Foel Fach Wind Farm Limited.

Foel Fach Wind Farm –

Environmental Statement Volume I

Non-Technical Summary of the Environmental Statement

Project Reference: 664094

DECEMBER 2025

Energy for generations

Coriolis Energy

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CONTENTS

FIGURES

INTRODUCTION

Background

Foel Fach Wind Farm Ltd. is seeking to obtain full planning permission for the proposed Foel Fach Wind Farm. The wind farm Site is located north of the town Bala, Gwynedd (**Figure 1** and **Figure 2**).

The Proposed Development comprises the construction and operation of ten wind turbines and associated infrastructure. It is classed as a Development of National Significance, as the combined installed capacity of the power generating elements will be greater than 10 MW. The Development of National Significance application will be submitted to Planning and Environment Decisions Wales and will be determined by the Welsh Ministers.

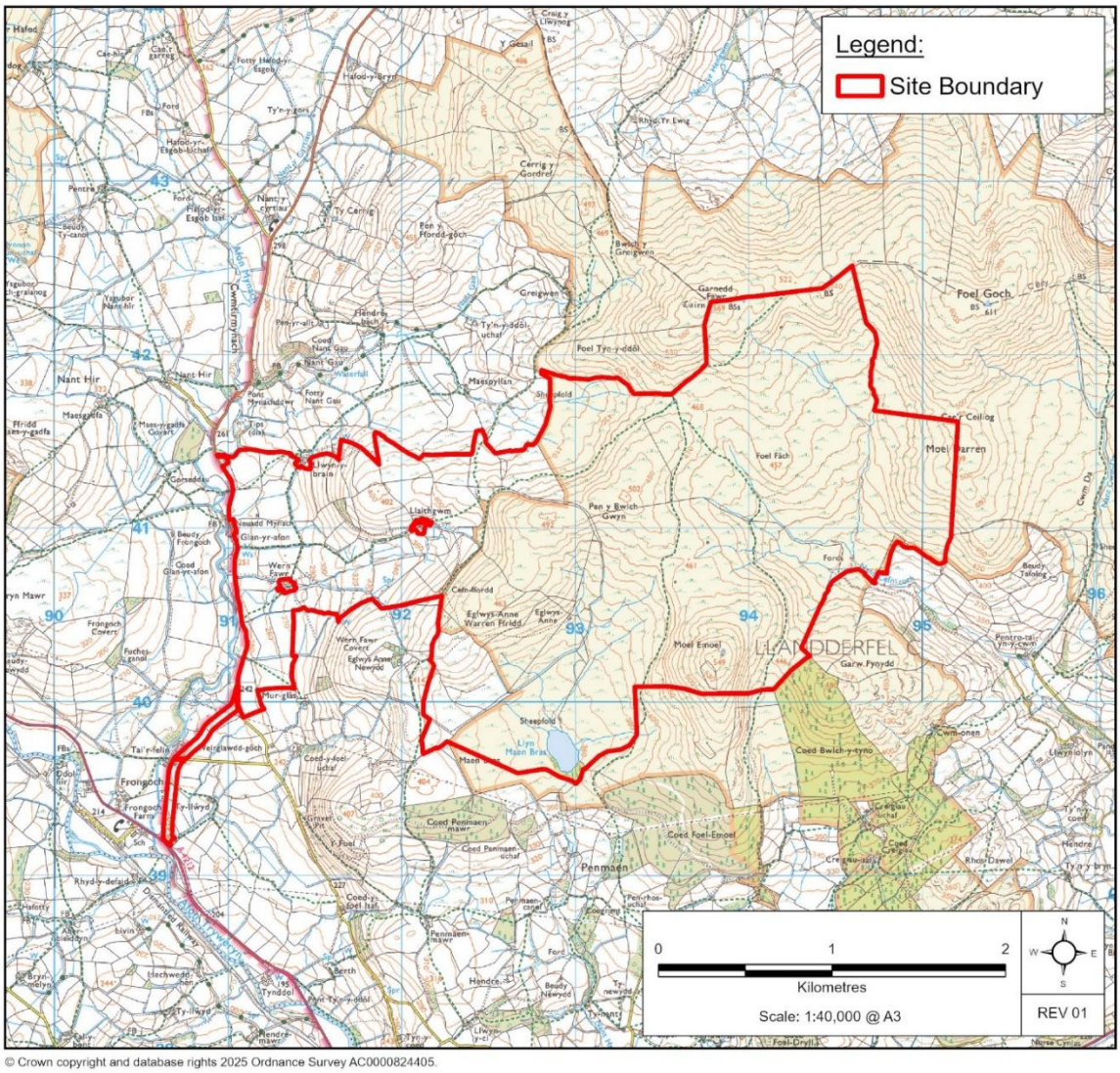


Figure 1 Location of the Site Boundary of the Proposed Development.

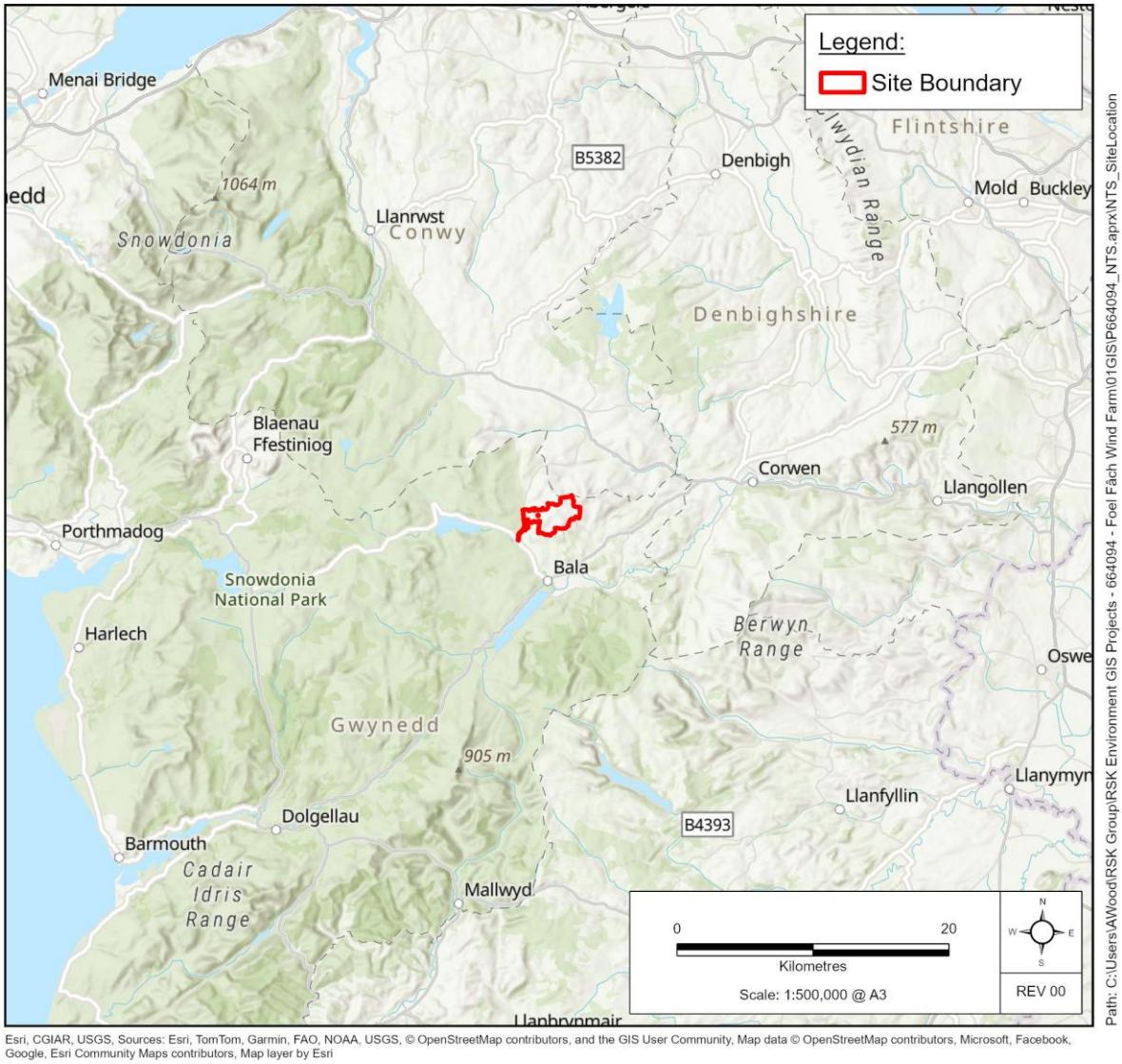


Figure 2 Wider Locational Context of the Site.

Environmental Impact Assessment

Due to the scale of the Proposed Development, an Environmental Impact Assessment is required as part of the Development of National Significance application. Environmental Impact Assessment or 'EIA' is a process that identifies the likely significant effects of a proposed new development project on the environment. Where significant effects are identified, mitigation proposals are put forward so that these effects can be avoided, reduced or managed. The findings of Environmental Impact Assessment are reported within an Environmental Statement report which is included as part of the Development of National Significance application.

Purpose of the Environmental Statement

The findings of the Environmental Impact Assessment are presented in the Environmental Statement report, which is split into four volumes:

- Volume I: Non-Technical Summary (this document);
- Volume II: Main Written Statement;
- Volume III: Supporting Technical Appendices; and
- Volume IV: Supporting Figures and Plans.

Other documents included with the Development of National Significance application are a Planning Statement, a Design and Access Statement, Socio-economic Statement and a Green Infrastructure Statement. Where appropriate these other documents are cross referred to within the Environmental Statement.

This Non-Technical Summary provides a summary of the environmental assessments presented in Environmental Statement (in Volumes II to IV) that is written in plain English. It includes a summary of the outcomes of the assessments undertaken together with an explanation of how environmental issues identified will be addressed by the Applicant. A Welsh language version of this Non-Technical Summary is also available.

THE PROPOSED DEVELOPMENT

Planning Policy Context

The need for the Proposed Development relates to the generation of electricity from renewable energy sources. New renewable energy generation projects are necessary to meet the Welsh Government's targets on reducing greenhouse gas emissions and increasing electricity consumption from renewable electricity sources.

The Environment (Wales) Act 2016 sets a target to reduce greenhouse gas emissions in Wales by 100% by 2050 in comparison with emissions in the year 1990. Furthermore, the Welsh Government has declared a climate emergency and in March 2021 the Senedd Cymru approved a net zero target for 2050.

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

Future Wales: The National Plan 2040 provides a framework for planning change and development and is the highest tier of the development plan against which Development of National Significance applications are determined. Policy 17 on renewable and low carbon energy and associated infrastructure, and Policy 18 on renewable and low carbon energy Developments of National Significance, states that the Welsh Government strongly supports the principle of developing renewable and low carbon energy from all technologies and at all scales to meet Wales's future energy needs. Policy 9 on enhancing biodiversity, ecosystem resilience and green infrastructure states that these areas should be included in development plans to safeguard the functions and opportunities they provide.

Planning Policy Wales (Edition 12) details the land use planning policies of the Welsh Government, with the objective to ensure the delivery of sustainable development. Planning Policy Wales identifies that low carbon electricity must become the main source of energy in Wales and recognises that wind energy forms a key part of meeting renewable energy production due to Wales' considerable wind resource.

Design Overview

The main components of the Proposed Development are shown in **Figure 3** include:

- ten three bladed horizontal axis wind turbines, each as illustrated in **Figure 4**
- wind turbine foundations and hardstanding areas, which include crane pad hardstanding areas and laydown/storage areas
- an onsite substation
- a battery energy storage system
- permanent wind monitoring equipment (LiDAR)
- site access improvements, through the upgrading of the existing junction off the B4501
- onsite access tracks (new roads and upgraded existing roads/tracks), passing places and vehicle turning heads

- underground power cables linking the wind turbines and the substation
- watercourse crossings and associated infrastructure
- drainage system
- micrositing up to 50 m
- onsite signage, and
- biodiversity enhancements proposals.

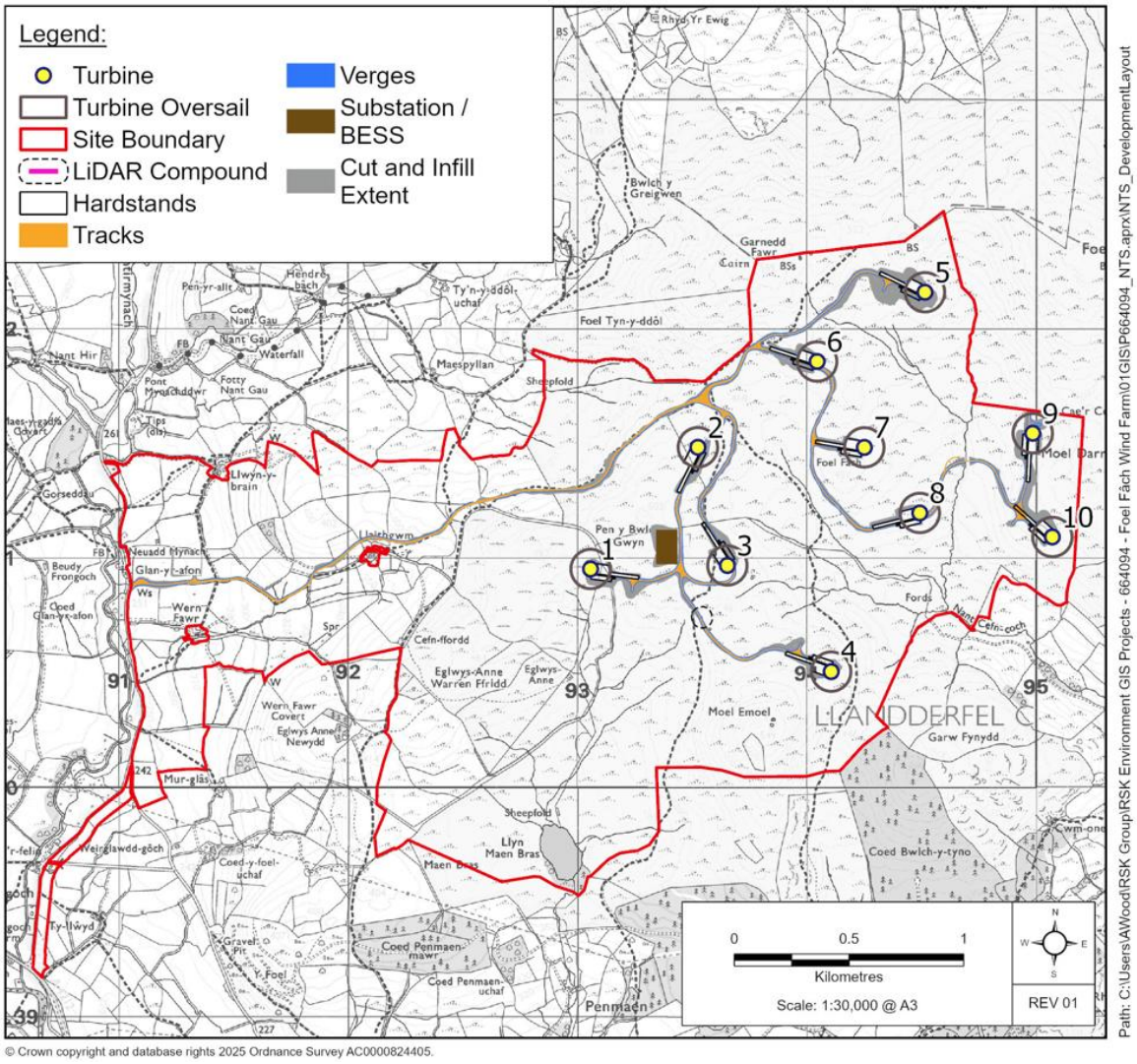


Figure 3 Layout of the Proposed Development

In addition to the above, the following temporary components, integral to the Proposed Development, are proposed during the construction phase:

- a construction and storage compound, located along the Site access track
- a working area north of the tracks leading to T09 and T10
- a concrete batching compound
- up to five temporary materials/ soil storage areas (if required)

- a peat storage area, and
- a borrow pit for the extraction of stone.

Access to the Proposed Development would be directly from the B4501. The junction access will be designed to accommodate oversized vehicles.

Approximately 9.9 kilometres of new site access tracks will be constructed within the Site as part of the Proposed Development. Approximately 830 m of existing farm tracks will also be upgraded. New track will typically be up to 5 metres wide and existing tracks will be upgraded up to 7.5 metres in width.

Four new watercourse crossings are required. There are two new crossing locations and one existing crossing that requires an upgrade. The construction of a single span bridge is also required in one location in the east of the Site.

A permanent LiDAR compound for weather condition monitoring is located adjacent to the access track.

Connection to the electricity grid from the onsite substation connection would also be required but does not form part of this planning application.

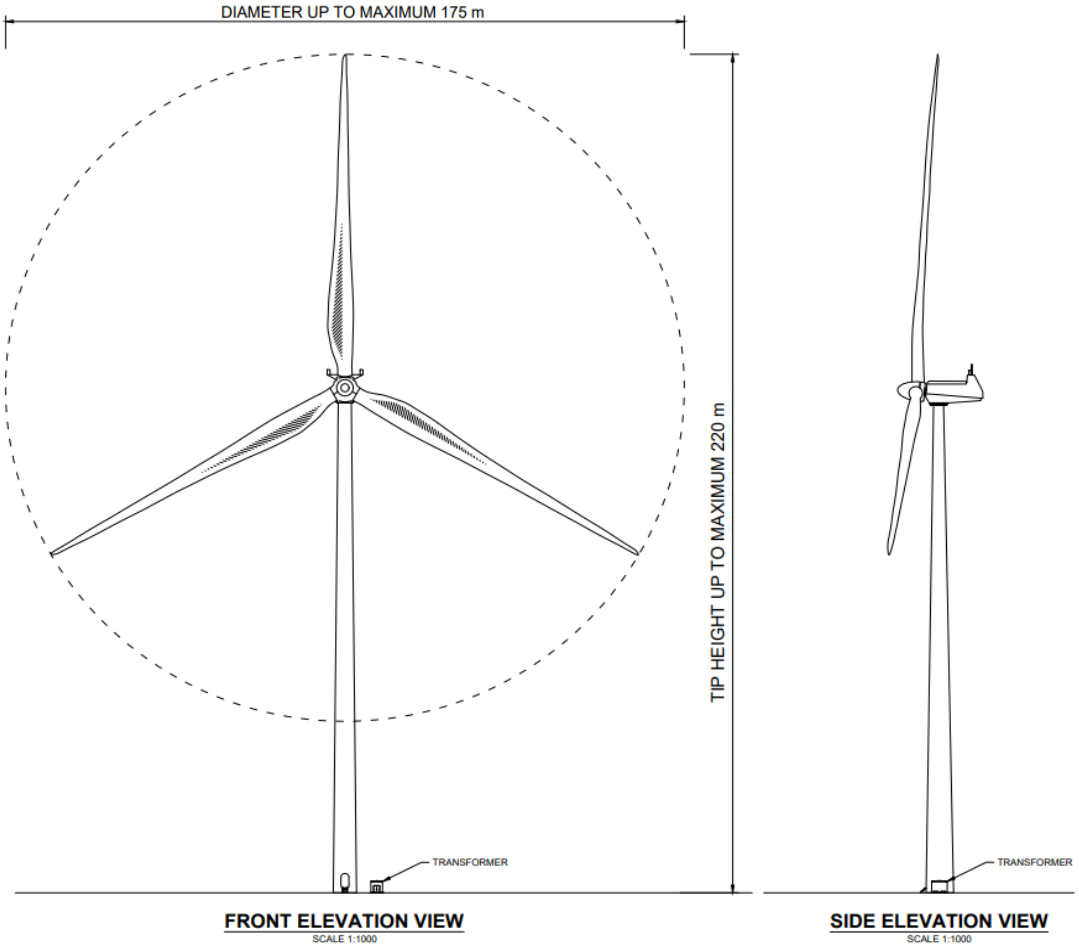


Figure 4 Drawing Illustrating an Indicative Wind Turbine

Construction

The Proposed Development would be constructed over a period of approximately 21 months. Building and commissioning the Proposed Development will comprise the following general stages:

- site establishment (including temporary compound and the concrete batching plant)
- construction of new access tracks, crane hardstanding and drainage infrastructure
- turbine foundations, watercourse crossings and bridge construction
- substation, energy storage electrical works and light detection and ranging installation
- cable trenching and installation
- crane delivery and demobilisation
- turbine delivery, erection and commissioning, and
- site finalisation works, including restoration.

During construction, environmental issues would be identified, managed and monitored though a Construction Environmental Management Plan by the main construction contractor. The objective of this plan would be to ensure that any impact of the construction works on the natural environment are minimised and acceptable. An outline draft of the Construction Environmental Management Plan is provided as an appendix to the Environmental Statement.

A Site Waste Management Plan and a Materials Management Plan will also be developed by the construction contractor prior to construction activities commencing. These plans will outline details of the materials requirements and anticipated waste generation during construction as well as how the construction contractor intends manage waste and materials on the construction Site.

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 components, grid infrastructure and heavy lift cranes.

A Construction Traffic Management Plan detailing how traffic will be managed, and an Abnormal Load Transport Management Plan will be prepared by the Applicant and agreed with Gwynedd Council ahead of construction.

All management plans referred to in the Environmental Statement will be secured by suitably worded conditions on any planning permission granted.

Operation

The expected operational design life of the Proposed Development is 40 years from the date of commissioning.

During the operation of the Proposed Development, regular maintenance works will be required, involving maintenance staff visiting the Site to undertake checks and maintenance activities. Maintenance activities would include the following:

- scheduled routine maintenance and servicing, usually conducted at least twice yearly, which will involve the undertaking of non-essential repairs on gearboxes and generators
- high voltage and other electrical maintenance
- blade inspections, and
- any necessary routine civil maintenance of tracks, drainage and buildings.

Decommissioning

At the end of the operational period, the Proposed Development would be decommissioned. Any repowering would extend the life of the Proposed Development by replacing the turbines and other electricity infrastructure, which would be subject to a new Planning Application.

A decommissioning strategy will be submitted by the Applicant for agreement with the Local Planning Authority prior to the decommissioning works taking place, and this is likely to be subject to an appropriately worded condition on any planning permission.

Existing use of the Site

The Site (as illustrated in **Figure 1**) extends northwards across the Rhiwlas Estate from the A494/A212 towards Llangwm, east and south of the B4501 to approximately six kilometres south of Cerrigdrudion.

Land use within the Site consists mainly of open moorland predominantly used for cattle and sheep grazing. Two areas of common land are located within the Site, on the western slope of Moel Darren. There is another area of common land immediately north of the Site boundary, just south of Garnedd Fawr.

The Site is crossed by several watercourses, including Nant Cefn Coch which drains the eastern portion of the Site into Afon Meloch. The south-western area is drained via two unnamed watercourses conveying flow into Afon Tryweryn. The Site is within Flood Zone A which is at little or no risk of fluvial flooding.

There are six public rights of way within the Site and much of the Site is open access land.

Environmental Designations in and around the Site

The Migneint-Arenig-Dduallt Special Area of Conservation and Site of Special Scientific Interest located approximately 805 metres to the west of the Site. There are 79 Gwynedd Candidate Wildlife Sites within 2 kilometres of the Site.

Peat soils are present in areas of boggy ground in the southern and north-eastern parts of the Site, with some additional peat soils confirmed in the northern and western parts. There are two private water supply sources within the Site and a further 103 private water supplies within 5 kilometres of the Site boundary.

There are no designated historical receptors and 26 non-designated historic receptors recorded within the Site. Two non-designated historic receptors date to the prehistoric period, which consist of a grass covered cairn on the summit of Garnedd Fawr and north-eastern boundary of the Site, and a hut circle located in the centre-east of the Site. Within 2 kilometres of the Site there are 23 designated historic receptors including one scheduled monument, 21 Grade II listed buildings, and Bala and Bala Lakeside Registered Landscape of Special Historic Interest.

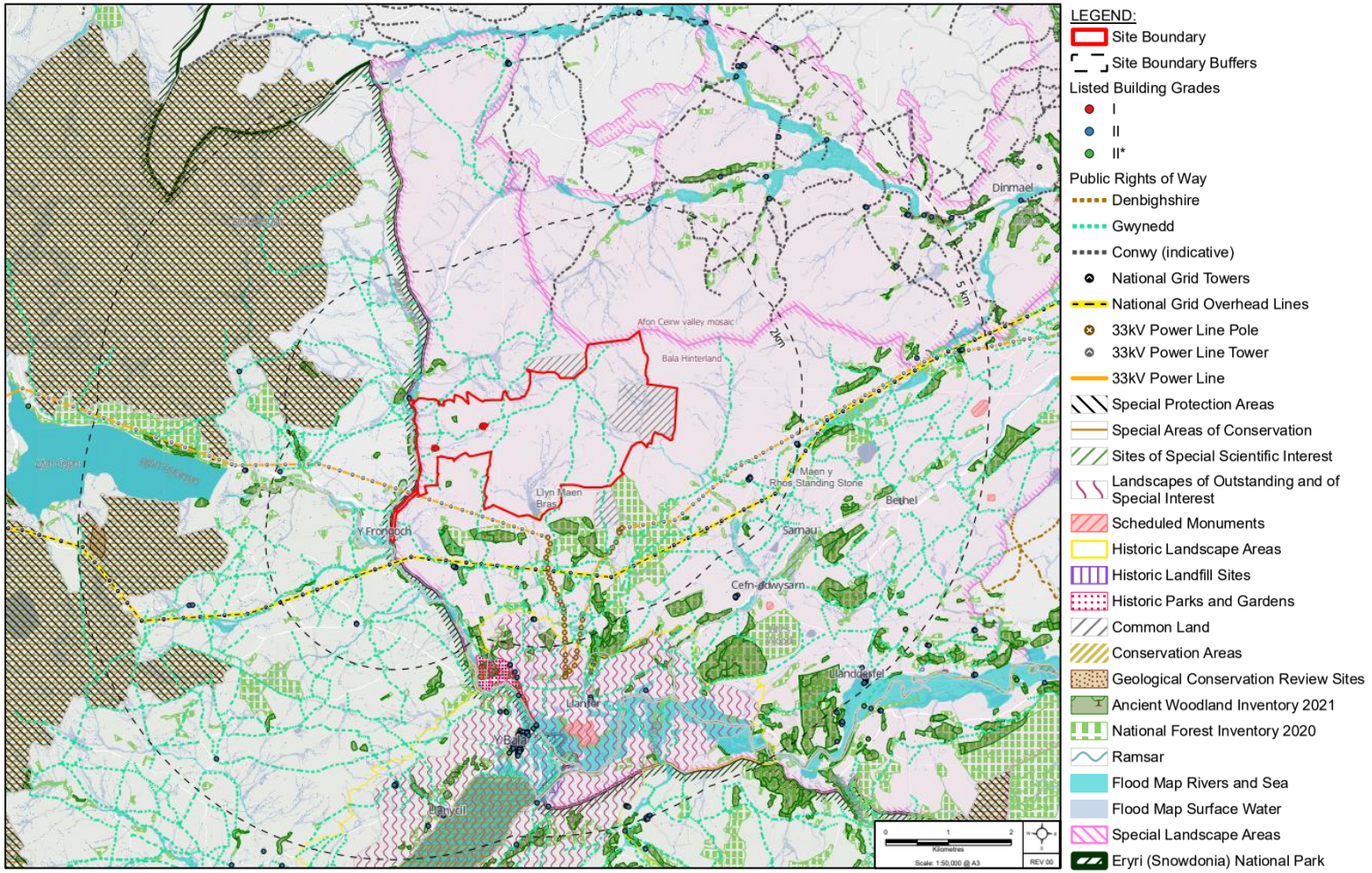
The Site is located approximately 1.9 km east of the Eryri National Park boundary. The Site lies within a Special Landscape Area called "Bala Hinterlands" which recognises the local

landscape value. The Clwydian Range and Dee Valley National Landscape lie approximately 11 kilometres to the east.

The nearest residential properties are scattered farms and houses, with the closest approximately 890 m from the proposed turbines. The nearby settlements of Frongoch (2.7 kilometres), Sarnau (2.7 kilometres), and the town of Bala (4 kilometres).

The Site is located in a military Low Flying Area 7, which the Ministry of Defence define as a *'low priority low flying area less likely to raise concerns'* in relation to wind turbine developments. The Site is located between 46 and 48 km south-west of Hawarden Airport.

Some of the key environmental designations are shown on **Figure 5.**



See **ES Volume IV, Figure 3.1 Environmental Constraints** for full Copyright list. © Crown copyright and database rights 2025 Ordnance Survey AC0000824405. Map data © OpenStreetMap contributors, Microsoft, Facebook, Google, Esri Community Maps contributors, Map layer by Esri

Figure 5 Environmental Constraints Plan

Alternatives and Design Evolution

Alternatives have been considered as part of the process of designing the Proposed Development. The Site was selected to avoid environmental, technical or engineering constraints where possible, while ensuring the maximum potential for energy generation.

The design has considered consultation feedback received at public exhibitions held in September 2024 in Cwmtirmynach and Bala, and detailed technical consultation directly with statutory consultees. The design has also considered the results of environmental surveys undertaken over several years.

The following environmental features have been identified and taken into consideration when developing the design:

- Landscape: Avoiding locations near the Eryri National Park and reducing visibility from key visual receptors;
- Ecology: Avoiding ground water dependant terrestrial ecosystems and Annex I habitat types;
- Residential properties: Appropriate distance between infrastructure and residential properties to avoid breaching of any amenity thresholds;
- Watercourses: Placing infrastructure at least 50 metres from watercourses, and designing infrastructure to minimise the number and extent of new watercourse crossings;
- Peat: Avoiding areas of deeper peat where possible; and
- Public Rights of Way: Avoiding or enhancing rights of way so far as practicable.

The location of turbines and associated infrastructure was discussed by technical experts in design workshops. As a result of this and the consultee feedback, changes to the design were made, summarised in and as follows (**Figure 6**):

Design 1 (Pre-Scoping Layout)

- Preliminary layout based on desk-based research, including 17 turbines with a potential blade to tip height of 250 metres.

Design 2 (Scoping Stage Layout)

- An 11-turbine layout with a with maximum height to blade tip of 220 metres;
- The locations of turbines and tracks were adjusted to avoid areas of deeper peat, potential ground water dependant terrestrial ecosystems and Annex 1 habitats (a type of natural or near-natural habitat listed in Annex I of the European Union Habitats Directive that is at risk).
- At this stage the Site area was approximately 1000 hectares.

Design 3 (Post-Scoping Layout)

- The locations of the turbines were adjusted where possible to further avoid areas of deeper peat, potential ground water dependant terrestrial ecosystems and Annex 1 habitats;
- The turbine locations and tracks were relocated to ensure they were at least 50 metres from watercourses to reduce the risk of water pollution occurring during the construction phase;

- A Site entrance compound was proposed north of the access track entrance, to avoid environmental constraints and enable close access to the public road;
- An additional compound area was proposed between turbine one and turbine two and the substation/ battery energy storage system was proposed near turbine eight due to the suitable topography, proximity to turbines and avoidance of peat and watercourses;
- In addition, access tracks, foundation areas/hardstanding and crane pad hardstandings were added.

Design 4 (Design Chill Layout)

- Following additional peat surveys turbine locations and tracks were adjusted to avoid peaty soils where possible;
- Turbines one and five were moved south and turbine four was removed from the design to avoid loss of peaty soils and due to its proximity to a watercourse;
- Turbine eight was moved east to reduce the visual impact on Bala;
- An undesignated local interest feature known as 'The Giants Pebble' was avoided in the track design alignment, and the track profile was lowered in this location to minimise the potential for any visual impact on this feature.

Design 5 (The Proposed Development)

- A temporary construction compound was included to the East of turbine eight;
- The proposed concrete batching areas was moved from the construction compound near the Site entrance to a new area opposite the substation;
- The LiDAR Compound area was introduced on the track leading to turbine eight;
- Turbines one, two, eight and eleven were reduced from 220 metre tip height to 200 metre to minimise visual impact from the Eryri National Park;
- Access tracks were further optimised as a loop was added in to the access tracks between turbine five to make delivery to turbine two feasible;
- The turbines were then re-numbered turbine one to turbine ten, and the red line boundary brought in to arrive at the final layout design. The final site area is approximately 659 hectares;
- Five temporary material storage areas were identified, avoiding key environmental constraints such as ground water dependant terrestrial ecosystems, watercourses and peat soils.

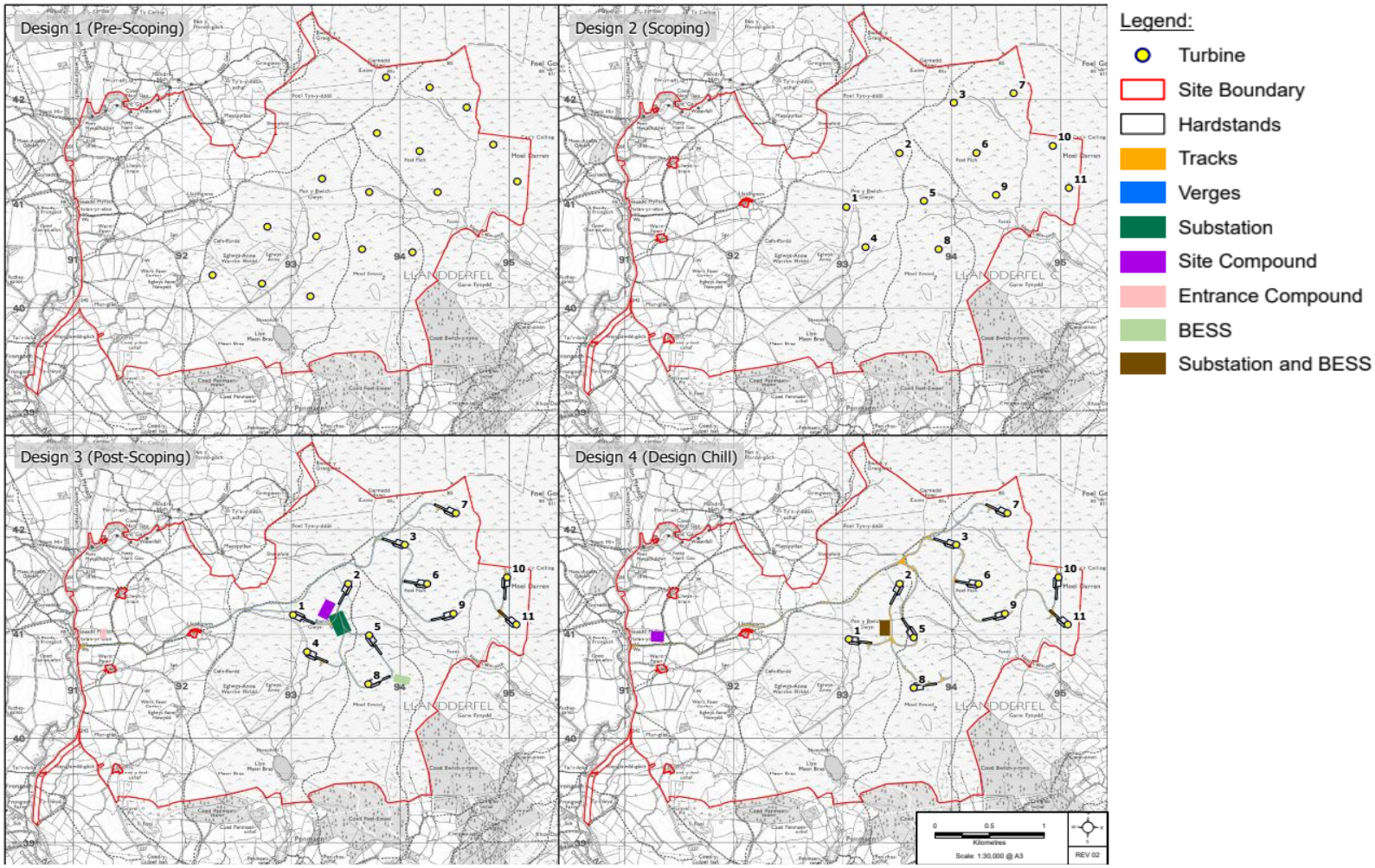


Figure 6 Alternatives Sites Development Options

FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

Terrestrial Ecology

Method of Assessment

The Terrestrial Ecology assessment has been undertaken in accordance with Chartered Institute of Ecology and Environmental Management guidance and considers the following four main potential impacts upon designated sites, protected species and habitats associated with wind farm developments. These are direct and indirect habitat loss, disturbance/ displacement, effects on bat foraging/commuting routes and collision risk with operational turbines.

The assessment identifies which of the important ecological features identified through the desk study and field surveys require further consideration and receive a full impact assessment. The assessment covers the Proposed Development on its own as well as cumulatively with other relevant projects.

Baseline Conditions

Baseline ecology field surveys have been undertaken to inform the impact assessment, including for habitats and vegetation, badger, pine marten, otter, water vole, red squirrel, reptiles and bats.

Figure 7 View of Dry heath transitioning to acid grassland, with Llyn Maen Bras to the south and Llyn Tegid beyond. (Photo taken by Avian Ecology)

The surveys have identified that semi-improved acid grassland dominates the eastern and central areas of the Site, along with extensive areas of acid flush and marshy grassland. In the west, there is a complex mosaic of poor semi-improved grassland, acid grassland, and marshy grassland, with areas of wet heath, acid flush, and fen. There is also scattered dry heath and bracken/gorse scrub across the Site, and small remnant patches of blanket bog. There are a few small streams in the centre and south-west of the Site, running off the hills, and also a waterbody, called Llyn Maen Bras, in the south-west.

Habitats around the access track comprise species-poor pasture, with some adjacent native hedgerow boundaries and mature broad-leaved trees. Limited evidence of protected terrestrial mammals was found on the Site, but suitable habitats for foraging and commuting otters and badgers were identified. Bat species were recorded onsite including common pipistrelle, soprano pipistrelle and noctule bats.

Figure 8 Common Pipistrelle. (Photo by Meneer Zjeroen. Licensed under CC BY 2.0)

There are three Candidate Local Wildlife Sites within the Site (Llandderfel, Llwyn-y-brain heath and Llywyn-y-brain cottage), but only Llandderfel was considered close enough for potential impacts to occur. The Site does not overlap with any designated sites of nature conservation interest although there are several in the wider surrounding area. The closest designated site is, River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid Special Area of Conservation and the Afon Dyfrdwy (River Dee) Site of Special Scientific Interest, located adjacent to the western Site boundary.

Proposed Mitigation and Effects

Mitigation by design has meant the design layout of the Proposed Development has evolved to be sensitive to ecological features. In addition to this, mitigation is proposed to ensure that protected species and habitats are protected. These measures are fundamental to allow any works to proceed in a legally compliant manner.

Although no significant effects are anticipated, precautionary measures are proposed to minimise effects on protected species and habitats, such as measures to reduce any unnecessary collision risk to foraging and commuting bats. A 50 m 'stand-off' buffer between the blade tip and bat habitat features (including watercourses and waterbodies) will ensure appropriate mitigation requirements for all bat species. During the operational phase of the Proposed Development, additional mitigation in the form of pitching the blades out of the wind ('feathering') to reduce rotation speeds below two revolutions per minute while idling, would be implemented. Furthermore, implementation of the Construction Environmental Management Plan is also considered as additional mitigation.

The Proposed Development provides an opportunity to deliver notable habitat improvements within the Site, including the peatland and heathland restoration and native woodland (riparian) planting, as well as creating roosting and foraging opportunities for wildlife, such as bats, which is detailed in an outline Habitat Management Plan. These improvements are predicted to provide net beneficial effects associated with the Proposed Development, benefitting many protected species and habitats in the long-term.

With the implementation of the embedded mitigation, no significant residual effects upon any important ecological features are predicted to occur (alone or in combination with any other wind farm development).

A shadow Habitats Regulations Assessment has also been undertaken, but found no evidence found to suggest the integrity of either the River Dee and Bala Lake Special Area of Conservation /River Dee Site of Special Scientific Interest/Afon Dyfrdwy (River Dee) Site of Special Scientific Interest would be affected by the Proposed Development.

Ornithology

Method of Assessment

The Ornithological (wild bird) assessment has been undertaken in accordance with Chartered Institute of Ecology and Environmental Management guidance and considers the following four main potential impacts upon ornithological features associated with wind farm developments. These are direct habitat loss, disturbance/displacement, blocking any established movement routes and collision risk with operational turbines.

Baseline ornithological conditions have been established through a desk study review of existing information and ornithological field surveys, informed through consultation with Natural Resource Wales and ornithological recording groups.

Baseline Conditions

The Site is located within the known foraging distance of bird species which are considered to be an important feature (a 'qualifying species') of the Migneint-Arenig-Dduallt Special Protection Area and Site of Special Scientific Interest designations. The Site is also potentially within the maximum foraging range of some qualifying species of the most spatially distant Berwyn Special Protection Area and Site of Special Scientific Interest.

There was no evidence of any Special Protection Area qualifying species breeding during field surveys, and activity for most of these species during a two-year survey period was very limited. In total five hen harrier, two peregrine and zero merlin flights were recorded. Red kite (a qualifying species for the Berwyn Special Protection Area and Site of Special Scientific Interest) was the most regularly recorded target species, although no evidence of red kite breeding was recorded.

Figure 9 Red Kite. (Photo by ahisgett, licensed under CC BY 2.0)

Baseline studies have established that the Site and/or adjacent habitats are used by a limited group of bird species. This comprised of kestrel (using the Site for foraging, but not breeding), a breeding pair of hobby, two breeding pairs of curlew, low breeding numbers of red grouse (up to two pairs), low densities of perching birds (including ground-nesting species like grasshopper warbler), and limited flight activity of other waders like lapwing and snipe (but with no evidence of breeding).

Proposed Mitigation and Effects

The design of the Proposed Development layout has been evolved to consider ornithology. The turbines have avoided the ridgeline and summits of hills to avoid areas of raptor activity, and habitat features and breeding Curlew have been avoided. In addition to this a commitment is made for pre-construction checks, to ensure that nesting birds are protected.

Although no additional mitigation measures are required, as a precautionary measure any dead sheep from the proximity of the Proposed Development during operation, to avoid raptors being attracted to these areas.

The Proposed Development provides an opportunity to deliver notable habitat improvements within the Site, including the peatland and heathland restoration and native woodland planting. The proposals for this are detailed in an outline Habitat Management Plan and will benefit many key bird species.

With the implementation of the embedded mitigation, no significant residual effects upon any important bird features are predicted to occur.

A shadow Habitats Regulations Assessment has also been undertaken specifically for ornithology, but found no evidence found to suggest the integrity of either the Migneint-Arenig-Dduallt Special Protection Area or Berwyn Special Protection Area would be affected by the Proposed Development.

Land, Soils and Water

Method of Assessment

Land, Soils and Water assessment considers the potential impacts of the Proposed Development on geology, soils, peat soils, surface water, drainage and flood risk, groundwater, private water supplies, designated sites and potential groundwater-dependent terrestrial ecosystems. The assessment has been informed throughout by desk-based studies and field-based surveys, following various good practice guidance.

Baseline Conditions

The Proposed Development lies across five drainage catchment areas: the Afon Mynach in the north-west, Afon Meloch in the east, River Dee – Alwen to Llyn Tegid in the central southern part, Afon Tryweryn – Dee to Mynach in the south-western corner and Afon Medrad in the northern margin of the Site. There are no records of active mining or quarrying within the Site.

Peat surveys identified peat soils in areas of boggy ground in the southern and north-eastern parts of the application boundary, with some additional peat soils confirmed in the northern and western parts. Soil core samples confirmed that much of the Site has thin soils, under 0.3 m in thickness, overlying soft clay. The Peatland Condition Assessment undertaken to inform the Peat Management Plan identified that there is no peatland habitat within the Site that would be considered to be near-natural. The majority of the peatland areas are drained or modified and are in poor condition.

There are two private water supply sources within the application boundary and a further 103 private water supplies within five kilometres of the Site boundary.

Effects and Proposed Mitigation

Physical changes to land drainage and surface water flows could occur during construction of the Proposed Development, but would be managed by installation of suitable drainage systems. These would be monitored and maintained through the lifetime of the Proposed Development. Earthworks could result in loose sediment entering watercourses during construction and there is potential for pollution of surface and groundwater from spills of fuels, oils, concrete and foul drainage. A pollution prevention and spillage plan will be implemented during the construction and operational phases.

The Site lies within Flood Zones two and three, with the areas at risk of flooding confined to surface waterbodies and small watercourses within the Site. There is potential for flooding downstream, and a Flood Consequences Assessment has been prepared to address changes to flood risk downstream of the Site. Flood risk in areas downstream can be managed by use of suitable sustainable drainage systems to control, manage and treat

surface water runoff throughout the life of the Proposed Development.

The Proposed Development has been carefully designed to avoid areas of peat soil where possible. A Peat Management Plan has been prepared to provide details of the management of peat soils within the Site, together with plans for Site reinstatement and mitigation measures for peat soils. Reuse of peat soils would be targeted to areas most suitable in terms of current soil types and hydrology, to ensure that they provide the greatest value to the peat soils and habitat within the Site.

Four private water supplies local to the Site have potential to be affected by the Proposed Development. However, mitigation measures and monitoring plans have been set out to ensure these supplies are protected. As a result, there would be no anticipated significant effects on private water supplies.

Cultural Heritage

Method of Assessment

Culture Heritage Assessment has been undertaken in accordance with legislation, national and local planning policy and guidance relevant to Cultural Heritage. This used an inner study area that encompassed the entire application boundary, where known and potentially unknown historic receptors were identified that may experience physical construction effects.

An outer study extending to ten kilometres from the Site was also used to identify historic receptors. Designated historic receptors within the Site and within five kilometres of the Site were assessed. Scheduled monuments, Grade I and II* listed buildings and designated historic receptors that are particularly susceptible to changes to their setting, deriving significance from long-range views were assessed up to ten kilometres.

The assessment of effects has combined analysis of the data gathered during the desk-based assessment and site visits, any visualisations the Proposed Development, and geophysical survey conducted within its footprint. Analysis of historic receptors enabled a clear perspective and interpretation of the historic development of the Site and outer study areas. This analysis also established what comprised the setting for the historic receptors, and what elements of that setting contribute to how the asset is experienced, understood and appreciated.

Baseline Conditions

There are no designated historic receptors the application boundary. There are 26 non-designated historic receptors recorded within the application boundary, with 25 recorded in the Trust for Welsh Archaeology (Heneb) Historic Environment Record. These predominantly relate to the post-medieval period or of an unknown origin, representing 85% of the non-designated historic receptors identified within the application boundary. Two non-designated historic receptors date to the prehistoric period, which consist of a grass covered cairn on the summit of Garnedd Fawr and north-eastern boundary of the Site, and a hut circle located in the centre-east of the Site.

The only newly identified non-designated historic receptor within the Proposed Development is a previously unrecorded linear feature identified during analysis of the LiDAR[1] and satellite imagery, and through the field visit. The linear feature of an unknown date that bisects Moel

[1] LiDAR which stands for Light Detection and Ranging, is a technology which uses laser light to create a 3D representation of the land surface, which can be used to identify potential archaeological features

Darren in the east of application boundary.

There is a medium potential for previously unknown historic receptors to be located within the footprint of proposed infrastructure. Geophysical survey has been conducted to determine the presence or absence of any previously unknown historic receptors, with no anomalies indicative of below ground archaeological remains detected within the areas surveyed.

Figure 10 Llandderfel Hut Circle. (Photograph taken by Headland Archaeology)

Peat to a depth over 20 cm has been recorded within the application boundary. Peat, which survives under waterlogged conditions and therefore has excellent preservation potential for organic remains, also potentially seals an undisturbed ground surface with archaeological potential. Study of the organic remains preserved within stratified peat deposits enables the construction of a narrative of changes to the surrounding environment brought about by human activities and natural events in the prehistoric and historic periods.

There are 23 designated historic receptors recorded by Cadw within the two kilometres outer study area. These relate to one scheduled monument, 21 Grade II listed buildings, and Bala and Bala Lakeside Registered Landscape of Special Historic Interest.

There are 188 designated historic receptors recorded within the 5 kilometres outer study area. These consist of 11 scheduled monuments, one Grade I listed building, 11 Grade II* listed buildings, 160 Grade II listed buildings, the Grade II listed Rhiwlas registered historic park and garden, which includes its two kitchen gardens, and two conservation areas.

A further 43 designated historic receptors are recorded within the ten kilometres outer study area. These comprise 20 scheduled monuments, 21 Grade II* listed buildings and two registered historic landscapes.

Proposed Mitigation and Effects

It is proposed that post-determination archaeological monitoring or excavation of linear heritage feature be undertaken during the construction phase to mitigate the loss of a section of the feature by preservation through record.

Where the peat survey has identified peat deeper than 20 cm in depth which cannot be avoided through the design (e.g. through micrositing) a programme of post-determination deposit mapping, purposive sampling, analysis and dating and reporting will be undertaken by a geoarchaeological specialist prior to the commencement of construction activity.

The desk-based assessment and geophysical survey results indicate that the application boundary has generally low archaeological potential. The risk that currently unknown archaeological remains may be disturbed during construction would be managed through an Archaeological Clerk of Works and an Unexpected Finds Protocol.

These could be made a condition of consent by the Local Authority with the scope defined by an archaeological written scheme of investigation approved by Welsh Archaeological Trust.

It is considered that following additional mitigation measures that the residual effect of direct impacts and indirect impacts will be not significant.

Measures to enhance the historic environment would be detailed within a Historic Environment Enhancement Plan and would include: conservation management plans for the non-designated cairn, hut circle and sheepfolds within the application boundary, repair and enhancement of drystone walls and historic hedgerows within the application boundary and improved interpretation and access to the historic assets within the application boundary through information boards, development of a heritage trail and web-based resources.

Landscape and Visual

Method of Assessment

The landscape and visual impact assessment was undertaken in accordance with the relevant published guidelines, and in consultation with Natural Resource Wales and Conwy County Borough Council. The assessment looked at an area extending 35 kilometres from the Site to understand where the wind farm might be visible and what effects it could have on the landscape character and people's views.

Computer modelling was used to predict where the turbines would theoretically be visible, and this was checked through extensive site visits and photographic surveys from key viewpoints.

The methodology involved:

- desktop studies using LANDMAP data (which is a landscape resource map for Wales), landscape character assessments, and policy documents
- field surveys conducted across different seasons and weather conditions
- generation of computer-models to identify areas where the turbines would be visible
- assessment of 21 representative viewpoints with photomontage visualisations
- residential Visual Amenity Assessment for properties within two kilometres, and
- evaluation of effects on landscape character areas and visual receptors.

The assessment used a systematic approach to determine the sensitivity of receptors and magnitude of change, leading to judgments on the significance of effects.

Baseline Conditions

The Proposed Development is located on upland moorland characterised by open grazing, with areas of acid grassland, marshy grassland and acid flush.

The Site is located approximately two kilometres east of the Eryri (Snowdonia) National Park boundary. While not within the National Park itself, the Site lies within a Special Landscape Area called "Bala Hinterlands" which recognises the local landscape value. The Clwydian Range and Dee Valley National Landscape lies approximately 11 kilometres to the east.

The landscape is characterised as large-scale open upland moorland with exposed plateaus and hillsides. There are a few small tree plantations, overhead power lines, and a network of stone walls and tracks scattered across the landscape. The area provides opportunities for recreation with several public footpaths crossing the moorland.

The nearest properties are scattered farms and houses, with the closest approximately 890 m from the proposed turbines. The nearby settlements of Frongoch (2.7 kilometres), Sarnau (2.7 kilometres), and the town of Bala (3.1 kilometres) would have varying degrees of

visibility. The area is crossed by public footpaths and minor roads, with the main A494 and A5 roads providing access to the wider region.

Tall features like power lines and telecommunication masts are already part of the scenery.

Proposed Mitigation and Effects

The wind farm layout has been carefully designed to minimise landscape and visual effects by:

- positioning turbines on the more elevated northern slopes to create a compact, logical arrangement
- reducing some turbine heights from 220 metres to 200 metres
- minimum 1.9 kilometre distance from Eryri National Park boundary
- maintaining appropriate distances from residential properties (minimum 890 m), and
- using standard off-white turbine colouring with low-reflectivity finish.

During construction, impacts would be minimised through:

- an environmental management plan to protect existing landscape features
- retaining existing vegetation where possible
- maintaining tidy construction compound, and
- careful soil management and storage for later restoration.

Following the implementation of embedded mitigation measures (including careful turbine siting, underground cabling, and sympathetic access design), the assessment identified some, relatively localised significant landscape and visual effects during all phases of the development.

Effects on Landscape Character

The Proposed Development would result in significant changes to the immediate landscape character of the Foel Goch Uplands, introducing large vertical structures into the currently open moorland setting. Effects on landscape character would extend up to approximately ten kilometres from the Site, with the most significant changes within five kilometres. Many parts of the landscape within these areas would however have no views of the Proposed Development and no effects on landscape character.

Effects on Views

The most significant effects would arise during the 40-year operational period. Major to moderate-major significant effects were identified on:

- ten of the 20 residential properties within two kilometres of the turbines
- nearby settlements Bala (parts of the northern area beyond the town centre), Cefnddwysarn, Frongoch and Sarnau
- 12 of the 21 assessed viewpoints, representing various receptor types
- B4501 and minor roads within 5 km (western area), and
- public rights of way and recreational routes in the immediate vicinity primarily less than five kilometres.

Effects would diminish with distance, with significant effects generally contained within 10 to 13 kilometres of the Site. Visual screening from topography, vegetation, and built form would

reduce actual visibility with many parts of the landscape having either no visibility of the Proposed Development, or limited visibility that would not result in a significant effect.

No residential properties were identified as being at risk of breaching the Residential Amenity Threshold, ensuring that while some significant effects occur, no properties would experience overwhelming or dominant impacts.

Figure 11 Extracted image from the visualisations produced for the Landscape and Visual Impact Assessment illustrating the Proposed Development at viewpoint 9: V9: B4391 South of Rhanneg.

Effects on Protected Landscapes

While the wind farm would be visible from some parts of Eryri National Park, it would not compromise the overall integrity of the National Park or prevent the appreciation of its special qualities across the designated area as a whole. Any significant effects would be limited to areas towards the eastern boundary of the National Park, and the majority of the National Park would have no visibility of the Proposed Development. Where the Proposed Development would be seen, it would be in views looking beyond the National Park, with the most scenic core of the National Park in the opposite direction and not impacted. Effects on the Clwydian Range and Dee Valley National Landscape would be very limited due to the distance (11 kilometres+) with no significant effects identified.

Noise

Method of Assessment

A noise assessment was undertaken to determine the likely significant noise effects from the construction and operational phases of the Proposed Development, on nearby noise sensitive receptors which were identified as scattered residential properties.

This assessed noise from:

- onsite construction activities including the erection of wind turbines and construction of associated tracks
- construction vehicles arriving and departing the Site on the road network near the Site entrance, and
- operation of the wind turbines, including cumulative noise impact with other nearby wind turbines/ farms.

The construction noise assessment was undertaken in accordance with British Standard 5228 at the nearest receptors proximate to the Proposed Development.

Operational wind turbine noise was assessed in accordance with the guidance in Institute of Acoustics Good Practice Guidance to establish noise limits relative to background noise levels or fixed minimum limits. Predictions of wind turbine noise from the Proposed Development have been made in accordance with good practice using a candidate wind turbine.

The Total ETSU-R-97 Noise Limit is applicable to all operational and consented wind farms in the area, so site specific noise limits have also been derived to control the specific noise from the Proposed Development operating on its own.

Baseline Conditions

Background noise data was collected at four locations proximate to the Proposed Development between October and December 2024. The measured noise levels were used to establish background noise levels in the absence of any wind turbine noise and to set noise limits at the nearest receptors to the Proposed Development. There was no influence from operational wind turbines on the background noise data due to the large separation distances from the noise monitoring locations.

The Site is located in a relatively remote area and properties surrounding the Proposed Development are mainly single, rural dwellings including farmhouses and holiday cottages scattered throughout the area.

Proposed Mitigation and Effects

The turbine layout of the Proposed Development was developed to avoid potentially significant noise effects.

During the construction phase, mitigation will be applied in the form of good practice, in accordance with the construction environmental management plan, including measures to reduce noise. These include:

- keeping residents informed of the proposed working schedule, where appropriate
- adhere to core construction work hours
- ensure all vehicles and mechanical plant would be fitted with effective exhaust silencers and be subject to programmed maintenance
- instruct that machines would be shut down between work periods or throttled down to a minimum
- regularly maintain all equipment used onsite, including maintenance related to noise emissions, and
- vehicles would be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation.

To further mitigate operational phase effects, an appropriate wind turbine model will be selected for installation to meet the Site-specific noise limits which will be enforced in planning conditions. Any chosen model should have a range of operational modes available (i.e not only one full mode) which would allow reduction of noise in specific wind speed and time periods, if required.

Following the implementation of the proposed mitigation measures, the effects of noise from the Proposed Development are considered not significant for the construction and operational phases.

Traffic and Transport

Method of Assessment

A Traffic Assessment has been undertaken in line with current good practice guidance.

This has assessed the access to the Proposed Development, which will be via an upgraded simple priority from the B4501 at Glan-yr-afon. This access junction will be designed to accommodate all predicted loads and traffic for all phases of the Proposed Development.

Construction traffic associated with the Proposed Development has been assessed. This will generally approach from the north via the A5 and B4501. However, some personnel may arrive from the south via be A494, A4212 and B4501.

An assessment of abnormal indivisible load has also been assessed. Abnormal load components will depart from the Port of Liverpool, travelling to the Site via the A5036, A59, M57, M62, M6, M56, M53, A55, A4087, A470, A4212 and B4501. It is anticipated that the abnormal indivisible load deliveries will take place in Months 13 to 17, outside of the peak of construction.

Baseline Conditions

Baseline traffic data to inform the assessment was obtained from a combination of Automatic Traffic Count Surveys and existing information from the UK Department for Transport.

There are limited pedestrian facilities in the immediate vicinity of the Proposed Development, reflecting the rural nature of the area. There are however a number of Public Rights of Way within the Site boundary, as well as areas of Common Land and Open Access Land.

There are no National Cycle Network Routes within the immediate vicinity of the Proposed Development. The closest National Cycle Network Route to the Proposed Development is National Cycle Network Route 82 which runs to the west of the study area within Trawsfynydd. National Cycle Network Route 82 is approximately 210 kilometres in length and runs in sections from Bangor to Fishguard.

A review of consented developments was undertaken as part of the baseline assessment. No onshore wind farm developments or other significant traffic generating developments with planning permission were identified, that should be considered as part of any cumulative assessment.

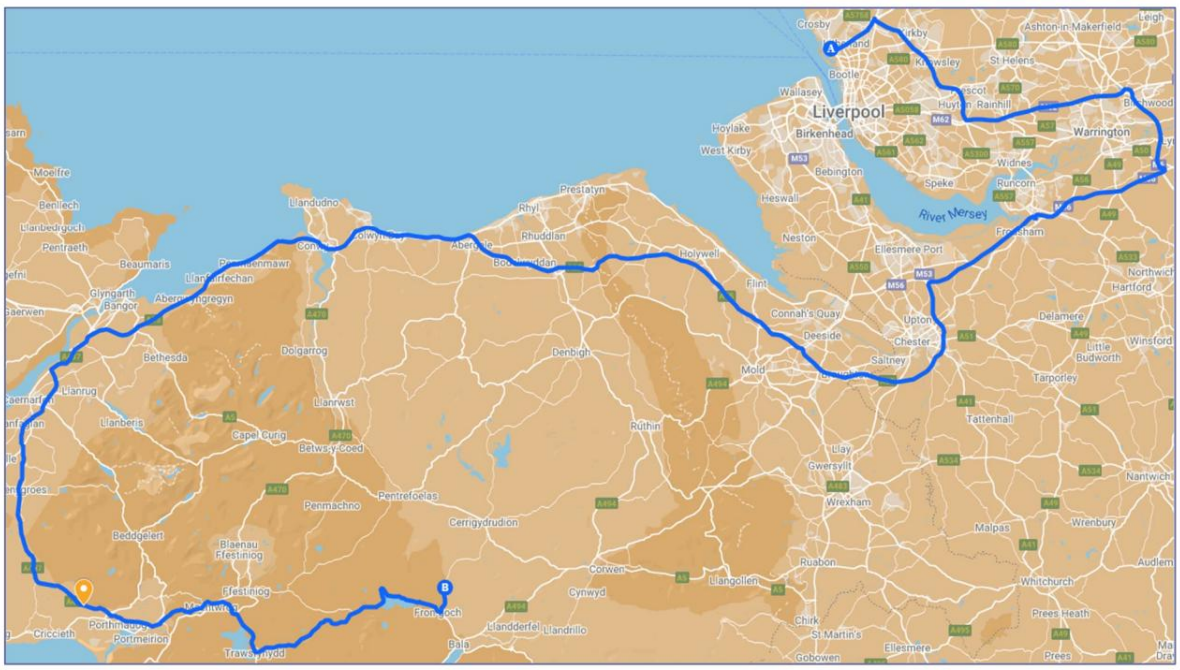


Figure 12 Proposed abnormal indivisible load access route to the Site. Extracted image from Annex 1 of Appendix 11.1 Transport Assessment. (Basemap OS Open Source 2025)

Proposed Mitigation and Effects

The construction traffic would result in a temporary increase in traffic flows on the road network surrounding the Proposed Development. The peak of construction in terms of vehicular movements is expected to occur in month eight will be 114 daily journeys (52 Car/ Lights and 62 heavy goods vehicles journeys). Over the course of a typical 10 hour working day on the Site, this would equate to approximately 11 two-way heavy goods vehicle movements per hour.

The assessment identified that B4501 users, residents on the B4501 and PRoW/ path/ common land/ open access land users within the Site are likely to experience significant effects, prior to the application of mitigation measures. The following measures would therefore be implemented to mitigate any adverse effects of construction traffic during the construction phase:

- Construction Traffic Management Plan
- Abnormal Load Transport Management Plan
- Access Management Plan, and
- Staff Travel Plan.

With the implementation of appropriate mitigation, no significant residual effects are anticipated in respect of traffic and transport issues.

Aviation

Method of Assessment

The aviation assessment has been undertaken in accordance with Civil Aviation Authority guidance, using data from UK Aeronautical Information Publications and modelling of radar line of sight.

Baseline Conditions

The Site is located in uncontrolled airspace extending from ground level to approximately 19,500 feet above sea level. The radar systems operated by NATS EN-Route Ltd at Great Dun Fell, St Annes and Clee Hill provide air traffic services in the airspace overhead the Site. The Site is within 60 kilometres of Hawarden Airport and may have the potential to affect its radar and instrument flight procedures. The Site is within a military low flying area. There are no other aviation assets within the study area.

Proposed Mitigation and Effects

Effects on the radar systems will be mitigated by use of the data from an additional radar that does not have line of sight to the turbines in the Proposed Development. This radar is unaffected by the turbine interference and can still provide reliable tracking data.

It is proposed that turbines one, four, five and ten are provided with dimmable lights at hub height. Additional infra-red lighting is also proposed on all turbines except turbine seven to satisfy Ministry of Defence requirements.

With the proposed mitigation no significant effects on aviation are predicted.

Climate

The climate change assessment provides an approximation of the greenhouse gas (notably carbon dioxide) emissions produced during the manufacture, construction and decommissioning of the Proposed Development (i.e. the whole lifecycle of the Proposed Development). It also provides an estimate of the contribution that renewable energy proposals would make towards the reduction of emissions, which would otherwise be produced by fossil fuel power generation if the Proposed Development was not built.

The difference between emissions produced and emissions saved over the whole life of the Proposed Development is called the 'carbon balance'. The time it takes for emissions saved to be greater than the emissions produced is called the 'pay-back' period. A Greenhouse Gas assessment was carried out using the industry-standard Scottish Government's Carbon Assessment Tool in order to assess the Greenhouse Gas emissions and savings associated with the Proposed Development.

The main sources of emissions from the Proposed Development include the disturbance of peatland and the energy consumption required for the manufacture and construction of the turbines, battery energy storage system and associated infrastructure. However, the production of greenhouse gas emissions are small compared with the emissions saved, with the pay back period occurring only 0.6 years after the Proposed Development becomes operational against a fossil fuel mix of electricity or 1.3 years against a grid-mix of electricity.

The Proposed Development is predicted to deliver total emissions savings of 1,264,305 tonnes of carbon dioxide equivalent over its 40-year operational lifetime, against grid mix electricity generation, and 2,632,967 tonnes of carbon dioxide equivalent against fossil fuel mix electricity generation.

The whole lifecycle effect is considered be significant and beneficial as the renewable energy generated by the Proposed Development would contribute towards Wales's national emissions reduction targets.

Cumulative Effects

A cumulative effects assessment was undertaken to assess whether the combination of multiple effects on the environment would result in any effects of greater significance. This has been assessed with respect to the potential for the combination of multiple effects across different factors of the environment, and the combined effect of other committed development projects when considered together with the effects of Proposed Development.

The introduction of the Proposed Development during construction and decommissioning would have a significant intra-project effect on users of the B4501. This is due to the short-term, temporary changes in views and increase in construction movements (large loads).

Cumulative inter-project effects are anticipated during the operational phase for landscape and visual receptors. When incorporating operational, consented, submitted and in scoping schemes, there would be potential for greater effects, albeit primarily from more elevated locations. The schemes at Gaerwen at 6 kilometres east and Moel Chwa at 5 kilometres north-east would be the closest to the Proposed Development and have the greater potential to be seen more prominently in views alongside the Proposed Development, however, for the majority of the landscape, intervening landform and vegetation would prevent such combined visibility, with locations generally limited to upland areas. This would create views with turbines visible in multiple directions, impacting the visual amenity of these areas to some degree, but it is these more elevated locations from which the existing wind energy in the landscape is already visible, such that it is an existing characteristic of the view.

The cumulative effects assessment has concluded that there would be a significant beneficial residual effect on climate change. This would result from the combined effect of carbon dioxide emissions reductions of the Proposed Development together with other existing and new wind farm developments, which collectively contribute towards Wales's national emissions reduction targets and renewable electricity generation ambitions.

WHAT HAPPENS NEXT?

Following Pre-Application Consultation all comments received are considered, and the design proposals are reviewed taking the comments received into account. All application documents will then be updated based on the comments and design amendments, before being submitted fir a decision to Planning and Environment Decisions Wales.