

3. Design Evolution and Alternatives

3.1 Introduction

- 3.1.1 The Environmental Impact Assessment (EIA) Regulations require the consideration of alternatives and an indication of the reasons for selecting the Site, except where limited by constraints of commercial confidentiality. Part 2 of Schedule 4 of the EIA Regulations notes the following requirement: *“A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects”*.
- 3.1.2 This chapter provides information on how the Proposed Development Site was identified by the Applicant as a suitable location for a wind energy generation project, as well as the design iteration process undertaken to arrive at the final Proposed Development layout and design.
- 3.1.3 The EIA process provides an opportunity to integrate technical and environmental considerations into the iterative design of a development, allowing potential environmental effects to be considered and minimised so that the environment is considered within the Proposed Development design layout from the earliest stage.
- 3.1.4 The final design of the Proposed Development represented in this EIA Report was arrived at following iterative consideration of many alternative design configurations, including location of turbines, turbine scale, layout and design of tracks and ancillary infrastructure. This chapter describes the design iteration process from which the Proposed Development design was selected.
- 3.1.5 The final design for the Proposed Development is described in full within **Chapter 2: Project Description** and is shown on **Figure 1.2**.

3.2 Key Issues and Constraints

- 3.2.1 During the initial planning stages of the Proposed Development, the Applicant undertook a feasibility study which was informed by several environmental, technical and economic factors.
- 3.2.2 Part of the site selection and design process was to identify environmental designations and potential sensitive receptors. Key environmental issues and constraints for consideration in the site selection and design process were established through a combination of desk-based research, extensive field survey and consultation (through the EIA Scoping process and additional consultation with key consultees). The key constraints and opportunities, design objectives and actions taken are described in **Section 3.3** below.
- 3.2.3 The identification of key issues and constraints during the iterative process has allowed for issues to be addressed and the careful placement of infrastructure for the Proposed Development within the Site. This allowed the Applicant and EIA team to facilitate effective mitigation, with potentially significant impacts avoided or minimised as far as reasonably practicable through the design process.

3.3 Key Opportunities

- 3.3.1 Some of the key opportunities that were taken into account during the planning stages of the Proposed Development included the following:



- The potential to offer significant community benefits (discussed in more detail in **Chapter 2: Proposed Development** and the Socio-Economic Impact Report accompanying the application for Section 36 consent);
- The potential to tie biodiversity enhancement objectives in with existing habitat management plans in the area to potentially create wildlife corridors and achieve a habitat enhancement over a wider area;
- The potential to contribute to the restoration of surfaces in the local area which has been affected by abandoned coal mines, as has been done by the Applicant at the North Kyle Energy Project near Dalmellington, East Ayrshire; and
- The potential to offer new and enhanced recreation and access opportunities to the public during the operational phase of the Proposed Development, potentially including a heritage trail.

3.4 Consideration of Alternatives

3.4.1 In relation to the Proposed Development, the primary alternatives considered included:

- “Do nothing”;
- Alternative sites;
- Alternative designs;
- Alternative turbine parameters;
- Alternative track construction material sources;
- Alternative access routes; and
- Potential biodiversity enhancement options.

Do Nothing Scenario

3.4.2 In the absence of the Proposed Development, it is anticipated that the current land uses within the Site would continue, with any potential future land use changes being determined by the landowners. Whilst this would mean no anticipated adverse environmental impacts arising due to the construction and operation of the Proposed Development, the do-nothing scenario would also mean that:

- The proposed community benefits to be derived from the operation of the proposed wind farm would not be realised;
- There would be no contribution to national net-zero targets; and
- There would be a loss of the expected beneficial impacts of the Proposed Development, including recreation and access benefits and biodiversity enhancement.

3.4.3 In addition, the potential for the Proposed Development to contribute to the overall objectives of the Applicant and landowners to restore the landscape that has been damaged and left derelict as a result of abandoned mines and related infrastructure, would be lost.



Alternative Sites

- 3.4.4 The neighbouring land to the north, the former Powharnal mining area, was initially considered but was discarded as a potentially viable wind farm site due to being located within the Muirkirk and North Lowther Uplands Special Protection Area (SPA).
- 3.4.5 The Applicant's focus in East Ayrshire is to develop on former mining sites that require further restoration. The former Dalfad Coal Mine provided such an opportunity and is not located within an area with any heritage or ecological designation.

Alternative Designs

- 3.4.6 The Proposed Development has been revised iteratively in response to various factors, including:
- Environmental constraints information derived from desktop studies followed by Site investigations;
 - Pre-application consultation responses received from consultees;
 - Feedback gathered during the pre-application public consultation events; and
 - Technical design constraints associated with the proposed infrastructure to be utilised.
- 3.4.7 **Figure 3.1** presents the layout at key stages of the design process. These key-stage layouts are discussed in more detail in **Section 3.6**.

Alternative Turbine Parameters

- 3.4.8 During the design process, several potential choices of available turbines were considered, including 200 m to tip, 180 m to tip and 149.9 m to tip. The tallest turbines would have the highest energy generating capacity at approximately 6 MW per turbine. However, for some of the turbines, two different heights of shorter turbine alternatives were considered which, although they would have lower generating capacities (around 4.5 MW), would reduce potential landscape and visual impacts, residential amenity impacts and improve the visual coherence of the Proposed Development as a whole from key viewpoints.

Alternative Track Construction Material Sources

- 3.4.9 Three main options were considered for sourcing track construction materials, namely:
- Using onsite borrow pits, assuming suitable material is present and accessible within the Site in sufficient quantities; or
 - Importing construction material to the Site; or
 - A combination of the above.
- 3.4.10 The use of recycled stone from the former mining operations was carefully considered in the design process but was rejected due the poor quality of the bulk of such materials. This was based on the detailed analysis and testing of the use of such stone by the Applicant on another nearby, similar site: North Kyle Wind Farm.
- 3.4.11 Whilst the preference from a practical perspective would have been to source suitable material from onsite borrow pits where possible, the conditions of the Site



are such that it is unlikely that sufficient stone, if any, could be won from potential borrow pits within the Site.

- 3.4.12 It is, therefore, anticipated that suitable aggregate will be imported to the Site, likely from local quarries.

Alternative Access Routes

- 3.4.13 The proposed entrance to the Site from the A70 has been designated as the main entrance to the Site from the outset. However, an alternative access was considered during the design process which would enable non-AIL (abnormal indivisible load) construction traffic to access the Site from the south. The potential southern access route would have followed the old mine-works conveyor route northwards from the A76, through the Glen Water Wind Farm, and would have crossed the Glenmuir Water at the old conveyor route crossing, before leading up into the Site in a north-westerly direction and joining up with the internal wind farm track network near the former Duncanziemere Coal Mine open void and High Glenmuir. The southern access was included in the Initial, Scoping and Design Chill Layouts (see **Figure 3.1**). However, after consideration of several factors, including the relative complexity of how the access track would cross the Glenmuir Water and the level of detailed baseline information that would be required to cross the watercourse, the southern access track was considered unfeasible at this stage. It was removed from the Final Layout and is not assessed within this EIAR.

Potential Biodiversity Enhancement Options

- 3.4.14 Various biodiversity enhancement options are under consideration and are discussed in the Outline Biodiversity Enhancement Management Plan (OBEMP) (**Technical Appendix 6.6**). It is the intention for the options to align with several objectives, including:
- Compliance with relevant legislation and guidance;
 - Current and potential habitat conditions on the Site;
 - Landowner requirements and preferences (where possible); and
 - Potential to create links with habitat enhancement areas with other biodiversity restoration and enhancement initiatives in the local area.
- 3.4.15 The overall objective of the OBEMP will be to deliver clear biodiversity enhancements.

3.5 Design Evolution of the Proposed Development

Design Process

- 3.5.1 The design of the Proposed Development was iterative and guided by the EIA process. Baseline information gathered from desktop studies and field surveys was continuously incorporated into the design at various stages. This approach facilitated key decisions that resulted in the primary mitigation of as many potential environmental impacts of the Proposed Development as possible.

Design Principles

- 3.5.2 The overarching principles guiding the design of the Proposed Development aimed to maximise renewable energy generation while:



- Minimising the land disturbance needed for constructing the wind farm infrastructure as much as possible;
- Reducing potential impacts on sensitive receptors wherever possible;
- Minimising the number of watercourse crossings;
- Applying the waste management hierarchy, such as reusing materials on site rather than removing and disposing of them in landfill; and
- Identifying potential opportunities for environmental enhancement, access improvement and community benefits.

Design Objectives

- 3.5.3 The final Proposed Development layout has been informed by a robust design iteration process, considering potential environmental, landscape and visual impacts and their effects, physical constraints, safe and efficient operation of the development, and health and safety considerations. The information used to inform the design iteration process included baseline data (desk studies and field surveys), review of preliminary visualisations, ongoing impact assessments and consultation feedback.
- 3.5.4 The Proposed Development layout is considered to represent the most appropriate design, considering acceptable limits for potential environmental impacts and physical constraints, while maximising the renewable energy generating capability of the Site and maintaining financial viability of the Proposed Development.
- 3.5.5 Key design considerations and drivers for change throughout the process are summarised in **Table 3-1**, below. The iterative design process was environmentally led and was primarily influenced by:
- Residential amenity of residential properties in relatively close proximity to the Site;
 - Presence of peat deeper than 0.5 m in parts of the Site;
 - Hydrology, e.g. proximity to watercourses;
 - Ecology, e.g. consideration of valuable habitats and protected species;
 - Ornithology, e.g. potential for adverse impacts to breeding and wintering birds;
 - Implications of existing telecommunications and utilities infrastructure; and
 - Potential impacts to aviation including operational procedures at Glasgow Prestwick airport.
- 3.5.6 Other major considerations driving the design and layout of the Proposed Development included sustainability principles such as:
- Reusing existing infrastructure wherever possible;
 - Minimising infrastructure footprint and potential impacts on sensitive environmental receptors; and
 - Identifying potential opportunities to enhance biodiversity as well as public access and recreation.
- 3.5.7 The overall design objectives were to maximise the renewable energy yield whilst minimising potential adverse impacts on the receiving environment, whilst also identifying opportunities to enhance the natural environment and benefit the local communities.



Table 3-1: Key Environmental Design Objectives

Aspect	Sensitive Receptors	Constraints / Considerations	Design Objective	Actions / Decisions Taken
Ecology and Ornithology	Important Ecological Features (IEF) e.g. sensitive habitats, protected species, etc.	Appropriate avoidance buffers were implemented for various IEFs.	To avoid sensitive habitats and protected species wherever possible and to minimise the potential to impact IEFs through design.	- Turbines and ancillary infrastructure were sited outside of sensitive habitats wherever possible. Where this was not possible, the footprint of the infrastructure within these habitat areas was minimised. - Potential of the infrastructure to impact on protected species was avoided wherever possible. - Potential options for biodiversity enhancement and mitigation were considered throughout all stages of the design process.
Peat	Peat	Peat depths	To avoid peat deeper than 0.5 m wherever possible.	Phase 1 and Phase 2 peat probing informed the design.
Hydrology	Watercourses and water bodies	Locations of watercourses and water bodies	To minimise potential impacts on sensitive receptors.	- A 50 m avoidance buffer was applied to all watercourses and water bodies (except where existing infrastructure was already located within the 50m avoidance buffer, e.g. the existing mining tracks travelling closer than 50 m to a watercourse). - A 250 m avoidance buffer was applied to all private water supply (PWS). Furthermore, an assessment of PWS source catchments was undertaken within the applicable study area and infrastructure was sited outwith these areas.



Aspect	Sensitive Receptors	Constraints / Considerations	Design Objective	Actions / Decisions Taken
				The number of new required watercourse crossings was minimised.
Residential Amenity	Residential properties within 2 km of the Site	Likely visual effects, noise effects, potential to affect private water supplies.	To take account of potential visual amenity effects of turbines on the nearest residential properties.	- Wireline visualisations and street views from the nearest properties were checked at key stages in the design iteration process to obtain an initial understanding of potential residential visual amenity effects. - Several turbines (TBC01 and TBC02 shown on the Initial Layout on Figure 1 in Appendix A) were deleted from the Initial Layout due to proximity to residential developments. - The initial layout included 17 turbines, of which all would be 200m to tip. However, through the iterative design process, the heights of Turbines T01, T03, T06, T13 and T14 have been reduced to 149.9 m to reduce potential visual impacts and residential amenity impacts on sensitive receptors within the study area.
			To take account of likely effects of noise on the nearest residential properties	Initial noise modelling was used to inform the Scoping Layout (see Figure 3.4 in Appendix A). Cognisance was also taken of the potential for cumulative impacts on sensitive receptors, even during the early stages of the design.



Aspect	Sensitive Receptors	Constraints / Considerations	Design Objective	Actions / Decisions Taken
				The decision was made to remove High Glenmuir from residential use, should the Proposed Development gain consent.
			To avoid the potential to affect PWS within the study area.	Locations of PWS were established through desk study, field surveys and consultation of residents within the PWS study area. Turbines and tracks were sited outside of catchments feeding PWS supplies wherever possible.
Cultural Heritage	Heritage assets and settings	Heritage assets within the Site were avoided through implementation of appropriate avoidance buffers. Cognisance was taken of the potential for turbines to potentially impact on the setting of Scheduled Monuments outwith the study area.	To avoid direct impacts on known heritage assets within the Site. Where applicable, to avoid potential significant impacts on the settings of important heritage assets outwith the Site that may be affected by the Proposed Development.	- Owing to the nature of the heritage assets within the Site, the link between the heritage asset and the mining history of the Site, the lack of physical remains onsite, cultural heritage assets did not pose a significant constraint to the design. - Offsite cultural heritage assets and the potential for turbines to impact on settings were taken into consideration throughout the design evolution. Views from Kyle Castle were also checked during design workshops.
Public Access & Recreation	Recreational users and local communities	Making the area more accessible to local communities and recreational visitors.	Providing access road, walking and cycling access to the Site for recreational use during the operational phase. To improve restoration of land that was left derelict or in suboptimal condition by past mining activities.	- No specific action taken as the objectives of the Proposed Development design relating to other environmental aspects will simultaneously address this objective. - The Applicant has engaged with the developer of the nearby Glen Water Wind Farm (which was in planning at



Aspect	Sensitive Receptors	Constraints / Considerations	Design Objective	Actions / Decisions Taken
			Identifying potential opportunities to enhance recreational appeal and encourage visitors to the Site. Ensuring the health and safety of all visitors to the Site.	the time of writing) in an effort to coordinate and link up recreational routes between the two developments. The intentions of the Applicant in this regard, and the potential community and recreational access benefits were presented at the public consultation events that were held in 2026 (see Section 4 for more detail).
Telecommunications	Fixed Links, telecommunications infrastructure, wireless communications networks.	Avoiding direct impacts on fixed links passing through the Site	To avoid impacts on existing telecommunications infrastructure and fixed link paths through appropriate siting of turbines and ancillary infrastructure. To maintain operator-required stand-off distances from identified telecommunications links.	- A 100 m avoidance buffer was established around the path of the fixed link. - This was treated as a hard constraint throughout the design evolution of the Proposed Development.
Utilities	Electricity lines, underground electricity cables, pipelines, water infrastructure	Presence of existing utility infrastructure within and surrounding the Site. Requirement to maintain appropriate distances and avoid potential conflicts between proposed infrastructure and utility assets.	To avoid utility infrastructure wherever possible throughout design process. To maintain appropriate buffers from overhead electrical infrastructure and known utility assets.	- An appropriate avoidance buffer of topple distance +10% was applied to all overhead lines that exist within the Site. - Wherever possible, turbines were sited further than 3 x rotor diameter away from overhead lines.

Other key design objectives that shaped the Proposed Development included the technical and economic considerations that are summarised in **Table 3-2**, below.



Table 3-2: Key Technical and Economic Design Objectives

Aspect	Design Objective	Actions Taken
Wind Resource	To maximise energy yield of each turbine.	- Turbines were initially sited to maximise yield on the Site and spaced appropriately to maximise use of wind resource. The turbines require minimum separation distances, referred to as separation ellipses. - The wind resource of the Site was analysed and used to inform the suitability and wind resource optimisation of each turbine. Whilst this was a major consideration, key environmental constraints (such as peat depth and hydrology avoidance buffers) took precedence over wind resource maximisation.
Engineering	To ensure the design: - Is 'buildable'. - Meets turbine manufacturer and Distribution Network Operator (DNO) specifications. - Minimises the need for engineering works, such as 'cut and fill'. - Took environmental constraints and wind resource requirements into account.	- Tracks were aligned to follow existing tracks and contour lines wherever possible. - Turbine manufacturer requirements for ancillary infrastructure such as tracks, abnormal indivisible load (AIL) turning heads, turbine hardstands, crane hardstands, substation and fire safety etc. were taken into account. - Construction compounds, laydown areas, and other infrastructure, such as a battery energy storage system (BESS) facility and substation were included in the design. - Each relocation of turbines, tracks and other infrastructure was checked for compliance with engineering requirements, standards and specifications to ensure the final design will be buildable. - Considered potential alternative locations or orientation of infrastructure to minimise impacts on environmental sensitive receptors.
Generating Capacity	To design a wind farm with a generating capacity of at least 80 MW to meet grid connection requirements.	Planned for 14 turbines taking environmental and technical constraints into account, delivering 65-70 MW, which when combined with the proposed BESS would likely make optimal use of the available 80 MW grid connection on the Site.
Stability of Electrical Supply	To provide infrastructure to facilitate a stable supply of electricity to the grid to assist in meeting peak demands.	Included a BESS in the design to provide stability of supply to the grid should the need arise and minimise any curtailment.
Economic Viability	To take account of environmental and engineering constraints whilst remaining financially viable.	- The continued financial feasibility was checked regularly using applicable software during the iterative design process to ensure that the Proposed Development remained financially viable. - The BESS was added to the initial design as an option to help improve projected future returns.



Aspect	Design Objective	Actions Taken
Health and Safety	To take account of recorded mine entries and other mining related infrastructure and implement an appropriate avoidance buffer.	A coal mining risk assessment (CRMA) was undertaken prior to Scoping. The CMRA revealed that while there are mine entries recorded on the Site, which were all mined through by opencast mining. The opencast mining areas have been backfilled and it is not anticipated that the former mine entries will pose a health and safety risk. The turbines that are located on backfilled opencast areas have been sited on shallow backfill material (no deeper than 15 m).
	To minimise the impacts of a potential catastrophic event e.g. toppling of a turbine.	Wherever possible, ancillary infrastructure was sited further than topple distance (tip height plus 10%) away from the turbine locations. All turbines have been sited further than topple distance from residential dwellings.
	To comply with CDM Regulations.	Compliance of the design was checked at key stages against the Construction (Design and Management) (CDM) Regulations 2015 by an appropriately qualified and competent civil engineer.
Substation Location	To site the proposed substation in an appropriate location to avoid undergrounding of a grid connection or weaving of an overhead line through the wind farm, while identifying a potential point of connection.	Substation and BESS were located to the south of the turbine array to enable easier connection between the Dalfad substation and the likely grid connection point (the consented Glenmuckloch Substation, approximately 8km to the southeast of the Site).



3.6 Design Iterations

- 3.6.1 The layout of the Proposed Development has been an iterative process that started in August 2025, each time taking into consideration information gathered through Site assessments and / or comments from consultees, as well as the professional judgement of technical specialists.
- 3.6.2 Since the submission of the EIA Scoping Report in January 2026 and the receipt of the EIA Scoping Opinion in March 2026 and Addendum in April 2026, the Applicant has undertaken regular design iterations to maximise the capacity of the Proposed Development and beneficial environmental impacts whilst minimising the potential adverse environmental impacts.

Initial Layout (August 2025)

- 3.6.3 The Initial Layout is shown in **Figure 3.1**. The initial layout of the Proposed Development was developed taking available information into account, including the following:
- Technical requirements, such as separation ellipses and wind resource information;
 - Landowner requirements;
 - Ecological designations, including Sites of Special Scientific Interest (SSSI), Special Conservation Areas (SAC), Special Protection Areas (SPA) and Ancient Woodland, etc.;
 - Phase 1 peat probing depths and interpolation;
 - CMRA results;
 - Topographical data; and
 - Watercourses mapped on 1:50,000 OS mapping.
- 3.6.4 Owing to some early survey work, engagement with key consultees and from experience gained and data generated during the development of the North Kyle Wind Farm (located near Dalmellington, East Ayrshire) it was possible to develop an initial layout that not only took the technical requirements of the turbines into account, but also some initially identified environmental constraints. The main objectives of the design at this early stage were to:
- Avoid areas of peat, wherever possible;
 - Avoid locating turbines near watercourses;
 - Establish an oversail buffer along the redline boundary, equal to at least the anticipated blade length;
 - Take cognisance of the separation ellipses of the turbines; and
 - Avoid areas of deep opencast backfill and any other areas of mining high risk areas.
- 3.6.5 This Initial Layout consisted of 17 turbines, all 200 m to tip, within a Site area of 553.44 ha. Preliminary access tracks had been identified based principally on topographical data, but also taking available environmental constraints information into account.



Scoping Layout (January 2026)

- 3.6.6 A pre-scoping design workshop was held with environmental specialists in attendance. The purpose of the workshop was to use available information to refine the initial design to take account of environmental constraints and technical requirements.
- 3.6.7 At this stage, environmental information was limited to desktop studies and to the surveys that had been done prior to scoping, which included phase 1 peat probing and ornithology surveys. Various constraints, including watercourse buffers, gradient limitations, and abnormal load access requirements influenced turbine placement.
- 3.6.8 Some initial design advice was provided by the environmental specialists and included the following (in addition to the environmental constraints that had previously been applied in the Initial Layout):
- Avoidance of peat deeper than 0.5 m where possible;
 - Avoidance of natural woodland and higher value habitats;
 - Minimising the number of watercourse crossings;
 - Angle of slope, avoiding areas too steep to develop;
 - Reduced tip height of T14 to minimise potential visual impacts;
 - Site boundary revised to remove overlap with adjacent SPA and to include additional area to south-west to enable restoration and habitat enhancement opportunities;
 - Two turbines (TBC01 and TBC02) removed due to potential risk of residential visual amenity impacts and topple distance to infrastructure such as buildings and overhead line, as well as other environmental constraints;
 - T1 of Initial Layout removed to accommodate ornithology constraints;
 - Avoidance of mining risk areas;
 - Avoidance of ecological and ornithological buffers; and
 - Reusing existing tracks and watercourse crossings wherever possible.
- 3.6.9 Once the design had been revised following the workshop, the design was further optimised for energy yield and rechecked against the environmental constraints before being finalised. This process resulted in the production of the Scoping Layout, presented in **Figure 3.1**. The Scoping layout consisted of 14 turbines, of which 13 at 200 m tip height and one at 149.9 m tip height (T14). The revised Site area was expanded to 659.17 ha to include additional land at the former Duncanziemere Coal Mine, which has been earmarked for potential restoration as part of the Proposed Development. At this stage, the design included turbines and access tracks, including the potential southern access via the former coal conveyor route (as described in **Section 3.4**).

Design Chill Layout (April 2026)

- 3.6.10 Following receipt of the Scoping Opinion, completion of Site walkovers, technical Site surveys and a residential visual amenity Site visit, and the first public exhibition (which was held on the 4th of March 2026), a design workshop was held to refine the proposed layout. The following changes were made to the design of the Proposed Development during the workshop:



- The Site boundary was amended (Site area reduced) to take account of new landowner requirements;
- Potential residential amenity (visual) effects – the height of T6 was reduced from 200 m to 149.9 m;
- Micrositing of turbines and other infrastructure in light of:
 - Additional peat depth information that was obtained during Site surveys as well as Phase 1 peat data interpolation;
 - Mine entries and risk data;
 - Ecological constraints; and
 - Hydrological constraints.
- Ancillary infrastructure optioneering during the workshop identified several areas that could support construction compounds, a substation and BESS, but these would be subject to:
 - Further engineering investigation, confirmation of the presence/absence of mine entries within what is now backfilled opencast, and
 - Landowner appetite for accommodation of the ancillary infrastructure on their land.

3.6.11 The design chill layout consisted of 14 turbines, 12 of which would be 200 m to tip and two would be 149.9 m to tip (T6 and T14). The southern access was still included in the design at this stage. The substation and BESS were earmarked to be located within the Duncanziemere former opencast mine. The locations for three small construction compound areas were identified. The area within the Site boundary was reduced by approximately 4 ha to 655.28 ha to accommodate a new landowner request. The design chill layout is included in **Figure 3.1**.

Pre-Freeze Layout (May 2026)

3.6.12 Following further engineering optioneering and input from the environmental technical specialists who provided advice during the iterative design process, as well as further information obtained from:

- Phase 2 peat probing;
- Hydrology and geohydrology reconnaissance survey;
- Private Water Supply survey; and
- Borrow pit search,

further minor changes were made to microsite some of the infrastructure off deeper areas of peat.

3.6.13 Alternative locations were identified for the substation, BESS and construction compounds in response to landowner requirements and technical specifications as well as clarification that the mine entries that were identified in available baseline data were no longer there, as they had been removed during opencast mining. The feasibility of hosting temporary construction compounds on this section of the backfilled opencast was investigated from an engineering perspective and confirmed to be possible. The revised design, therefore, included a larger construction compound to the west of T13.

3.6.14 At this stage, the layout still consisted of 14 turbines, 12 of which would be 200m to tip and two would be 149.9 m to tip (T6 and T14). The southern access was removed



from the layout, primarily due to insufficient detailed information that would be required by the relevant consultees to construct a bridge over the Glenmuir Water at the time of design finalisation.

Design Freeze (June 2026)

- 3.6.15 All four of the previous iterations were displayed at the second public exhibition that was held on the 4th of June 2026. Following the feedback received during the second public exhibition and follow up consultation of the neighbouring landowners and nearby business owners, the decision was taken by the Applicant to reduce the tip heights of T1, T3 and T13 to 149.9 m.
- 3.6.16 Further minor changes were made to accommodate construction considerations, including ensuring that AIL delivery vehicles could enter a turbine construction area forwards rather than having to reverse in.
- 3.6.17 Since the layout of the turbines was unchanged from the Pre-Design Freeze layout to the Design Freeze layout, there is no need to include a specific layout image in **Figure 3.1**.

Proposed Development (July 2026)

- 3.6.18 The arrangement of the substation, BESS and construction compound 3 was revised in such a way as to minimise potential visual impacts on sensitive receptors which would likely have visibility of these buildings.
- 3.6.19 The final design consists of 14 turbines, of which nine will be 200 m tip height and five will be 149.9 m tip height. There will be three temporary construction compounds, a substation and a BESS. The final layout can be seen on **Figure 3.1** and **Figure 1.2**.

Table 3-3: Summary of Design Iterations

Design Iteration	Date	Key Parameters	Main Drivers for Change
Initial Layout	August 2025	17 turbines - All turbines 200 m - Initial Site area – 553.44 ha.	N/A – Initial Layout
Scoping Layout	January 2026	14 turbines (3 turbines removed) 13 at 200 m, 1 at 149.9 m - Extended Site area – 659.17 ha.	Phase 1 peat probing, ornithology, ecology, mining risk areas, engineering, residential visual amenity.
Design Chill	April 2026	14 turbines 12 at 200 m, 2 at 149.9 m - Reduced Site area – 655.28 ha.	Phase 1 peat probing, landowner requests, ecology, hydrology, residential visual amenity, mining risk areas.
Pre-Freeze Layout	May 2026	14 turbines 12 at 200 m, 2 at 149.9 m - Removal of southern access.	Phase 2 peat probing, reconnaissance walkovers for hydrology, hydrogeology, private water supply (PWS) and borrow pit search areas.



Design Iteration	Date	Key Parameters	Main Drivers for Change
Design Freeze	June 2026	14 turbines 9 at 200 m, 5 at 149.9 m - BESS - Substation	Feedback from second round of public consultation, access requirements.
Final Layout	July 2026	Same as Design Freeze but with substation, BESS and construction compound 3 rearranged within the original substation, BESS & construction compound footprint area.	Further reduction of visibility of substation and BESS infrastructure from sensitive receptors.

3.7 Grid Connection Corridor

3.7.1 To address East Ayrshire Council and the ECU's requirement (as set out in the Scoping Opinion, dated 30th March 2026) to consider the likely significant effects of the connection of the Proposed Development to the grid, an indicative grid connection corridor has been identified. In respect of this, it has been assumed that the Dalfad Wind Farm will be connected to the consented Glenmuckloch Substation, which will be located approximately 8 km to the southeast of the Site, and it has been assumed that the grid connection will be via a 132 kV overhead line.

3.7.2 The grid connection does not form part of the Section 36 consent being sought for the Proposed Development. It will be subject to a separate consenting process (assumed to be under Section 37 of the Electricity Act 1989), led by the Transmission Operator. The grid connection route, land assembly, specification, construction methodology, mitigation measures and other details are not confirmed at this stage and are not in the control of the Applicant. However, this EIAR includes a proportionate assessment of likely significant effects of the grid connection, including in-combination effects with the Proposed Development, based on reasonable assumptions that can be made at this time (see discussion below as well as **Section 2.3 of Chapter 2: Project Description**).

Assumed Overhead Line Routeing Corridor and Rationale

3.7.3 A potential overhead line routeing corridor was identified (refer to **Figure 2.13**) with reference to Holford Rules 1 and 2 (listed, below) and by using relevant guidance and professional judgement relating to designations and their sensitivities.

- Holford Rule 1: Avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the line in the first place, even if the total mileage is somewhat increased in consequence.
- Holford Rule 2: Avoid smaller areas of high amenity value, or scientific interests by deviation; provided that this can be done without using too many angle towers, i.e. the more massive structures which are used when lines change direction.



Table 3-4: Constraints Used to Inform an Assumed Overhead Line Routeing Corridor

Sensitivity	Justification	Examples	Routeing Corridor Identification Response
High	Holford Rule 1 features (international and national designations) or environmental features considered particularly sensitive to transmission infrastructure.	European designated sites (e.g. SPA)	Avoid where possible and prioritise for mitigation.
		National Parks	
		National Scenic Areas	
		Category A Listed Buildings	
		Slopes greater than 22°	
		Turbine tip height + 10%	
	Technical constraints of key significance.	Wind Farm Infrastructure (e.g. turbines, met masts, substations)	
Moderate	Holford Rule 1 features considered less sensitive to transmission infrastructure.	Geological SSSIs	Proceed with caution, taking potential mitigation measures into account during design and planning.
		Category B and C Listed Buildings	
		Local Nature Reserves	
		50m buffer areas around water bodies	
		Ancient woodland areas or semi-natural origin	
		Turbine micrositing buffer (specific to each wind development)	
		Turbine 3x rotor diameter and micrositing buffer area	
	Holford Rule 2 features (regional and local designations).	Areas of potential Groundwater Dependent Terrestrial Ecosystem (GWDTE) / or sensitive habitat areas (where this information is publicly available)	
		Peat 1-2m depth (where this information is available), areas of peat as identified in the Carbon & Peatland Map 2016	
		Archaeological features	



Sensitivity	Justification	Examples	Routeing Corridor Identification Response
Low	Holford Rule 2 features considered not to be sensitive to transmission infrastructure.	Geological Conservation Review Sites	Some constraints of lesser sensitivity – not expected to be an issue for route identification.

3.7.4 Holford Rules 1 and 2 were applied to these site-specific strategic constraints using the following hierarchy to identify the assumed overhead line routeing corridor (refer to **Figure 3.2**):

- Avoid SACs, Class 1 peat areas, residences, scheduled monuments, listed buildings and non-designated heritage assets of potentially national significance;
- Preferably avoid or limit the distance travelled within SSSIs, RSPB Bird Sensitive Areas, native / nearly-native woodland and 150m buffer to existing and committed residential properties;
- Cultural heritage assets should be considered from a setting perspective where they are of national importance or where the setting is pertinent to its citation. When assessing the impact on setting, a buffer of 2 km from the cultural heritage asset should be used;
- Where it is possible to do so, avoid or limit the distance travelled within sensitive habitats (e.g. GWDTE), natural or semi-natural forested areas and peat; and
- Apply an avoidance buffer of 150m to settlements and residential properties.

3.7.5 In general, an 800m-wide corridor route has been assumed, but the corridor widens in areas where it might be difficult to get an overhead line across a piece of land (e.g. former opencast areas) and has been narrowed where there are high sensitivity constraints on either side of the corridor (e.g. between the Corsencon Hill Local Nature Conservation Sites (LNCS) and the Merkland Woods LNCS). Although these narrower areas may appear to be ‘pinch points’, they are wider than the 60 m that the Transmission Operator generally requires to construct an overhead line. There are two small sections of the corridor that have been excluded to avoid residential properties (150 m avoidance buffer applied) – as shown in **Image 3-1**, below.





Image 3-1: Example of exclusion within grid connection corridor to avoid residential properties

- 3.7.6 The assumed corridor also avoids areas where there are many watercourse crossings in close proximity, but there is one section near the Corsencon Hill LNCS where it is not possible to avoid these at all without going southwards into the River Nith flood plain or northwards into the LNCS. However, there appears to be sufficient area between the 50 m watercourse avoidance buffers within which an overhead line timber pole could be sited.



3.8 References

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