by natural gas and with a gross electrical output capacity of up to 1,800MW including up to two gas turbines, one turbine hall, a new main pipe rack, modifications to the existing steam turbine, generating plant and turbine hall building, a new underground gas pipeline, and associated works (ground preparation, lighting, roadways and car parking, drainage and waste management, and landscaping);
- Work No 3 – up to two battery storage facilities including a structure protecting the battery energy storage cells;
- Work No 4 – a new GIS banking buildings;
- Work No 5 – a natural GRF compound;
- Work No 6 – an AGI including creation of a permanent access from Rusholme Lane, creation of a permanent access into the field to the south of Dickon Field Drain, and creation of a culvert on Dickon Field Drain;
- Work No 7 – an underground gas pipeline connection, approximately 3km in length and up to 600 millimetres (mm) nominal diameter, together with telemetry cabling;
- Work No 8 – an up to 400 kilovolt (kV) underground electrical connection between the new gas insulated switchgear banking buildings and the existing National Grid substation busbars;
- Work No 9 – temporary construction laydown areas including two means of access, and car parking;
- Work No 10 – CCS readiness reserve space and diversions for public rights of way;
- Work No 11 – retained and enhanced landscaping and biodiversity enhancement measures;
- Work No 12 – decommissioning and demolition of sludge lagoons and construction of replacement sludge lagoons bund walls, underground pipework, valves and sluices and access roads;
- Work No 13 – removal of an existing 132kV overhead line (OHL) and removal of two 132kV pylons and foundations;
- Work No 14 – construction of a temporary passing place on Rusholme Lane; and
- Associated development in connection with and in addition to work nos. 1–14 but only within the Order Limits and insofar as it is unlikely to give rise to any materially new or materially different environmental effects from those assessed in the environmental statement.

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

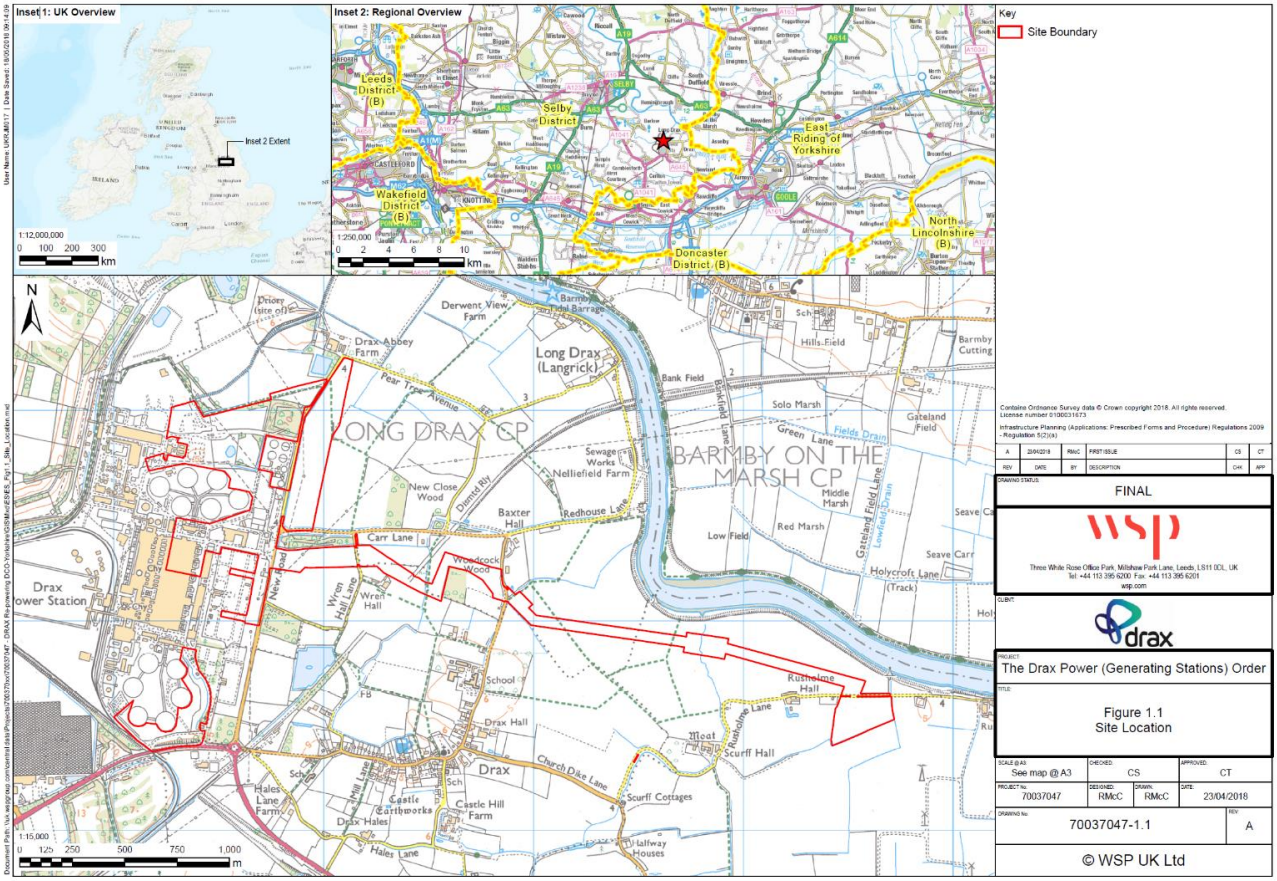
2.3 The Secretary of State notes that requirements are in place within the DCO which provide for any decommissioning works to be subject to an approved environmental management plan, and that such works will also be subject to the undertaker obtaining any further consents or approvals which may be necessary as and when decommissioning takes place in future. The Secretary of State therefore considers that such impacts will be addressed fully by the relevant authorities prior to decommissioning, and in light of more detailed information on decommissioning processes and environmental conditions at that time. The Secretary of State therefore considers that decommissioning is not a barrier to the application being granted.

2.4 The Applicant has adopted a 'Rochdale Envelope' approach. The Rochdale Envelope is a term used in planning to reflect that often a developer will not know all the details associated with the proposal at the time of application. The Rochdale Envelope allows the Applicant to set out the broad range of options under consideration and then carry out an assessment based on the realistic worst-case scenario for each of those options. These options are used to assess the significance of the Project's environmental effects. This allows the Applicant to apply for a DCO that allows some flexibility in the final design of the Project whilst providing certainty that no greater environmental effects than those described in the realistic worst-case scenario can occur, providing the final project design lies within the options assessed.

Project location

2.5 The Project is in North Yorkshire, within Selby District Council's and North Yorkshire County Council's administrative areas, and largely within the existing Drax Power Station complex. The associated pipeline area extends to the east and the CCS reserve space would be on adjacent land to the east. The location is shown in Figure 1 below.

Figure 1: Site Location



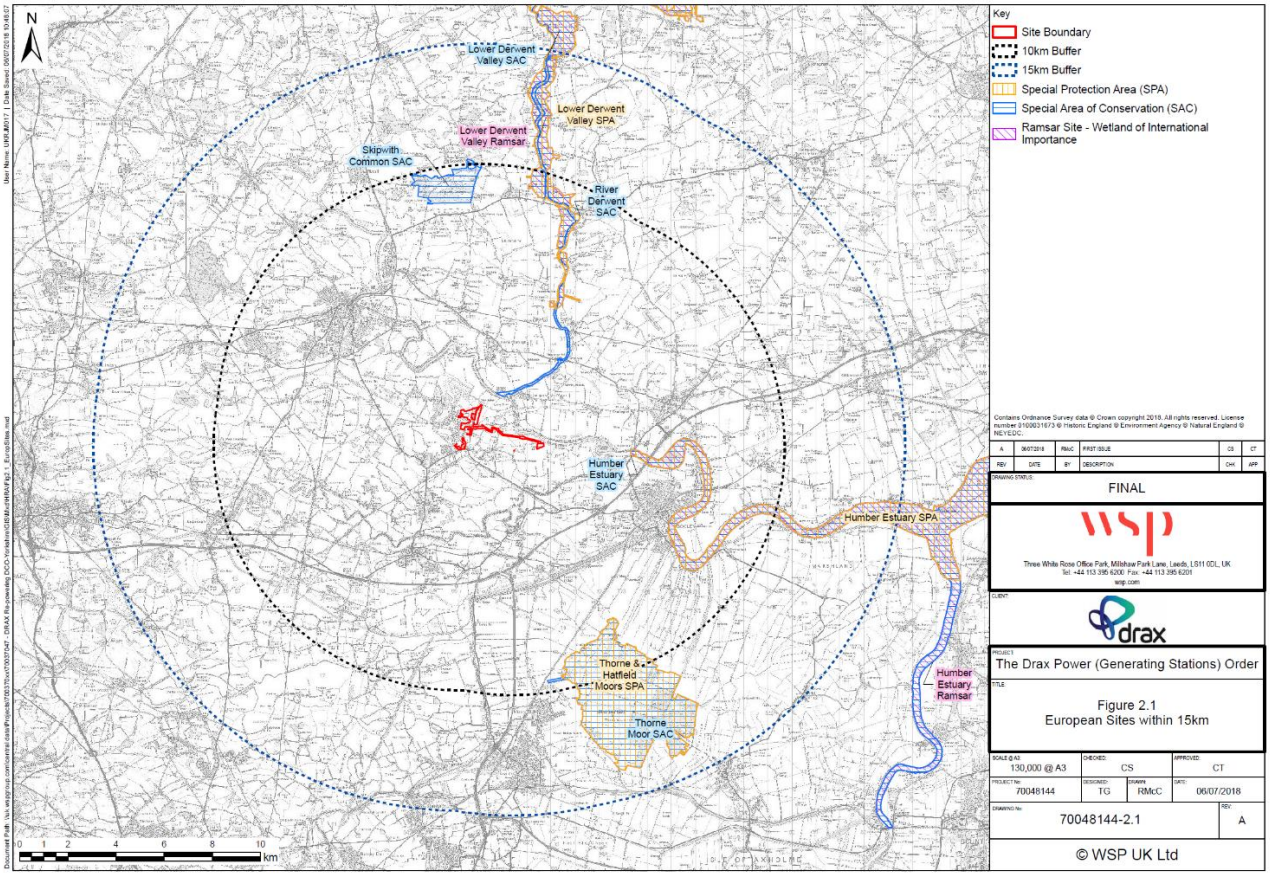
Designated Sites

2.6 The proposed Order Limits of the Drax Re-Power project do not overlap with any European site. The nearest European site is approximately 800m to the north east of the Power Station Site. The relationship between the proposed Order Limits and the European sites considered is shown in Figure 2.

2.7 The Applicant identified a zone of influence (ZoI) within which the Project could conceivably impact European sites, either alone or in-combination with other plans and projects. This ZoI was set at

15km from the centre of the stacks of the proposed gas turbines within the boundary of the Project. The applicant contended that beyond the 15km ZoI the air quality impacts of the Project become effectively indiscernible from background air quality. Other potential effects, including disturbance effects to species using functionally linked land and hydrological links to European sites and functionally linked land, were considered and assessed within this ZoI. The Statement of Common Ground (SoCG) signed between the Applicant and NE confirms NE's agreement that beyond 15km there are no conceivable impact pathways by which the Project could adversely affect European sites.

Figure 2: Map of European Sites within 15km of the Project



3. Likely Significant Effects Test

3.1 Under regulation 63 of the Habitats Regulations, the Secretary of State must consider whether a development will have an LSE on a European site, either alone or in combination with other plans or projects.

3.2 A LSE is, in this context, any effect that may be reasonably predicted as a consequence of a plan or project that may affect the conservation objectives of the features for which the site was designated but excluding trivial or inconsequential effects. An AA is required if a plan or project is likely to have a significant effect on a European site, either alone or in-combination with other plans or projects

3.3 The purpose of this test is to identify any LSEs on European sites that may result from the project and to record the Secretary of State's conclusions on the need for an AA and their reasons for including activities, sites or plans and projects for further consideration in the AA.

3.4 The Applicant confirmed in its HRA that its Stage 1 screening has been carried out without taking account of the measures intended to avoid or reduce the harmful effects of the project on European Sites in accordance with the recent European Court of Justice case in People Over Wind and Sweetman v Coillte Teoranta (Case 323/17).

3.5 The following ten European Sites were identified within 15km of the Project (the ZoI):

- River Derwent SAC
- Lower Derwent Valley SAC
- Lower Derwent Valley SPA
- Lower Derwent Valley Ramsar
- Humber Estuary SAC
- Humber Estuary SPA
- Humber Estuary Ramsar
- Skipwith Common SAC
- Thorne and Hatfield Moors SPA
- Thorne Moor SAC

3.6 The Applicant's SoCG with NE confirms agreement between the Applicant and NE that correct qualifying features have been identified and no other European Sites beyond those ten listed are relevant. No other concerns were raised by other relevant IPs in relation to the European Sites and qualifying features considered by the Applicant in its HRA report. The Secretary of State can therefore be satisfied that all the relevant European sites and relevant qualifying features have been identified for consideration.

3.7 The Secretary of State has considered the potential for the Project to affect all relevant interest features of the ten European sites, taking into account their conservation objectives, to determine whether there is potential for LSEs in the context of the Habitats Regulations. The outcome of this assessment is recorded in Table 1.

3.8 The Applicant's conclusions of no LSE on all other qualifying features of the ten European sites as presented in its final HRA report and screening matrices was not disputed by any IPs during the Examination. The SoS is therefore content that all relevant potential impacts have been identified and assessed during the Examination and is satisfied to adopt these conclusions for the purposes of the HRA. For information about the reasons why LSE was excluded from certain features the reader is invited to refer to the RIES.

Likely Significant Effects: alone assessment

3.9 The Secretary of State has considered the potential impacts of the Project on all relevant interest features of the ten European Sites identified to determine whether there is potential for a LSE from the Project alone in the context of the Habitats Regulations. The Secretary of State's assessment of LSE is recorded in Table 1.

3.10 The Secretary of State agrees with the recommendations of the ExA, and the views of the Applicant and NE, and concludes that LSEs cannot be excluded at all ten European sites and for all 74 features (listed in Table 1) when the Project is considered alone due to the impacts on qualifying features of:

- changes to air quality
- hydrological changes (changes to water quality and flow)
- disturbance (disturbance, displacement and direct mortality)

Likely Significant Effects: in-combination assessment

3.11 The Applicant identified 43 other plans and projects as being relevant to the LSE in-combination assessment. The Applicant's HRA report lists the plans and projects identified. Of these, potential in-combination effects were identified with the following two projects:

- Eggborough CCGT Generating Station; and
- Thorpe Marsh Power Station.

3.12 Both projects were identified for their potential to give rise to operational air emissions, which could potentially combine with those from the Project to lead to a LSE in-combination due to the impacts of changes to air quality during operation.

3.13 Knottingley Power Project and Ferrybridge D CCGT are two further major point source emitters located beyond 15km of the Project but within 15km of European Sites within the Project's ZoI. Therefore, they were considered qualitatively within the Applicant's air quality assessment. The Applicant concluded that at these distances any in-combination impacts would be imperceptible and significant effects are not likely. The SoCG between the Applicant and NE did not identify any areas of concern with regards to the Applicant's approach to the in-combination assessment.

3.14 The Secretary of State has considered the potential impacts of the Project on all relevant interest features of the ten European Sites identified to determine whether there is potential for a LSE from the Project in combination with other relevant plans and projects in the context of the Habitats Regulations. The Secretary of State's assessment of LSE is recorded in Table 1.

3.15 The Secretary of State agrees with the recommendations of the ExA, and the views of the Applicant and NE, and concludes that LSEs cannot be excluded at all ten European sites and for all 74 features (listed in Table 1) when the Project is considered in-combination with Eggborough CCGT generating station and Thorpe Marsh Power Station due to the impacts on qualifying features of changes to air quality.

Table 1: European sites where the Project is likely to give rise to significant effects on the listed qualifying features, either alone or in-combination with other plans or projects. "X" denotes that a likely significant effect has been identified

Site	Features where LSE identified	Air quality changes	Hydrological changes	Disturbance
River Derwent SAC	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	X	X	
	River lamprey	X	X	
	Sea lamprey	X	X	
	Bullhead	X	X	
	Otter	X	X	X
Lower Derwent Valley SAC	Lowland hay meadows	X		
	Alluvial forests with Alder and Ash	X		
	Otter	X	X	X
Lower Derwent Valley Ramsar	The river and flood meadows	X		
	Rich assemblage of wetland invertebrates	X		
	Staging post for passage birds in spring.	X		
	Regularly supports 20,000 or more waterbirds	X		
	Regularly supports 1% of the individuals in a population of: Eurasian wigeon and Eurasian teal	X		
Lower Derwent Valley SPA	Berwick Swan (non-breeding)	X		
	Eurasian wigeon (non-breeding)	X		
	Eurasian teal (non-breeding)	X		
	Northern shoveler (breeding)	X		
	European golden plover (non-breeding)	X		
	Ruff (non-breeding)	X		
	Waterbird assemblage	X		
Humber Estuary SAC	Estuaries	X		
	Mudflats and sandflats not covered by seawater at low	X		
	tide Sandbanks which are slightly covered by sea water all the time	X		
	Coastal lagoons * Priority feature	X		
	Salicornia and other annuals colonizing mud and sand	X		

	Atlantic salt meadows	X		
	Embryonic shifting dunes	X		
	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	X		
	Fixed coastal dunes with herbaceous vegetation (grey dunes)	X		
	Dunes with *Hippopha rhamnoides*	X		
	Grey Seal	X		
	Sea Lamprey	X	X	
	River Lamprey	X	X	
Humber Estuary SPA	Great bittern (Non-breeding)	X		
	Great bittern (Breeding)	X		
	Common shelduck (Non-breeding)	X		
	Eurasian marsh harrier (Breeding)	X		
	Hen harrier (Non-breeding	X		
	Pied avocet (Non-breeding)	X		
	Pied avocet (Breeding)	X		
	European golden plover (Non-breeding)	X		
	Red knot (Non-breeding)	X		
	Dunlin (Non-breeding)	X		
	Ruff (Non-breeding)	X		
	Eurasian teal	X		
	Eurasian wigeon	X		
	Mallard	X		
	Turnstone	X		
	Common pochard	X		
	Greater scaup	X		
	Brent goose	X		
	Common goldeneye	X		
	Sanderling	X		
	Common ringed plover	X		
	Eurasian curlew	X		

	Whimbrel	X		
	Greenshank	X		
	Lapwing	X		
	Black-tailed godwit (Non-breeding)	X		
	Bar-tailed godwit (Non-breeding)	X		
	Common redshank (Non-breeding)	X		
	Little tern (Breeding)	X		
	Eurasian oystercatcher (wintering)	X		
	Grey plover	X		
	Waterbird assemblage	X		
Humber Estuary Ramsar	Criterion 1: Dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons	X		
	Criterion 3: Breeding colony of grey seals	X		
	Criterion 5: Assemblages of international importance: 153,934 waterfowl (Non-breeding season)	X		
	Criterion 6: Species/populations occurring at levels of international importance: Eurasian golden plover; Red knot; Dunlin; Alpine; Black-tailed godwit; Common redshank; Common shelduck; Bar-tailed godwit	X		
	Criterion 8: Migration route for both river lamprey and sea lamprey between coastal waters and their spawning areas.	X	X	
Skipwith Common SAC	Northern Atlantic wet heaths with *Erica tetralix;* Wet heathland with cross-leaved heath	X		
	European dry heaths	X		
Thorne and Hatfield Moors SPA	European Nightjar (Breeding)	X		
Thorne Moor SAC	Degraded raised bogs still capable of natural regeneration	X		

Likely Significant Effects: Conclusions

3.16 The Secretary of State considers that sufficient information has been provided to inform a robust assessment in line with her duties under the Habitats Regulations.

3.17 Having given due consideration to the information and analysis presented to her, the Secretary of State is in agreement with the ExA and concludes that LSEs cannot be excluded for all ten European sites and for all 74 features listed in Table 1, when the Project is considered both alone and in combination with other relevant plans and projects. The Secretary of State is satisfied to rely on the recommendations of the ExA, the advice of NE, the RIES, and written responses to it to inform his view. She considers that the evidence behind these judgements has been fully tested as part of the examination process. These ten European sites are now taken forward to the AA stage to consider whether the Project, either alone or in-combination, would result in an adverse effect upon their integrity.

4. Appropriate Assessment

Methodology

4.1 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 European 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 determine whether adverse effects on the integrity (AEOI) of the site can be ruled out as a result of the plan or project, either alone or in-combination with other plans and projects, in view of the site's conservation objectives (European Commission, 2000).

4.2 The purpose of this AA is to determine whether or not adverse effect on the integrity of those ten European sites and 74 features identified during the LSE test can be ruled out as a result of the Project alone and in combination with other plans and projects in view of the site's conservation objectives and using the best scientific evidence available.

4.3 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 compensation measures identified.

Conservation Objectives

4.4 Guidance from the European Commission indicates that disturbance to a species or deterioration of a European site must be considered in relation to the integrity of that site and its conservation objectives (European Commission, 2000). Section 4.6.3 of that guidance defines site integrity as: *…the coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified.*

4.5 Conservation objectives outline the desired state for a European 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 (English Nature, 1997).

4.6 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 adverse effect on integrity, either alone or in-combination. The potential for the Project to have an adverse effect on site integrity is considered for each site in turn.

4.7 The consideration of adverse effects on integrity are divided into two categories, which are addressed separately for each of the relevant European sites:

- Air quality effects; and
- Disturbance and hydrological effects

Air Quality Effects

4.8 A LSE could not be excluded at ten European sites due to their proximity (within 15km) to the Project and the potential via this impact pathway to be effected by the increased air emissions from the Project during operation:

- Lower Derwent Valley SAC

- Lower Derwent Valley SPA
- Lower Derwent Valley Ramsar
- River Derwent SAC
- Humber Estuary SAC
- Humber Estuary SPA
- Humber Estuary Ramsar
- Skipwith Common SAC
- Thorne and Hatfield Moors SPA
- Thorne Moor SAC

4.9 The Applicant's ES presents air quality dispersion modelling which includes quantification of potential air quality impacts at European sites. It sets out the predicted numerical air quality impacts of the Project, based on a realistic worst-case scenario for operation (ES Tables 6.16 to 6.20). This includes the predicted impact of the Project alone on levels of nitrous oxides (NOx), ammonia (NH3), nitrogen deposition and acidification (ES Tables 6.21 to 6.2) as well as impacts from increased emissions occurring in-combination with other developments located within the 15km ZoI.

4.10 The Applicant assessed the impacts associated with the Project using various scenarios associated with both Open Cycle Gas Turbine (OCGT) and Closed Cycle Gas Turbine (CCGT) operation. It assessed impacts associated with both secondary abatement technology applicable to the CCGT technology (namely Selective Catalytic Reduction (SCR)) and primary abatement (namely operation controls) as mitigation measures to reduce nitrous oxide (NOx) emissions. The need for SCR will be determined by the Environment Agency (EA) as part of the separate environmental permitting (EP) process. The DCO allows flexibility for the Project to operate with either option and therefore the impacts associated with either outcome have been assessed.

4.11 A non-material change request was submitted at Deadline 3 to increase the proposed stack heights for units X and Y from 120m to 122.5m (AGL) to maintain the minimum height differential of 6m between the stacks and the cooling towers (at a height of 116.5m AGL) Air Quality modelling was subsequently updated at Deadline 5 to reflect this change. The updated air quality modelling on ecological receptors demonstrates that the change in stack height had a negligible effect on air quality impacts and the updated HRA report concludes that the Project would not have an adverse effect on the integrity of any of the European sites assessed. The Applicant's conclusions therefore remained unchanged. NE did not respond to RIES consultation, however considering that the change leads to a marginal reduction in air quality effects and do not affect HRA conclusions, the Secretary of State agrees with the recommendation of the ExA that NEs original advice (that adverse effect on integrity from the effects of air emissions can be excluded) would remain unchanged.

4.12 All parties were in agreement with the results of the Applicant's air quality modelling so for brevity of this report it will not be duplicated here in its entirety. Instead this HRA presents an analysis of the 'realistic worst-case scenario' results in the context of assessing the effect of changes to air quality on the integrity of the ten European sites listed above.

4.13 This HRA assesses the following air quality effects, both from the Project alone and in-combination with other projects:

- Increased ammonia (NH3) concentrations;
- increased atmospheric concentrations of NOx (hourly and annual mean concentrations);
- increased nitrogen deposition; and
- increased acid deposition (sulphur and nitrogen).

4.14 In line with EA Guidance, the Applicant applied a 1% screening threshold to determine the level of significance of effect on designated sites. Where the Project (either alone or in-combination with

other plans or projects) would increase emissions by less than 1% of the relevant critical level, this is considered insignificant. The Applicant's SoCG with EA records agreement with the use of this threshold and confirms that it is accepted by the EA and NE as a threshold below which the magnitude of an effect is judged to be so low as to be inconsequential and can robustly and reasonably be taken to result in no LSE when applied to HRA screening. It also states that "A change of more than 1% does not necessarily indicate that a significant effect (or adverse effect on integrity) will occur; it means that the change in effect cannot on its own be described as imperceptible and therefore requires further consideration."

Disturbance and Hydrological Effects

4.15 Whilst the Project is not within or adjacent to any European sites, the River Ouse is located in close proximity to the site boundary and this is hydrologically linked to the Lower Derwent Valley SAC and River Derwent SAC (upstream) and the Humber Estuary SAC and Humber Estuary Ramsar (downstream). LSE could not be excluded at these four European sites due to the potential for impacts of habitat disturbance and hydrological changes on three features:

Otters

4.16 The Applicant's HRA report identified that the otter qualifying features of the Lower Derwent Valley SAC and River Derwent SAC may utilise habitats within and adjacent to the Project and therefore may be impacted by disturbance (light, visual, noise and vibration) whilst they are using functionally linked habitat. During construction, a risk of mortality to otters was identified as a result of collision with moving construction vehicles or interaction with construction materials and compounds and excavations. The HRA report considered that such impacts may result in the killing or injury of otters, the reduction and degradation of available habitat and food sources and/or displacement of otters from areas used for commuting, foraging, resting and breeding.

4.17 Surveys identified suitable areas for commuting, foraging and lying up/resting habitat for otter within the site boundary and surrounding 250m, although no confirmed lying up/ resting sites were identified within the Project or within 50m of it during the field surveys. It was considered very unlikely a maternal otter holt would be present within 250m of Project site but considered possible that a maternal holt could occur along the River Ouse within 250m of the pipeline route.

Sea lamprey and river lamprey

4.18 The Applicant's HRA report identified that the sea lamprey and river lamprey qualifying features of the River Derwent SAC, Humber Estuary SAC and Humber Estuary Ramsar are sensitive to water quality changes and may also be impacted by disturbance (in particular noise and vibration impacts during spawning) and reduction and degradation of available habitat and food sources.

4.19 Due to their migratory nature, it was considered that river lamprey and sea lamprey may use the River Ouse (approximately 85m to the closest area of construction) and potentially may also be present within connecting watercourses and ditches in closer proximity to the Project. However, it was also considered spawning was not likely on the basis of current survey information and likely saline habitat conditions (as they spawn in freshwater habitat) and that it was unlikely that these species regularly utilise the minor watercourses and ditches crossed by the pipeline element of the Project due to the low water volume and small sizes of these watercourses. These fish species were therefore considered for potential impacts associated with changes to water quality potentially arising from both the construction and operation of the Project.

Appropriate Assessment: River Derwent SAC

4.20 The River Derwent SAC is located approximately 600m from the Project

4.21 Conservation Objectives for the River Derwent SAC:

> 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;
> - 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 of qualifying species
> - The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
> - The populations of qualifying species, and,
> - The distribution of qualifying species within the site.

4.22 A LSE upon the interest features of the site was identified because of the potential for the Project, both alone and in-combination with other plans and projects, to lead to
- air quality changes
- hydrological changes
- disturbance

4.23 The potential impacts upon each of the qualifying features are set out in Table 2.

Table 2: Impact upon each feature of the River Derwent SAC for which LSE was identified

Feature	Air Quality	Hydrological	Disturbance
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	X	X	
River lamprey	X	X	
Sea lamprey	X	X	
Bullhead	Although bullhead were carried forward to Stage 2 in the Applicant's HRA report, the report also states that LSEs are considered unlikely for bullhead, as this species is unlikely to be present within the tidal waters of the River Ouse downstream and immediately upstream of the Project. This is because bullhead is a freshwater species that does not inhabit tidal waters. Bullhead were therefore not considered further by the ExA and will not be considered further in this HRA.		
Otter	X	X	X

Air Quality Effects

4.24 The Applicant's air quality modelling shows that while the 1% threshold is exceeded for ammonia deposition both alone (1.1%) and in-combination (2.0%), the Project would not lead to exceedances of the critical loads/levels for ammonia at this site alone or in-combination with other projects. The Applicant also considers the 1.1% to be analogous with an impact of 1% if the critical level, due to inherent uncertainty and conservatism built into the model.

4.25 The River Derwent (and the hydrologically connected downstream River Ouse) is not considered to be sensitive to the effects of nitrogen deposition and associated acidification, due to the River's water quality. EA monitoring data indicates that the River Derwent is strongly phosphate limited. In phosphate limited systems, additional inputs of nitrogen have limited effects on plant productivity, as phosphate is the primary limiting nutrient. As such, additional inputs from the Project, both alone or in-combination with other Plans or Projects, would be unlikely to lead to any perceptible eutrophication effects on freshwater habitats within the SAC and therefore their ability to support lamprey and otter.

4.26 The Applicant and NE agreed in the SoCG that no further direct mitigation of air emissions is necessary beyond setting an appropriate stack height and including either NOx emissions control by combustion control, or NOx and ammonia emissions control by the use of SCR with an annualised ammonia emissions budget. The Secretary of State is satisfied that Schedule 13 of the DCO secures the height of the stacks. It specifies a maximum height for the stacks of 123m AGL/129m AOD and a minimum height of 122.5m AGL/128.5m AOD.

4.27 In the SoCG between the Applicant and the EA and in the SoCG between the Applicant and NE it was agreed that operational emissions from the Project would be further controlled through the EA's EP regime. The SoCG between the Applicant and the EA confirms that the EA would only approve an EP if it did not adversely affect a European site.

4.28 Given the low magnitude of the potential air quality impacts, the Secretary of State concludes that, subject to the mitigation secured in the DCO, the effects of air emissions during Project operation will not have an adverse effect on the integrity of the River Derwent either alone or in-combination with other plans and projects.

Disturbance and Hydrological Effects

4.29 Surveys identified suitable areas for commuting, foraging and lying up/resting habitat for otter within the site boundary and surrounding 250m, although no confirmed lying up/ resting sites were identified within the Project or within 50m of it during the field surveys. It was considered very unlikely a maternal otter holt would be present within 250m of Project site but considered possible that a maternal holt could occur along the River Ouse within 250m of the pipeline route.

4.30 Due to their migratory nature, it was considered that river lamprey and sea lamprey may use the River Ouse (approximately 85m to the closest area of construction) and potentially may also be present within connecting watercourses and ditches in closer proximity to the Project. However, it was also considered spawning was not likely on the basis of current survey information and likely saline habitat conditions (as they spawn in freshwater habitat) and that it was unlikely that these species regularly utilise the minor watercourses and ditches crossed by the pipeline element of the Project due to the low water volume and small sizes of these watercourses. These fish species were therefore considered for potential impacts associated with changes to water quality potentially arising from both the construction and operation of the Project.

4.31 The Applicant's HRA identified a potential for indirect impacts to otters, sea lamprey and river lamprey using functionally linked habitat during construction and operation as a result of pollution to watercourses. There is limited potential for any upstream transport of silt or other pollutants from the Proposed Scheme reaching the River Derwent (APP-080) due to the presence of the Barmby Tidal barrage at the mouth of the River Derwent, which inhibits upstream flows into the Derwent from the Ouse.

4.32 The Applicant's HRA identified potential for disturbance to otters present as a result of light, visual, noise and vibration. During construction, a risk of mortality to otters was identified as a result of collision with moving construction vehicles or interaction with construction materials and compounds and excavations. The HRA report considered that such impacts may result in the killing

or injury of otters, the reduction and degradation of available otter and fish habitat and food sources and/or displacement of otters from areas used for commuting, foraging, resting and breeding.

4.33 Avoidance and mitigation measures are proposed by the Applicant. These measures are listed in full between paragraphs 5.3.16 and 5.3.20 of the Applicant's HRA report. Measures are to be delivered through the Landscape and Biodiversity Strategy (LBS) (secured by Requirement 8 of the DCO), which is to be prepared substantially in accordance with the final version Outline LBS submitted at D9. In addition, the CEMP (secured by Requirement 17 of the DCO) which is to be prepared substantially in accordance with the final version Outline CEMP submitted at D8, identifies the measures to be implemented to avoid/minimise generation of excessive litter, dust noise and vibration, pollution control and avoidance of hydrological impacts during construction. The CEMP will also provide detailed method statements, monitoring and management of the measures, and includes for a Pollution Incident Response Plan.

4.34 Measures also secured through the DCO include:

- Implementation of a Decommissioning Environmental Management Plan (DEMP) during decommissioning, in accordance with Requirement 26 of the DCO;
- the use, where practicable, of trenchless construction techniques for installation of the gas pipeline between the NGRF and the AGI when crossing watercourses, as secured by the Construction Environmental Management Plan (CEMP) through Requirement 17 of the DCO, and including measures to address the use of trenched construction techniques if required;
- targeted mitigation measures to avoid or minimise disturbance of otters that may form part of the River Derwent SAC or Lower Derwent Valley SAC populations to be delivered through the LBS and CEMP secured by Requirements 8 and 17 (respectively) of the DCO;
- pollution control measures that would be incorporated into the Surface Water Drainage Strategy for the operational Project, the delivery of which is secured by Requirement 13 and 17 (CEMP) of the Recommended DCO; and
- an ecologically sensitive lighting design, the delivery of which is secured by Requirement 10 (External lighting during construction and operation) of the DCO.

4.35 By the close of Examination all parties were satisfied that the plans (secured in the DCO) to ensure appropriate mitigation of any potential impacts of disturbance and hydrological effects on otter, sea lamprey and river lamprey. NE confirmed that NE is "satisfied with the approach to otter and fish mitigation across the Outline CEMP, Outline LBS and HRA and is broadly satisfied with the revisions made to the Outline CEMP in this regard. The Applicant's final version of the Outline CEMP addressed NE's minor amendment to the Outline CEMP (by omitting "ideally" from paragraph 3.4.6.)

4.36 The Applicant states that given the above measures, any impact to otters from the Project alone would be minor and short term, with no perceptible effect on the SAC population. The Applicant also states that any residual effects on fish qualifying interests from the Project alone would be so minimal as to be imperceptible. It concludes that there would be no adverse effects on the integrity of any European Site from disturbance or hydrological effects.

4.37 The Applicant considers that any minor disturbance effects on the local otter population from the Project alone could not combine appreciably with those of other plans or projects and as such, there is no prospect of significant in-combination effects. This was not disputed by any interested parties. The Applicant considers that any minor disturbance effects on local fish populations could not combine appreciably with those of other plans or projects and as such, there is no prospect of significant in-combination effects. This was not disputed by any interested parties.

4.38 NE confirmed in its SoCG with the Applicant that they agree that 'there would be no adverse effects on the integrity of any European Site resulting from likely significant effects (disturbance and hydrological impacts) on functionally linked habitats'.

4.39 The ExA states in its report that it is 'content that there would be no adverse effect on the integrity of the European sites or their qualifying features as a result of hydrological impacts and impacts to functionally linked land from the Proposed Development alone or in combination with other plans and projects. Adequate mitigation is secured in the Recommended DCO'

4.40 Given the avoidance and mitigation measures secured in the DCO and the low magnitude of any potential residual impacts, the Secretary of State concludes that the effects of hydrological impacts and disturbance during Project construction and operation will not have an adverse effect on the integrity of the River Derwent SAC either alone or in-combination with other plans and projects.

Conclusion on the River Derwent SAC

4.41 Given the low magnitude of the potential air quality, hydrological and disturbance effects the Secretary of State agrees with the recommendations of the ExA, and the views of NE and the Applicant and concludes that, subject to the mitigation secured in the DCO, the Project will not have an adverse effect on the integrity of the River Derwent SAC either alone or in-combination with other plans and projects.

Appropriate Assessment: Lower Derwent Valley SAC

4.42 The Lower Derwent Valley SAC is located approximately 5.1km from the Project

4.43 Conservation Objectives for the Lower Derwent Valley SAC:

> 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;
>
> - 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 of qualifying species
> - The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
> - The populations of qualifying species, and,
> - The distribution of qualifying species within the site.

4.44 A LSE upon the interest features of the site was identified because of the potential for the Project, both alone and in-combination with other plans and projects, to lead to

- air quality changes
- hydrological changes
- disturbance

4.45 The potential impacts upon each of the qualifying features are set out in Table 3.

Table 3: Impact upon each feature of the Lower Derwent Valley SAC for which LSE was identified

Feature	Air Quality	Hydrological	Disturbance
Lowland hay meadows	X		
Alluvial forests with Alder and Ash	X		
Otter	X	X	X

Air Quality Effects

4.46 The Applicant's air quality modelling shows that the Project alone would not lead to exceedances of the critical loads/levels for ammonia, nitrogen deposition, and acid deposition at this European site under any scenario. There is a maximum modelled process contribution of 0.8% and 0.2% for nitrogen and acid deposition respectively. As the impacts of the Project alone lead to no exceedances of critical levels or exceedances of the 1% threshold, no adverse effects on the integrity of the SAC are predicted to arise.

4.47 The maximum predicted in-combination impact for acid deposition would be 0.35% increase. In-combination, the maximum predicted impact using secondary abatement would be a 1.4% increase to the critical level for ammonia. Despite this exceeding the 1% threshold, this does not result in an exceedance of the critical level for ammonia at this site. The maximum predicted in-combination impact for nitrogen deposition would be a 1.6% increase to the critical load/level. The Applicant concludes that despite exceeding the 1% threshold this represents a *de minimus* in-combination effect.

4.48 The Applicant contends that the River Derwent is phosphate limited, there is conservatism built into the air quality assessment and that there is a reducing impact of nitrogen deposition with distance such that at greater distances the critical load/level reduces. The Applicant also highlights that the Project would make no difference to the exceedance of critical loads and levels for the European Site.

4.49 The conservatism in the modelling is identified as being due to the following:

- continuous full load operation for the year;
- 70% conversion of NOx to NO2;
- assessment of maximum impacts anywhere in a designated site, irrespective of area and the presence of particular habitats;
- assessment against the lower threshold of recommended critical loads
- assessment of maximum impacts across 5 modelled years; and
- emissions continually occurring at the limit set in the IED / BReF conclusions and or recommended emissions ceiling.

4.50 Given the conservatism of the air quality modelling and the low magnitude of the potential air quality impacts the Secretary of State concludes that, subject to the mitigation secured in the DCO, the effects of air emissions during Project operation will not have an adverse effect on the integrity of the Lower Derwent Valley SAC when considered either alone or in-combination with other plans and projects.

Disturbance and Hydrological Effects

4.51 The Applicant's HRA identified a potential for indirect impacts to otters using functionally linked habitat during construction and operation as a result of pollution to watercourses. The Applicant's HRA also identified potential for disturbance to otters present as a result of light, visual, noise and vibration. During construction, a risk of mortality to otters was identified as a result of collision with moving construction vehicles or interaction with construction materials and compounds and

excavations. The HRA report considered that such impacts may result in the killing or injury of otters, the reduction and degradation of available otter and fish habitat and food sources and/or displacement of otters from areas used for commuting, foraging, resting and breeding.

4.52 Avoidance and mitigation measures proposed by the Applicant to address potential impacts to otters are set out in paragraph 4.34 above. By the close of Examination all parties were satisfied with the final versions of plans to ensure appropriate mitigation of any potential impacts of disturbance and hydrological effects to otters.

4.53 The Applicant concluded that any impacts to otters that occurs during construction, operation or decommissioning would be minor and short term, with negligible effects on the SAC population and would not compromise the favourable conservation status of populations associated with the Lower Derwent Valley SAC and hence there would be no adverse effect on the integrity of the SAC. NE confirmed in its SoCG with the Applicant that they agree that 'there would be no adverse effects on the integrity of any European Site resulting from likely significant effects (disturbance and hydrological impacts) on functionally linked habitats'. The ExA states that it is 'content that there would be no adverse effect on the integrity of the European sites or their qualifying features as a result of hydrological impacts and impacts to functionally linked land from the Proposed Development alone or in combination with other plans and projects. Adequate mitigation is secured in the Recommended DCO'

4.54 Given the avoidance and mitigation measures secured in the DCO and the low magnitude of any residual impacts, the Secretary of State concludes that the effects of hydrological impacts, and disturbance during Project construction and operation will not have an adverse effect on the integrity of the Lower Derwent Valley SAC either alone or in-combination with other plans and projects.

Conclusion on the Lower Derwent Valley SAC

4.55 Given the conservatism of the air quality modelling and the low magnitude of the potential air quality, hydrological and disturbance effects the Secretary of State agrees with the recommendations of the ExA, and the views of NE and the Applicant and concludes that, subject to the mitigation secured in the DCO, the Project will not have an adverse effect on the integrity of the Lower Derwent Valley SAC either alone or in-combination with other plans and projects.

Appropriate Assessment: Lower Derwent Valley SPA

4.56 The Lower Derwent Valley SPA is located approximately 5.1km from the Project

4.57 Conservation Objectives for the Lower Derwent Valley SPA:

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;

- 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.

4.58 A LSE upon the interest features of the site was identified because of the potential for the Project, both alone and in-combination with other plans and projects, to have air quality effects on the following features:

- Berwick Swan (non-breeding)

- Eurasian wigeon (non-breeding)
- Eurasian teal (non-breeding)
- Northern shoveler (breeding)
- European golden plover (non-breeding)
- Ruff (non-breeding)
- Waterbird assemblage

4.59 The Applicant's air quality modelling shows that the Project alone would not lead to exceedances of the critical loads/levels for ammonia, nitrogen deposition, and acid deposition at this European site under any scenario. There is a maximum modelled process contribution of 0.8% and 0.2% for nitrogen and acid deposition respectively. As the impacts of the Project alone lead to no exceedances of critical levels or process contributions in excess of 1% of critical loads, no adverse effects on the integrity of the SPA are predicted to arise.

4.60 In-combination, the maximum predicted in-combination impact using secondary abatement would be a 1.4% increase to the critical level for ammonia. This does not result in an exceedance of the critical level for ammonia at this site. The maximum predicted in-combination impact for acid deposition would be 0.35% increase. This also does not exceed the critical load/level for acid deposition at this site.

4.61 The maximum predicted in-combination impact for nitrogen deposition would be a 1.6% increase to the critical load/level. The Applicant concludes that despite exceeding the 1% threshold this represents a *de minimus* in-combination effect.

4.62 The Applicant contends that the River Derwent is phosphate limited, there is conservatism built into the air quality assessment and that there is a reducing impact of nitrogen deposition with distance such that at greater distances the critical load/level reduces. The Applicant states that the impact will lead to no perceptible vegetative change of SPA habitats and hence their role supporting SPA bird species. The Applicant also highlights that the Project would make no difference to the exceedance of critical loads and levels for the European Site.

4.63 The site relevant critical loads for the Lower Derwent Valley SPA includes advice on the application of critical loads and levels to several of the bird species for which the SPA is designated (golden plover, tundra swan, ruff and Eurasian teal). The advice on critical loads identifies that '*no expected negative impact on species due to impacts on the species' broad habitat'* for Eurasian teal and Ruff. For tundra swan a potential negative impact is identified for standing water habitats, dependent on whether waterbodies are nitrogen or phosphate limited. Environment Agency monitoring data indicates that the River Derwent is strongly phosphate limited. In phosphate limited systems, additional inputs of nitrogen have limited effects on plant productivity, as phosphate is the primary limiting nutrient. As such, additional inputs would be unlikely to lead to any perceptible eutrophication effects on standing water habitats within the SPA. For golden plover APIS identifies the Critical Load for neutral grassland habitats as being appropriate, due to the species' use of this habitat type.

Conclusion on the Lower Derwent Valley SPA

4.64 Given the conservatism of the air quality modelling and the low magnitude of the potential air quality impacts the Secretary of State agrees with the recommendations of the ExA, and the views of NE and the Applicant and concludes that, subject to the mitigation secured in the DCO, the Project will not have an adverse effect on the integrity of the Lower Derwent Valley SPA either alone or in-combination with other plans and projects.

Appropriate Assessment: Lower Derwent Valley Ramsar

4.65 The Lower Derwent Valley Ramsar is located approximately 5.1km from the Project.

4.66 A LSE upon the interest features of the site was identified because of the potential for the Project, both alone and in-combination with other plans and projects, to have air quality effects on the following features:

- The river and flood meadows
- Rich assemblage of wetland invertebrates
- Staging post for passage birds in spring.
- Regularly supports 20,000 or more waterbirds
- Regularly supports 1% of the individuals in a population of: Eurasian wigeon and Eurasian teal

4.67 The Applicant's air quality modelling shows that the Project alone would not lead to exceedances of the critical loads/levels for ammonia, nitrogen deposition, and acid deposition at this European site under any scenario. There is a maximum modelled process contribution of 0.8% and 0.2% for nitrogen and acid deposition respectively (ES Table 6.19 and 6.20). As the impacts of the Project alone lead to no exceedances of critical levels or process contributions in excess of 1% of critical loads, no adverse effects on the integrity of the SPA are predicted to arise.

4.68 The maximum predicted in-combination impact for acid deposition would be 0.35% increase. This also does not exceed the critical load/level for acid deposition at this site.

4.69 The maximum predicted in-combination impact for nitrogen deposition would be a 1.6% increase to the critical load/level. The Applicant concludes that despite exceeding the 1% threshold this represents a *de minimus* in-combination effect.

4.70 The Applicant contends that the River Derwent is phosphate limited, there is conservatism built into the air quality assessment and that there is a reducing impact of nitrogen deposition with distance such that at greater distances the critical load/level reduces. The Applicant states that the impact will lead to no perceptible vegetative change of Ramsar habitats and hence their role supporting bird species. The Applicant also highlights that the Project would make no difference to the exceedance of critical loads and levels for the European Site.

4.71 The Site relevant critical loads page for the Lower Derwent Valley SPA includes advice on the application of critical loads and levels to several of the bird species for which the SPA is designated (golden plover, tundra swan, ruff and Eurasian teal). Ruff and Eurasian teal are also listed in the citation for the Lower Derwent Valley Ramsar Site. The advice on APIS on critical loads identifies that '*no expected negative impact on species due to impacts on the species' broad habitat'* for Ruff. EA monitoring data also indicates that the River Derwent is strongly phosphate limited. In phosphate limited systems, additional inputs of nitrogen have limited effects on plant productivity, as phosphate is the primary limiting nutrient. As such, additional inputs would be unlikely to lead to any perceptible eutrophication effects on standing water habitats within the Ramsar Site.

Conclusion on the Lower Derwent Valley Ramsar

4.72 Given the conservatism of the air quality modelling and the low magnitude of the potential air quality impacts the Secretary of State agrees with the recommendations of the ExA, and the views of NE and the Applicant and concludes that, subject to the mitigation secured in the DCO, the Project will not have an adverse effects on the integrity of the Lower Derwent Valley Ramsar either alone and in-combination with other plans and projects.

Appropriate Assessment: Humber Estuary SAC

4.73 The Humber Estuary SAC is located approximately 6km from the Project

4.74 Conservation Objectives for the Humber Estuary SAC:

> 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;
> - 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 of 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.

4.75 A LSE upon the interest features of the site was identified because of the potential for the Project, both alone and in-combination with other plans and projects, to lead to
- air quality changes
- hydrological changes

4.76 The potential impacts upon each of the qualifying features are set out in Table 4.

Table 4: Impact upon each feature of the Humber Estuary SAC for which LSE was identified

Feature	Air Quality	Hydrological
Estuaries	X	
Mudflats and sandflats not covered by seawater at low	X	
tide Sandbanks which are slightly covered by sea water all the time	X	
Coastal lagoons * Priority feature	X	
Salicornia and other annuals colonizing mud and sand	X	
Atlantic salt meadows	X	
Embryonic shifting dunes	X	
Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")	X	
Fixed coastal dunes with herbaceous vegetation ("grey dunes") * Priority feature	X	
Dunes with *Hippopha rhamnoides*	X	
Grey Seal	X	
Sea Lamprey	X	X
River Lamprey	X	X

Air Quality Effects

4.77 The Applicant's air quality modelling shows that the Project will not lead to any exceedances of the critical loads/levels for ammonia and nitrogen deposition either alone or in-combination with other plans or projects (ES: Tables 6.16, 6.17, 6.21, 6:23).

4.78 The Project alone will not lead to significant nitrogen deposition onto the Humber Estuary SAC. There is a maximum modelled process contribution of 0.3% for nitrogen deposition (ES: Table 6.19 and 6.20).

4.79 The maximum predicted in-combination impact of the Project would be 0.9% for nitrogen deposition so there would be no exceedances of any critical levels. Humber Estuary habitats occurring within 15 km of the Project are not considered to be sensitive to acidification.

4.80 Given the low magnitude of the air quality impacts the Secretary of State concludes that, subject to the mitigation secured in the DCO, the effects of air emissions during Project operation will not have an adverse effect on the integrity of the Humber Estuary SAC either alone or in-combination with other plans and projects.

Hydrological Effects

4.81 The Applicant's HRA identified a potential for indirect impacts to sea lamprey and river lamprey using functionally linked habitat during construction and operation as a result of pollution to watercourses.

4.82 Avoidance and mitigation measures proposed by the Applicant to address potential impacts to sea lamprey and river lamprey are set out in paragraph 4.34 above. By the close of Examination all parties were satisfied with the final versions of plans to ensure appropriate mitigation of any potential hydrological effects.

4.83 The Applicant states that any residual effects on fish qualifying features from the Project alone would be so minimal as to be imperceptible. They concluded that there would be no adverse effects on the integrity of the site from hydrological effects. The Applicant stated that any minor disturbance effects on local fish populations could not combine appreciably with those of other plans or projects and as such, there is no prospect of significant in-combination effects. This was not disputed by any interested parties.

4.84 NE confirmed in its SoCG with the Applicant that they agree that 'there would be no adverse effects on the integrity of any European Site resulting from likely significant effects (disturbance and hydrological impacts) on functionally linked habitats'. The ExA states that it is 'content that there would be no adverse effect on the integrity of the European sites or their qualifying features as a result of hydrological impacts and impacts to functionally linked land from the Proposed Development alone or in combination with other plans and projects. Adequate mitigation is secured in the Recommended DCO'

4.85 Given the avoidance and mitigation measures secured in the DCO and the low magnitude of any residual impacts, the Secretary of State concludes that the effects of hydrological impacts during Project construction and operation will not have an adverse effect on the integrity of the Humber Estuary SAC either alone or in-combination with other plans and projects.

Conclusion on the Humber Estuary SAC

4.86 Given the low magnitude of the air quality and hydrological effects the Secretary of State agrees with the recommendations of the ExA, and the views of NE and the Applicant and concludes that, subject to the mitigation secured in the DCO, the Project will not have an adverse effect on the integrity of the Humber Estuary SAC either alone or in-combination with other plans and projects.

Appropriate Assessment: Humber Estuary Ramsar

4.87 The Humber Estuary Ramsar is located approximately 6km from the Project

4.88 A LSE upon the interest features of the site was identified because of the potential for the Project, both alone and in-combination with other plans and projects, to lead to

- air quality changes
- hydrological changes

4.89 The potential impacts upon each of the qualifying features are set out in Table 5.

Table 5: Impact upon each feature of the Humber Estuary Ramsar for which LSE was identified

Feature	Air Quality	Hydrological
Criterion 1: Dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons	X	
Criterion 3: Breeding colony of grey seals	X	
Criterion 5: Assemblages of international importance: 153,934 waterfowl (Non-breeding season)	X	
Criterion 6: Species/populations occurring at levels of international importance: Eurasian golden plover; Red knot; Dunlin; Alpine; Black-tailed godwit; Common redshank; Common shelduck; Bar-tailed godwit	X	
Criterion 8: Migration route for both river lamprey and sea lamprey between coastal waters and their spawning areas.	X	X

Air Quality Effects

4.90 The Applicant's air quality modelling shows that the Project will not lead to any exceedances of the critical loads/levels for ammonia and nitrogen deposition either alone or in-combination with other plans or projects (ES: Tables 6.16, 6.17, 6.21, 6:23).

4.91 The Project alone will not lead to significant nitrogen deposition onto the Humber Estuary Ramsar. There is a maximum modelled process contribution of 0.3% for nitrogen deposition (ES: Table 6.19 and 6.20). The maximum predicted impact of the Project in-combination would be 0.9% for nitrogen deposition. There are therefore no exceedances of the 1% threshold. Humber Estuary habitats occurring within 15 km of the Project are not considered to be sensitive to acidification.

4.92 Given the low magnitude of the air quality impacts the Secretary of State concludes that, subject to the mitigation secured in the DCO, the effects of air emissions during Project operation will not have an adverse effect on the integrity of the Humber Estuary Ramsar either alone or in-combination with other plans and projects.

Hydrological Effects

4.93 The Applicant's HRA identified a potential for indirect impacts to sea lamprey and river lamprey using functionally linked habitat during construction and operation as a result of pollution to watercourses.

4.94 Avoidance and mitigation measures proposed by the Applicant to address potential impacts to sea lamprey and river lamprey are set out in paragraph 4.34 above. By the close of Examination all

parties were satisfied with the final versions of plans to ensure appropriate mitigation of any potential hydrological effects.

4.95 The Applicant states that any residual effects on fish qualifying interests from the Project alone would be so minimal as to be imperceptible. They concluded that there would be no adverse effects on the integrity of the site from hydrological effects. The Applicant stated that any minor disturbance effects on local fish populations could not combine appreciably with those of other plans or projects and as such, there is no prospect of significant in-combination effects. This was not disputed by any interested parties.

4.96 NE confirmed in its SoCG with the Applicant that they agree that 'there would be no adverse effects on the integrity of any European Site resulting from likely significant effects (disturbance and hydrological impacts) on functionally linked habitats'. The ExA states that it is 'content that there would be no adverse effect on the integrity of the European sites or their qualifying features as a result of hydrological impacts and impacts to functionally linked land from the Proposed Development alone or in combination with other plans and projects. Adequate mitigation is secured in the Recommended DCO'

4.97 Given the avoidance and mitigation measures secured in the DCO and the low magnitude of any residual impacts, the Secretary of State concludes that, subject to the mitigation secured in the DCO, the effects of hydrological impacts during Project construction and operation will not have an adverse effect on the integrity of the Humber Estuary SAC either alone or in-combination with other plans and projects.

Conclusion on the Humber Estuary Ramsar

4.98 Given the low magnitude of the air quality and hydrological effects the Secretary of State agrees with the recommendations of the ExA, and the views of NE and the Applicant and concludes that, subject to the mitigation secured in the DCO, the Project will not have an adverse effect on the integrity of the Humber Estuary SAC either alone or in-combination with other plans and projects.

Appropriate Assessment: Humber Estuary SPA

4.99 The Humber Estuary SPA is located approximately 6km from the Project

4.100 Conservation Objectives for the Humber Estuary SPA:

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;

- 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.

4.101 A LSE upon the interest features of the site was identified because of the potential for the Project, both alone and in-combination with other plans and projects, to have air quality effects on the following features:

- Great bittern (Non-breeding)
- Great bittern (Breeding)

- Common shelduck (Non-breeding)
- Eurasian marsh harrier (Breeding)
- Hen harrier (Non-breeding
- Pied avocet (Non-breeding)
- Pied avocet (Breeding)
- European golden plover (Non-breeding)
- Red knot (Non-breeding)
- Dunlin (Non-breeding)
- Ruff (Non-breeding)
- Eurasian teal
- Eurasian wigeon
- Mallard
- Turnstone
- Common pochard
- Greater scaup
- Brent goose
- Common goldeneye
- Sanderling
- Common ringed plover
- Eurasian curlew
- Whimbrel
- Greenshank
- Lapwing
- Black-tailed godwit (Non-breeding)
- Bar-tailed godwit (Non-breeding)
- Common redshank (Non-breeding)
- Little tern (Breeding)
- Eurasian oystercatcher (wintering)
- Grey plover
- Waterbird assemblage

4.102 The Applicant's air quality modelling shows that the Project will not lead to any exceedances of the critical loads/levels for ammonia and nitrogen deposition either alone or in-combination with other plans or projects (ES: Tables 6.16, 6.17, 6.21, 6:23).

4.103 The Project alone will not lead to significant nitrogen deposition onto the Humber Estuary SPA. There is a maximum modelled process contribution of 0.3% for nitrogen deposition. The maximum predicted in-combination impact of the Project would be 0.9% for nitrogen deposition so there would be no exceedances of the 1% threshold. Humber Estuary habitats occurring within 15 km of the Project are not considered to be sensitive to acidification.

Conclusion on the Humber Estuary SPA

4.104 Given the low magnitude of the air quality impacts the Secretary of State agrees with the recommendations of the ExA, and the views of NE and the Applicant and concludes that, subject to the mitigation secured in the DCO, the Project will not have an adverse effect on the integrity of the Humber Estuary SPA either alone or in-combination with other plans and projects.

Appropriate Assessment: Skipwith Common SAC

4.105 Skipwith Common SAC is located approximately 8km from the Project

4.106 Conservation Objectives for the Skipwith Common SAC:

> 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;
> - The extent and distribution of the qualifying natural habitats
> - The structure and function (including typical species) of the qualifying natural habitats and,
> - The supporting processes on which the qualifying natural habitats rely

4.107 A LSE upon the interest features of the site was identified because of the potential for the Project, both alone and in-combination with other plans and projects, to have air quality effects on the following features:
- Northern Atlantic wet heaths with *Erica tetralix;* Wet heathland with cross-leaved heath
- European dry heaths

4.108 The air quality modelling shows that background levels at Skipwith Common SAC are already exceeding the critical loads/levels for ammonia, nitrogen deposition and acid deposition.

4.109 The Project would generate a maximum process contribution of 0.4% of the critical level for ammonia. This is in the context of an existing exceedance of 242% of critical level, with the Project equivalent to up to 0.17% of background levels. The Project would not lead to significant nitrogen or acid deposition alone (a modelled maximum process contribution of 0.4% and 0.3% respectively).

4.110 In-combination, the maximum predicted in-combination impact would be a 2.7% increase in the critical load/level for ammonia. The maximum predicted in-combination impact for nitrogen deposition would be up to a 1.9% increase to the critical load/level and for acid deposition up to a 1.6% increase. The in-combination impacts of ammonia concentrations and nitrogen and acid deposition therefore exceed the 1% threshold.

4.111 The Applicant outlined in its HRA research into the effects of nitrogen deposition on heathland habitats. The cited studies suggest that the effects of additional nitrogen where background deposition rates are already high are much reduced relative to where background deposition rates are low. This is because where nitrogen is already in excess the plants present within the habitats have limited capacity to respond.

4.112 The Applicant also cites a NE Commissioned Report Number 210 (Caporn *et al*., 2016[2]) which confirms that in this study, with background deposition rates of 20 kgN/ha/yr (comparable to estimated baseline deposition rates at Skipwith Common SAC), adding a further 1 kgN/ha/yr was shown to decrease species richness by between 1.4% and 1.9%. Graminoid (grass) cover was found to increase by between 0.8% and 1.1%. The maximum species richness recorded varied between 16 and 32. Taking a worst-case species richness from the above of 16, an impact equivalent to 3.26 kgN/ha/yr would theoretically be required to reduce species richness across the

[2] Caporn, S., Field, C., Payne, R., Dise, N., Britton, A., Emmett, B., Jones, L., Phoenix, G., S Power, S., Sheppard, L., and Stevens, C. 2016. assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance. Natural England Commissioned Reports, Number 210.

SAC by an average of one species (per quadrat). The maximum predicted impact of the Project, in-combination with other plans and projects is 0.19 kgN/ha/yr, equivalent to approximately 6% of the amount required to reduce species richness by an average of one species per quadrat. This level of deposition falls within the bounds of natural variation and is predicted to lead to negligible (and imperceptible) vegetative change across the SAC.

4.113 The worst-case impact of acid deposition is 1.6% in-combination, with the contribution from the Project decreasing with increasing distance from stacks. The Applicant states that no perceptible vegetative change to SAC habitats is predicted to arise from this level of deposition, reiterates the conservatism built into the assessment and states that the Project would make no difference to the exceedance of critical loads and levels for the Skipwith Common SAC.

Conclusion on the Skipwith Common SAC

4.114 Given the conservatism of the air quality modelling and the low magnitude of the air quality impacts the Secretary of State agrees with the recommendations of the ExA, and the views of NE and the Applicant and concludes that, subject to the mitigation secured in the DCO, the Project will not have an adverse effect on the integrity of the Skipwith Common SAC either alone or in-combination with other plans and projects.

Appropriate Assessment: Thorne and Hatfield Moors SPA and Thorne Moor SAC

Thorne and Hatfield Moors SPA

4.115 Thorne and Hatfield Moors SPA is located approximately 9.3 km from the Project.

4.116 Conservation Objectives for the Thorne and Hatfield Moor SPA:

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;

- 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.

4.117 A LSE upon the interest features of the site was identified because of the potential for the Project, both alone and in-combination with other plans and projects, to have air quality effects on the breeding European Nightjar feature of the site.

Thorne Moor SAC

4.118 Thorne Moor SAC is located approximately 9.3km from the Project.

4.119 Conservation Objectives for the Thorne Moor SAC:

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;

- The extent and distribution of qualifying natural habitats
- The structure and function (including typical species) of qualifying natural habitats, and
- The supporting processes on which qualifying natural habitats rely

4.120 A LSE upon the interest features of the site was identified because of the potential for the Project, both alone and in-combination with other plans and projects, to have air quality effects on the feature 'degraded raised bogs still capable of natural regeneration'.

Assessment: Thorne and Hatfield Moors SPA and Thorne Moor SAC

4.121 The air quality modelling shows that background levels at Thorne and Hatfield Moors SPA are already exceeding the critical loads/levels for ammonia, nitrogen deposition and acid deposition.

4.122 The Project would generate a maximum process contribution of 0.4% of the critical level for ammonia. This is in the context of an existing exceedance of 239% of the critical level, with the Project equivalent to up to 0.2% of background levels. The Project would not lead to significant nitrogen or acid deposition alone, 0.8% and 0.6% respectively.

4.123 In-combination, the maximum predicted impact would be a 1.3% increase in the critical load/level for ammonia. Given the exceedance is only marginally above 1% threshold at the point of greatest predicted impact, no perceptible effects on SAC habitats are predicted to arise; in respect of the SPA, the suitability of the habitats present to support nightjar is not expected to be subject to perceptible change.

4.124 The maximum predicted in combination impact for nitrogen deposition would be a 2.67% increase to the critical load, and for acid deposition a 2% increase. The in-combination impacts of nitrogen and acid deposition therefore exceed the 1% threshold.

4.125 The Applicant cites a NE Commissioned Report Number 210 (Caporn *et al*., 2016) which confirms that in this study, with background deposition rates of 20 kgN/ha/yr (comparable to estimated baseline deposition rates at Thorne Moore SAC of 19.2 kg N/ha/yr), adding a further 1 kgN/ha/yr was shown to decrease species richness by 0.9%. Graminoid (grass) cover was found to increase by between 1.5%. The maximum species richness recorded was 32. Applying a species richness of 32, an impact equivalent to 3.3 kgN/ha/yr would theoretically be required to reduce species richness across the SAC by an average of one species (per quadrat). The maximum predicted in combination impact of the Project with other plans and projects is 0.13 kgN/ha/yr, equivalent to approximately 3.9% of the amount required to reduce species richness by an average of one species per quadrat. This level of deposition falls within the bounds of natural variation and is predicted to lead to negligible (and imperceptible) vegetative change across the SAC.

4.126 The Applicant also included a review of a study of how ecosystem functions could be used as indicators for heathland response to nitrogen deposition (Bahring *et al.,* 2017[3]). This study suggests that the effects of additional nitrogen where background deposition rates are already high are much reduced relative to where background deposition rates are low. This is because nitrogen is already in excess, with the plants present having limited capacity to respond.

4.127 The worst-case in-combination impact of acid deposition is 2% (so above the 1% threshold). No perceptible vegetative change to SAC habitats are predicted to arise from this level of deposition. There is also evidence from a study completed by the Centre for Ecology and Hydrology (Monteith *et al.,* 2015[4]) that suggests levels of acid deposition across Thorne Moor are reducing, with evidence of a downward trend between 2012 and 2014.

[3] Alexandra Bähring , Andreas Fichtner , Karin Ibe , Gudrun Schütze , Vicky M. Temperton Goddert von Oheimb , Werner Härdtle., 2017. Ecosystem functions as indicators for heathland responses to nitrogen fertilisation. *Ecological Indicators,* 72(1) pp. 185-193

[4] Monteith, D., Sherrin, L., Carter, H., Keenan, P., Thacker., Coyle, M., Nemitz, E. and Smith, R., 2015. *Monitoring of acidifying and eutrophying deposition and ecological parameters at seven potentially vulnerable Natura 2000 sites in England and Wales.* Centre for Ecology and Hydrology, Lancashire.

4.128 The Applicant reiterates the conservatism built into the assessment and states that the Project would make no difference to the exceedance of critical loads and levels for the Thorne and Hatfield Moors SPA and Thorne Moor SAC

Conclusion on the Thorne and Hatfied Moors SPA and Thorne Moor SAC

4.129 Given the conservatism of the air quality modelling and the low magnitude of the air quality impacts the Secretary of State agrees with the recommendations of the ExA, and the views of NE and the Applicant and concludes that, subject to the mitigation secured in the DCO, the Project will not have an adverse effect on the integrity of the Thorne and Hatfied Moor SPA or Thorne Moor SAC either alone or in-combination with other plans and projects.

5. Habitats Regulations Assessment Overall Conclusions

5.1 The Secretary of State has carefully considered all the information presented within the Drax Power Station Re-Power Project application and the representations made by all interested parties. Of note:

- The Applicant concluded that the Project would not adversely affect the integrity of the European sites and qualifying features considered in its Stage 2 assessment.
- NE confirmed that it considered that the Applicant has submitted a thorough ES which it states it is: *"satisfied that it demonstrates beyond reasonable scientific doubt that there would be no significant effect on the integrity of any European sites" and "does not consider that the proposal is likely to have a significant impact on any nationally or internationally designated nature conservation sites or nationally designated landscapes, and that sufficient mitigation measures have been put in place to avoid significant impacts on protected species."*
- The ExA recommended that the 'Proposed Development would not lead to an adverse effect on the integrity of any European sites, either alone or in-combination' and that it is satisfied that 'the information contained in the HRA report and integrity matrices, alongside submissions in the Examination as discussed above, are sufficient for the SoS to undertake an appropriate assessment of the effects of the Proposed Development on European sites'.

Conclusions on the effects of Air Quality

5.2 All European sites, with the exception of the River Derwent SAC, would experience an increased emission level below the 1% threshold, from the effects of the Project alone. In respect to the River Derwent SAC, where there is predicted to be a 1.1% ammonia change, this is deemed to be analogous with 1% due to the conservancy built into the air quality modelling and the overall critical load would not be exceeded at this site.

5.3 The Humber Valley SAC, SPA and Ramsar would experience an increased emission level below the 1% threshold from the effect of the Project in-combination with other plans and projects.

5.4 The Project, in-combination with other plans and projects, is predicted to exceed the 1% threshold at the:

- Lower Derwent SAC, SPA and Ramsar (for ammonia and nitrogen deposition) however, this does not result in overall exceedance of the critical load for this site.
- Skipwith Common SAC, Thorne Moore SAC and Thorne and Hatfield Moor SPA (for ammonia and for nitrogen and acid deposition), where exceedances of the critical loads/levels are already occurring at these European sites.

5.5 Despite the exceedances, the Secretary of State is satisfied that the air emissions from the Project would fall well below the point at which research suggests one might observe a potentially adverse effect on the qualifying habitats at these sites, being of a level that falls within the bounds of natural variation and which is predicted to lead to negligible and imperceptible change.

5.6 The Applicant and NE agreed in the SoCG that no further direct mitigation of air emissions is necessary beyond setting an appropriate stack height and including either NOx emissions control by combustion control, or NOx and ammonia emissions control by the use of SCR with an annualised ammonia emissions budget. The Secretary of State is satisfied that Schedule 13 of

the DCO secures the height of the stacks. It specifies a maximum height for the stacks of 123m AGL/129m AOD and a minimum height of 122.5m AGL/128.5m AOD.

5.7 In the SoCG between the Applicant and the EA and in the SoCG between the Applicant and NE it was agreed that operational emissions from the Project would be further controlled through the EA's EP regime. The SoCG between the Applicant and the EA confirms that the EA would only approve an EP if it did not adversely affect a European site.

5.8 The Secretary of State has considered the air quality assessment provided by the Applicant in light of the conservation objectives for the ten European sites. Given the low magnitude of the air quality effects and the conservatism of the air quality modelling, the Secretary of State agrees with the recommendations of the ExA, and the views of NE and the Applicant and concludes that, subject to the mitigation secured at Schedule 13 of the DCO, the Project will not have an adverse effect on the integrity of any of the ten European sites, either alone or in-combination with other plans and projects.

Conclusions on the effect of Habitat Disturbance and Hydrological Changes

5.9 Whilst the Project is not within or adjacent to any European sites, the River Ouse is located in close proximity to the site boundary and this is hydrologically linked to the Lower Derwent Valley SAC and River Derwent SAC (upstream) and the Humber Estuary SAC and Humber Estuary Ramsar (downstream). LSE could not be excluded at these four European sites due to the potential for impacts of habitat disturbance and hydrological changes on three features:

- Otter (Lower Derwent Valley SAC and River Derwent SAC)
- Sea lamprey and river lamprey (River Derwent SAC, Humber Estuary SAC and Ramsar)

5.10 The Applicant's HRA identified a potential for indirect impacts to otters, sea lamprey and river lamprey using functionally linked habitat during construction and operation as a result of pollution to watercourses. The Applicant's HRA identified potential for disturbance to otters present as a result of light, visual, noise and vibration. During construction, a risk of mortality to otters was identified as a result of collision with moving construction vehicles or interaction with construction materials and compounds and excavations. The HRA report considered that such impacts may result in the killing or injury of otters, the reduction and degradation of available otter and fish habitat and food sources and/or displacement of otters from areas used for commuting, foraging, resting and breeding.

5.11 Avoidance and mitigation measures are secured in the DCO via the following Requirements:

- Landscape and Biodiversity Strategy (secured by Requirement 8)
- Construction Environmental Management Plan (secured by Requirement 17)
- Decommissioning Environmental Management Plan (secured by Requirement 26)
- Surface Water Drainage Strategy (secured by Requirement 13 and 17)
- Ecologically sensitive lighting design (secured by Requirement 10)

5.12 By the close of Examination all parties were satisfied that these would ensure appropriate mitigation of any potential impacts of disturbance and hydrological effects on otter, sea lamprey and river lamprey.

5.13 NE considered that there would be no adverse effects on the integrity of any European Site resulting from likely significant effects (disturbance and hydrological impacts) on functionally linked habitats and the ExA states that it is 'content that there would be no adverse effect on the integrity of the European sites or their qualifying features as a result of hydrological impacts and impacts to functionally linked land from the Proposed Development alone or in combination with other plans and projects. Adequate mitigation is secured in the Recommended DCO'.

5.14 The Secretary of State is satisfied that the appropriate mitigation is secured via Requirements in the DCO, and that any impact to otters from the Project alone would be minor and short term, with no perceptible effect on site populations, and that any residual effects on sea lamprey and river lamprey from the Project alone would be so minimal as to be imperceptible. The Secretary of State is satisfied that there is no in-combination effect with other plans or projects

5.15 The Secretary of State has considered the assessment provided by the Applicant in light of the conservation objectives for the ten European sites. Given the low magnitude of the effects of hydrological changes and disturbance, the Secretary of State agrees with the recommendations of the ExA, and the views of NE and the Applicant and concludes that, subject to the mitigation secured at Requirements 8, 10, 13, 17 and 26 and Schedule 13 of the DCO, the Project will not have an adverse effect on the integrity of any of the ten European sites, either alone or in-combination with other plans and projects.

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