

Department for Business, Energy and Industrial Strategy

Habitats Regulations Assessment - King's Lynn 'B' Combined Cycle Gas Turbine Power Station

06 December 2018

1. The Secretary of State for Business, Energy and Industrial Strategy ("the Secretary of State") has given consideration to the application dated 6 April 2018 ("the Application") on behalf of EP UK Investments Limited ("the Applicant") to vary the consent granted by the Secretary of State on 5 February 2009 ("the original consent") to construct and operate a 1020MW Combined Cycle Gas Turbine generating station and a direction under section 90(2) of the Town and Country Planning Act 1990 ("section 90 direction") that planning permission for the Development be deemed to be granted. The variation being requested ("the varied development") is to:
 - increase the maximum generating capacity from 1020MW to 1700MW;
 - allow for the option of either:
 - i. up to two CCGT unit(s) comprising up to two gas turbines, up to two heat recovery steam generators, up to two steam turbines, air-cooled condensers and associated equipment; or
 - ii. one CCGT unit comprising a gas turbine, a heat recovery steam generator, a steam turbine and air-cooled condensers, and an open cycle gas turbine ("OCGT") plant of up to 299MW and associated equipment;
 - allow a black start facility to be used in the event of an emergency; and
 - amend the associated deemed planning permission to take into account revisions to the indicative layout and siting of the consented development due to the reconfiguration of the power plant which requires an increased area of land (approximately 5 hectares) and other amendments to take into account responses to the consultation.
2. The varied 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 varied 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 varied 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. Collectively, this process is known as a Habitats Regulations Assessment ("HRA").

3. The Secretary of State has used a number of information sources to inform this HRA. Documents referred to include the Applicant's Environmental Impact Assessment Report, including Appendix 5A: Air Quality Assessment and Appendix 7D: Report to Inform Habitats Regulations Assessment ("RIHRA"). The Secretary of State has also taken into consideration the HRA specific representations received from the Statutory Nature Conservation Body, which in this case was Natural England.
4. The RIHRA identified the following European Sites for assessment:
 - The Wash and North Norfolk Coast Special Area of Conservation
 - The Wash Special Protection Area
 - The Wash Ramsar
 - Roydon Common and Dersingham Bog Special Area of Conservation
 - Roydon Common and Dersingham Bog Ramsar
5. The reasons for designation and conservation objectives for each site have been provided in pages 6-10 of the EIA Applicant's Appendix 7D: Report to Inform Habitats Regulations Assessment.
6. Habitats protected by all of the above listed sites were thought to have the potential to be impacted by changes to air quality during operation. The main emitted pollutants of interest for these designations are ammonia (NH₃) and oxides of nitrogen (NO_x) as NH₃ can be directly toxic to vegetation and NO_x and NH₃ together can result in nitrogen deposition which can in turn potentially alter the botanical composition of a range of habitats. Nitrogen deposition can also contribute to acid deposition.
7. The applicant modelled the concentrations of these pollutants at each site using dispersion modelling techniques. This was modelled for two scenarios: One 'with' and one 'without' Selective Catalytic Reduction ("SCR") technology in place. The S36 consent allows for either scenario as requirement for SCR is determined by the Environment Agency (EA) as part of the separate Environmental Permitting process.
8. 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 Management ("IAQM")¹²³⁴. 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

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

² 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.

³ 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.

⁴ A Guide to navigating the assessment of air quality effects on designated sites (Consultation draft, IAQM, 2017).

project is not likely to have a significant effect (alone and in-combination with other plans or projects) on the habitat assessed.

9. In addition to the effect on air quality, the Applicant and Natural England also discussed the possibility of changes to water quality.

Likely Significant Effects

The Wash SPA/Ramsar and the Wash and North Norfolk Coast SAC (“the Wash sites”)

10. These three European sites are considered together in this section because the habitats present in the modelled area are of equal importance to all three designations either directly or, in the case of the SPA, indirectly as supporting habitat.
11. With use of the significance criterion outlined above, the Applicant demonstrated that under the worst case scenario (with SCR), nitrogen deposition is expected to exceed 1% of the long term critical load at locations within these sites. It is noted that Natural England, the Government’s Statutory Nature Conservation Body, advised that the varied development was not likely to have a significant effect on any protected site. However, in the light of the exceedance of this benchmark, and in view of the IAQM guidance, the Secretary of State considers that likely significant effects cannot be ruled out and an Appropriate Assessment is required.
12. For the other relevant pollutants (NH₃ and acid deposition), the Applicant’s modelling outputs demonstrate that significance criterion will not be exceeded within these sites. In line with IAQM guidance, these emissions are therefore not likely to have a significant effect on this site, alone and in-combination with other plans and projects.
13. It is noted that changes to water quality during construction and operation were also discussed between Natural England and the Applicant in the context of this site. However, both parties agreed that a significant effect would be unlikely. This is on the basis that all process effluent discharge (boiler blowdown and effluent from the demineralisation plant) will be treated at a sewage facility . In addition, any contaminated surface water runoff would be subject to methods that prevent entry directly or indirectly into any watercourse or underground strata or onto adjoining land (Conditions 22 and 23 of the Varied Consent). With these measures in place, the Secretary of State agrees that any changes to water quality within the Wash sites are unlikely to be detectable.

Roydon Common and Dersingham Bog SAC and Ramsar (“the Roydon Common and Dersingham sites”)

14. With use of the significance criterion outlined in the IAQM guidance, the Applicant demonstrated that under the worst case scenario (with SCR), nitrogen deposition and acid deposition are expected to exceed 1% of the long term critical

load at locations within this site. It is noted that Natural England, the Government's Statutory Nature Conservation Body, advised that the varied development was not likely to have a significant effect on any protected site. However, in the light of the exceedance of the relevant benchmarks, and in view of the IAQM guidance, the Secretary of State considers that likely significant effects cannot be ruled out and an Appropriate Assessment is required.

15. For NH₃, the Applicant's modelling outputs demonstrate that significance criterion will not be exceeded within the Roydon Common and Dersingham sites. In line with IAQM guidance, these emissions are therefore not likely to have a significant effect on the Roydon Common and Dersingham sites, alone and in-combination with other plans and projects.
16. It is noted that changes water quality during construction and operation was also discussed between Natural England and the Applicant. However, the Applicant considers that a significant effect would be unlikely in view of a 8km separation distance between the site of the varied development and Roydon Common and Dersingham sites. All process effluent discharge (boiler blowdown and effluent from the demineralisation plant) will be treated at a sewage facility. Any contaminated surface water runoff would be subject to methods that prevent entry directly or indirectly into any watercourse or underground strata or onto adjoining land (Conditions 22 and 23 of the varied Consent). With these measures in place, the Secretary of State has concluded that any changes to water quality within the Roydon Common and Dersingham sites are unlikely to be detectable.

Appropriate Assessment

The Wash SPA/Ramsar and the Wash and North Norfolk Coast SAC

17. Each habitat has an empirically derived critical load for nitrogen deposition. This is the rate of deposition (expressed as kgN/ha/yr) below which evidence gives good reason to believe that a negative effect on vegetation parameters would not arise, irrespective of the relative contribution to deposition of a given plan or project.
18. Scrutiny of the website MAGIC (www.magic.gov.uk) indicates that the habitat present at the modelled (most affected) location within The Wash is saltmarsh. The minimum critical load for saltmarsh is 20 kgN/ha/yr because saltmarsh is a naturally relatively nitrogen-rich habitat. Even including SCR, the scheme will result in an increase in nitrogen deposition rate at the modelled location of 0.1 kgN/ha/yr. This is small in itself (equivalent to 0.5% of the most stringent part of the critical load range) and the Applicant's Appendix 5A indicates that the total nitrogen deposition (PEC) is forecast to remain well below the critical load even with this scheme in operation, since the baseline nitrogen deposition rate at this location is only 8.77 kgN/ha/yr. As such, even allowing for other projects expected to come into operation over the same timescale, there are forecast to be no adverse effects.
19. Since the critical load for nitrogen deposition is not expected to be breached, the Secretary of State has concluded that no adverse effect will arise from the varied development alone and in-combination with other plans or projects.

Roydon Common and Dersingham Bog SAC and Ramsar

20. The baseline for nitrogen deposition is shown to exceed the critical load for the site being 13.66 kgN/ha/yr compared to a critical load of 10 kgN/ha/yr. Dose-response relationships for bog habitats are limited but published research⁵ has shown that the effects of additional nitrogen (and by extension, increased acid deposition) at existing higher 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, Caporn *et al* (2016) shows that at background rates of 15 kgN/ha/yr (representative of the approximate background rate at the SAC/Ramsar site) as much as 1kgN/ha/yr would need to be added to decrease forb species richness in bog habitat by 2.6%, decrease lichen species richness in the same habitat by 1.7% or increase graminoid cover by 1.5%. The same report shows that a dose of 3.3 kgN/ha/yr would need to be added to reduce species richness by '1' (i.e. to render at least 1 species less frequently encountered in a random quadrat).
21. Although the existing deposition rates exceed the critical load for bog, the contribution of the scheme (the dose) is forecast to be small (0.2 kgN/ha/yr allowing for SCR) and there are no other identified plans and projects that would affect air quality at the Roydon Common and Dersingham sites over the same timescale. This leads to a conclusion that the expected total dose is sufficiently small that it would not lead to any adverse effect.

Secretary of State's Conclusions

22. The Secretary of State has concluded that the varied development, alone and in-combination with other plans or projects, will not have an adverse effect on The Wash & North Norfolk Coast SAC, The Wash SPA or Ramsar site or Roydon Common and Dersingham Bog SAC or Ramsar site. In the case of The Wash this is due to the total nitrogen deposition, remaining well below the critical load above which adverse effects may arise. In the case of Roydon Common and Dersingham Bog sites, the conclusion is reached because the total nitrogen dose expected due to the scheme falls well below the dose expected to result in a detectable effect on the vegetation at existing background deposition rates and no other projects and plans have been identified that would contribute additional atmospheric nitrogen over the same timescale. This conclusion is supported by Natural England's advice, which was that no likely significant effect is anticipated.

⁵ 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 seminatural habitats of conservation importance. Natural England Commissioned Reports, Number 210