
**THREE OAKS RENEWABLE
ENERGY PARK
EXTENSION**

**Environmental
Statement Chapter 3: Site
Selection, Design and Alternatives**

MAY 2026



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3 **Site Selection, Design and Alternatives**

Introduction

- 3.1 This chapter describes the site selection, design and alternatives for the Three Oaks Renewable Energy Park Extension ('the Proposed Development'), which involved appraisal work at two levels:
- Strategic site selection; and
 - Detailed site design.
- 3.2 The objective of the process has been to develop a carefully considered, sensitively designed and commercially sound renewable energy park.

Regulatory Requirement

- 3.3 There is no general requirement to consider alternative sites or proposals to the Proposed Development. The Town and Country Planning (Environmental Impact Assessment) Regulations (2017) (hereafter referred to as the 'EIA Regulations') states the requirement at Schedule 4 as:

"A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

- 3.4 The EIA Regulations do not require a specific methodology for the reporting of alternatives, or the criteria to be used to inform the consideration of reasonable alternatives.
- 3.5 The consideration of alternatives and design evolution for the Proposed Development has been undertaken with the aim of preventing or reducing adverse environmental effects via a qualitative appraisal process using professional judgement as guided by technical specialists in their field.
- 3.6 This chapter adopts a staged process to the consideration of alternatives, firstly identifying the Proposed Development site and considering its suitability, followed by an overview of the evolution of the site design with a comparison of relevant environmental effects.

Strategic Site Selection

- 3.7 No explicit comparison of the environmental effects from the Proposed Development with 'other sites' has been undertaken, nor is there any requirement to do so. The process for identifying an appropriate site for such a development is subject to a range of criteria which can affect its suitability, namely electricity grid connection, land availability, energy resource, access and environmental sensitivity. This list is not provided in any specific order and all are relevant to the identification of a technically suitable development site.

Electricity Grid Connection and Grid Capacity

- 3.8 A renewable energy park, such as the Proposed Development, requires a technically and economically viable grid connection. Ridge Clean Energy's (RCE) own grid connection specialists have liaised with the local Distribution Network Operator (DNO) and secured a technically and economically viable grid connection for the Proposed Development.
- 3.9 Electricity generated from the Proposed Development will be exported through on-site cabling to the consented substation at the adjacent Three Oaks Renewable Energy Park, which will connect to the electricity distribution network via the existing 66 kV overhead line to its immediate north, which runs in a broadly east to west alignment. However, the two developments would be managed via separate grid connection agreements. Cables would generally be routed alongside site tracks, other than from T3 south through a dedicated cable trench (approximately 1 m wide and 1 m deep) to the substation. No off-site works would be required to facilitate the connection to the local distribution network.

Land Availability

- 3.10 Within suitable proximity of the point of connection to the local electricity distribution network, there must be land which is not only technically suitable for the Proposed Development, but also owned by a landowner willing to engage in the relevant commercial negotiations to host such a development.
- 3.11 Following identification of the point of connection into the local distribution network, Three Oaks REP Extension Ltd ('the Applicant') utilised their existing relationship with the landowners in immediate proximity to the consented substation location and (after considering initial technical suitability of the land) secured land interest for the Proposed Development.

Energy Resource

- 3.12 The Applicant undertook an exercise, using freely available online wind resource tools (such as <https://globalwindatlas.info/en/>), to identify land with a suitable wind resource such as to make the Proposed Development commercially viable. The Site was identified as having sufficient energy resource for this purpose.
- 3.13 Furthermore, the Site's historic interest with a previous application submitted for a similar development (including temporary anemometer mast) affirms the technical suitability in terms of wind resource.

Access

- 3.14 There must be a technically suitable access option to allow infrastructure components to be safely delivered to site. The Applicant identified that the Site could be safely and suitably accessed, accommodating both standard construction traffic and abnormal loads (such as turbine components). Accordingly, the Site was considered suitable for the Proposed Development in relation to access. See Chapter 8 (Traffic and Transport) – Volume 2 for further information.

Environmental Sensitivity

- 3.15 The Applicant conducted an initial review of environmental designations to determine the suitability of the Proposed Development Site. As shown on Figure 3.1 (Regional Constraints) and Figure 3.2 (Site Constraints) – Volume 3, it was identified that the site was free from the following designations:
- World Heritage Sites;
 - Special Protection Areas (SPA);
 - Special Areas of Conservation (SAC);
 - Site of Special Scientific Interest (SSSI);
 - RAMSAR;
 - National Landscapes / Areas of Outstanding Natural Beauty;
 - National Parks;
 - Scheduled Monuments;
 - Registered Park and Gardens;
 - Conservation Areas;
 - RSPB Important Bird Areas; and
 - Listed Buildings.
- 3.16 Furthermore, a buffer from residential dwellings of 800 m was applied by the Applicant, which was considered appropriate in relation to restriction on scheme design and development as well as reducing impacts.

Summary

- 3.17 The Applicant appraised the Proposed Development site against the above considerations and determined it to be a technically, environmentally and economically viable site for a renewable energy park.

The Do Nothing Alternative

- 3.18 Within each technical assessment reported in Chapters 5 to 9 – Volume 2 of this ES, the likely evolution of the surveyed and established environmental baseline is considered up to the anticipated date of construction commencing.
- 3.19 It is considered that under the 'do nothing' scenario, such an evolution of the baseline would continue, with the Site continuing to be used for arable agriculture.
- 3.20 The context of the Site would also continue to evolve through the forecasted growth in baseline traffic levels as well as the construction and operation of the consented Three Oaks Renewable Energy Park.
- 3.21 In the 'do nothing' scenario, the likely significant effects (both beneficial and adverse) as reported in this ES would not materialise. Furthermore, the benefits of the Proposed Development (the generation of clean renewable energy or associated Biodiversity Net Gain (BNG)) would not occur, with no associated contributions made towards the vital energy transition towards renewable energy.

- 3.22 Accordingly, the 'Do Nothing' scenario is not considered appropriate and is not given further consideration within this ES.

Evolution of the Site Design

- 3.23 The final layout as assessed in this ES has been the subject of an iterative design evolution process which sought to avoid or minimise the predicted adverse effects as far as reasonably practicable via design embedded mitigation. The resultant proposal balances the environmental and technical constraints (informed through specialist inputs who are qualified experts in their field), whilst producing an economically viable project. Design changes made are considered to be Primary mitigation which is embedded into the design of the scheme.
- 3.24 Inputs were also received through consultation with the local community, through in-person public exhibitions and liaison through other channels of communication – see the accompanying Statement of Community Involvement (SCI) for further information.
- 3.25 Each of the wind turbine layout iterations were adopted for the reasons set out below, however the following principle parameters were retained throughout all iterations:
- Retaining a minimum distance from residential properties (minimum 800 m as applied by the Applicant);
 - Minimum turbine spacing/separation of approximately 5 x rotor diameter downwind and 3 x rotor diameter crosswind, and a south-west prevailing wind direction;
 - Retention of infrastructure within land made available for development to the Applicant;
 - Public Rights of Way buffers;
 - Known services;
 - Avoidance of sensitive ecological habitat (where possible); and
 - Consideration of slope and civil engineering requirements.
- 3.26 Throughout the design evolution process, a number of studies, investigations and surveys were completed and were taken into consideration to support optimising the layout.

Layout 1

- 3.27 The initial site design comprised 6 x 149.9m wind turbines with a total generating capacity of 25.2 MW (see Figure 3.3 (Turbine Layout 1) – Volume 3). This layout accounted for the hard constraints as identified above. Table 3.1 below identifies the Layout 1 coordinates.

Table 3.1 – Layout 1 coordinates

Turbine number	Easting (NGR)	Northing (NGR)
1	510553	465697
2	511086	465865
3	511678	466058
4	510757	464991
5	511290	465154
6	511771	465303

Layout 2

- 3.28 To enable a more accurate design for necessary wind turbine infrastructure (in terms of allowing suitable space for access tracks, crane hardstandings and cabling), T 1-5 were moved away from field boundary extents. Layout 2 was used for the information boards at the public exhibitions, (see Figure 3.4 (Turbine Layout 2) – Volume 3). See the accompanying SCI for further information.

Table 3.2 – Layout 2 coordinates

Turbine number	Easting (NGR)	Northing (NGR)
1	510563	465663
2	511096	465832
3	511690	466018
4	510755	464963
5	511299	465120
6	511771	465304

Layout 3

- 3.29 As referred to in the accompanying SCI, concerns were raised during public consultation events by some residents in the village of Rudston (approximately 1.8 km north) in relation to the views of the proposed wind turbines. Accordingly, the decision was taken to move the 3 northernmost wind turbines approximately 150 m south within the same field boundaries, see Figure 3.5 (Turbine Layout 3) – Volume 3.
- 3.30 The relocation of the northern 3 turbines resulted in reduction in impact to views from the village of Rudston, compared with Layout 2. The relocation also results in a reduction of AOD heights due to the use of falling topography in a southerly direction.

Table 3.3 – Layout 3 coordinates

Turbine number	Easting (NGR)	Northing (NGR)
1	510594	465540
2	511141	465712
3	511715	465915
4	510755	464963
5	511299	465120
6	511771	465304

Layout 4

- 3.31 Turbine 1 (T1) was microsituated 130 m north-west to avoid an Electromagnetic Interference (EMI) buffer zone for an Airwaves telecommunication link. Whilst micrositing, care was taken to retain the turbine within the available geophysical survey extents and land available for development (acknowledging this moved T1 slightly closer to Rudston).
- 3.32 T3 was microsituated c.9 m north to avoid areas of archaeological responses within the geophysical survey.
- 3.33 T4 was microsituated 117 m south to avoid a JRC (Joint Radio Company) EMI buffer zone, whilst being retained within the geophysical survey area and land available for development but avoiding identified archaeological features.
- 3.34 T5 was microsituated 19 m south-east to avoid archaeological interest as shown on geophysical survey results.
- 3.35 These amendments (Figure 3.6 (Turbine Layout 4) – Volume 3) were considered to result in a reduction of impacts associated with EMI link interference, as well as the reduction of development within known areas of archaeology compared to Layout 3 and thus were adopted.

Table 3.4 – Layout 4 coordinates

Turbine number	Easting (NGR)	Northing (NGR)
1	510523	465648
2	511113	465714
3	511714	465924
4	510772	464846
5	511316	465111
6	511771	465303

Layout 5

- 3.36 Following advice from the Applicant's ecological specialist, T1 was micrositied 11 m east to accommodate NatureScot's bat buffer guidance (NatureScot, 2021), which was considered to be a beneficial amendment in relation to bat impacts from the Proposed Development. This located T1 7 m within an EMI buffer, however following consultation with the link operator this was confirmed as being acceptable.
- 3.37 Following further EMI information, T2 was moved west by 30 m to avoid the 60% Fresnel zone (+ 25 m buffer) for an EMI link. Due to other constraints it was not possible to fully relocate T2 outside the link operator's requested buffer zone, see Chapter 10 (Other Considerations) – Volume 2 for further information. Note that the buffer zone west of T2 in Figure 3.7 (Turbine Layout 5) – Volume 3 only shows the associated 60% Fresnel zone.
- 3.38 T3 was moved 52 m north-east to fully avoid an EMI link operator's requested buffer zone. Note that the buffer zone adjacent to T3 in Figure 3.7 (Turbine Layout 5) – Volume 3 only shows the associated 60% Fresnel zone.
- 3.39 T5 was moved 24 m east to reduce incursion into the Fresnel Zone (down to 4.01m). Through micrositied allowances (25 m for Turbines 1-5 and 10 m for Turbine 6), it is predicted that the Proposed Development has the ability to be clear of the Fresnel Zones.
- 3.40 The amendments were considered to result in a further reduction of impact associated with EMI link interference compared with Layout 4 and thus were adopted.

Table 3.5 – Layout 5 coordinates

Turbine number	Easting (NGR)	Northing (NGR)
1	510534	465648
2	511084	465710
3	511722	465975
4	510772	464846
5	511340	465110
6	511771	465303

Access Optioneering to T4 & Permanent Anemometer Mast

- 3.41 In general, internal access tracks were designed to be in the most efficient alignments from the following considerations:
- Overall length of new tracks;
 - Routing tracks parallel to contours where possible to minimise cut and fill;
 - Avoiding steep slopes for transport requirements;

- Utilising existing hedge breaks where possible; and
- Routing tracks adjacent to field boundaries to reduce sterilisation of agricultural land.

3.42 However, several track alignment options were presented to link the access between T5, on to T4 and the permanent anemometer mast. Figure 3.8 (Access Track Optioneering to T4) – Volume 3 shows these three options. It was determined that option 3 maintained access to (assumed) Best and Most Versatile (BMV) agricultural land in the south-west of the field, preventing the sterilisation of further agricultural land (as would be the case with options 1 and 2), and would also reduce overall track length requirements. For these reasons, option 3 was considered to result in minor beneficial (not significant) effects, and thus was adopted.

Summary

- 3.43 The Applicant identified the Site as an optimal location for the Proposed Development, informed by consideration of electricity grid connection, land availability, energy resource, access and environmental sensitivity. A 'do-nothing' scenario has been presented which is considered to prevent the adverse as well as beneficial impacts identified within this ES, but importantly would fail to deliver much needed domestically generated clean and renewable energy.
- 3.44 An iterative design evolution process was then undertaken to inform the optimal locations for wind turbines as well as access track alignments, informed by public consultation and input from technical, environmental and civil engineering specialists. This has resulted in an optimal turbine layout maximising yield at the Site whilst reducing environmental impacts where possible. Overall, this has led to more favourable environmental effects presented in the technical assessments as reported in chapters 5 – 10 of this ES.

References

- NatureScot (2021) Bats and onshore wind turbines - survey, assessment and mitigation. Available at <https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation> (Access January 2026).