

Habitats Regulations Assessment
Eggborough Combined Cycle Gas Turbine Power Station
20 September 2018

1. Secretary of State for Business, Energy and Industrial Strategy (“the Secretary of State”) has given consideration to the report dated 27 June 2018 of the Examining Authority (“the ExA”), Richard Allen B.Sc(Hons) PGDip MRTPI, who conducted an examination into the application (“the Application”) submitted on 30 May 2017 on behalf of Eggborough Power Limited (“the Applicant”) for a Development Consent Order (“the Order”) under section 37 of the Planning Act 2008 (“the 2008 Act”) for the Eggborough Combined Cycle Gas Turbine (“CCGT”) Generating Station (“the Development”).
2. The Order, as applied for, would grant development consent for the construction and operation of a CCGT generating station of up to 2,500 megawatts (“MW”) on land located at the existing Eggborough Coal-Fired Power Station site near Selby in North Yorkshire.
3. The Development would comprise:
 - An electricity generating station located on land at the existing Eggborough Power Station site, fuelled by natural gas and with a gross output of up to 2500 MW; a peaking and black start plant with a combined gross output of up to 299 MW; and cooling infrastructure;
 - Temporary construction and laydown area involving the infilling of an existing on-site lagoon, and reserve space for carbon capture readiness;
 - Works to the existing National Grid Electricity Transmission (“NGET”) sub-station including underground and overground electrical cables, replacement equipment and connections to busbars;
 - Works to replace the existing cooling water intake and discharge infrastructure from the River Aire;
 - Works to replace the existing groundwater and towns water supply connections;
 - Installation of a high-pressure gas supply pipeline to link the proposed CCGT to the National Grid Gas Feeder pipeline;
 - Installation of an above-ground installation for both the Applicant and National Grid Gas at the gas pipeline connection point;
 - Landscaping and biodiversity enhancements;
 - Surface water drainage works from the site to Hensall Dyke utilising an existing connection; and
 - Vehicular, pedestrian and cycle access works.
4. The Development is not directly connected with or necessary to the management of any European Site. Therefore, under Regulation 63 of The Conservation Of Habitats And Species Regulations 2017 (“the Habitats Regulations”), the Secretary of State is required to consider whether the Development would be likely, either alone or in-combination with other plans and projects, to have a significant effect on a European site. If likely significant effects cannot be ruled out, then the Secretary of State must undertake an Appropriate Assessment (“AA”) addressing the implications for the European Site in view of its conservation objectives. In the light of any such assessment, the Secretary of State may grant development consent

only if it has been ascertained that the Development will not, either on its own or in combination with other plans and projects, adversely affect the integrity of such a site, unless there are no feasible alternatives or imperative reasons of overriding public interest apply.

5. The ExA drew together all the submitted evidence in relation to HRA matters into a Report on the Implications for European Sites (RIES). The RIES compiled documents and signpost information provided within the Application, and the information submitted throughout the Examination by both the Applicant and Interested Parties. The RIES was issued during the examination to ensure that all Interested Parties, including the relevant Statutory Nature Conservation Bodies (in this case, Natural England), had been consulted formally. A key document, referenced throughout the RIES is the Applicant's 'Habitats Regulations Assessment (HRA) Signposting Report and Screening and Integrity Matrices', which was submitted at Deadline 5. For the remainder of this section this report is referred to as "the Applicant's HRA report". In undertaking this HRA the Secretary of State has referenced the RIES and the Applicant's HRA report, and all other relevant documentation submitted as part of the Examination.
6. The Applicant's HRA report identified the following European Sites for assessment:
 - Skipwith Common Special Area of Conservation (SAC);
 - Thorne Moor SAC;
 - Hatfield Moor SAC;
 - Humber Estuary SAC;
 - Humber Estuary Special Protection Area (SPA);
 - Humber Estuary Ramsar;
 - Strensall Common SAC; and
 - North York Moors SAC.
7. All of the above listed sites were thought to either have the potential to be impacted by changes to surface water during construction and operation, or changes to air quality during operation (any air quality effects generated during construction are not expected to reach any European site).
8. The Humber Estuary sites were screened into the Applicant's HRA in order to assess the effect of changes to surface water during construction and operation. However, the sites lie 25km downstream (via the River Aire) so any surface water pollution from the Development would be significantly diluted before it reached the sites. The Development is therefore not likely to have a significant effect on the Humber Estuary sites and no other plans or projects that could contribute to an in-combination effect were identified.
9. All of the other above listed sites were screened into the Applicant's HRA in order to assess the impact of changes to air quality from the operation of the Development. It is noted that all lie beyond 10 km from the project, which, according to the Applicant, is the typically accepted zone of influence in which potential pathways for impacts are considered. However, the 10km radius was increased to include these sites in response to pre-application comments from North Yorkshire County Council.

10. The Applicant's HRA addressed the following air quality effects:
 - Increased atmospheric concentrations of oxides of nitrogen (NO_x) (hourly and annual mean concentrations);
 - Increased nutrient nitrogen deposition;
 - Increased acid deposition (sulphur and nitrogen); and
 - Increased ammonia concentrations (only if/ when SCR abatement is required).
11. There are two measures of particular relevance when considering the potential for likely significant effects to result from changes in air quality arising from the Development. The first is the concentration of oxides of nitrogen (known as NO_x) in the atmosphere. This source of nitrogen (N) can be deposited either directly (known as dry deposition, including directly onto the plants themselves) or washed out in rainfall (known as wet deposition). Deposited nitrogen can then have a range of effects, primarily growth stimulation or inhibition, but also biochemical and physiological effects such as changes to chlorophyll content. The guideline atmospheric concentration of NO_x frequently advocated for the protection of vegetation is 30 micrograms per cubic metre (µg_m⁻³), known as the Critical Level¹. This is driven by the role of NO_x in N deposition and in particular in growth stimulation and inhibition. If the total NO_x concentration in a given area is below the critical level, it is unlikely that N deposition will be an issue, unless there are other sources of nitrogen (e.g. ammonia). If it is above the critical level then local N deposition from NO_x could be an issue and should be investigated.
12. The second important metric is a direct determination of the rate of the resulting N deposition, which is habitat specific because different habitats have varying tolerance to nitrogen. For many habitats there are measurable effects in the form of published dose-response relationships for N deposition, which do not exist for NO_x. Unlike NO_x, the N deposition rate below which current evidence suggests that effects should not arise is different for each habitat. The rate (known as the Critical Load) is provided on the UK Air Pollution Information System website (www.apis.ac.uk) and is expressed as a quantity (kilograms) of N over a given area (hectare) per year (kg N/ha/yr). More recently, there has also been research compiled that investigates N dose response relationships in a range of habitats (Caporn et al., 2016).
13. The Applicant modelled the predicted release of NO_x and N deposition from the Development. This was modelled for two scenarios: One 'with' and one 'without' Selective Catalytic Reduction ("SCR") technology in place. The DCO allows for either scenario as requirement for SCR is determined by the Environment Agency (EA) as part of the separate Environmental Permitting process.
14. To assess the significance of the modelling outputs the Applicant followed an approach outlined in several guidance notes produced by the EA, the Air Quality and Technical Advisory Group ("AQTAG") and the Institute of Air Quality

¹ Hall, J., Bealey, B. & Wadsworth, R. (2006) *Assessing the risks of air pollution impacts to the condition of Areas/ Sites of Special Scientific Interest in the UK*. JNCC, Peterborough.

Management (“IAQM”)²³⁴⁵. Together these guidance notes provide a significance criterion of 1% of the relevant long-term benchmark (critical level and/or critical load) and 10% of the relevant short term benchmark (if available) as a threshold to determine likely significant effects. If an impact falls below these thresholds, a project is not likely to have a significant effect on the habitat assessed.

15. For all sites for which air quality modelling was undertaken, with the exception of Thorne Moore SAC, emissions of NO_x and N deposition from the operation of the Development (“Process Contribution”) were predicted to be under the 1% and 10% criteria. At Thorne Moore SAC the N deposition process contribution was estimated at 1.1% under the modelled SCR scenario.

16. The AQTAG guidance states that there is a “low likelihood” of in-combination effects arising at sites where Process Contributions are estimated to be below 1% of the Critical Load. Under such circumstances it is also advised that an in-combination assessment is not required as any effect would be inconsequential and not likely to be discernible from fluctuations in background measurements⁴. However, following queries from the ExA, the applicant presented an in-combination assessment, which included the following projects.

- Eggborough Coal-Fired Power Station Decommissioning and Demolition
- Ferrybridge Multifuel 2 Power Station
- Knottingley Power Project
- Southmoor Energy Centre
- Advanced Thermal Treatment Plant
- Thorpe Marsh CCGT
- Chapel Haddlesey Hydroelectric Scheme
- Thorpe Marsh Gas Pipeline
- Drax Re-power Project
- West Burton C Power Station
- Ferrybridge D CCGT Power Station

17. The in-combination effect of changes to air quality is also not likely to be significant (excluding Thorne Moore SAC). This is in view of the magnitude of the effect that has been calculated for the project alone (less than 1% of the criterion), and the separation distances between the Development, the identified plans and projects, and the European sites in question (and the qualifying features within)

18. On the basis of the above the Secretary of State considers that changes to air quality and surface water are not likely to have a significant effect on the following European Sites, alone and in-combination with other plans and projects.

- Skipwith Common Special Area of Conservation (SAC);

² AQTAG21 Draft (2015) Likely Significant Effect – use of 1% and 4% long term thresholds and 10% short term thresholds.

³ Environment Agency (2012) Simple assessment of the impact of aerial emissions from new or expanding IPPC regulated industry for impacts on nature conservation. Operational Instruction 66_12. Environment Agency.

⁴ Institute of Air Quality Management (IAQM) (2016) Use of a Criterion for the Determination of an Insignificant Effect of Air Quality Impacts on Sensitive Habitats. IAQM Position Statement – Effect of Air Quality Impacts on Sensitive Habitats.

⁵ A Guide to navigating the assessment of air quality effects on designated sites (Consultation draft, IAQM, 2017).

- Hatfield Moor SAC;
- Humber Estuary SAC;
- Humber Estuary Special Protection Area (SPA);
- Humber Estuary Ramsar;
- Strensall Common SAC; and
- North York Moors SAC.

19. In relation to Thorne Moor SAC, as stated above, the modelled N deposition exceeds 1% of the critical load at that site (by 0.1%). This exceedance is within the margin of error associated with the modelling of air emissions at such large distances. However, as a precaution, the Secretary of State considers that an Appropriate Assessment is required to assess this effect further. This is in line with draft guidance produced by the Institute for Air Quality Guidance⁵, which indicates that an Appropriate Assessment may be required when this criterion is exceeded.

Appropriate Assessment

20. A copy of the Conservation Objectives for the Thorne Moore SAC is provided in Annex A. The site qualifies as a SAC due to its “degraded raised bogs still capable of natural regeneration”.
21. It should be noted that the N deposition critical load is already exceeded within the Thorne Moore SAC. The UK’s semi-natural habitats exceed their atmospheric N deposition critical load ranges across much of their area, and survey data suggests that this results in measurable adverse effects on vegetation in protected sites, although information from Common Standards Monitoring (CSM) does not appear to identify this as a potential cause of ‘unfavourable condition’ at many designated sites⁶.
22. It is therefore not known if the degraded unfavourable condition of the lowland raised bog feature within the Thorne Moor SAC is influenced by the high N deposition rates, but it is reasonable to assume that it must be, based on the baseline conditions.
23. However, the degree to which N deposition is influencing any adverse change in the vegetation of the bog habitat cannot be reasonably quantified. Published dose-response relationships for bog habitats are limited but have shown that the effects of additional nitrogen at existing high background nitrogen rates may be modest compared to those at low background rates, because nitrogen is already in excess and the ability of plants to respond to additional nitrogen is finite. For example, research published by Natural England for ‘bogs’ with background deposition rates of 15 kg N/ha/yr, the addition of a further 1 kg N/ha/yr decreases for species richness in bog habitat by 3.9%⁶. The same research document also states that ‘Within the bog habitat, graminoid cover (principally the sedge, *Eriophorum vaginatum*) was found to increase by 1.5% per additional kg N across the deposition range studied, suggesting that the balance between shrubs, graminoid and moss (mainly *Sphagnum* spp.) is at risk of moving towards dominance by sedge species’.
24. To reduce species richness by ‘1’ (i.e. at least one species would be less frequently encountered in a random quadrant of the affected area) the total process contribution would need to be 3.3 kg N/ha/yr. The process contribution from the proposed development with SCR has been modelled at approximately 1.1% of the lower critical load value of 5 kg N/ha/yr, which is approximately 0.055 kg N/ha/yr. This is well below the process contribution that would be reasonably expected to result in a measurable change to the vegetation composition of the SAC, even when the high background N deposition rates are considered.

⁶ Caporn, S., Field, C., Payne, R., Dise, N., Britton, A., Emmett, B., Jones, L., Phoenix, G., S Power, S., Sheppard, L. & 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.

25. On this basis, the Secretary of State concludes that the Development alone will not have an effect on the integrity of Thorne Moor SAC.

26. All schemes considered in-combination at the LSE stage were assessed to ascertain if any would result in high N deposition rates to the Thorne Moor SAC. However, because the 1% critical load threshold has not been exceeded at any other plan or project considered in-combination, it was the Applicant's view there would be no risk that the value of 3.3 kg N/ha/yr being met or exceeded. Indeed, the Applicant has calculated that this value would not be exceeded even if the process contribution for all of the projects was at or close to 1% of the critical load for N deposition.

27. On this basis, the Secretary of State concludes that the Development, in-combination with other plans and projects, will not have an adverse effect on the integrity of Thorne Moor SAC.

Annex A: Conservation Objectives for the Thorne Moore SAC



European Site Conservation Objectives for Thorne Moor Special Area of Conservation Site Code: UK0012915

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

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**

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

Qualifying Features:

H7120. Degraded raised bogs still capable of natural regeneration

Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2010 (the "Habitats Regulations") and Article 6(3) of the Habitats Directive. They must be considered when a competent authority is required to make a 'Habitats Regulations Assessment', including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives and the accompanying Supplementary Advice (where available) will also provide a framework to inform the measures needed to conserve or restore the European Site and the prevention of deterioration or significant disturbance of its qualifying features as required by the provisions of Article 6(1) and 6(2) of the Directive.

These Conservation Objectives are set for each habitat or species of a [Special Area of Conservation \(SAC\)](#). Where the objectives are met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving Favourable Conservation Status for that species or habitat type at a UK level. The term 'favourable conservation status' is defined in Article 1 of the Habitats Directive.

Publication date: 30 June 2014 – version 2. This document updates and replaces an earlier version dated 29 May 2012 to reflect Natural England's Strategic Standard on European Site Conservation Objectives 2014.