Foel Fach Wind Farm Limited.

Foel Fach Wind Farm

Design and Access Statement

Project Reference: 664094

DECEMBER 2025

Energy for generations

Coriolis Energy

CONTENTS

1 INTRODUCTION

1.1.1 This DAS has been prepared to accompany a full planning application for the proposed Foel Fach Wind Farm (hereafter referred to as the 'Proposed Development') submitted by Foel Fach Wind Farm Limited (hereafter referred to as 'the Applicant').

1.1.2 The Proposed Development Site covers approximately 650 hectares (ha), located 3.1 km north-east of Bala, Gwynedd. The Proposed Development comprises the construction, operation and decommissioning of ten wind turbines with a maximum blade tip height of up to 220 m and 200 m, and associated infrastructure including wind turbine foundations, hardstanding areas, an onsite substation, and a battery energy storage system (BESS).

1.1.3 The aim of the Design and Access Statement (DAS) is to explain and justify the design principles and concepts behind a proposed development, showing how design quality and inclusive access have been considered from the outset. This statement demonstrates how the design of the Proposed Development responds to the Site, its context, and relevant planning policies, while meeting the objectives of good design set out in Planning Policy Wales and Technical Advice Note (TAN) 12.

1.1.4 The DAS provides a clear narrative of the design process, explaining key decisions and how the scheme achieves sustainable, inclusive, and safe outcomes. It is also a communication tool to support consultation, design review, and decision-making, ensuring transparency and clarity in how the proposal contributes to placemaking and the five objectives of good design: character, access, movement, environmental sustainability, and community safety. This statement has been prepared in accordance with the guidance set out in Welsh Government and Design Commission for Wales, Design and Access Statements in Wales: Why, What and How (Welsh Government, 2017).

2 APPROACH TO DESIGN

2.1.1 The nature of the Proposed Development relates to the generation of electricity from renewable energy sources and is a response to the national energy policy and planning objectives.

2.1.2 The Environment (Wales) Act 2016 (UK Government, 2016) sets a target to reduce greenhouse gas emissions in Wales by 100% by 2050. Furthermore, the Welsh Government has declared a climate emergency and in March 2021 the Senedd Cymru approved a net zero target for 2050. Renewable energy is a key component to achieving greenhouse gas emission reduction.

2.1.3 In 2017, the Welsh Government announced a target of meeting 70% of electricity consumption in Wales from renewable electricity sources by 2030. This figure was updated (July 2023) and the Welsh Government has committed to the target of Wales ensuring that 100% of its annual electricity consumption will come from renewable sources by 2035, and to continue to keep pace with consumption thereafter.

2.1.4 Future Wales: The National Plan 2040 (Welsh Government, 2021) provides a framework for planning change and development and has development plan status. Policy 17 on renewable and low carbon energy and associated infrastructure and Policy 18 on renewable and low carbon energy developments of national significance, provide the strategic spatial and detailed criteria-based policies for renewable and low carbon energy developments and these are the main policies against which the proposed development will be considered. Policy 17 provides that the Welsh Government strongly supports the principle of developing renewable and low carbon energy from all technologies and at all scales to meet future energy needs in Wales.

2.2 Design Objectives

2.2.1 The design strategy outlines the approach to developing a wind farm that integrates with the surrounding landscape while addressing other environmental and technical considerations. The design has evolved to consider factors such as visual impact, heritage, ecology, noise, hydrology, geology, buildability and wind yield identified during the iterative design process. The aim is to balance maximising renewable energy output while minimising environmental and technical impacts.

2.2.2 The overarching objectives of the design strategy were as follows:

- To maximise the potential energy yield throughout the Site through the employment of wind technology in optimal locations.
- To use the latest wind turbine technology, consisting of more efficient and larger turbines where these can be reasonably accommodated within the landscape, as supported by Policy 17 of Future Wales: The National Plan 2040 (Welsh Government, 2021).
- To ensure that turbines respond to the scale of the underlying landscape and operational, consented and proposed turbines in the surrounding context.
- To develop a turbine layout which minimises adverse effects upon cultural heritage assets and their settings, including listed buildings and non-designated but locally important heritage assets.

- To make use of natural and topographical screening of turbines and other infrastructure in key views where possible.
- To ensure that no turbine is overbearing in views from any individual residential property.
- To explore opportunities within the Site to restore and enhance biodiversity and provide greater access and recreational opportunities.
- To develop a layout that fulfils the above objectives whilst minimising or avoiding other environmental and technical constraints as far as possible, including noise, hydrology (watercourses), priority habitats, steep slopes, telecommunications links, and other technical constraints identified during the EIA process.

2.3 Iterative Design

2.3.1 From the outset of the project, an iterative design process was followed, allowing the layout to be reviewed and refined in response to environmental survey results and the advice of technical specialists. This approach meant that input from disciplines such as landscape, ecology, and heritage could be incorporated as the design developed, helping to balance technical efficiency with environmental sensitivity.

2.3.2 The design has been refined through engagement with key consultees as part of the EIA, including discussions with Gwynedd Council, Natural Resources Wales, and other statutory and non-statutory bodies. Their feedback helped shape the scheme design and its mitigation measures.

2.3.3 Community engagement has also been important to the design process. An initial public exhibition was held from 16 September to 14 October 2024 at Neuadd Mynach, Cwmtirmynach, and Canolfan Bro Tegid, Bala, to introduce the project, outline early proposals, and gather feedback. Additional statutory consultation, including two further public exhibitions, form part of the Pre-Application Consultation process.

3 THE SITE IN ITS CONTEXT

3.1.1 The characteristics of the Site and its surrounding environmental context have played a central role in shaping the overarching design objectives outlined in **Section 2** of this report. These principles have been essential to the design development process, ensuring that environmental sensitivities were correctly interpreted and addressed from the outset of the design.

3.2 Site Characteristics

3.2.1 The Site covers approximately 650 hectares (ha), located 3.1 km north-east of Bala, Gwynedd, mostly open moorland used for cattle and sheep grazing.

3.2.2 The Site is located in an upland area, with elevations ranging from 250 m to 569 m AOD; the highest point onsite being Garnedd Fawr at 569 m AOD. The topography of the Site generally slopes to the south-east from a prominent ridge of high points including Cerrig Y Gordref (497 m AOD) to the north, Foel Goch (611 m AOD) to the north-east, Moel Darren (509 m AOD) to the east, Garw Fynydd (490 m AOD) to the south and Craig Y Garn (461 m AOD) to the west.

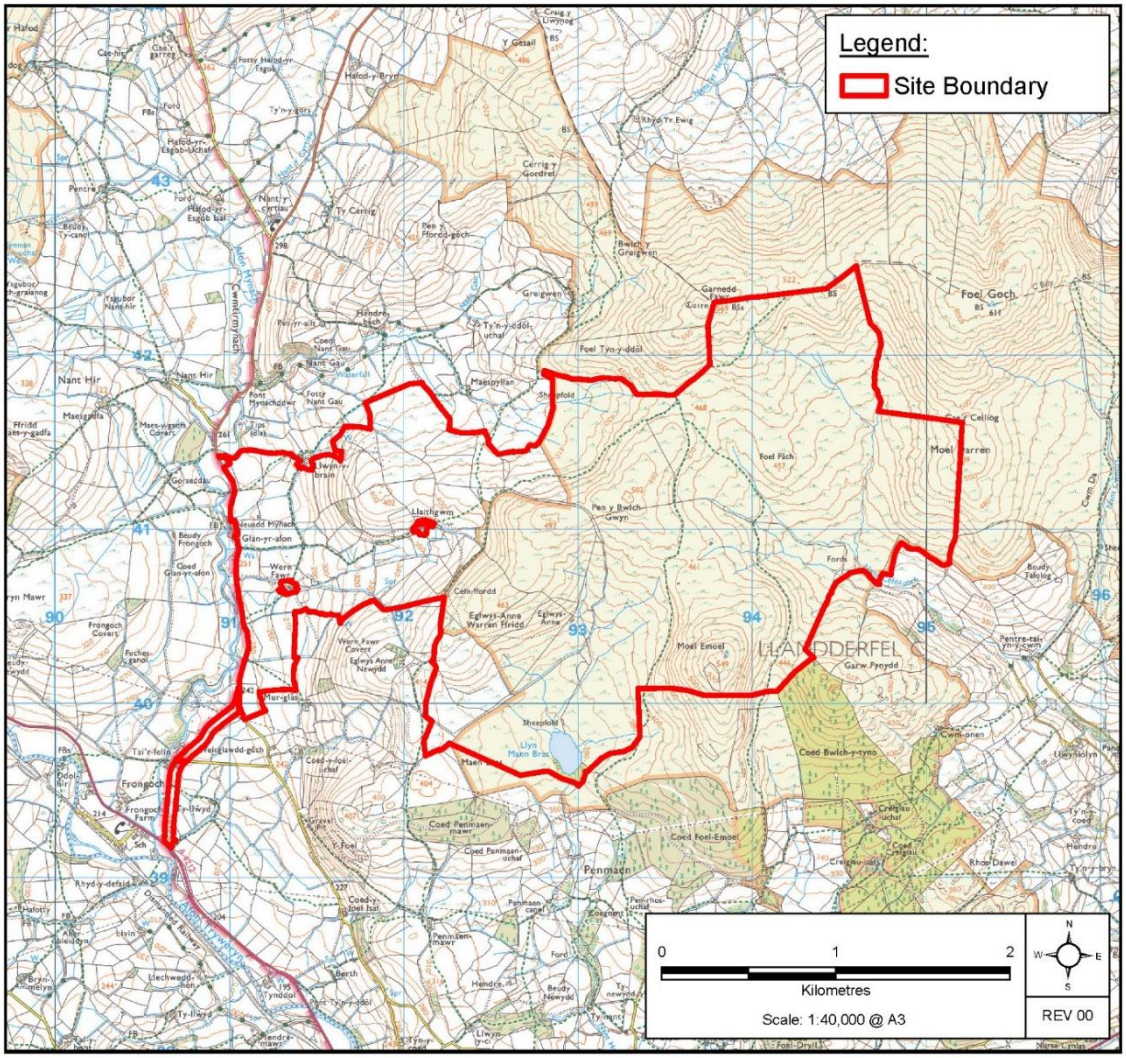
3.2.3 The Site extent is shown in **Figure 3.1** below.

3.3 Site Access

3.3.1 The Proposed Development will be accessed directly from the B4501. The access junction will provide the sole access for construction materials and ongoing operational traffic.

3.3.2 The construction of the Proposed Development will require the delivery of approximately 285 Abnormal Indivisible Loads (AILs), comprising mainly of large, prefabricated turbine components. The proposed abnormal load delivery route to the Site would originate at the Port of Liverpool and some temporary remedial works will be required to accommodate AIL deliveries.

Figure 3.1 Site Extent



3.4 Wider Context

3.4.1 The nature of wind turbines as tall structures results in potential effects beyond the immediate Site boundary and over a wider geographical area. Visual effects to a variety of receptors, such as protected landscapes, recreational routes, public rights of way and residences, and physical impacts on, for example, transport networks need to be taken into consideration.

3.4.2 Such receptors, in some cases up to 35 km from the Site boundary, have been identified and assessed in terms of their sensitivity to the Proposed Development and subsequently applied in evolving the wind farm design. Overall, receptors beyond 10 km are less likely to experience significant effects due to distance and screening. A description of how these receptors have been considered in the design process is set out below:

- Eryri National Park (Snowdonia): 1.9 km west of the nearest turbine, this iconic protected landscape is assessed in detail due to its proximity and special qualities.
- Clwydian Range and Dee Valley National Landscape: 11 km from the Site, this legally protected area of ridges, moorland, limestone outcrops, and the River Dee World Heritage Site has limited turbine visibility but it has been assessed.
- Historic Landscapes: Four registered landscapes lie within 20 km, including Bala & Lakesides, Berwyn, Transfynydd Basin & Cwm Prysor, and Mynydd Hiraethog.
- National Landscape Character Areas: The Site is within NLCA10 Mynydd Hiraethog, a moorland and forestry upland with prehistoric archaeology and wide horizons, with Snowdonia, Vale of Clwyd, and Berwyn Mountains nearby.
- Local Landscape Designations: Three Special Landscape Areas (SLA) have been assessed in detail: Bala Hinterlands (where the Site sits), Afon Ceirw valley mosaic, and Mynydd Hiraethog upland mosaic.
- Residential receptors within 2 km: These isolated properties are closest to the turbines and have the highest sensitivity to change in views and residential visual amenity.
- Settlements within 2–5 km: Bala, Llanderfel, Sarnau, Frongoch, Wenalt, Bethel, Llanfor, Cefnddwysarn, and Rhyd-uchaf. They are likely to have significant views of the development due to proximity, settlement size, and openness of surrounding landscapes.
- Local PRoW network within 5 km: footpaths and bridleways traversing open access moorland and upland ridges provide elevated, direct views toward the turbines and will be sensitive due to recreational value and high visual exposure.
- Nearby cycle routes (1–5 km): road-based cycling routes around Bala, Sarnau, Frongoch, and Cerrigydrudion, as well as minor scenic roads, are more exposed and likely to experience visual change.
- Scenic B-roads close to the Site (B4501, B4401, B4391): these roads pass through open upland landscapes and are frequently used by visitors, making them sensitive visual receptors.
- Heritage/tourist features near Bala: the Bala Lake Railway and visitor routes along Llyn Tegid may be affected, as they provide valued tourist experiences with expansive lake and mountain views.

3.5 Site Selection

3.5.1 The overall approach to wind farm site selection undertaken by the Applicant is to identify areas of land where the siting of a wind farm would result in minimal environmental effects, align with planning and renewable energy policy, be free from overriding technical constraints, and be economically viable. Early selection of the Site for wind energy was primarily driven by the following criteria:

- A review of current and emerging planning policy (at the National and Local level)

- Geographical Information System (GIS) constraints analysis
- A review of suitable site access points, grid viability and transportation issues
- Consideration of wind speeds and terrain characteristics, to understand whether these will be sufficient for optimal operation of wind turbines
- Desk-based assessment of site technical and environmental constraints
- Ground conditions for building of turbine foundations, access tracks and associated electrical infrastructure, and
- Ability for extant land use to be maintained as much as possible alongside the simultaneous operation of wind turbines, e.g. upland grazing land.

GIS Constraints Analysis

3.5.2 The GIS constraints analysis undertaken for the Site involved identifying and mapping environmental, technical, and engineering constraints to wind farm development. Constraints that were considered as part of the Site selection exercise for the Proposed Development included:

- Aviation interests: Including; visibility to radars (both military and civilian) and Ministry of Defence (MoD) facilities and operations
- Landscape designations: including National Parks and local landscape designations
- Ecological designations: including international designations (e.g., Special Protection Areas), National designations (e.g., Sites of Special Scientific Interest), and Local designations (e.g., Local Nature Reserves)
- Cultural heritage designations: including Registered Gardens and Designed Landscapes, Registered Battlefields, World Heritage Sites, Listed Buildings, Conservation Areas, and Scheduled Ancient Monuments
- The pattern of settlement and land use: including; residential properties and settlements, use of the Site, and existing infrastructure, and
- Other sensitive environmental receptors including public rights of way, habitats of principal importance, peatlands, ground water dependant terrestrial ecosystems, watercourses, surface flood risk areas, potential noise sensitive residential properties and telecommunications links.

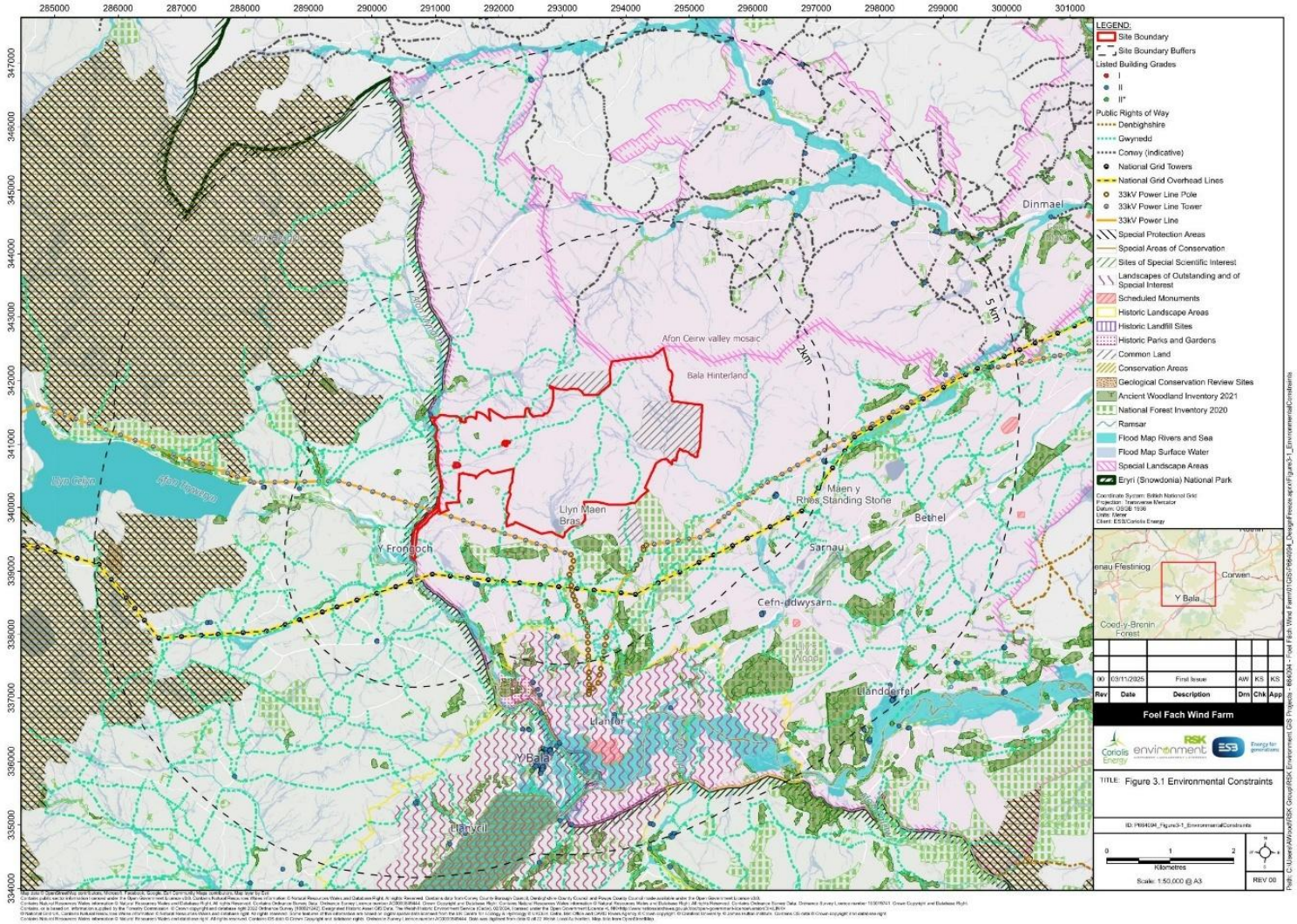
3.5.3 The predicted wind resource in any given location is an important consideration in identifying potentially suitable wind farm sites. The electricity that can be generated by a wind farm is directly linked to wind speed. Wind speed generally increases with height above ground level. However, the relationship is not linear: because the power available in the wind is proportional to the cube of the wind speed, even a small increase in average wind speed results in a much larger increase in potential electricity generation. This has a significant effect on both the carbon savings that can be achieved and the commercial viability of a site. For this reason, potential wind farm locations are initially assessed using publicly available datasets such as the Numerical Objective Analysis of Boundary Layer (NOABL) wind speed database

3.5.4 The potential development area for the Proposed Development was delineated and refined by the rigorous mapping and the interpretation of site characteristics and the surrounding area. Protected areas, terrestrial constraints and buffer zones to sensitive features then informed the process of wind farm design and laying out of infrastructure.

3.6 Environmental Constraints

3.6.1 The Site presents a range of environmental constraints that have informed the design of the Proposed Development to ensure compatibility with its surroundings. These constraints have been thoroughly identified and are shown in **Figure 3.2** overleaf.

Figure 3.2 Environmental Constraints Plan



3.6.2 The Site is not located within any internationally or nationally designated landscapes. The closest designated landscapes are Eryri National Park (2 km west). The Site is located within the Bala Hinterlands Special Landscape Area (SLA), with the Afon Ceirw valley mosaic SLA located approximately c.250 m north of the most northern turbine. Nearby ecological designations include:

- Afon Dyfrydwy/River Dee Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC) located adjacent to the south-west boundary of the Site;
- Migneint-Arenig-Dduallt SSSI, SAC, Special Protection Area (SPA) and Important Bird Area (IBA) located approximately c.805 m west of the Site;
- Tryweryn River Sections SSSI located approximately c.2.45 km south-west of the Site;
- Cors y Sarnau SSSI located approximately c.2.6 km south-east of the Site;
- Caerau Uchaf SSSI located approximately c.3.2 km south-east of the Site;
- Llyn Tegid/Bala Lake SSSI, and RAMSAR Site which is located approximately c.3.9 km south-west of the Site;
- Y Glyn-diffwys SSSI, 4.61 km north-east of the Site;
- Corsydd Nug a Merddwr, 6.12 km, north-west of the Site;
- Berwyn a Mynyddoedd De Clwyd / Berwyn and South Clwyd Mountains SAC and Berwyn SSSI, located 7.3 km south-east of the Site; and
- Coedydd Dyffryn Alwern SSSI, located 7.49 km north-east of the Site.

3.6.3 There are three Gwynedd 'Wildlife Sites' (all Candidate Wildlife Sites) within the Site: Llandderfel, Llwyn-y-brain heath and Llywyn-y-brain cottage.

3.6.4 The Site is crossed by a number of watercourses, including Nant Cefn Coch which drains the eastern portion of the Site into Afon Meloch. The south-western area of the Site is drained via two unnamed watercourses conveying flow into Afon Tryweryn. The Site lies within Flood Zone A meaning the majority of the Site is considered to be at little or no risk of fluvial flooding. A small area on the western edge of the Site lies within Flood Zone C2 indicating the area has a 0.1% likelihood of flooding from surface water, small watercourses and rivers in any given year. The Flood Risk Assessment Wales Map indicates there is a medium risk of flooding from rivers within the Site, with areas of flood risk confined to the main watercourse channels.

3.6.5 The majority of the Site area (over three quarters) has soils or peaty soils under 0.3 m in thickness. Areas of peat soil are restricted to pockets of boggy ground, with a higher concentration in the north-eastern part of the Site.

3.6.6 There are no designated historic assets recorded by Cadw within the Site Boundary. The Grade II listed buildings Llaithgwm, Llaithgwm Stable Block, Llaithgwm Carthouse and Wern Fawr have been excluded from within the Site Boundary and are located approximately c.900 m and c.1.7 km west of the nearest turbine at Llaithgwm and Wern Fawr respectively.

3.6.7 There are five other Grade II listed buildings within 1 km of the Site Boundary, namely Pont Llwyn y Brain, Coed-y-Foel Isaf and the Coed-y-Foel Isaf Carthouse, Pigsty, Outhouse and Brewhouse.

3.6.8 Llangwm Conservation Area is located approximately c.2.8 km north-east of the Site.

3.6.9 The nearest scheduled monument is Maen y Rhos Standing Stone, located approximately c.1.7 km to the east of the Site.

4 DESIGN DEVELOPMENT

4.1 Design Evolution

4.1.1 The initial design iterations of the Proposed Development focused primarily on the turbines, with the locations of other infrastructure components dictated by the turbine layout and onsite environmental constraints. As the design evolved, minor alterations to the turbine and infrastructure locations were made, ensuring alignment with identified constraints. These changes were reviewed and refined through a series of workshops with technical team members.

4.1.2 The design evolution was guided by the principles of avoiding, minimising, or offsetting significant adverse environmental effects while maintaining operational efficiency and cost-effectiveness. This process incorporated feedback from environmental surveys, engineering studies, and consultations with specialist and community stakeholders. Input from these sources helped address constraints related to landscape, ecology, heritage, and other factors, shaping the overall project design.

4.1.3 Stakeholder feedback, both from technical specialists and the community, played a critical role in refining the design. Relevant suggestions were carefully considered and integrated to ensure the development aligns with planning policy and local expectations.

4.1.4 To illustrate how the design evolved from its initial concept to the final layout, the following sections outline key iterations of the project. Further details on the design process and iterations are provided in **Figure 4.1** to **Figure 4.4** below.

Design 1: Pre-Scoping Stage Layout

4.1.5 Following initial acquisition of the Site for development, preliminary layouts based on desk-based and GIS analysis were under consideration that included up to 17 turbines of potentially up to 250 m to blade-tip height.

4.1.6 The pre-scoping stage layout is shown in **Figure 4.1** overleaf.

Design 2: Scoping Stage Layout

4.1.7 By the time of a request for EIA Scoping being submitted in July 2024, an 11 turbine layout had been developed with a with maximum height to blade tip of 220 m. This design was informed by preliminary results of onsite surveys (including phase 1 peat and phase 1 habitat survey), a Ground Water Dependant Terrestrial Ecosystem (GWDTE) desk-based assessment and consultant inputs. Some amendments were also made to the Site boundary avoid environmental designations, including the Eryri National Park and River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales) SAC and Afon Dyfrdwy (River Dee) SSSI.

Figure 4.1 Design 1: Pre-Scoping Stage Layout

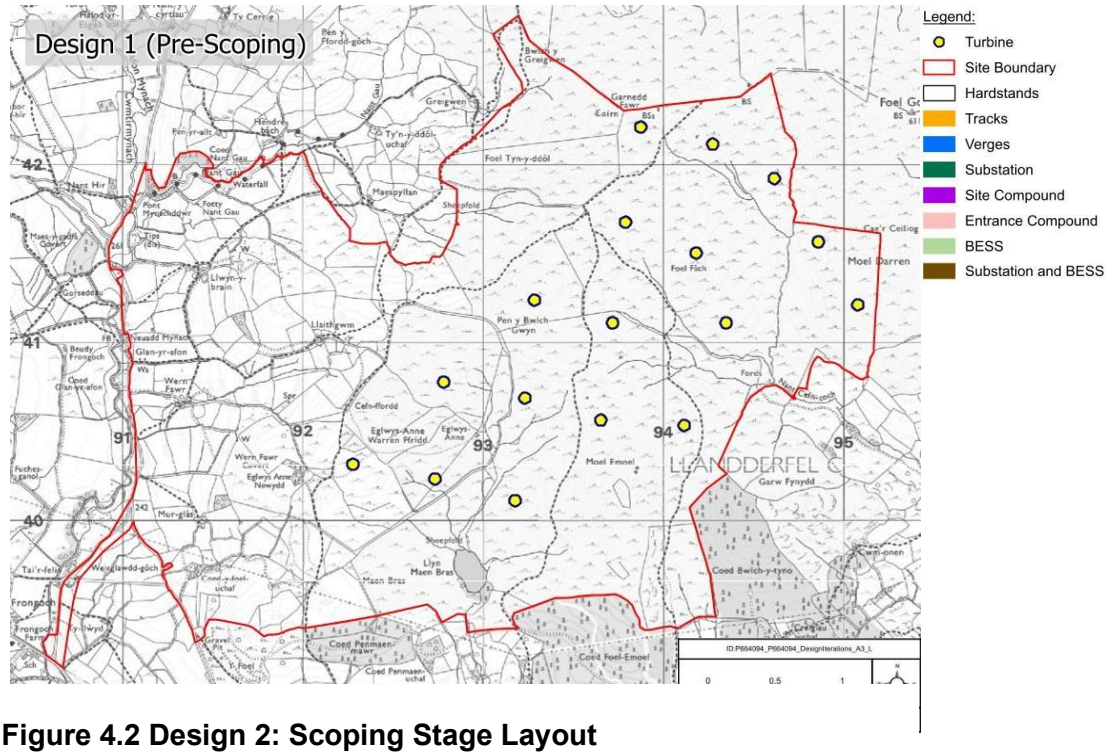
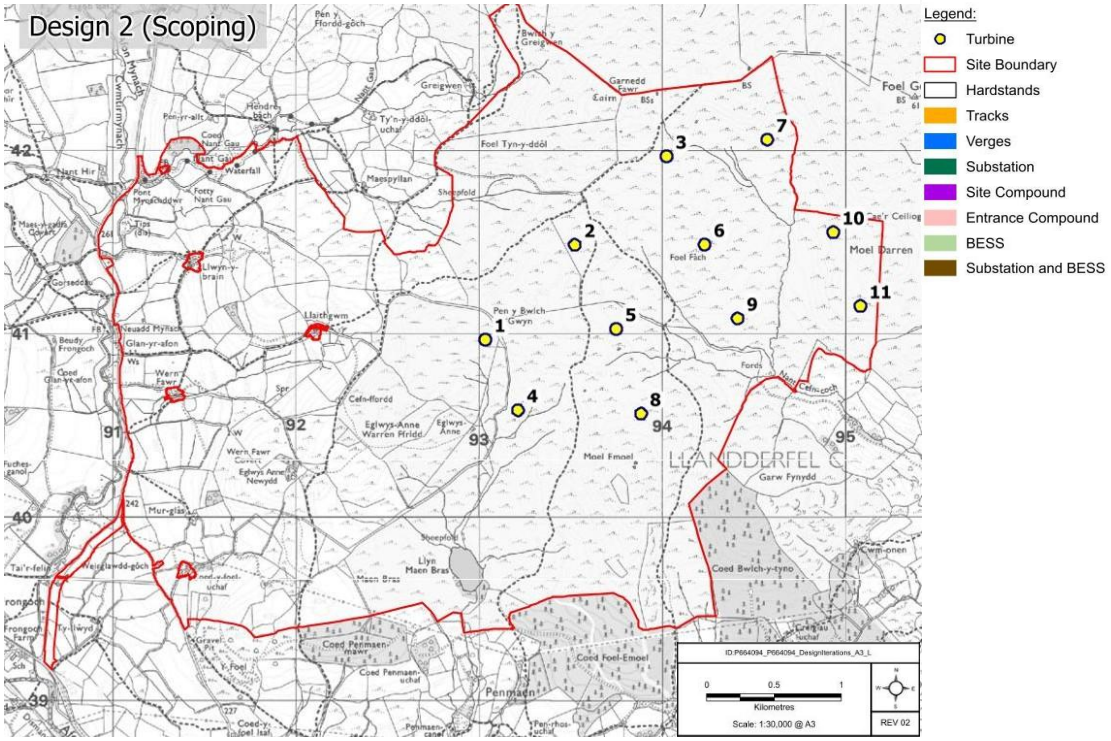


Figure 4.2 Design 2: Scoping Stage Layout



4.1.8 At this stage the Site size was approximately 1,000 ha. This layout was used to determine the scope of the assessments to be included in this ES and to obtain feedback on the layout.

4.1.9 The Scoping Direction (**ES Volume IV, Appendix 1.2: EIA Scoping Direction and Addendum**) contains a copy of all the consultee scoping responses. This consultation helped identify and clarify key stakeholder concerns relating to the design of the Proposed Development, including:

- Visual impact on Eryri National Park;
- Effects on the host Special Landscape Area;
- Impact on views from Lake Bala; and
- Effects on nearby residential properties.

4.1.10 Design 2: Scoping Stage Layout is shown in **Figure 4.2** overpage.

Design 3: Post-Scoping Layout

4.1.11 During a design workshop involving the full project team in September 2024, turbine locations were reviewed and adjusted where feasible to avoid areas of deeper peat, potential Groundwater Dependent Terrestrial Ecosystems (GWDTE), and Annex I habitats. While turbine heights remained unchanged, several were repositioned to ensure they were located outside the 50 m watercourse buffers to reduce the potential risk of water pollution. The appearance of the revised layout of turbines was reviewed within the computerised 3D model software that was available for the project.

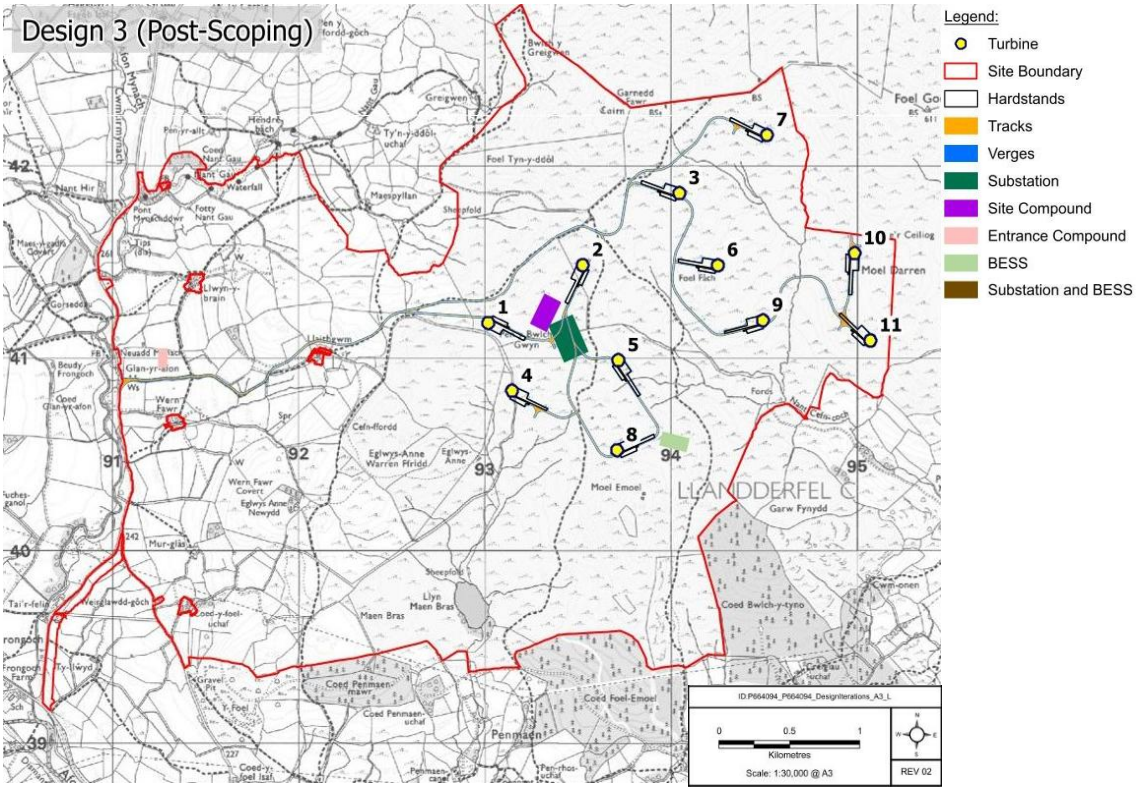
4.1.12 The design team also considered alternative locations for the main entrance compound to the north and south of the Site. The southern options were discounted due to the presence of peat, while the upland areas were avoided because of steep gradients. Consequently, the entrance compound was located to the north of the access track entrance, providing convenient access from the public road.

4.1.13 An additional compound area was introduced between turbines T01 and T02, and the Substation and Battery Energy Storage System (BESS) were positioned near T08, where the topography and proximity to the turbines were most suitable.

4.1.14 Further refinements were also made to include access tracks, turbine foundation areas, crane pads, and associated hardstanding areas required for construction and maintenance activities.

4.1.15 Design 3: Post-Scoping Layout is shown in **Figure 4.3** below.

Figure 4.3 Design 3: Post-Scoping Layout



Design 4: Design Chill Layout

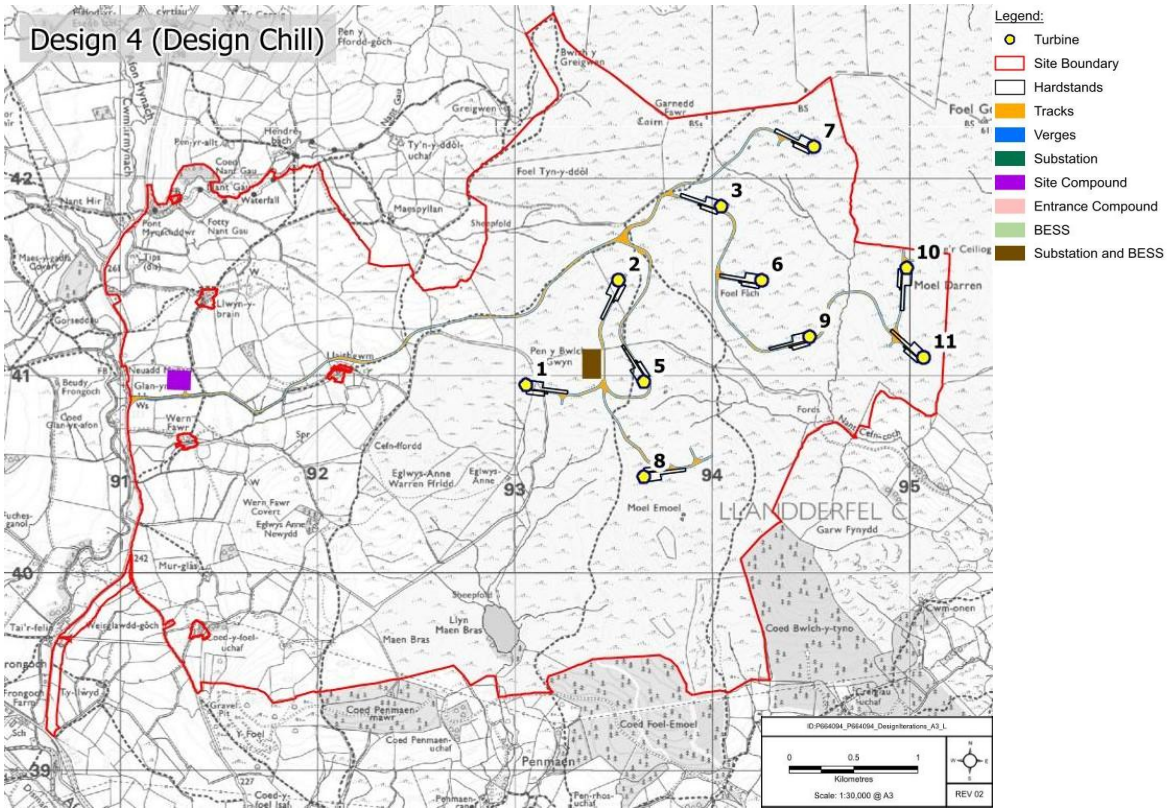
4.1.16 Following the results of the additional Phase 2 peat surveys, turbine locations and access tracks were revised where feasible to avoid areas of identified peaty soils.

4.1.17 Turbines T01 and T05 were moved slightly south to avoid peat soils, while T04 was removed from the design entirely after peat was confirmed within its proposed hardstanding area. As T04 had also been located close to a watercourse, its removal further reduced the potential risk of water pollution during construction and operation.

4.1.18 The relationship between T08 and Moel Emoel, particularly in views from Bala, was identified as an important visual consideration. The design team therefore explored options to relocate T08 east and west, as well as to test alternative tip heights. This assessment showed that shifting the turbine further west would require significant earthworks and would bring it closer to a PRoW, making that option less suitable.

4.1.19 Design 4: Design Chill Layout is shown in **Figure 4.4** below.

Figure 4.4 Design 4: Design Chill Layout



Design 5: Design Freeze Layout (Proposed Development)

4.1.20 The final design represents the outcome of the iterative design process and defines the Proposed Development. It includes the confirmed turbine locations along with the siting and design of all ancillary infrastructure. A temporary construction compound was added to the east of T08, following a recommendation from the lead designer and pre-construction advisor.

4.1.21 The proposed concrete batching area was relocated from the main construction compound near the Site entrance to a new position opposite the substation. This adjustment places the batching area further from nearby watercourses, reducing potential risks of contamination.

4.1.22 A LiDAR compound area was added along the track leading to T08, on the eastern side of the track.

4.1.23 Further consideration of visual effects concluded that moving T08 slightly westward would reduce visual impacts on Bala. In addition, turbines T01, T02, T08, and T11 were reduced in height from 220 m to 200 m to help reduce visibility from the Eryri National Park.

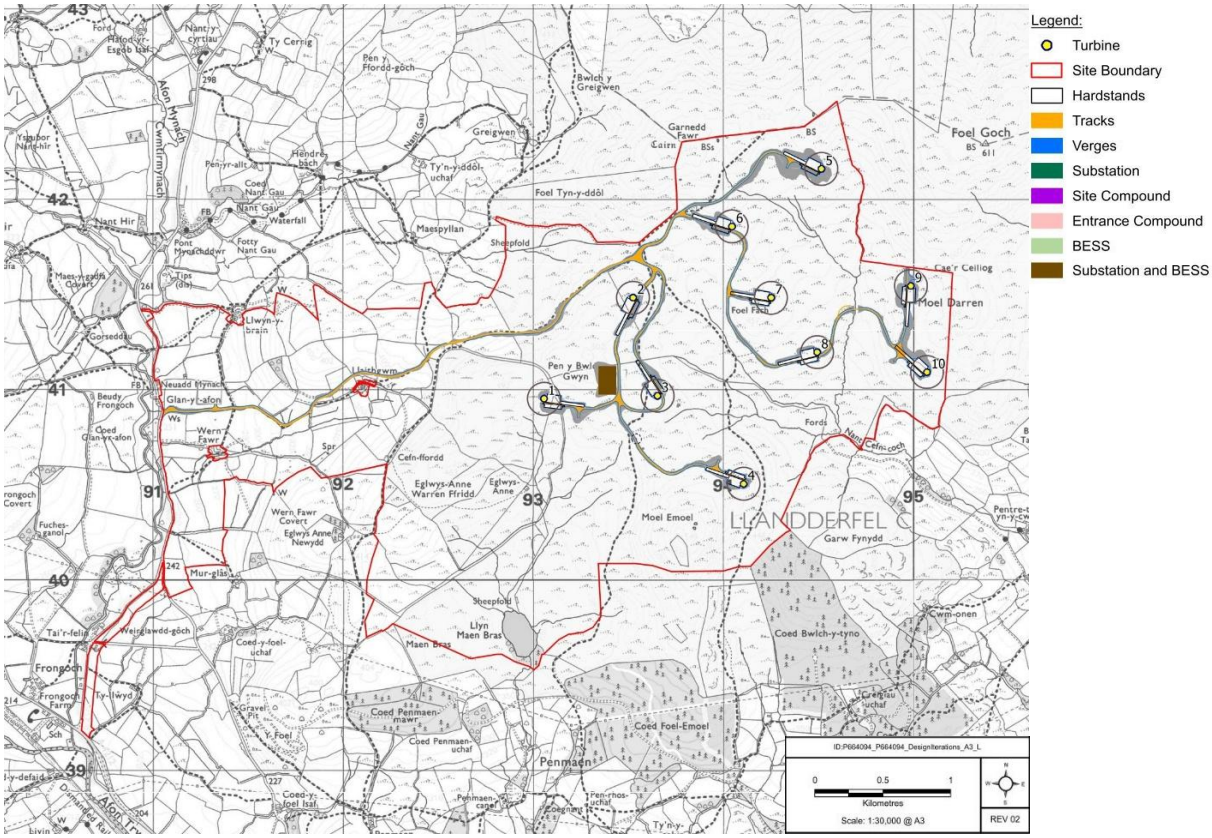
4.1.24 Access tracks were refined further, including the addition of a loop near T05 to improve the feasibility of deliveries to T02. On-site tracks are designed as two-lane routes to allow safe movement of construction and maintenance vehicles.

4.1.25 The turbines were then renumbered from T01 to T10, and the red line boundary was refined to reflect the final layout. The total Site area for the Proposed Development is approximately 659 ha.

4.1.26 Five additional temporary material storage areas were also identified. These were located to avoid key environmental constraints, including GWDTEs, watercourses, and areas of peat.

4.1.27 Design 5: Design Freeze Layout (Proposed Development) is shown in **Figure 4.5** below.

Figure 4.5 Design 5: Design Freeze Layout (Proposed Development)



5 THE PROPOSED DEVELOPMENT

5.1 Design

5.1.1 The Proposed Development will comprise ten wind turbines with a tip heights of 200 m and 220 m. The turbines will be three-bladed, mounted on a nacelle at the top of each turbine, which also houses the generator and switchgear. These would be the principal visual characteristics of the turbines, along with the ground concrete foundations.

5.1.2 Each turbine will consist of a tapered tubular steel tower, a combination of carbon fibre reinforced plastic, glass fibre reinforced plastic, balsa wood and foam blades, and a nodular cast iron rotor hub. The foundation base for each turbine would be levelled to provide a workable platform for the assembly of reinforcing bars and formwork used to contain the poured concrete.

5.1.3 The proposed turbine layout has been designed to minimise the effect on the surrounding landscape and visual amenity receptors. The locations of the turbines have been selected to, where possible, make use of natural and topographical screening afforded to key views within the surrounding area and ensure that no turbine is overbearing in views from any individual residential property.

5.1.4 An onsite electrical substation and control building would also be a principal visual element of the development. The substation and control building compound would measure approximately 150 m x 75 m and would be surrounded by a 2 m – 2.75 m high ‘palisade’ fence.

5.1.5 The BESS Battery Units are proposed to consist of batteries housed in secure and weatherproof ‘shipping container’ style structures. It is anticipated that each BESS Battery Unit would measure up to 6.06 m in length and 2.44 m in width and up to 2.9 m in height and be and located towards the central area of the Site.

Landscape and Visual Considerations

5.1.6 The Site is located within the Gwynedd & Ynys Môr (Bala Hinterlands) Special Landscape Area and lies approximately 1.9 km east of the boundary of Eryri (Snowdonia) National Park. The character of this sensitive landscape context has required careful consideration of the development's effects on nationally and locally designated landscapes, key viewpoints, settlements, and individual properties.

5.1.7 The design evolution has specifically addressed the proximity to Eryri National Park through:

Maintaining Appropriate Separation Distance

- Minimum 1.9 km separation maintained from the National Park boundary (approximately 2 km to the nearest turbine T01); and
- This separation reduces the perceived scale and prominence of the turbines when viewed from within the National Park.

Turbine Height Reductions

- Four turbines (T01, T02, T04, and T10) reduced from 220 m to 200 m tip height specifically to reduce visual impact from National Park viewpoints; and
- This 20 m reduction equates to approximately 9% height decrease, providing meaningful visual impact mitigation.

Layout Refinement

- The final layout concentrates turbines within the central upland areas within the Site, avoiding a dispersed arrangement that would extend the visual influence across a wider area; and
- This creates a more contained development when viewed from the National Park.

5.1.8 The Bala Hinterlands SLA (formerly Penllyn) hosts the development site, requiring particularly careful design consideration:

Respecting Landscape Character

- Turbines positioned on the elevated moorland areas that characterise the upland parts of the SLA;
- Avoiding lower-lying pastoral areas that contribute to the intimate valley character; and
- Utilising the existing large-scale upland character to provide appropriate context for the turbine scale.

Reducing Development Footprint

- Site boundary reduced from approximately 1,000 ha to 659 ha through the design process;
- Turbine number reduced to 10 rather than maximising the Site capacity; and
- Infrastructure concentrated to minimise direct effects on the landscape features that contribute to the character of the SLA.

Maintaining Landscape Function

- Preserving the SLA's role as a setting to Eryri National Park through appropriate separation and layout design; and
- Retaining the upland grazing character across the majority of the Site area.

5.1.9 The design process has incorporated specific measures to protect residential visual amenity:

Turbine Positioning

- Turbine locations selected to avoid creating overwhelming visual effects on individual properties; and
- Particular attention paid to individual properties within 2 km of the proposed turbines.

Layout Arrangement

- Turbines arranged to create a coherent group with consistent spacing that minimises overlapping and introducing outlying turbines; and
- Specific consideration of the visual relationship between turbines and settlement edges.

Assessment Results

5.1.10 With reference to **ES Volume III, Appendix 9.10: Residential Visual Amenity Assessment,** the Residential Visual Amenity Assessment (RVAA) confirms that no properties would experience 'overwhelming' visual effects that would make them unattractive places to live.

Viewpoint 5: Llangower (Lake Bala) - 7.8 km distance

5.1.11 This popular tourist viewpoint on the western shore of Lake Bala provides views across the lake towards the Proposed Development:

- The design ensures turbines appear on the distant skyline rather than dominating the immediate lakeside landscape;
- Eight turbines would be visible but at sufficient distance (7.8-9.5 km) to maintain the primacy of the lake and surrounding landscape in the view; and
- The assessment identifies a Major significant effect, reflecting the importance of this tourist viewpoint, but notes that the large-scale landscape context helps accommodate the turbines.

Viewpoint 7: Carnedd y Filiast - 6.9 km distance

5.1.12 This summit viewpoint within Eryri National Park provides commanding panoramic views:

- All turbines would be visible but appear as part of a wider 360-degree panoramic vista;
- The elevated viewpoint provides extensive landscape context, with the turbines forming one element within a much larger visual field; and
- The design's height reductions for nearest turbines (T01, T02) help reduce their prominence in this key National Park view.

Viewpoint 12: Arenig Fawr - 11.1 km distance

5.1.13 This prominent peak within Eryri National Park offers some of the finest panoramic views in Wales:

- The 11 km distance ensures turbines appear as small-scale elements within the broad panoramic view;
- The turbines would be visible on the eastern skyline but would not compromise the dramatic mountain landscape that characterises this viewpoint; and
- The assessment notes this represents a Moderate-Major significant effect but acknowledges that the expansive 360-degree panorama provides substantial visual context.

5.2 Access

Site Access

5.2.1 The Proposed Development will be accessed directly from the B4501. The access junction will provide the sole access to the Site for abnormal loads associated with the turbine equipment, as well as access for construction materials and ongoing operational traffic.

5.2.2 The Site entrance will be well maintained and monitored during the operational life of the Proposed Development. Regular maintenance will be undertaken to keep the Site access track drainage systems fully operational and the road surface in good condition and to ensure there are no adverse issues affecting the public road network.

Site Access Tracks

5.2.3 From the Site entrance, approximately 9.9 km of new Site access tracks will be constructed and around 830 m of existing farm tracks will be upgraded as part of the Proposed Development. Site tracks are required throughout the operational phase of the Proposed Development to permit access for maintenance and repair operations. They will also allow access during the decommissioning stage.

5.2.4 The Site access track layout has been designed to minimise environmental disturbance by avoiding sensitive features and keeping the length of track commensurate with the minimum required for operational safety. The nominal running width will be 5 m and existing tracks will be upgraded up to 7.5 m width, although track widths may be wider in some sections to accommodate bends in the road alignment. The minimum construction thickness of access tracks would be 550 mm.

5.2.5 The Site access track layout from the public road to the main wind farm area will be a minimum width of 7.5 m for safe vehicular access and egress. In addition, up to five turning heads will be constructed at appropriate locations to accommodate empty abnormal load turning.

5.2.6 Adjacent to the track will be assumed 3 m verges for cabling and an appropriate drainage verge. Generally, the sloping verges of access tracks will be reinstated through re-seeding with locally occurring species, top-soil reuse and/or turf replacement to blend in with the surroundings. The adjacent grassland will be allowed to extend across the edges and middle, reducing the extent of the visibility of tracks in the landscape. The engineered appearance of any embankments will be smoothed out to ensure any landforms blend in with topography.

Pedestrian Access

5.2.7 There are several Public Rights of Way (PRoWs) within, and in the vicinity of the Site, as shown in **Figure 5.1** and **Table 5.1** below.

Figure 5.1 Public Rights of Way and the Site

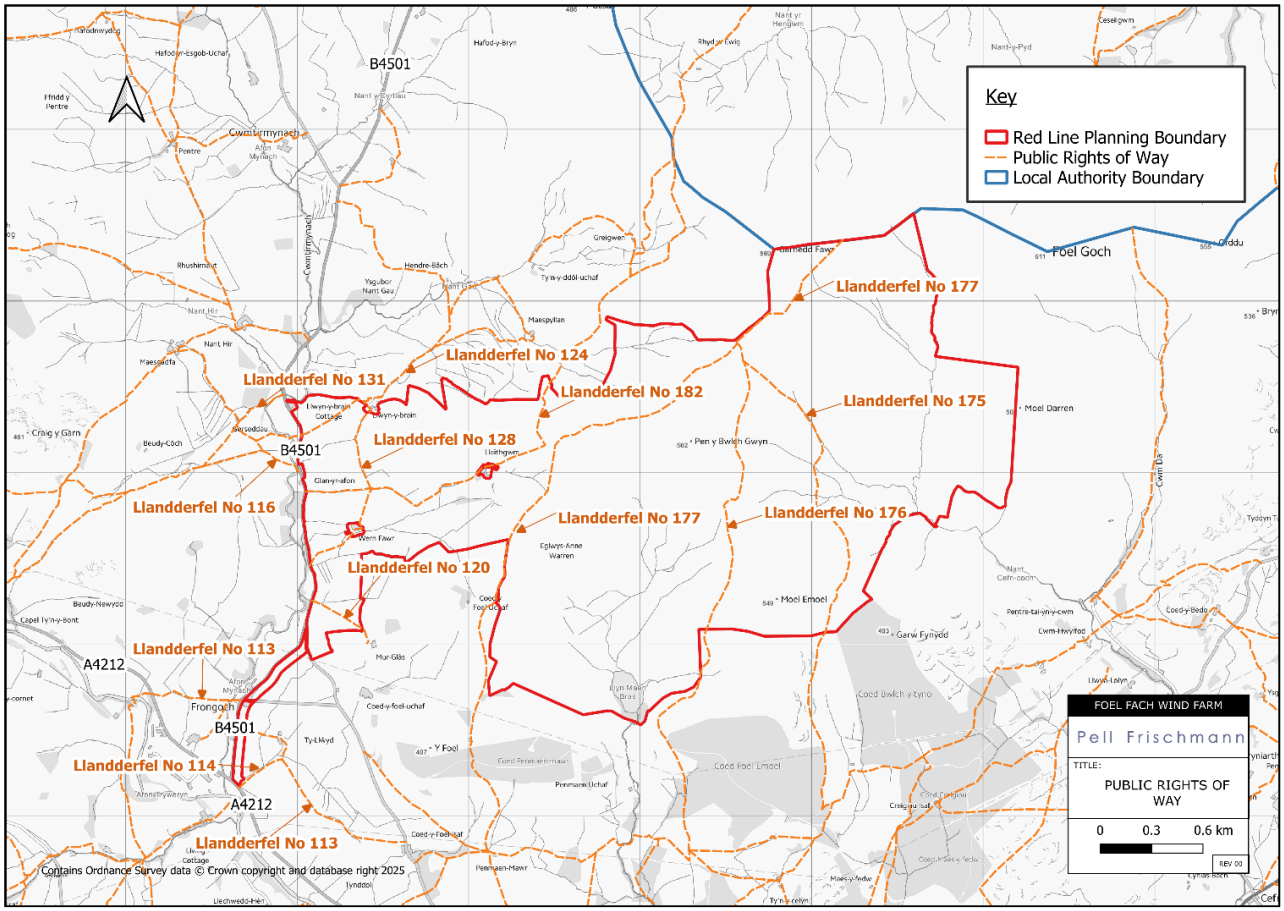


Table 5.1 Public Rights of Way (PRoW)

Reference	Path Name	Type	Length (m)
46409954	Llandderfel No 175	Footpath	2,984
46409953	Llandderfel No 176	Footpath	5,723
46409939	Llandderfel No 177	Footpath	4,795
46409857	Llandderfel No 182	Footpath	3,680
46409936	Llandderfel No 128	Footpath	1,234
46409859	Llandderfel No 124	Footpath	3,533
46409782	Llandderfel No 131	Footpath	1,773
46409784	Llandderfel No 116	Footpath	1,967
46409999	Llandderfel No 120	Footpath	437
46410048	Llandderfel No 113	Footpath	2,027
46410056	Llandderfel No 114	Footpath	614

5.2.8 Any passable PRoWs that do not lead directly into a construction area and are not used by construction vehicles will remain open, except when construction activities are occurring at specific crossing points.

5.2.9 The Proposed Development also presents opportunities for access enhancements, including improvements to PRoWs within the red line planning boundary of the Proposed Development. These are subject to discussions and agreements with Gwynedd Council.

5.2.10 Temporary diversions will be assessed prior to construction as part of the application for diversion of PRoW and which will be secured by planning condition. No permanent diversion are envisioned as a result of the Proposed Development. However, given some of the access tracks follow the routes of existing PRoW, and given there will be no access restrictions during the operation of the Proposed Development, there will be a general improvement to access in the long term.

5.3 Movement

5.3.1 Movement refers to how highway users access, navigate, and interact with the Proposed Development, ensuring efficiency and minimal environmental impact.

5.3.2 This section outlines the transport requirements and arrangements necessary to facilitate the construction phase of the Proposed Development while minimising disruptions to local communities and protecting environmental and safety standards.

5.3.3 During the construction period, the following traffic will require access to the Site: staff transport, construction equipment and materials, deliveries of machinery and supplies such as crushed rock, and abnormal loads comprising wind turbine sections and heavy lift cranes.

Construction Staff

5.3.4 During the peak construction period, the workforce is expected to reach around 40 staff per day, based on experience from wind farm projects of a similar scale. Staff will generally arrive in non-Heavy Goods Vehicles (HGV), with a proportion travelling by minibus (around 60%) and the remainder by car (around 40%).

5.3.5 For traffic assessment purposes, single car occupancy has been assumed as a worst-case scenario, although car sharing may reduce movements in practice. On this basis, staff transport is estimated to generate up to 52 daily vehicle movements (26 inbound and 26 outbound) at peak.

Construction Traffic Management

5.3.6 A Traffic Management Plan (TMP) will be prepared and agreed with Gwynedd Council in advance of the construction phase. A draft TMP is provided in Annex 2 of **ES Volume III, Appendix 11.1: Transport Assessment**. The TMP will demonstrate compliance with national and local policy guidance and will set out detailed descriptions of actions required by Contractors to meet during the construction process, following these objectives:

- Ensure that movements of people, plant and materials are achieved in a safe, efficient, timely and sustainable manner.

- Ensure that any impact to local communities and the local economy is reduced as far as reasonably practical.
- Ensure that construction traffic levels do not exceed an acceptable level during network peak periods.
- Reduce and control construction vehicle trips where practical.
- Ensure that strategies and mitigation measures are implemented and adhered to through continued monitoring, review, and improvement.
- Limit the effects of construction traffic on the Local Road Network.

Abnormal Indivisible Load deliveries

5.3.7 The wind turbines are broken down into components for transport to the Site. The nacelle, blade and tower sections are classified as AILs due to their weight, length, width and height when loaded.

5.3.8 In addition to the wind turbine deliveries, up to two high-capacity erection cranes would be needed to offload a number of components and erect the turbines. The cranes are likely to be mobile cranes with a capacity up to 1,000 tonnes that are escorted by boom and ballast trucks to allow full mobilisation onsite. Smaller erector cranes would also be present to allow the assembly of the main cranes and to ease the overall erection of the wind turbines.

5.3.9 Escort vehicles would accompany the AIL convoys to support the traffic management measures. Up to three vehicles would be deployed and it is assumed that three AIL turbine component loads would be delivered per convoy. This would result in 37 convoys on the network, with a total of approximately 224 escort vehicle movements (112 inbound trips and 112 outbound trips).

5.3.10 Wind turbine components that do not classify as AILs, would be delivered in addition to these, resulting in a further approximately 56 vehicle movements (28 inbound trips and 28 outbound trips). All of these deliveries are expected to occur over a period of approximately five months.

Material Deliveries

5.3.11 The estimated total volume of concrete required onsite is 9,891.48 m³, based upon expected wind turbine foundation, substation foundation and miscellaneous uses across the Proposed Development. Deliveries of raw materials to support concrete production are expected to generate inbound trips of approximately 22 cement tankers, 103 sand tippers, 210 aggregate tippers and 126 water tankers.

5.3.12 Geotextile will be delivered to Site in rolls by HGV, a total of 218 large rolls may be required, which will result in 22 vehicle movements (11 inbound trips and 11 outbound trips).

5.3.13 Ducting will be installed within the trench to protect the cable, and additional ducting will be used where the cable passes beneath roadways. The delivery and removal of ducting materials are expected to generate approximately 26 vehicle movements in total (13 inbound and 13 outbound trips).

5.3.14 The substation building will require deliveries of building materials and structural elements and will result in 250 vehicle movements (125 inbound trips and 125 outbound trips). Deliveries associated with the BESS will result in a further 34 HGV

vehicle movements (17 inbound trips and 17 outbound trips) for battery, invertor and cabin / building deliveries.

5.4 Environmental Sustainability

5.4.1 This section highlights the measures integrated into the Proposed Development to conserve natural resources, enhance ecosystems, and ensure adaptability to environmental challenges. By prioritising the balance between energy generation and biodiversity preservation, the Proposed Development is in line with the principles of environmental sustainability and climate resilience.

5.4.2 In the construction phase, the principal receptors are the River Dee and Bala Lake SAC, the River Dee SSSI, habitats within the Llandderfel Candidate Local Wildlife Site, Annex 1 and Section 7 habitats, and commuting or foraging bats. Potential effects include habitat loss, disturbance and pollution risk. These are controlled through measures such as watercourse buffers, carefully designed crossings and established construction practices, so the overall impact is deemed negligible and not significant. Once operational, the only receptor of note is bats, which face a low risk of turbine collision or barotrauma. The adoption of 50-metre stand-offs from suitable habitats ensures this risk remains negligible. Decommissioning is expected to result in similar pressures to those identified for construction, but a Decommissioning Environmental Management Plan would keep these impacts to negligible levels.

5.4.3 For birds, construction has the potential to cause temporary habitat loss, disturbance and displacement. However, surveys confirmed low levels of activity, no breeding within the Site, and limited land-take, so effects are negligible. In the operational period, there is potential for localised avoidance of turbines and a small risk of collision. Collision risk modelling shows that predicted losses would represent only a very minor proportion of regional and national populations, so the impact is considered negligible to minor and not significant. During decommissioning, some disturbance and habitat loss may occur, but with turbines already positioned away from the areas of highest bird activity, significant effects are not anticipated.

5.4.4 Hydrological receptors most at risk include surface water, groundwater, private water supplies, groundwater-dependent terrestrial ecosystems, designated sites linked hydrologically to the development, downstream property and infrastructure, and soils including peat. Potential impacts could result in changes to drainage patterns, contamination from sediment or pollutants, modification of groundwater flow, downstream flood risk, erosion, compaction, peat instability and risks to water-dependent habitats and supplies. Mitigation centres on drainage and hydrology management, sediment and pollution control, safe handling of fuels and concrete, and measures such as bunds, silt fencing, settlement ponds, micrositing, and careful management of soil and peat. In the operational phase the risk is much lower, with protection maintained through routine inspection of tracks, drainage and watercourse crossings and continued spill prevention.

5.4.5 Taking the above measures into account, the application of embedded mitigation (especially the use of appropriate buffers) influenced the design evolution of the Proposed Development and has allowed the scheme to be delivered in an environmentally sustainable manner. **Table 5.2** provides a summary of the buffers and stand-off distances incorporated to safeguard sensitive receptors.

Table 5.2 Design Buffers and Stand-off Distances for Sensitive Receptors

Environmental factor	Design buffer / separation
Terrestrial Ecology	A 50 m buffer from watercourses has been incorporated from an early design stage to avoid watercourses and watercourse crossings
Land, soils and water	Infrastructure has been sited outside a 50 m buffer from all major watercourses within the Site to minimise works in close proximity to watercourses, minimising the risk of spillages of contaminating materials or release of sediment.
Landscape and Visual	Maintaining 50 m buffer from major watercourses for infrastructure placement to preserve riparian landscape features and reduce visual intrusion near water features.
Terrestrial Ecology	The layout of the Proposed Development has adopted a minimum 50 m 'stand-off' distance between bat habitat features and turbine blades to reduce collision risk with bat species and minimise affecting the most likely important habitats used by foraging/ commuting bats.
Noise and Vibration	Maintaining a distance of at least 800 m from turbines to the nearest residential receptor during the design evolution process.
Landscape and Visual	Maintaining separation from Eryri National Park boundary (approximately 1.9 km to nearest turbine T01) to minimise visual impacts on the National Park's special qualities and designated landscape.

6 CONCLUSIONS

6.1.1 This DAS has demonstrated that the Foel Fach Wind Farm represents the outcome of a robust, evidence-based, and iterative design process informed by environmental, technical, and policy considerations. The design of the Proposed Development has evolved through detailed assessment and consultation to achieve an appropriate balance between maximising renewable energy generation and minimising likely significant adverse effects on the surrounding environment.

6.1.2 The DAS confirms that the Proposed Development follows the objectives of national and local planning policy, including Planning Policy Wales, Technical Advice Note (TAN) 12: Design, and the principles outlined in Welsh Government and Design Commission for Wales, Design and Access Statements in Wales: Why, What and How (Welsh Government, 2017). The design process has addressed the five key objectives of good design (character, access, movement, environmental sustainability, and community safety) whilst maintaining compliance with the relevant technical, environmental, and operational standards for wind energy infrastructure.

6.1.3 Through iterative refinement and engagement with statutory bodies, technical specialists, and the local community, the final layout of ten turbines and associated infrastructure has been optimised to reduce visual and environmental impacts whilst maintaining operational efficiency and long-term viability. It is concluded that the Proposed Development will make a significant contribution to renewable energy and decarbonisation targets in Wales, in accordance with Future Wales: The National Plan 2040.

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