



APPLICANT'S RESPONSE TO ISSUES RAISED AT DEADLINE 5

Drax Bioenergy with Carbon Capture and Storage

Infrastructure Planning (Examination Procedure) Rules 2010

Document Reference Number: 8.10.5

Applicant: Drax Power Limited

PINS Reference: EN010120



REVISION: 01

DATE: 9 May 2023

DOCUMENT OWNER: Drax Power Limited

AUTHOR: Various

APPROVER: C. Fountain

PUBLIC

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1. INTRODUCTION

1.1. PURPOSE OF THIS DOCUMENT

- 1.1.1. On 23 May 2022, Drax Power Limited ("the Applicant") made an application ("the Application") for a Development Consent Order (DCO) to the Secretary of State for Business, Energy and Industrial Strategy ("the SoS"). The Application relates to the Drax Bioenergy with Carbon Capture and Storage (BECCS) Project ("the Proposed Scheme") which is described in detail in Chapter 2 (Site and Project Description) of the Environmental Statement (ES) (APP-038). The Application was accepted for Examination on 20 June 2022.
- 1.1.2. This document, submitted at Deadline 6 of the Examination, contains the Applicant's responses to the representations submitted by the various Interested Parties at Deadline 5.
- 1.1.3. In this document, the Applicant has focussed on responding to points that have not already been made by Interested Parties and responded to by the Applicant. For this reason, the Applicant has responded to points raised by North Yorkshire Council and Biofuelwatch, but has not responded to the submission of Mr Palgrave at Deadline 5.

2. THE NORTH YORKSHIRE COUNCIL

Table 2-1 – The North Yorkshire Council

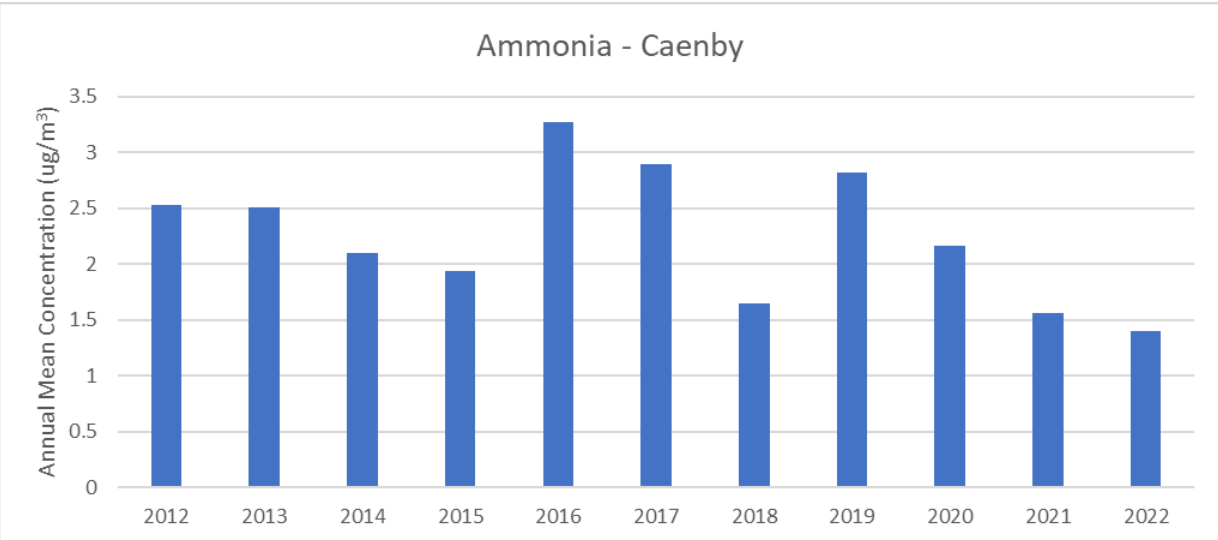
Response Ref. (location in original submission)	Comment	Applicant's Response
2.1	<p>Paragraph 7.1 - Measurement location LT4 and Receptor R14</p> <p>It was questioned whether or not LT4 monitoring location data was representative of receptor R14. LT4 monitoring location data is used to set the background noise level at R14, a distance of roughly 1.5km apart. Taking into account the low background noise level reported (28dB LA90,15min), similar distances to Drax Power Station which is likely a dominant contributor to the existing noise climate (~1km), and rural context at both locations, there are no objections to adopting LT4 monitoring location data to set the R14 background noise level.</p>	<p>The Applicant notes and agrees with this response.</p>
2.2	<p>Paragraph 7.2 - Adverse residual operational noise impacts & contextual considerations</p> <p>A noise difference between the rating level (LAr,Tr) and background noise level (LA90,15min) is +6dB at receptor R6 and +7dB at receptor R14, which is an indication of adverse impacts depending on context.</p> <p>Whilst a context case is provided by the applicant, it is contested that good acoustic design should form part of this in terms of equipment choice and orientation. The Councils Environmental Health Officer met with Esteban Olmos (Noise, Associate Director, WSP) on 23 March 2023 and would summarise as follows:</p> <ul style="list-style-type: none"> • Operational noise assumptions are provided (Appendix 7.2) and the indicative plant equipment layout shows plant orientation (Figure 2.2). It was confirmed that good acoustic design was embedded into the indicative layout. However, there is uncertainty that the Council had no input into the options appraisal that took place in the early stages of design, therefore, we are unable to comment on this. It is suggested in a post hearing note that revisiting the indicative layout has the potential to cause onerous design implications (para 7.12). • There are some elements to the assessment methodology that favour the context case and worthy of emphasis: <ul style="list-style-type: none"> o Background noise levels at R6 and R14 are likely to be higher than those selected for the assessment. This is a consequence of the adopted assessment methodology which differs to that suggested within the standard and provides a much more conservative conclusion (Appendix 7.4 Baseline Noise Statistical Analysis – Plate 1.21: LT4 Night-time Histogram vs. BS4142:2014+A1:2019 Section 8 [Figure 4]). o Operational noise assumptions include an assumption that all noise sources will be operational 100% of the time. 	<p>The Applicant met NYC on 24 April 2023 to discuss their comments submitted at Deadline 5 (Comments on the Applicant's updated draft Development Consent Order; and Comments on any other responses received by Deadline 4) (REP5-032). It was agreed that the Applicant would submit to NYC a short description on the noise impact implications of the alternative layout considered in Section 3.4 of ES Chapter 3 (Consideration of Alternatives) (APP-039). NYC and the Applicant agreed that additional noise modelling will not be undertaken to support this description. This note, which also included narrative relating to the differences in the options for other environmental topics, was issued to NYC on 5 May 2023.</p> <p>Good acoustic design was factored in the options for the carbon dioxide compression, described in paragraphs 3.2.25 and 3.2.26 of ES Chapter 3 (Consideration of Alternatives) (APP-039). Similarly, noise impact was considered during early stages to decide on the wastewater treatment plant option, as described in paragraphs 3.5.16 and 3.5.17 of ES Chapter 3 (Consideration of Alternatives) (APP-039).</p> <p>Good acoustic design formed part of the equipment choice and orientation, however, it is noted that differences in the potential noise impact between both layout options considered did not play a key role in the selection of the preferred layout. This was mainly based on engineering feasibility.</p> <p>The Applicant agrees with the statement saying that there are some elements of the assessment methodology that favour the context case. Similarly, the Applicant is also of the opinion that it is necessary to balance the onerous design implications of revisiting the indicative layout with the adverse night-time impacts at receptors R6 and R14. The Applicant considers that it is not necessary to revisit the layout and that the dDCO commitments on noise present an appropriate balance between onerous design implications and adverse night-time impacts.</p>

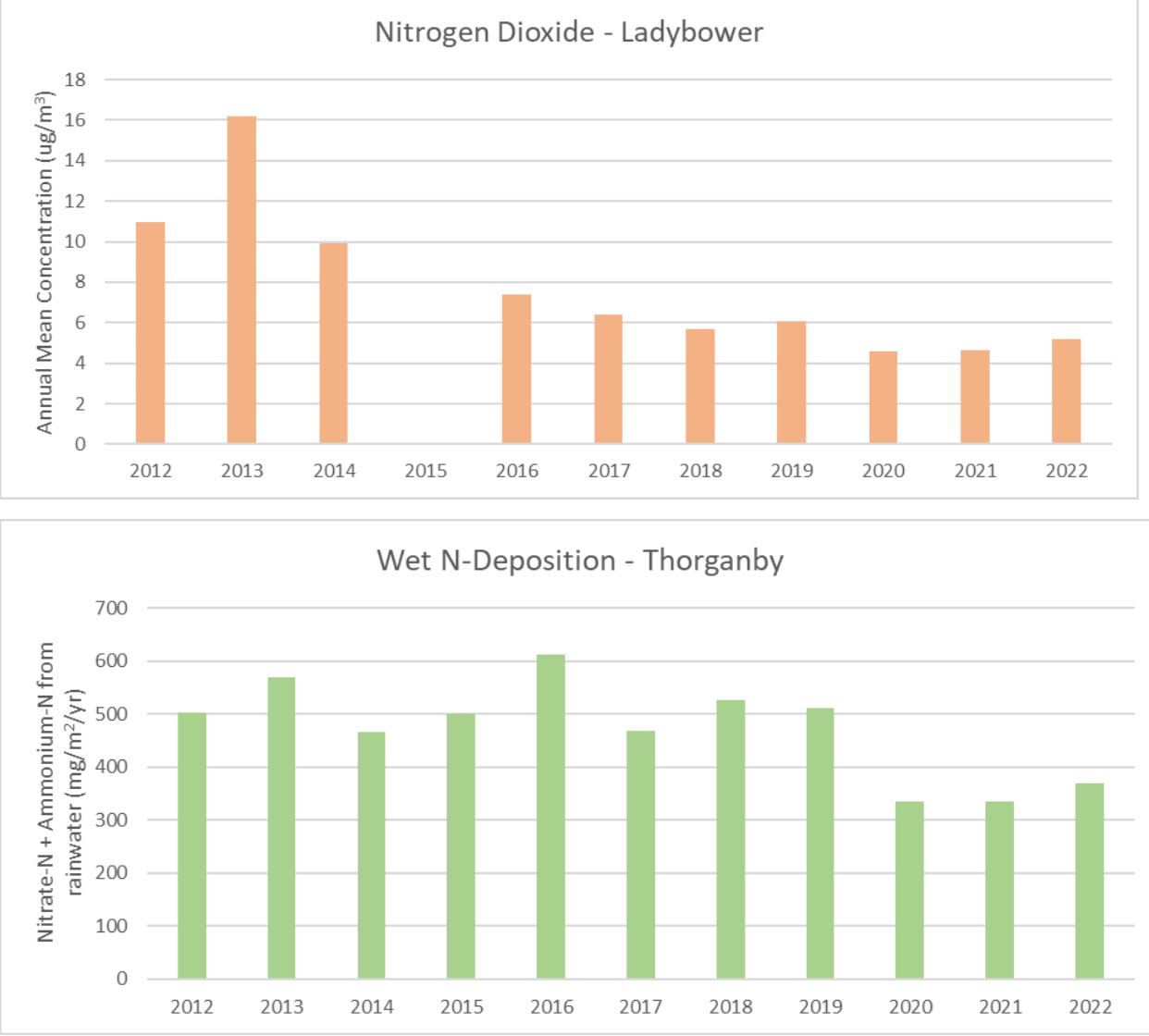
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	<p>The aforementioned depicts a deflated background noise level against an inflated rating level, thus potential for exaggerating the actual noise impacts.</p> <p>As such, it is necessary to balance the onerous design implications of revisiting the indicative layout with the adverse night-time noise impacts at receptors R6 and R14, in the context of what is a conservative assessment of existing background noise levels and a worst-case scenario with all plant operating 100% of the time.</p>	

3. BIOFUELWATCH

Table 3-1 – Biofuelwatch

Response Ref. (location in original submission)	Comment	Applicant's Response
3.1	<p>REP4-028 4.3 (P1 – P2) AQ 1.7 of REP2-060 The Applicant responded to our question thus:</p> <p><i>'The monitoring undertaken by local authorities is publicly available within their Air Quality Annual Status Reports that are published on an annual basis. For example: for Selby, the reports are published on Selby District Council's Local Air Quality Management website 1 for years from 2012 to 2022. Pollutant concentrations are monitored at 36 locations within the district. For East Riding of Yorkshire, the reports are published on East Riding of Yorkshire's Air quality monitoring website 2 for years from 2012 to 2022. Pollutant concentrations are monitored at over 90 locations within the district.'</i></p> <p>Due to the council changes the link provided by Drax no longer links to the relevant page however we were able to find Selby District Council's 2022 Air Quality Annual Status Report (ASR) on the new site to which the link redirects.</p> <p>It is our understanding that all of the air pollution monitoring conducted by Selby District Council is traffic based and therefore not aimed at monitoring emissions from Drax and other industrial sites in the area. Appendix D of the report, maps, makes it clear all monitoring was in traffic related locations. Selby Council acknowledges in its own response that it does not have any data relating to Drax (REP2-095).</p> <p>We would assert therefore that the Local Authority pollution monitoring does not cover Drax's emissions and certainly the existing air quality monitoring that there is that does not measure the new pollutants that are produced by the PCC amine process. So there is no established baseline for those compounds.</p>	<p>The monitoring undertaken by the Local Authorities (LA) is indeed focussed on roadside locations, since these locations are where concentrations of pollutants considered for Local Air Quality Management, primarily NO₂, are highest in their area and where there is potential exposure to pollution. The impacts of emissions from Drax will be present in the monitoring, albeit making a small and, given the main monitoring technique used i.e. diffusion tubes, unquantifiable contribution to total concentrations. Given the spatial coverage of the LA monitoring, this is sufficient to characterise the baseline air quality climate.</p> <p>As acknowledged in Chapter 6 (Air Quality) of ES (APP-042), the monitoring does not cover amines and their degradation products. The interpretation of the results of modelling of amines/nitrosamines has taken into account this limitation.</p>
3.2	<p>We would like to ask the Natural England the following questions in relation to REP4-041 Table 1a: Natural England's detailed advice</p> <p>Natural England key issue reference no 20 1.</p> <p>What level of cumulative uncertainty did Natural England assume when assessing whether nitrogen deposition and acid deposition at Thorne Moor fall within the bounds of natural variation?</p>	<p>Consideration of the available data and approach underpinning the dispersion (air quality) modelling and subsequent quantification of impacts on designated sites is relevant to this question and, as such, the Applicant provides a response below.</p> <p>As set out in paragraph 6.5.55 of the Air Quality chapter of the ES (APP-142), conservatism has been embedded into the dispersion modelling, and this demonstrates that a precautionary approach has been taken in the assessment of impacts. This conservatism, including assessing the impacts for the worst year within five modelled years, is included to address the uncertainties associated with modelling.</p> <p>The deposition experienced at Thorne Moor (and all designated sites) varies considerably between years. Since it is not possible to measure total deposition with a single instrument, this natural variability is best illustrated by a review of the available monitoring data. UK Centre for Ecology and Hydrology (UKCEH) and Environment Agency operate</p>

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		<p>national monitoring networks on behalf of Defra. In relation to deposition, data from the Automatic Urban and Rural Network (specifically NO₂ and SO₂ concentrations), the National Ammonia Monitoring Network (NH₃ concentrations), and the Precip-Net (Sulphate, Nitrate and Ammonium in rainwater) are relevant since these are the primary contributors to dry deposition of nitrogen/acid (NO₂, SO₂, NH₃) and wet deposition nitrogen/acid (NO₃, NH₄ and SO₄ in rainwater). At the closest rural monitoring sites to Thorne Moor (Ladybower, Caenby and Thorganby for the above networks), the interannual variability in all of these parameters exceeds +/-20%. Specifically in relation to N-Deposition, the graphs below show annual mean data and demonstrate that:</p> <ol style="list-style-type: none"> NH₃ concentrations, and by inference dry deposition of N from ammonia, varied by +/-40% about the mean between 2012 and 2022; NO₂ concentrations, and by inference dry deposition of N from ammonia, varied by +/-20% between 2016 and 2022 (and by a greater amount if the higher pollution in 2012 – 2014 is taken into account); and N deposition from nitrate and ammonium in rainwater varied by +/-30% about the 2012 to 2022 mean. <p>The cumulative modelled worse case impact of the Proposed Scheme over any site is 0.17kgN/ha/yr. This occurs at Hagg Green Lane SINC, where the total deposition is 33.9kgN/ha/yr and the Proposed Scheme impact amounts to 0.5% of the total deposition. Over Thorne Moor, the maximum cumulative impact is 0.06kgN/ha/yr and the total deposition is 21.4kgN/ha/yr. The impact in this case amounts to less than 0.3% of the total deposition. For acid deposition, the impact is 0.4% of the total deposition at Thorne Moor.</p> <p>Clearly, therefore, the impacts of the Proposed Scheme are considerably lower than the natural interannual variation in deposition.</p>  <table border="1" data-bbox="1626 1367 2763 1871"> <caption>Ammonia - Caenby</caption> <thead> <tr> <th>Year</th> <th>Annual Mean Concentration (ug/m³)</th> </tr> </thead> <tbody> <tr><td>2012</td><td>2.5</td></tr> <tr><td>2013</td><td>2.5</td></tr> <tr><td>2014</td><td>2.1</td></tr> <tr><td>2015</td><td>1.9</td></tr> <tr><td>2016</td><td>3.3</td></tr> <tr><td>2017</td><td>2.9</td></tr> <tr><td>2018</td><td>1.6</td></tr> <tr><td>2019</td><td>2.8</td></tr> <tr><td>2020</td><td>2.2</td></tr> <tr><td>2021</td><td>1.5</td></tr> <tr><td>2022</td><td>1.4</td></tr> </tbody> </table>	Year	Annual Mean Concentration (ug/m ³)	2012	2.5	2013	2.5	2014	2.1	2015	1.9	2016	3.3	2017	2.9	2018	1.6	2019	2.8	2020	2.2	2021	1.5	2022	1.4
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		 <p>Nitrogen Dioxide - Ladybower</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Annual Mean Concentration (ug/m³)</th> </tr> </thead> <tbody> <tr><td>2012</td><td>11.0</td></tr> <tr><td>2013</td><td>16.0</td></tr> <tr><td>2014</td><td>10.0</td></tr> <tr><td>2015</td><td>0.0</td></tr> <tr><td>2016</td><td>7.5</td></tr> <tr><td>2017</td><td>6.5</td></tr> <tr><td>2018</td><td>5.5</td></tr> <tr><td>2019</td><td>6.0</td></tr> <tr><td>2020</td><td>4.5</td></tr> <tr><td>2021</td><td>4.5</td></tr> <tr><td>2022</td><td>5.0</td></tr> </tbody> </table> <p>Wet N-Deposition - Thorganby</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Nitrate-N + Ammonium-N from rainwater (mg/m²/yr)</th> </tr> </thead> <tbody> <tr><td>2012</td><td>500</td></tr> <tr><td>2013</td><td>570</td></tr> <tr><td>2014</td><td>460</td></tr> <tr><td>2015</td><td>500</td></tr> <tr><td>2016</td><td>610</td></tr> <tr><td>2017</td><td>460</td></tr> <tr><td>2018</td><td>520</td></tr> <tr><td>2019</td><td>510</td></tr> <tr><td>2020</td><td>330</td></tr> <tr><td>2021</td><td>330</td></tr> <tr><td>2022</td><td>360</td></tr> </tbody> </table>	Year	Annual Mean Concentration (ug/m³)	2012	11.0	2013	16.0	2014	10.0	2015	0.0	2016	7.5	2017	6.5	2018	5.5	2019	6.0	2020	4.5	2021	4.5	2022	5.0	Year	Nitrate-N + Ammonium-N from rainwater (mg/m²/yr)	2012	500	2013	570	2014	460	2015	500	2016	610	2017	460	2018	520	2019	510	2020	330	2021	330	2022	360
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3.3	<p>Table 1a: Natural England's detailed advice</p> <p>Natural England key issue reference no 19 and 20</p> <p>Why does Natural England consider significant increased long-term nitrogen and acid deposition, even if within the bounds of natural variation, to be acceptable when critical loads are exceeded (Lower Derwent Valley SAC, Lower Derwent Valley Ramsar, Thorne Moor SAC)? By definition, further significant long-term increases can be expected to cause further significant long-term ecological harm. Please could Natural England elaborate and explain its reasoning further.</p>	<p>The Applicant does not consider that there would be significant long term increases in cumulative nitrogen and acid deposition at the European Sites referred to. The rationale for this is presented in the HRA Report (REP2-101, Rev03 being submitted at Deadline 6)) and supporting appendices, notably Appendix 7 (REP2-107) and Appendix 8 (REP3-009). Following submission of the updated HRA Report and Appendices 7 and 8, and in line with ongoing correspondence between Natural England and the Applicant, Natural England have now agreed that the Proposed Scheme would not trigger adverse effects on the integrity of the referred to European Sites. This is set out in the Statement of Common Ground between Natural England and the Applicant (REP5-017).</p> <p>In addition, following the analysis of Natural England soils and habitat data for Lower Derwent Valley SAC (as set out in Appendix 8 of the HRA Report), the Applicant and Natural England have agreed that use of the 'calcareous grassland' acid deposition critical</p>																																																

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		<p>load class for Lower Derwent Valley is appropriate. The critical load for 'acid grassland' is 0.643 keq/ha/yr, whereas the critical load for 'calcareous grassland' is 4.856. Maximum baseline acid deposition is modelled as being 2.40keq/ha/yr.</p> <p>There is therefore no exceedance of the critical load for the 'calcareous grassland' habitat, and as such there is no exceedance of the critical load for the Lower Derwent Valley.</p>