

Tween Bridge Solar Farm

Environmental Statement

Appendix 14.1: Air Quality Impacts on Designated Ecological Sites

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

APFP Regulation 5(2)(a)

Document Reference: 6.3.14.1

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Appendices

Tween Bridge Solar Farm

Chapter 14: Air Quality and Greenhouse Gases Appendices

For RWE Renewables UK Solar and Storage Ltd

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14.1 Air Quality Impacts on Designated Ecological Sites

14.1.1 **ES Chapter 7 Ecology and Nature Conservation [Document Reference 6.2.7]** of the Environmental Statement (ES) assesses the effects of the Scheme on the following designated ecological receptors:

- Thorne Moor Special Area of Conservation (SAC), Thorne and Hatfield Moors Special Protection Area (SPA) and Thorne, Crowle and Goole Moors Site of Special Scientific Interest (SSSI);
- Hatfield Moor SAC and SSSI; and
- Hatfield Chase Ditches SSSI.

14.1.2 The locations of the designated habitats¹ relative to the Scheme are shown in Figure 14.1.1.

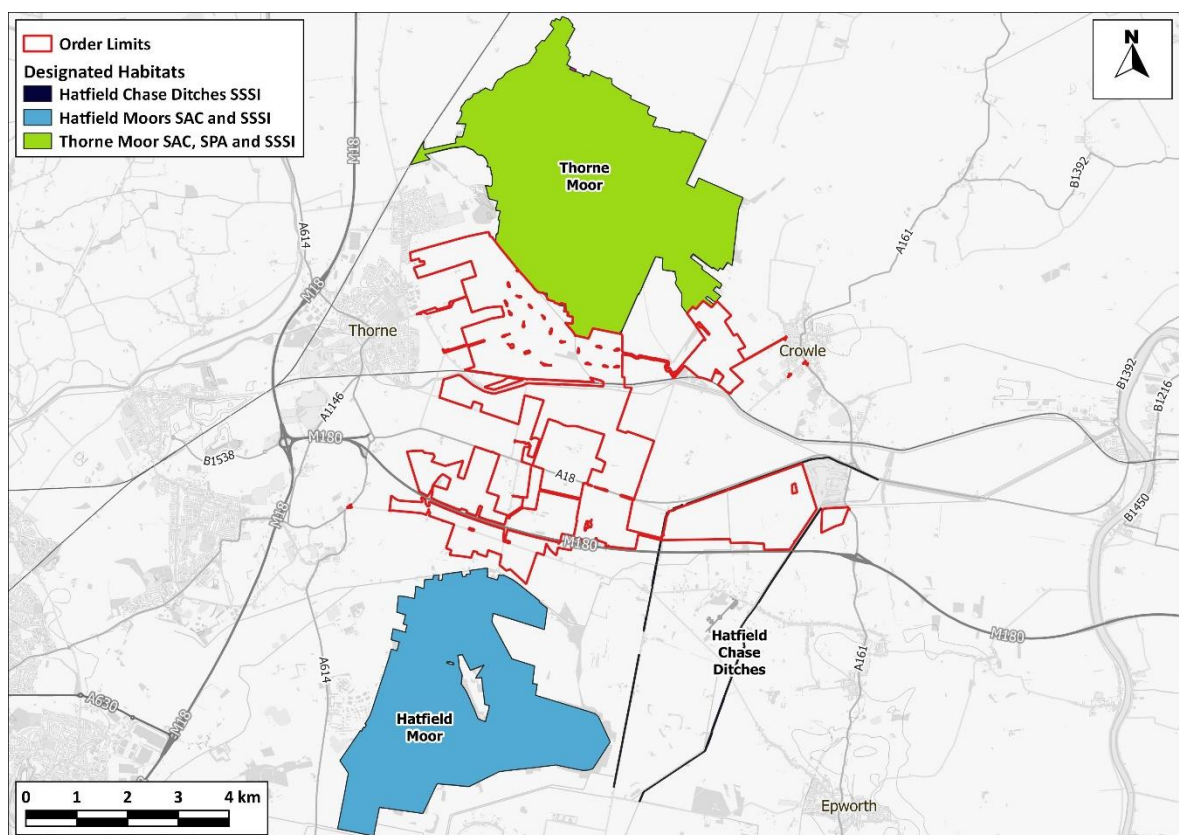


Figure 14.1.1: Locations of Designated Habitats in the Study Area

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

14.1.3 This appendix considers the air quality impacts on the designated habitats during the construction and operational phases of the Scheme. During construction, which is anticipated to last 54 months, the main sources of potential impacts will be construction traffic emissions and on-site plant and machinery, whilst once operational, the main source will be from servicing and maintenance and a

¹ The Hatfield Chase Ditches SSSI run adjacent and perpendicular to the A18 and M180.

shepherd. The overall significance of these effects is considered by the Project Ecologist in **ES Chapter 7 Ecology and Nature Conservation [Document Reference 6.2.7]**.

- 14.1.4 The effects of construction dust have been assessed in **ES Chapter 14 Air Quality and Greenhouse Gases [Document Reference 6.2.14]**, and overall, it has been concluded that, with the recommended mitigation adopted, the effect from construction dust on the sensitive habitats will be 'not significant'.

Assessment Approach – Natural England Guidance

- 14.1.5 The potential for impacts on designated habitats listed in Paragraph 14.1.1 has initially been screened based on the presence of qualifying features sensitive to air pollution within 200m of roads subject to changes in emissions², following Natural England guidance³. If there are no qualifying features within 200m of an affected road, then no further assessment is required.
- 14.1.6 Where there are qualifying features within 200m of a road, Natural England's guidance on advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations recommends the use of the Design Manual for Roads and Bridges (DMRB) criteria⁴. This states that the air quality impacts of each individual project should be scoped out from any further assessment where the changes caused by the project in isolation (i.e. not in combination with other plans or projects) do not meet any of the following criteria within 200m of a designated site:
- Annual Average Daily Traffic (AADT) $\geq 1,000$; or
 - Heavy Duty Vehicle (HDV) AADT ≥ 200 ; or
 - a change in speed band; or
 - a change in carriageway alignment by $\geq 5\text{m}$.
- 14.1.7 However, Natural England applies the DMRB criteria to changes to traffic caused by all types of plans or projects, and not just for highways schemes. In the same way, irrespective of their original derivation, Natural England³ (2018) adopts the 1% change criterion from the Environment Agency⁵ as a basis for screening out the need for more detailed assessment. It explains:
- "the AADT thresholds and 1% of critical load/level are considered by Natural England's air quality specialists ... to be suitably precautionary, as any emissions below this level are ... considered to be imperceptible". It goes on: "There can therefore be a high degree of confidence in [the use of these criteria] to screen for risks of an effect".*
- 14.1.8 Natural England³ further explains that the AADT criteria have *"been adopted here to simply help trigger when to look further where traffic projection data is the sole means of assessment – [triggering the criteria] does not immediately mean there will be an effect"*.
- 14.1.9 A key difference between how these criteria are applied by Natural England³ when compared with National Highways⁴ is that Natural England suggests that they should be applied first to the change caused by each individual project and then to the changes caused by relevant plans and projects in combination with one another.

² Beyond 200m, the contribution from road traffic emissions is not discernible from fluctuations in background concentrations.

³ Natural England (2018), Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001).

⁴ Highways England (2019), Design Manual for Roads and Bridges LA 105 Air Quality.

⁵ Environment Agency (2025), Air emissions risk assessment for your environmental permit

Construction Traffic Impact Assessment

Thorne Moor SAC, Thorne and Hatfield Moors SPA and Thorne, Crowle and Goole Moors SSSI

External Roads

- 14.1.10 The boundary of the SAC, SPA and SSSI is over 200m from any existing road that will be used by construction vehicles to access the primary construction compounds, for example Moor Edges Road and Marsh Road. On this basis, no further assessment is required.

Internal Roads

- 14.1.11 There will be access tracks throughout the Order Limits to enable construction vehicles to transport material between land parcels. The majority of routes between the primary compounds and the smaller parcels are over 200m from the boundary of the designated site, however, there are some short segments of access tracks within Land Parcels A and B which are within 200m (these Land Parcels are the ones abutting the designation) (**see ES Figure 2.1 Indicative Construction Layout Plan [Document Reference 6.4.2.1]**).
- 14.1.12 The Applicant has advised that traffic flows on these internal access tracks during the peak period of construction, assuming a single, consecutive approach is adopted, will be no greater than 114 two-way HDV movements, and 135 two-way Light Duty Vehicle (LDV) movements for Land Parcel A. For Land Parcel B, the corresponding peak flows are 29 two-way HDV movements and 26 two-way LDV movements.
- 14.1.13 Assuming a multiple stage construction programme, the worst-case traffic flows generated by the Scheme would arise if Land Parcels A and B were constructed simultaneously, which would lead to peak construction traffic flows of 143 two-way HDV movements and 164 two-way LDV movements.
- 14.1.14 The Applicant has advised that these peak periods will last for up to four months; it is, therefore concluded that the AADT flows, which take into account non-peak construction flows (which are, for example, 16 HDV movements for Land Parcel A), will be lower. As the in-isolation flows will be well below the DMRB criteria of 1,000 vehicles and/or 200 HDVs, the effect of Scheme traffic on internal roads on the Thorne Moor SAC, Thorne and Hatfield Moors SPA and Thorne, Crowle and Goole Moors SSSI will be not significant (or to use Natural England's terminology will be imperceptible – see paragraph 14.1.7).
- 14.1.15 Since the tracks are within the Order Limits, there will be no access to these routes for other road traffic or vehicles, such that the in-combination flows will be no different to those presented above. As the in-combination flows will be well below the DMRB criteria of 1,000 vehicles and/or 200 HDVs, the in-combination effect of traffic on internal roads on the Thorne Moor SAC, Thorne and Hatfield Moors SPA and Thorne, Crowle and Goole Moors SSSI will be imperceptible and not significant.

Hatfield Moor SAC and SSSI

External Roads

- 14.1.16 The boundary of the SAC and SSSI is over 200m from any existing road that will be used by construction vehicles to access the primary construction compounds, for example Sandtoft Road. On this basis, no further assessment is required.

Internal Roads

- 14.1.17 A small portion of the Order Limits (~4.5 hectares, in Land Parcel D) to the south adjacent to Moor Lane is within 200m of the SAC and SSSI, within which there are anticipated to be short segments of access tracks (see **ES Figure 2.1 Indicative Construction Layout Plan [Document Reference 6.4.2.1]**).
- 14.1.18 The Applicant has advised that traffic flows on these internal access tracks during the peak period of construction, assuming a single, consecutive approach is adopted, will be no greater than 67 two-way HDV movements, and 76 two-way LDV movements. These flows would be no different if a multiple stage construction programme was adopted, since there are no other Land Parcels in proximity to the SAC and SSSI.
- 14.1.19 The Applicant has advised that these peak periods will last for up to three months; it is, therefore concluded that the AADT flows, which take into account non-peak construction flows (which are eight HDVs and eight LDVs), will be lower. Since the in-isolation flows will be well below the DMRB criteria of 1,000 vehicles and/or 200 HDVs, the effect of Scheme traffic on internal roads on Hatfield Moor SAC and SSSI will be not significant.
- 14.1.20 Since the access tracks are within the Order Limits, there will be no access to these routes for other road traffic or vehicles, such that the in-combination flows will be no different to those presented above. As the in-combination flows will be well below the DMRB criteria of 1,000 vehicles and/or 200 HDVs, the in-combination effect of traffic on internal roads on the Hatfield Moor SAC and SSSI will be imperceptible and not significant.

Hatfield Chase Ditches SSSI

External Roads

- 14.1.21 The boundary of the SSSI is within 200m of an unnamed road, the A18 and M180 which will be used by construction vehicles. There are also internal tracks that will be within 200m of the SSSI.
- 14.1.22 The Project Transport Consultants, Pegasus Group, have advised that the construction of the Scheme will lead to the following additional vehicles (as AADT flows) on each of these roads:
- Unnamed Road – 21 LDVs and 19 HDVs;
 - A18 – 42 LDVs and 42 HDVs; and
 - M180 – 41 LDVs and 38 HDVs.
- 14.1.23 Since the in-isolation flows will be well below the DMRB criteria of 1,000 vehicles and/or 200 HDVs, the effect of Scheme traffic on external roads adjacent to Hatfield Chase Ditches SSSI will be imperceptible and not significant.
- 14.1.24 A review of cumulative schemes (see **ES Chapter 17 Cumulative Impacts [Document Reference 6.2.17]**) by Pegasus Group has concluded that, based on currently available information in the public domain, none of the identified cumulative schemes will utilise the A18 or Unnamed Road⁶. The in-combination flows on the unnamed road and A18 will therefore be no different to those presented above.

⁶ The review concludes that one identified site is on the construction traffic route for Land Parcel A (Selby Road, A614), and that based on available information, there are no forecast cumulative effects on any other link in the study area.

- 14.1.25 Given that the M180 is a major transport route through the north-east of England and forms part of the strategic road network managed by National Highways, its use cannot be avoided regardless of the location of the Scheme or other plans and projects. A review of the cumulative schemes by Pegasus Group considers that seven of the sites could lead to additional traffic flows on the M180 (those schemes being Sites 1,2, 3, 7, 8,12 and 18), however, no details are provided in the submitted documentation that distribute the traffic flows to the M180 (for example, the air quality assessment for Site 3 presents AADT flows for the scheme, but does not include an assessment of the M180, whilst Sites 12 and 18 are screening requests, and thus do not include information on likely trips generated by the proposals). As such, whilst additional trips on the M180 from cumulative schemes have not been quantified, it is, possible that in combination flows could exceed the DMRB criteria on the M180.
- 14.1.26 Notwithstanding, the ditches are approximately 26m wide, and the M180 crosses at two points, such that only a small area of the designation (~26,400m²) (~8% of the entire designation) will be affected by traffic using the M180. The ditches are notified for 'standing open water and canals' which includes networks of open channels that play a vital role in drainage, but also act as corridors for wildlife movement. As described in **ES Chapter 7 Ecology and Nature Conservation [Document Reference 6.2.7]**, the majority of the SSSI is considered to be in a declining state, largely as a result of agricultural run-off; a review of the condition of features and units by Natural England⁷ does not identify proximity to road traffic emissions as a reason for this decline.
- 14.1.27 The presence of water and flushing events (including from rainfall events) have been shown to reduce the accumulation of nitrogen, whilst it has also been shown that the contribution from nitrogen from the air is often much smaller than the contribution from other waterbodies (such as wash-off from agricultural fields and river inputs)⁸. This is further evidenced in the Briefing Paper drafted between North Lincolnshire Council and Natural England to assist with the North Lincolnshire Local Plan examination⁹, which states "Air pollution may have some impact on the ditches. Realistically though, this is going to have a tiny contribution in comparison to the water quality issues created by agricultural run-off and management of adjacent farmland which causes nutrient enrichment".
- 14.1.28 Further consideration of the sensitivity of the Hatfield Chase Ditches SSSI is provided in **ES Chapter 7 Ecology and Nature Conservation [Document Reference 6.2.7]**.

Internal Roads

- 14.1.29 The Applicant has advised that traffic flows on the internal access tracks within Land Parcel E (the Land Parcel within 200m of the SSSI) during the peak period of construction, assuming a single, consecutive approach is adopted, will be no greater than 85 two-way HDV movements, and 96 two-way LDV movements. Assuming a multiple stage construction programme, the worst-case traffic flows generated by the Scheme would arise if Land Parcels C and E were constructed simultaneously, which would lead to peak construction traffic flows of 155 two-way HDV movements and 175 two-way LDV movements.
- 14.1.30 The Applicant has advised that these peak periods will last for up to three months; it is, therefore concluded that the AADT flows, which take into account non-peak construction flows (which are, for example, eight HDVs and eight LDVs movements for Land Parcel C), will be lower. As the in-isolation flows will be well below the DMRB criteria of 1,000 vehicles and/or 200 HDVs, the effect of Scheme traffic on internal roads on the Hatfield Chase Ditches SSSI will be imperceptible and not significant.

⁷ Natural England (2025), 'Hatfield Chase Ditches SSSI: Condition of Features'.

⁸ Chartered Institute of Ecology and Environmental Management (2021), 'Advisory Note: Ecological Assessment of Air Quality Impacts'.

⁹ North Lincolnshire Council (2023), 'Briefing Paper: Position with Natural England'.

- 14.1.31 Since the tracks are within the Order Limits, there will be no access to these routes for other road traffic or vehicles, such that the in-combination flows will be no different to those presented above. As the in-combination flows will be well below the DMRB criteria of 1,000 vehicles and/or 200 HDVs, the in-combination effect of traffic on internal roads on the Hatfield Chase Ditches SSSI will be imperceptible and not significant.

Operational Traffic Impact Assessment

- 14.1.32 Once operational, the Scheme will generate approximately one visit to the Scheme per month; it is likely that the vehicles would be either a 4x4 or 7.5tonne van. This is well below the 1,000 AADT screening threshold for light vehicles set out in Natural England's guidance³.
- 14.1.33 Whilst trips associated with other plans and projects have not been quantified, it is considered highly unlikely that the Scheme will cause the in-combination changes in traffic flows to exceed the screening threshold, or make a perceptible difference to in-combination impacts.

Construction Equipment and Generators

- 14.1.34 There is no official guidance in the UK in relation to development control on how to assess the significance of air quality impacts from construction plant and vehicles. Guidance from the Institute of Air Quality Management (IAQM) on assessing the exhaust emissions from on-site plant¹⁰ states *"they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. For site plant and on-site traffic, consideration should be given to the number of plant/vehicles and their operating hours and locations to assess whether a significant effect is likely to occur"*.
- 14.1.35 During construction, up to 31 primary construction compounds will be provided on Site; these locations are shown in **ES Figure 2.1 Indicative Construction Layout Plan [Document Reference 6.4.2.1]**. Whilst the majority of these compounds are located over 200m from the habitats set out in Paragraph 14.1.1, two compounds are currently proposed to be located within 200m of the Thorne Moor SAC, Thorne and Hatfield Moors SPA and Thorne, Crowle and Goole Moors SSSI, whilst two further compounds are currently proposed to be located within 200m of the Hatfield Chase Ditches SSSI. The locations of the compounds will be reviewed prior to commencement of the works.
- 14.1.36 The Applicant has advised that generally, the construction compounds will include a back-up diesel generator, whilst other plant that will operate across the site and within the compounds will include tractors with trailers, piling rigs, cement mixers and cranes. The **Outline Construction Environmental Management Plan (CEMP) [Document Reference 7.1]**, which will be secured through DCO requirement, sets out a series of measures to minimise the effects of air quality and dust emissions. The measures include *"plan the site layout so that machinery and dust-causing activities are located away from receptors"* and *"selecting electrically driven equipment in preference to internal combustion powered"*. The **Outline CEMP [Document Reference 7.1]** also details the operational hours, stating *"Core working hours are proposed to be 07:00 to 19:00 Monday to Saturday, and 09:00 to 13:00 on Sundays"*; work across the Site will not, therefore, be continuous throughout the construction period.
- 14.1.37 As the site covers approximately 1,831 hectares and extends for more than 4km north-south and nearly 9km east-west, for the majority of the construction period any construction equipment and generators will be located at a sufficient distance from the designated sites that they will not experience discernible effects. The detailed CEMP will include a range of mitigation measures for the protection of air quality, for example a requirement that all machinery will be turned off when not in use. On this

¹⁰ IAQM (2024), 'Guidance on the assessment of dust from demolition and construction', Version 2.2.

basis, the potential for air quality impacts to have significant effects on any designated sites and their features of interest is considered to be very low, and no further consideration is required.



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