# 2. Site Selection and Design Evolution

## 2.1 Site Selection Process

2.1.1 The careful selection of potential wind farm sites is a critical aspect of the overall development process.

2.1.2 The process which led to identification of the Development Site started in 2015 when E.ON Renewables business, subsequently acquired by the Applicant, carried out a high-level assessment of the south-west Scotland area to identify potentially suitable sites for wind energy development.

2.1.3 An initial assessment of the feasibility of potential development sites was conducted using Geographical Information Systems ('GIS'), to look at high-level constraints and key criteria for wind farm development. This process allowed early identification of key technical, environmental and planning issues, which could either support or hinder the development of wind energy on individual sites.

2.1.4 Some sites were excluded following this exercise, due to factors including lack of a suitable wind resource, ornithological sensitivities, landscape and visual sensitivities, planning policy, and commercial constraints. Other sites, including the Development Site, passed this initial assessment and were then subject to further analysis and consultations with relevant consultees.

2.1.5 At the conclusion of the initial assessment, the Development Site was identified as being potentially suitable for wind farm development as no significant constraints had been identified.

2.1.6 Potentially suitable sites identified during this first phase of the process were then subject to feasibility assessments. Sites were evaluated, with those satisfying the basic assessment criteria progressing to the next stage of evaluation. These basic assessment criteria included (but were not limited to):

- **Land Availability**: ensuring there is sufficient land available for development;
- **Land Use and Context**: assessing the suitability of the existing land use and ensuring that the chosen site is outwith international or national environmental or planning designations (though noting that it is located within the locally designated East Ayrshire SLA);
- **Wind Resource**: ensuring a sufficient wind resource exists to make the development financially viable;
- **Electricity Grid**: assessing whether the site is within appropriate proximity of a suitable connection point to the electricity grid network;
- **Transport Infrastructure**: ensuring the site is accessible via public road infrastructure to allow the construction, operation and maintenance of a wind farm;
- **Residential Amenity**: ensuring wind turbines can be located sufficiently far away from houses to protect local amenity with respect to noise and shadow flicker;
- **Landscape and Visual Capacity**: an initial assessment of the landscape and visual effects of a wind farm on important receptors (i.e., ensuring it is not located within a statutory designated landscape and taking into account considerations of landscape capacity and potentially sensitive visual receptors); and

- **Nature Conservation Sites**: an initial assessment to determine the distance of statutorily designated sites such as Sites of Special Scientific Interest ('SSSIs'), National Nature Reserves ('NNRs'), Ramsar Sites, Special Areas of Conservation ('SACs') and Special Protection Areas ('SPAs') from the site.

2.1.7 The conclusion of this feasibility assessment work was that the Development Site met the necessary basic assessment criteria (e.g., a good wind resource, proximity to a potential grid connection and no immediately obvious insurmountable issues that would prevent consent) and therefore warranted further detailed environmental and technical assessment.

2.1.8 The wind energy spatial framework included within the East Ayrshire Local Development Plan ('EAC LDP') 2017[3] indicates that the Development Site is within Group 3 – Areas with potential for wind energy development and would therefore be supportive of an appropriately designed wind energy development on the Development Site.

2.1.9 The findings of the feasibility assessment study were subsequently built on by undertaking design and EIA work for the Proposed Development. This included undertaking consultations with relevant stakeholders such as NatureScot (formerly Scottish Natural Heritage ('SNH')), Royal Society for the Protection of Birds ('RSPB') and the Scottish Environment Protection Agency ('SEPA'), in order to understand their views on a potential wind farm at the Development Site and to ultimately assist in the evolution of an appropriate, responsibly designed wind farm that is sensitive to the surrounding area.

2.1.10 Detailed assessment was undertaken to resolve environmental and technical constraints. Environmental constraints are illustrated on **Figure 2.1**. This process led to an initial 3 turbine layout, shown as 'layout 1' on **Figure 2.2**, which took account of the criteria described at **Section 2.1.6** above.

## 2.2 Consideration of Alternatives

2.2.1 The EIA Regulations make two references to the consideration of alternatives, as follows.

- Paragraph 18(3)(d) of Part 5 states that "*a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment*."
- Paragraph 2 of Schedule 4 states that "*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.*"

2.2.2 In EIA terms, the requirement is therefore to report on reasonable alternatives that have been considered rather than it being a requirement of an EIA to consider alternatives. The high-level assessment of south-west Scotland to identify potentially suitable sites for wind energy development noted in **Section 2.1** resulted in the identification of other potential wind farm sites, including Benbrack and Enoch Hill which are now consented.

[3] The 2017 LDP will be replaced by the emerging Local Development Plan 2 (EAC LDP2) once it has been adopted. On 5 December 2022, EAC agreed to submit Local Development Plan 2 to Scottish Ministers for Examination. The plan and all necessary paperwork were submitted to the Scottish Government's Planning and Environmental Appeals Division (DPEA) on 24 February 2023. The submission is now being processed by the DPEA and all documentation will, in due course, be published on the DPEA website.

2.2.3 While no alternative sites for a development of a two-turbine wind farm were considered by the Applicant, alternatives in respect of layout, number of turbines and technology were considered.

2.2.4 The main alternatives in this respect are set out below. Furthermore, an alternative of 'no development' on the Development Site is also considered by virtue of the description of the existing baseline conditions described in each of the technical chapters. Those alternatives that have been considered are set out below.

## Site Selection

2.2.5 The site selection process is set out within **Section 2.1** and concluded that Development Site met the necessary basic assessment criteria (e.g., a good wind resource, proximity to a potential grid connection and no significant constraints) and therefore warranted further detailed environmental and technical assessment.

## Without the Proposed Development

2.2.6 Without the Proposed Development, status quo would remain with the main land use of commercial current forestry use continuing. From an environmental perspective, there would be no contribution towards climate change targets with possible further reliance on fossil fuel use.

## Technology

2.2.7 The requirement for renewable energy is accepted at national policy level with wind energy widely recognised as the most mature renewable energy technology currently available. As identified in the feasibility assessment, the Development Site also has good wind resource.

2.2.8 At scoping stage up to the initial drafting of the EIA Report in 2020, wind turbines were the only renewable technology proposed. The feasibility of including other renewables technology was explored in late 2022/early 2023 and it was concluded that battery storage would further optimise the Development Site.

## Design

2.2.9 The layout and individual siting of the turbines, battery storage and associated infrastructure has progressed through a number of design iterations and refinements, influenced by the EIA process. The design iterations are summarised in **Table 2.1** and illustrated within **Figure 2.2**.

2.2.10 The Applicant and its consultants undertook discussions with statutory and non-statutory consultees, the local community and the landowners with the accumulated findings all having an influence over the evolution of the design and the scope of the EIA.

2.2.11 The design of the Proposed Development has evolved in response to comments provided through various consultation discussions, desk studies and site work/technical appraisals by the project team. This process effectively began following the provision of a site boundary in early 2016 and the subsequent undertaking of initial tasks to inform investigations into the feasibility of developing a wind farm in this location. These initial tasks included site visits to assess the potential access route and undertake ecology and ornithology surveys.

2.2.12 A three-turbine layout ('Layout 1') was identified in 2017, based on the wind yield and minimum separation distances between turbines as well as on a desktop-based review of the "Hard constraints" (**Figure 2.2)**.

2.2.13 A further constraints mapping exercise was undertaken in 2019, resulting in a two-turbine layout, shown as Layout 2 on **Figure 2.2**. This design was the one considered as part of the EIA Scoping Report.

2.2.14 The design of the Proposed Development was further revisited in March 2023, which resulted in the inclusion of a battery storage facility and minor changes to the access tracks (**Figure 3.1A)**. No changes to the turbine locations or other infrastructure were implemented as part of this design iteration.

2.2.15 Overall, embedded mitigation measures have been incorporated into the design and construction of the Proposed Development, to avoid, prevent or minimise significant adverse environmental effects.

2.2.16 **Table 2.1** summarises the main design alterations and the main constrains that have influenced the design.

## Table 2.1 Design Iterations

| Design Iteration | Constraints Influencing Layout | Summary of Change |
|---|---|---|
| **Layout 1 (3 turbines)** | A three -turbine layout was identified in February 2017, based on an initial technical and environmental review. This was informed by wind yield, minimum separation distances between turbines and topography, and by a review of 'hard constraints' (such as existing infrastructure, residential properties, watercourses, roads, public rights of way, etc) which were buffered as appropriate. | A map illustrating the three turbine layout is shown on **Figure 2.2**. |
| **Layout 2 (2 turbines) (EIA scoping Layout)** | Increased turbine size and generating capacity led to a two-turbine layout in December 2019. It took account of initial assessment, specifically relating to landscape and visual, hydrology and ecology (incorporating buffers as set out in the technical chapters) and was designed to balance environmental constraints with optimising energy yield. | One turbine removed owing to the LVIA beneficial effects as well as limited disturbance to peatland. The remaining two turbines were moved slightly, resulting in the two-turbine design freeze shown on **Figure 2.2**. |
| **Layout 3 (2 turbines and battery storage)** | Further environmental surveys were undertaken to appropriately locate a battery storage facility within the Development Site.<br><br>Further topography review. | In March 2023 a minor change was made to the newly proposed access tracks between the turbines to further account for topography. Battery storage was also added to the Proposed Development. Its location was identified to reduce cabling |

| Design Iteration | Constraints Influencing Layout | Summary of Change |
|---|---|---|
| | | requirements and, at the same time, limit environmental impacts. The temporary construction compound was also relocated to the north of access track. Minor changes were required to the northernmost section of the exiting access track (off Afton Road) to reflect the recent realignment works completed by the landowner[4].<br>Refer to **Figure 3-1A** |

2.2.17 The design of the Proposed Development has been informed by a wide range of environmental data with constraints illustrated on **Figure 2-1.** Given the remote location of the Development Site, environmental topics that had a key role in informing the layout are described below.

2.2.18 Further details on the topic specific aspects that influenced the design are provided in technical chapters and are summarised in the Design and Access Statement that accompanies the planning application.

### Peat

2.2.19 The locations for turbines with the Development Site were located in areas of either no peat, or peat less than 0.5m deep.

### Landscape and Visual

2.2.20 The design evolution has aimed to reduce landscape, visual and cumulative effects and to respect the landscape characteristics identified in the EALWCS and the Dumfries and Galloway Wind Farm Landscape Capacity Study Supplementary Guidance ('DGWLCS').

### Historic Environment

2.2.21 During the design process, data for both designated and non-designated heritage assets was made available to the design team to allow consideration for the avoidance of direct impacts upon heritage assets and to identify areas of higher sensitivity to change to setting.

### Ecology

2.2.22 Site infrastructure has been designed as far as reasonably practicable to use the minimum land take. For instance, all access track has been designed to be linear, without loops, to avoid creating islands of habitat fragmentation.

2.2.23 The layout of the Proposed Development across the rest of the Development Site has also, wherever possible, avoided peatland habitat, and where avoidance has not been possible, has been designed to avoid habitats of highest ecological importance and highest sensitivity to effects.

[4] Realignment works shown on the aerial photography of Bing Maps.

2.2.24 The Proposed Development has been designed to minimise watercourse crossings and also has a buffer of 50m around watercourses and waterbodies (excluding watercourse crossings).

2.2.25 As far as reasonably practicable, turbines were positioned at least 50m (measured from blade-tip) from any features.

### Ornithology

2.2.26 Given the bird species present and their use of the Development Site and surrounding areas, ornithological considerations did not have a major influence on the design strategy for the Proposed Development.

### Geology, Hydrogeology and Geohydrology

2.2.27 The number of new watercourse crossings by the access track was also minimised as far as was reasonably practicable (six being required). The Proposed Development was also designed with a buffer of 50m around watercourses (excluding where crossings of these were required).

### Traffic

2.2.28 The Proposed Development has been situated close to a route which has previously been approved for transport of abnormal loads.