
Alwen Forest Wind Farm and Grid Connection

Green Infrastructure Statement

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1. Introduction

1.1.1. This document has been prepared to support an application for the proposed development of the construction and operation of a wind farm, grid connection, battery energy storage systems and associated infrastructure at Alwen Forest Wind Farm and Grid Connection at Alwen and Clocaenog Forests. The document seeks to respond to changes in Planning Policy Wales.

1.1.2. In line with Planning Policy Wales (PPW) and the Wellbeing of Future Generations Act 2015, Green Infrastructure encourages a wider, sustainable and problem-solving outlook which focuses on integrating and addressing multiple issues. Green infrastructure is defined in PPW, in paragraph 6.2.1, as:

Green infrastructure is the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect places. Component elements of green infrastructure can function at different scales and some components, such as trees and woodland, are often universally present and function at all levels. At the landscape scale green infrastructure can comprise entire ecosystems such as wetlands, waterways, peatlands and mountain ranges or be connected networks of mosaic habitats, including grasslands. At a local scale, it might comprise parks, fields, ponds, natural green spaces, public rights of way, allotments, cemeteries and gardens or may be designed or managed features such as sustainable drainage systems. At smaller scales, individual urban interventions such as street trees, hedgerows, roadside verges, and green roofs/walls can all contribute to green infrastructure networks.

1.1.3. The Welsh Government declared a nature emergency on 30th June 2021. The Senedd, through the Climate Change, Environment, and Infrastructure Committee are undertaken work to identify outcomes of COP15 and how this is and will shape the Welsh Government's response to the nature emergency and related matters. As part of this work, the Committee is considering how Wales can implement the COP15 international agreement on biodiversity at a local level, whether through legislation or updating policies, including the Nature Recovery Action Plan and Natural Resources Policy, and implementing the recommendations from the Biodiversity Deep Dive.

1.1.4. It is worth noting that Denbighshire County Council declared a Climate Change and Nature Emergency in July 2019. In response, and by 31st March 2030, the Council aims to become a net carbon zero, and ecologically positive Council. On 9th May 2019, Conwy County Borough Council declared a climate emergency.

1.1.5. Acknowledging the content of PPW and reflecting the assessment undertaken for the proposed development, this Statement is structured as follows:

- Context;
- Policies and plans;
- The Proposed Development; and
- Conclusion.

2. Context

2.1. Planning Policy Wales

- 2.1.1. The latest iteration of Planning Policy Wales states, in paragraph 6.2.12, that “A Green Infrastructure Statement should be submitted with all planning applications. The Green Infrastructure Statement should be proportionate to the scale and nature of the proposed development and describe how green infrastructure has been incorporated into the proposal”. PPW envisages the Green Infrastructure Statement as being an effective way of demonstrating positive multi-functional outcomes which are appropriate to the Site, and also demonstrate how the step-wise approach has been applied.
- 2.1.2. PPW notes that the Green Infrastructure Statement should highlight any baseline data considered and surveys and assessments undertaken, including habitats and species surveys, arboricultural surveys and assessments, and landscape and ecological management plans.

2.2. The DECCA framework

- 2.2.1. PPW states that development should not cause any significant loss of habitats or populations of species, locally or nationally and must working alongside nature and it must provide a net benefit for biodiversity and improve, or enable the improvement of, the resilience of ecosystems.
- 2.2.2. A net benefit for biodiversity is the concept that development should leave biodiversity and the resilience of ecosystems in a significantly better state than before, through securing immediate and long-term, measurable and demonstrable benefit, primarily on or immediately adjacent to the Site. The step-wise approach is the means of demonstrating the steps which have been taken towards securing a net benefit for biodiversity.
- 2.2.3. In doing so, regard must also be given to promoting the resilience of ecosystems, through the DECCA framework, which is framed as such:
- **Diversity** between and within ecosystems;
 - The **extent** or scale of ecosystems;
 - The **condition** of ecosystems including their structure and functioning;
 - The **connections** between and within ecosystems; and
 - **Adaptability** of ecosystems including their ability to adapt to, resist and recover from a range of pressures likely to be placed on them through climate change, for example.
- 2.2.4. PPW notes that a proactive and creative approach facilitating the delivery of biodiversity and ecosystem resilience outcomes must be taken by all those participating in the planning process, as all interventions contribute to a national scale resilience. The step-wise approach will help in securing a net benefit for biodiversity, with the onus on applicants to bring forward proposals in a way which will achieve a net benefit for biodiversity and demonstrate how they have used the step-wise approach.



2.3. Designated sites

- 2.3.1. In considering biodiversity and ecological networks within PPW, the third bullet point in paragraph 6.4.3 notes that the need to “ensure statutorily and non-statutorily designated sites and habitats are properly protected and managed and their role at the heart of resilient ecological networks is safeguarded”.
- 2.3.2. As noted in paragraph 6.4.10 of PPW, both statutorily and non-statutorily designated sites make a vital contribution to protecting biodiversity, maintaining the resilience of ecosystems and are important in providing opportunities for achieving wider well-being objectives. Paragraph 6.4.11 continues on this theme, noting that all designated sites must be able to continue to protect the biodiversity and features for which they were designated and contribute to the resilience of ecosystems at the appropriate scale. This ability should not be compromised by inappropriate development or other activity.
- 2.3.3. In relation to the step-wise approach, PPW identifies a hierarchy to designated sites, as shown in figure 1 below, with Special Areas of Conservation, Special Protection Areas, RAMSAR sites, Sites of Special Scientific Interests, and National Nature Reserves comprising statutory designations and in a higher tier, where their interaction with the step-wise approach is to avoid. Non-statutory and development plan designations should be considered in line with the step-wise approach.

Figure 1: Designated sites in PPW

Designation	Statutorily and Non Statutorily Protected Sites	Interaction with Step-wise Approach
Special Area of Conservation	Statutory	Avoid
Special Protection Area	Statutory	
Ramsar sites	Statutory	
Site of Special Scientific Interest	Statutory	
National Nature Reserve	Statutory	

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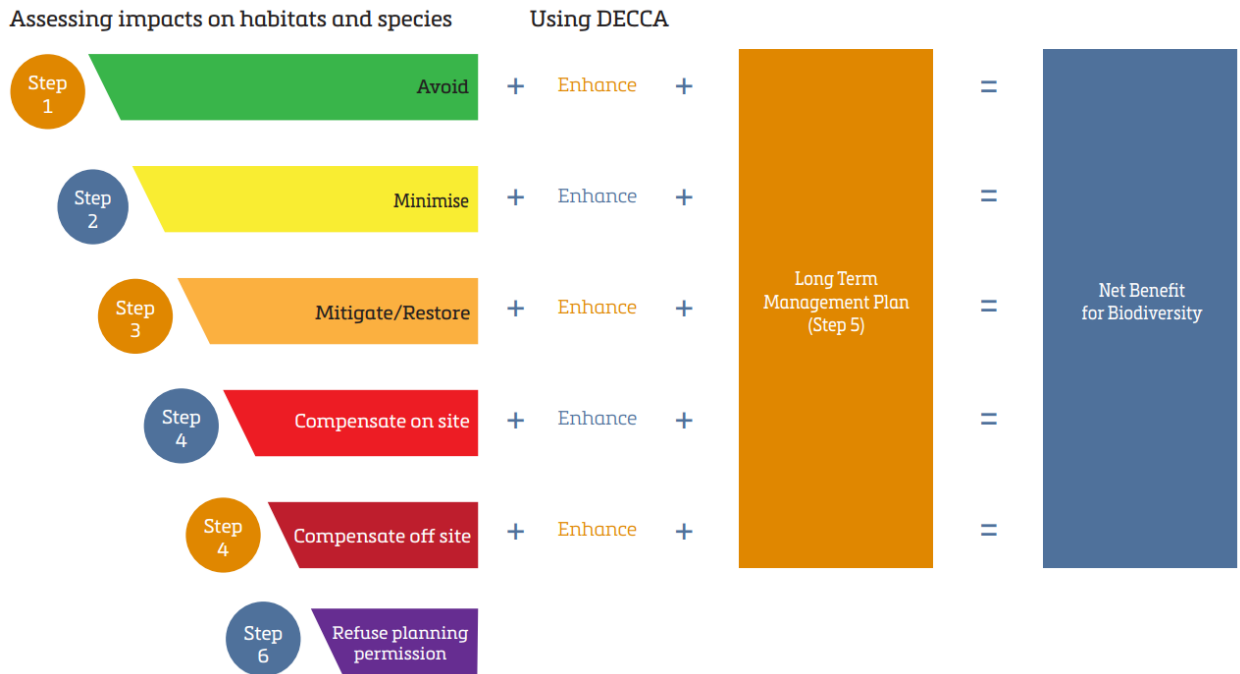
Designation	Statutorily and Non Statutorily Protected Sites	Interaction with Step-wise Approach
UNESCO Biosphere Reserve	Non-Statutory	Apply Step-wise Approach to determine
UNESCO Geoparks	Non-Statutory	
Sites of Importance for Nature Conservation	Non-Statutory	
Local Nature Reserve	Non-Statutory	
Local Wildlife Sites	Non-Statutory	
Regionally Important Geodiversity Sites (RIGS)	Non-Statutory	
Potential National Natural Resources Areas (Future Wales)	Development Plan	
Resilient Ecological Networks (RENs) / Nature Network Maps (NRW)	Area Statements/ Green Infrastructure Assessments	

2.4. The step-wise approach

- 2.4.1. As noted previously, paragraph 6.4.5 of PPW notes that the step-wise approach is the means of demonstrating the steps which have been taken towards securing a net benefit for biodiversity, with regard given to the DECCA framework when doing so.
- 2.4.2. The step-wise approach, as shown in figure 2 below, should be worked through iteratively, with the result being a scheme of enhancement secured through the proposed development to provide a net benefit for biodiversity, with the improvement of ecosystem resilience, particularly improving the connectivity to the immediate surroundings, being a key contribution to on-site avoidance, minimisation, and mitigation strategies and enhancement.



Figure 2: Summary of the step-wise approach



2.5. Biodiversity Net Benefit

- 2.5.1. A net benefit for biodiversity is the concept that development should leave biodiversity and the resilience of ecosystems in a significantly better state than before, through securing immediate and long-term, measurable and demonstrable benefit, primarily on or immediately adjacent to the site.
- 2.5.2. Furthermore, PPW notes that “all development must deliver a net benefit for biodiversity and ecosystem resilience from the baseline state (proportionate to the scale and nature of the development proposed). Even if the biodiversity value has been maintained, there must still be a pro-active process to look for and secure enhancement through the design and implementation of the development”.

3. Policies and Plans

3.1. Conwy County Borough Council

- 3.1.1. As a background paper to their Replacement Local Development Plan, Conwy County Borough Council have prepared a Green Infrastructure Assessment (October 2020) (document BP47). The Assessment notes that green infrastructure is vital for the health of Conwy's residents, biodiversity and habitats. The Council acknowledge that there is already a large amount of diversity within Conwy, but they now need to work with developers on improving the quality, accessibility and multi-functionality of these assets and improving the linkages between them.
- 3.1.2. Conwy's Green Infrastructure Assessment (GIA) provides a guide to opportunities for a greener, healthier, more biodiverse and prosperous Conwy through Green Infrastructure integration in new development, which will lead to further Green Infrastructure integration and achieve enhancement across the County.
- 3.1.3. Conwy's GIA identifies five priorities:
- Protect, enhance, create and restore habitats to create a resilient wildlife and biodiversity network;
 - Enable a thriving blue environment;
 - Promote sustainable growth and economic development through GI;
 - Encourage, enable and promote healthy lifestyles and enhance wellbeing; and
 - Improve connectivity.
- 3.1.4. Conwy's GIA notes that the most significant area of woodland lies in the southeast of the county, including forests around the Llyn Brenig and Alwen reservoirs. The reservoirs are surrounded by coniferous woodland, and the visitor centre at Llyn Brenig is a popular visitor attraction. The Assessment focuses largely on Green Infrastructure (GI) and how multi-functional outcomes can be achieved in urban areas.
- 3.1.5. The GIA includes an analysis of needs and GI functions for biodiversity and indicates that the area of the proposed wind farm and grid connection Site within Conwy comprises an area to enhance existing green infrastructure. Furthermore, within the context of a habitat networks figure, the wind farm and grid connection Site has suitable habitats within 250m of ecological designations.
- 3.1.6. The GIA also indicates that the proposed wind farm and grid connection site has potential for birds, with the Site having moderate farmland birds present, few wetland bird species present, and few bat species present. This indicative data is superseded by the survey and assessment work undertaken in the ES (appreciating the granularity of the GIA; and the site-specific focus of the ES (as well as the ES surveys and assessments being undertaken more recently)).

3.2. Denbighshire County Council

- 3.2.1. Denbighshire County Council have not yet produced a GIA. However, it is noted that the Corporate Plan 2022 to 2027 identifies a greener Denbighshire as one of its objectives, with goals to become a net carbon zero and ecologically positive organisation by 2030; and to look after and improve the natural environment.
- 3.2.2. It is worth noting that Denbighshire County Council declared a Climate Change and Nature Emergency in July 2019. In response, and by 31st March 2030, the Council aims to become a net carbon zero, and ecologically positive Council.

3.3. NRW's North West Area Statement

- 3.3.1. In 2020, NRW published the first version of the Area Statements which cover seven, different, diverse parts of Wales. The Area Statements set out the key challenges and opportunities to strengthen ecological networks and ecosystem services at a local scale. They identify areas where taking action at the right scale can maximise benefits.
- 3.3.2. One of the themes within the North West Area Statement is 'reconnecting people with nature', which links to the NRW priorities and well-being goals by improving green infrastructure and connecting people to their local natural environment. This will contribute to viable, safe and well-connected communities, consistent with the goal of 'A Wales of Cohesive Communities', whilst also helping communities become more sustainable and resilient.
- 3.3.3. Other themes within the Statement include 'ways of working', 'climate and environment emergency', 'encouraging a sustainable economy', 'opportunities for a resilient ecosystem', and 'supporting sustainable land management'.

3.4. NRW's North East Area Statement

- 3.4.1. One of the five themes of NRW's North East Area Statement is to '*...develop and improve urban/rural green infrastructure*'. The Statement expands upon this theme, noting that green infrastructure can help with the following Natural Resource Policy priorities: climate change adaptation; reverse the decline in biodiversity; reduce pollution levels in our air, enhance air quality, and reduce noise pollution; develop resilient ecological networks; improve the quality, and ensure the quantity, of our water; improving the management of existing woodlands and more widespread use of trees; safeguarding and increasing carbon stores in soils and biomass; and reducing the risk of land and coastal flooding.
- 3.4.2. Within the Climate Emergency: resilience and adaptation section, the Statement sets out a number of objectives, including to pursue green infrastructure opportunities to help reduce, mitigate and adapt to the challenges of a changing climate.

4. The Proposed Development

4.1. Introduction

- 4.1.1. In support of the proposed development and informed by both pre-application dialogue and the EIA scoping direction process, the Applicant has prepared and submitted a robust suite of surveys, assessments and supporting information, including but not limited to an Environmental Statement which includes chapters focussing on technical (gradients/slopes and river/water crossings); hydrology, peat and private water supplies; forestry and woodland; adjacent windfarms and existing infrastructure; ecology; landscape and visual; and cultural heritage amongst others. The Environmental Statement is supplemented by assessments which include baseline data, survey methodology and results, and assessment methodology and results.
- 4.1.2. The key characteristics and constraints to the Site and its surroundings included: wind resource; grid connection; vehicular access; land use; proximity of dwellings; landscape and visual; ecology and ornithology, hydrology; geology and hydrogeology; peat and soils, cultural heritage; forestry; and existing infrastructure and aviation, as noted in Chapter 3 of the Environmental Statement.
- 4.1.3. The NRW Area Statements (summarised in Section 3 of this Statement), identify areas that play an important role in managing environmental risks and maintaining ecological resilience e.g., linking people with nature; and develop and improve green infrastructure.
- 4.1.4. Chapter 3 – Site selection and design evolution of the Environmental Statement sets out how the design constraints were considered and iteratively updated as the design progressed and to reflect site conditions. The chapter sets out the approach taken by the Applicant in designing the proposed development and how a step-wise approach was adopted. The following sub-headings describe the approach taken by the Applicant in the context of the step-wise approach.

4.2. Context

Statutory designated sites

- 4.2.1. There are no statutory designated sites, such as Sites of Special Scientific Interest (SSSI), Special Protection Areas (SPA), Special Areas of Conservation (SAC), National Nature Reserve or RAMSAR, within the Site, as shown in Figure 5.1 in Volume 2 of the ES.
- 4.2.2. Furthermore, as stated in Section 5.6 of Chapter 5 in the Environmental Statement, construction or operation of the proposed development will not result in any loss of habitats within the statutory designated sites components. Section 3.5 of Chapter 3 in the Environmental Statement provides details on how the design of the proposed development evolved to avoid impacts on these features.

4.2.3. The nearest statutory designated site to the proposed development is the Mynydd Hiraethog SSSI (which is approximately 10 m from the footprint of the proposed development at its nearest point). As set out in Section 5.7 of Chapter 5 in the Environmental Statement, general embedded measures (including the installation of temporary fencing and signage preventing incursion onto the SSSI land, prevention of dust generation and air-borne pollutants, and avoidance of storing potentially polluting materials near to the SSSI) will be implemented to avoid the risk of any impacts occurring.

Irreplaceable habitats

4.2.4. The Applicant notes that step 1.b) of the step-wise approach also has regard to ‘...species and habitats which are irreplaceable’ and includes a footnote which states “Habitats, including the natural resources which underpin them, which would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, taking into account their age, uniqueness, species diversity or rarity. Examples include, ancient woodland and veteran trees, ancient hedgerows, wet woodlands, sand dunes, peatland, species rich grassland, long undisturbed soils, blanket bog, salt marsh and lowland fen.”

4.2.5. The Applicant has assigned all areas of distinct habitat at the site to plant communities within the National Vegetation Classification (NVC) – see Figure 5.2b in Volume 2 of the Environmental Statement. The Applicant considers that the NVC communities are the most suitable identifier of any ‘irreplaceable habitats’. From the survey work undertaken, the Applicant identified M19 – [Modified] *Calluna vulgaris-eriophorum vaginatum* blanket mire (the Applicant considers that blanket mire is synonymous with blanket bog). Blanket bog is included in the list of examples of irreplaceable habitat provided in Chapter 6 of PPW 12.

4.2.6. In line with the step-wise approach, the Applicant has avoided the M19 community – as shown in Figure 5.2b. The M19 does not extend up to the existing track and the proposed widening of the track to facilitate access for the proposed development would not encroach onto the M19 either. Accordingly, the Applicant has avoided the irreplaceable habitat, in line with the step-wise approach.

4.2.7. The Applicant considers that there are no other irreplaceable habitats which are within the footprint of any infrastructure proposed, nor in proximity to it (there may be other irreplaceable habitats within the red line boundary, but they will not be affected by the proposed development).

This position is taken in light of the definition of irreplaceable habitats within PPW, in so much that, save for the M19, the habitats on Site are not “*technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, taking into account their age, uniqueness, species diversity or rarity*”.

4.2.8. Firstly, the definition presumes the destruction of the habitat. As noted in the Outline Habitat Management Plan (OHMP) (Appendix 5.3 in Volume 3 of the ES) and the Soils and Peat Management Plan (SPMP) (Appendix 9.6 of the ES), the proposed development includes measures to re-use any peat excavated on site, with no material to be treated as waste. The Soils and Peat Management Plan also includes measures to appropriately handle materials so to ensure that their qualities and features are maintained.

4.2.9. In the interest of robustly satisfying the definition, should it be assumed that the habitat has been destroyed, then it is considered that the restoration, recreation or replacement of those habitats would neither be technically very difficult (note that NRW's National Peatland Action Programme (NPAP) is undertaking similar peatland restoration on a adjacent Site; and that NRW's Pre-Application Consultation (PAC) response notes that restoration techniques have advanced and can facilitate restoration); and nor would it take a very significant time to do so (it could be undertaken and maintained throughout the 35-year period of the proposed development).

4.2.10. The Applicant does not consider, save for the M19 (that will be retained and enhanced), that any other habitats on the Site comprises irreplaceable habitats in light of their age, uniqueness, species diversity or rarity – this position has been reached in light of the consideration of NVC communities at the Site.

4.3. The Stepwise Approach

4.3.1. Following the PAC exercise, changes were made to Layout 4 design as a direct result of consultee comments.

4.3.2. Figures 1.2 and 1.3 in Volume 2 of the ES illustrate the final layout for the proposed development. Figure 3.1 illustrates the final layout against site constraints for the proposed development.

4.3.3. The design changes between Layout 4 and the Final layout include:

- replacing T3-T4 track with a track alignment between T2 and T4 to move to shallower peat;
- then, being able to relocate T3 to shallower peat (and existing track) as a result of removing the access track between T3 and T4;
- relocating the concrete batching plant to avoid peat; and
- relocating the grid connection construction compound at Denbigh crossroads (Carnedd Ci) onto existing hardstanding to avoid peat.

4.3.4. These layout changes demonstrate the continued commitment to the step-wise approach advocated in PPW 12 throughout the design employed to avoid and minimise damage to biodiversity as far as possible as the first priority of the step-wise approach.

4.3.5. Embedded mitigations (e.g., the CEMP) will be employed to facilitate the avoidance of impacts. Each topic chapter has identified the embedded mitigations considered.

4.3.6. The list below outlines elements of the step-wise approach relevant to the design evolution of the proposed development, commencing with measures to avoid impacts, and iteratively working through steps to minimise, mitigate and compensate for impacts as far as possible. For each step a summary of how the design has incorporated these elements is provided.

Step 1 – Avoid:

4.3.7. Avoidance through design has been achieved through following:

- Initial site selection as part of the NRW Invitation to Tender process was based in part on the avoidance of National Parks, AONB, and protected designated sites such as Special Protection Areas (SPAs), Special Areas of Conservation (SACs), National Nature Reserve etc. Subsequent design iterations avoided the Site of Special Scientific Interest (SSSI) nearby.
- Retention of the beech woodland at Coed Tai-isaf and avoidance of impacts on trees used by roosting bats.
- Retention of the buildings at Hafod-y-Illan Uchaf and avoidance of impacts on roosting bats.
- The removal of turbines from South Alwen during the design evolution enabled the avoidance of potential impacts on moorland breeding raptors and waders.
- Use of turbine buffers to avoid potential displacement of black grouse from historic lekking sites and areas managed for this species.
- Another key aim of the design process was to avoid water quality impacts given the proximity of the proposed wind farm development to the Alwen Reservoir and Llyn Brenig Reservoir, removing turbines from South Alwen reduced the amount of infrastructure in the Alwen catchment;
- Avoidance of scrub and broadleaved woodland corridors along the grid connection route to prevent risk of disturbance and destruction of habitat for dormouse.
- All turbines and associated infrastructure (apart from tracks) have been sited at least 50 m (and mostly 100 m) in order to avoid impacts to mapped watercourses;
- Through Phase 1 and repeated Phase 2 peat surveys undertaken, the proposed wind farm and grid connection infrastructure has avoided areas of deep peat and is largely sited on average peat depths of 0.5 m or less. Only two out of the nine turbines are located on average peat depths of greater than 0.5 m but less than 1 m.
- All infrastructure has been sited to avoid areas of Groundwater Dependent Terrestrial Ecosystem potential;
- All infrastructure has avoided impacts to potential areas of blanket bog and irreplaceable habitat.
- Retention of LISS woodland and stands of mature Norway spruce within the wind farm site; and avoidance of an area of Norway spruce PAWS in the grid connection site to benefit red squirrel and provide continued nesting opportunities for forest raptors.
- All turbines have been sited to avoid forest coupes important to NRW land manager operations.

4.3.8. Avoidance will also be achieved through employment of best practice and controls as identified within the CEMP (e.g., pollution prevention measures, pre-construction surveys to facilitate avoidance of damage or disturbance to breeding sites or resting places).

Step 2 – Minimise:

- The proposed wind farm layout was designed to minimising collision risk to bats by siting turbines away from areas of higher bat activity levels in South Alwen.
- Minimise the potential disturbance and collision risk of osprey by applying a suitable buffer distance between known nest sites and turbine locations.
- The peat data collected significantly influenced the design evolution with the main objective of avoiding peat and where that is not possible, siting infrastructure in the shallowest peat depths to minimise impacts on peat whilst balancing competing constraints (see Appendix 9.4 Peat Considerations in Design Evolution). Peat surveys were undertaken repeatedly at different layouts and over 2,500 peat probes were employed to inform the design changes and final layout.
- Use of existing access tracks was also considered a key design criterion to minimise impacts on the peat resource, habitats and water courses.
- Inclusion of a 50 m blade tip to forest edge buffer for each turbine was implemented to minimise collision related effects on bats.
- In consultation with NRW land management, rather than employing a coupe felling approach for the construction of the proposed development, a key holing approach was agreed as the most appropriate felling strategy to accommodate the proposed development which minimises the area required to be felled for wind farm construction and operation.

Step 3 – Mitigate/Restore:

- Reinstatement of disturbed habitats adjacent to the footprint of infrastructure and cable trenches by retention, appropriate storage, and re-use of topsoil and turves.
- Restoration of heathland and peatland habitats (where peat is present) within keyholed areas.
- Pitching turbine blades out of the wind (feathering) at certain times when turbines are not generating a useable output.
- Post-construction monitoring of bat activity and collision mortality, and osprey flight activity (by vantage point survey and / or GPS tracking) to inform the need for further turbine curtailment.

Step 4 – Compensate on site:

- Replanting in situ will take place where forestry areas are felled for temporary construction infrastructure or for good forest practice measures.
- Enhancement of grassland and heathland habitats through removal of regenerating conifer cover across identified areas within the proposed development as well as heathland management within the Tir Mostyn Habitat Enhancement Plan (HEP) area within the proposed grid connection site boundary. This will increase biodiversity in areas where species diversity is poor and provide structural diversity to benefit species such as black grouse and breeding birds.

Step 4 – Compensate off site:

- Following the NRW guidance on developments in woodland, provision for compensatory planting will be made off-site for the area of forestry loss required to be felled for the wind farm construction and operation, which is not replanted on site or that is not mitigated as part of the HMP. The Applicant's land agreement with Welsh Ministers (and DCWW) secures the requirement for compensatory planting.
- A funding contribution will also be provided to DCWW for additional planting of approximately 1.2 ha broadleaved woodland on DCWW land at Llyn Brenig. The precise location of the planting will be determined following further assessment of ground suitability, maximum ecological benefit (considering connectivity with existing woodland), and land tenancy agreement.

Step 5: Long term management

- Post-construction management of habitats within the wind farm and proposed grid connection site will be undertaken for the operational life of the proposed development (35 years). The precise management regime will be detailed in a full HMP and will build on the outline objectives and measures provided in the Outline Habitat Management Plan (OHMP) provided in Appendix 5.3.
- On-site bat and bird population monitoring will also take place during operation at a frequency set out in the HMP and agreed by stakeholders. The outcome of on-site monitoring will be assessed in each annual management review and will inform changes to the breadth of management for subsequent years. This will allow for a dynamic HMP to ensure that residual effects on all species are maintained at or below the level predicted in this ES.
- A Conservation Management Plan, as agreed with Cadw, will also set out detailed proposals for heritage enhancements within the proposed wind farm site boundary and the Bryn y Gors-goch Historic Landscape which will comprise interpretation of historic assets and landscape elements along a new heritage trail employing the already improved connectivity of the footpaths provided by the proposed design of the wind farm and existing forestry tracks.

Enhancements

- 4.3.9. Enhancements to the existing habitat mosaic will allow the development and retention of heathland and bog habitats, but will also include measures to develop soft, broadleaved forest edge adjacent to afforested areas, improve water quality of the Nant y Gors Goch (that feeds Alwen Reservoir) through riparian zone enhancement, and restore degraded peatland. The measures will also benefit species for which loss of habitat is predicted to occur during construction and operation of the proposed development, including dormouse, otter, water vole, red squirrel, pine marten, and reptiles.

- 4.3.10. Note that all new broadleaved tree planting will be restricted to small-seed species (such as birch, rowan and willow) to avoid encouragement of grey squirrel (which has been confirmed to be present in Cerrig Caws). The habitat management enhancements (as well as public access and forestry operations access enhancements) will create improved foraging opportunities and habitat connectivity for dormouse, bats, pine martin and red squirrel as well as improved water quality which will benefit water vole and otter. Habitat management will also benefit breeding and foraging birds within the site and predicted to benefit species such as red kite, kestrel, nightjar and goshawk.
- 4.3.11. Enhancement of 16.8 hectares of bog habitats (outline in the OHMP in Appendix 5.3) within the proposed wind farm area through removal of conifer plantation and specific peatland restoration. This will contribute to the long-term vision of the Forest Resource Plan, and will improve local biodiversity, support a diverse invertebrate assemblage, provide a foraging resource for bats, and play a role in carbon sequestration (thereby helping to slow climate change).
- 4.3.12. In addition to mitigation measures within the site, a funding contribution will be provided to the Brenig Osprey Project to support conservation efforts and monitoring of the local population. This will aim to ensure continued delivery of objectives set out in the Llyn Brenig Osprey Conservation Plan.
- 4.3.13. The layout of the proposed wind farm development will also improve linkages across the site as it will provide improved connectivity between the Cerrig Caws forest area (and public right of way) to the southern part of the wind farm site boundary. New tracks will also provide a new route across the site which is not currently available due to existing footpaths being inaccessible (i.e., new track from T9 to the existing track leading to the substation and a new track from the substation down to the B4501).
- 4.3.14. These enhancements across the site will contribute to ongoing efforts of landowners, local authorities and land managers of ensuring that the environment and natural resources of Wales are suitably maintained, enhanced and used for the benefit of the people, environment and economy of Wales (now, and in the future) under the Sustainable Management of Natural Resources (SMNR) framework as required by the Environment (Wales) Act 2016 – which also aligns with the Well-being of Future Generations Act.

4.4. Long term management and a net benefit for biodiversity

- 4.4.1. The OMHP describes outline management objectives for land within the proposed development. By delivering against these objectives, the Proposed Development will achieve biodiversity net benefit. The OHMP has been informed by consultation with NRW, who are supportive of the measures noted in the OHMP. Should the proposed development be approved, the OHMP will be worked up into a more detailed plan which will have further input from NRW, as well as Dwr Cymru Welsh Water, Conwy County Borough Council and Denbighshire County Council.
- 4.4.2. The measures noted in the OHMP will be implemented for the duration of the operation of the proposed development, with some commencing during the construction period. The aims of the OHMP are focussed on the enhancement of habitats, but it is recognised that those enhancements will also benefit the species that use them.

4.4.3. The main aims for delivering net benefit to biodiversity (as identified in the OHMP) are:

- To increase the dry and wet heath resource and improve its condition.
- To enhance riparian corridors, and water quality of streams that discharge into Alwen Reservoir.
- To increase the broadleaved woodland resource.
- To improve the condition of bog habitats.

4.4.4. For the latter, two distinct parcels of modified blanket bog habitat have been identified within the Site, and measures to improve the condition of these (through drain blocking and forest to bog restoration measures) have been proposed. In addition, benefits to wider restoration currently undertaken by the National Peatland Action Programme (NPAP) in the northern part of Bryn y Gors-goch have been identified by proposing to block an existing track drain during track widening works. The Applicant considers that this aligns with, amongst other policies, Conwy's GIA and NRWs North-East Area Statement both seek improved water quality (supported by our riparian corridors), improved woodlands (supported by our broadleaved woodland planting), increasing carbon stores (supported by our peatland habitat restoration), and enhancing habitats generally (supported by our heathland enhancements).

4.4.5. Consideration of how the project addresses the individual components of the DECCA Framework is set out in the table 1 below.

Table 1: DECCA framework compliance

DECCA Framework Element	Definition (CIEEM, 2022)	Relevant Project Measures
Diversity	Maintaining and enhancing diversity at every scale, including genetic, structural, habitat and between-habitat levels. This supports the complexity of ecosystem functions and interactions that deliver services and benefits.	The commercial plantation within the site boundary is dominated by Sitka spruce. The proposed turbine locations have been sited in areas of conifer, and wind farm tracks designed to follow the existing forestry infrastructure, where possible. Keyholing of turbines will open areas of conifer plantation to allow a grassland, heathland and peatland habitat mosaic to develop and be maintained. Additional forest to bog restoration, heathland management, broadleaved woodland planting, and creation of riparian corridors within the site boundary will enhance the habitat structure at all levels and promote greater biodiversity.

Alwen Forest Wind Farm and Grid Connection

Green Infrastructure Statement



DECCA Framework Element	Definition (CIEEM, 2022)	Relevant Project Measures
Extent	<p>Incorporating measures which maintain and increase the area of semi-natural habitat/features and linkages between habitats. In general, smaller ecosystems have reduced capacity to adapt, recover or resist disturbance.</p>	<p>The habitat enhancement proposals will increase the extent of higher value habitats (bog, heathland, and broadleaved woodland) within the site boundary of the proposed development. Keyholing of turbines will open up extensive areas of open habitats, supported by a proposed increase in the extent of bog and broadleaved woodland within the site boundary through enhancement measures. Heathland management will be continued within the Tir Mostyn habitat enhancement plan (HEP) area within the proposed grid connection site boundary. This will enhance and maintain the extent of heathland mosaic alongside the Mynydd Hiraethog SSSI.</p>
Condition	<p>The condition of an ecosystem is affected by multiple and complex pressures acting both as short term and longer-term types of disturbance. Both direct and wider impacts should be considered, for example avoiding or mitigating pressures such as climate change, pollution, invasive species, land management neglect etc.</p>	<p>The habitat management measures outlined within the OHMP will seek to improve the condition of modified bog (through forest to bog restoration and blocking of drains) and heathland habitats (through removal of conifer and scrub regeneration). The creation of riparian corridors will aim to improve watercourse condition and deliver wider ecosystem services.</p>
Connectivity	<p>This refers to the links between and within habitats, which may take the form of physical corridors, steppingstones in the landscape, or patches of the same or related vegetation types that together create a network that enables the flow or movement of genes, species and natural resources. Developments should take opportunities to develop functional habitat and ecological networks within and between ecosystems, building on existing connectivity.</p>	<p>Improved linkages between existing riparian corridors will be made to enhance habitat extent for species such as otter and water vole. Heathland management will extend habitats for black grouse populations within the adjacent SSSI. These woodland edge habitats will be enhanced wherever possible with additional broadleaved planting. New tracks through the forest will also open up new routes for public recreation across the proposed development.</p>
Aspects of ecosystem resilience (adaptability, recovery and resistance)	<p>Ecosystem resilience is a product of the above four attributes. Adaptability, recovery and resistance to/from a disturbance are defining features of ecosystem resilience.</p>	<p>The proposed development will result in habitat creation that will increase diversity across a range of species groups. The extent of higher-value habitats (bog, heathland and broadleaved woodland) will be a significant increase over the baseline, and condition will be maintained through measures identified in the OHMP. Improved ecological diversity, extent, condition and connectivity, along with wider ecosystem benefits (including improved water quality feeding the Alwen Reservoir) within the site boundary will be delivered. The proposed development will therefore make a positive contribution to achieving ecosystem resilience at the local level.</p>

Allocation

- 4.4.6. The Proposed Development is partly within a pre-assessed area for wind energy in Future Wales (Area 2). This is a spatial allocation where the development of wind turbines of up to 250m tip height were modelled and found to be acceptable. The step-wise approach notes that “*where sites are already allocated in an adopted development plan it may not be possible to follow the step-wise approach in a sequential way, because certain progress towards fulfilling the allocations may have been made.*” Furthermore, “*where sites have progressed to a degree that it may not be possible to de-allocate them, then effects should be minimised and potential mitigation, and as a last resort, compensation identified and be capable of being secured.*”
- 4.4.7. In light of the approach taken in policy to allocations, notwithstanding the position set out previously in respect of how the proposed development has followed the step-wise approach, it is considered that the allocation of the Pre-Assessed Area for wind energy in Future Wales can be taken to mean that the thresholds to demonstrate compliance are lower. Importantly, the proposed development has been designed so to minimise impacts and maximise enhancements, including providing a net benefit for biodiversity.

4.5. Green Infrastructure and the Climate and Nature Emergencies

- 4.5.1. As noted within the Planning Statement, the Welsh Government, Conwy County Borough Council and Denbighshire County Council have declared a climate emergency, with the Welsh Government and Denbighshire County Council also declaring a nature emergency. It is important that the proposed development is considered in the context of these emergencies.
- 4.5.2. The proposed development will deliver a biodiversity net benefit, in line with legislation and policy – as demonstrated in this Statement and in the accompanying application documents. This net benefit will help to address the nature emergency. The proposed development will also deliver a nationally significant quantum of renewable energy which will help to address the climate emergency. The renewable energy generation will help to reduce greenhouse gas emissions – assuming a displacement of fossil fuel generation.
- 4.5.3. Long term positive effects are expected through the resultant access improvements across the site which will include a new track from T9 to existing track that leads to the substation where the footpath is currently impassable, and a new track from the substation down to the B4501 to improve linkages between Alwen Forest and Llyn Brenig.



- 4.5.4. In addition, the inclusion of turbines in the northern Cerrig Caws area provides improved access arrangements for forest management in this area as well as improved PRoW access by connecting the Cerrig Caws bridleway to the main Alwen Forest track systems to the south. These enhancements across the site will contribute to ongoing efforts of landowners, local authorities and land managers of ensuring that the environment and natural resources of Wales are suitably maintained, enhanced and used for the benefit of the people, environment and economy of Wales (now, and in the future) under the Sustainable Management of Natural Resources (SMNR) framework as required by the Environment (Wales) Act 2016 – which also aligns with the Well-being of Future Generations Act.

5. Conclusion

- 5.1.1. As this Statement, and the Environmental Statement submitted with the application demonstrates, the proposed development has been developed in accordance with a range of legislative and policy matters, including but not limited to: Planning Policy Wales (12th edition); Future Wales, Conwy County Borough Council Local Development Plan, and Green Infrastructure Assessment, Denbighshire County Council Local Development Plan, relevant NRW area statements, and the Well-being of Future Generations Act.
- 5.1.2. The step-wise approach taken by the Applicant in refining the proposed development is positive, avoiding impacts to statutorily designated sites, and applying the iterative and sequential approach. From that stage, and in utilising the DECCA framework, the Applicant has developed and proposed a series of biodiversity net benefits resulting from the proposed development to support both the Site and its surroundings – creating a resilient and connected ecosystem.
- 5.1.3. This approach aligns will create a network of natural and semi-natural features, interspersed with green spaces, rivers and lakes that will contribute to and enhance green infrastructure. Through additional connectivity and supplementary features amongst the existing woodland, multi-functional benefits will arise from the proposed development, whilst also reducing impacts which might otherwise have occurred to those features, habitats and species. The positive enhancements resulting from the proposed development represents site specific interventions which will support wider local, regional and national objectives in enhancing biodiversity and green infrastructure in Wales.
- 5.1.4. Finally, the step-wise approach mirrors the mitigation hierarchy outlined by the Chartered Institute of Ecology and Environmental Management (CIEEM)¹ – PPW12 puts into policy what was already best practice guidance. As the ES was written following the CIEEM guidelines (e.g., see section 5.4 of the ES), the Applicant considers that the step-wise approach has been applied in the evolution of the design of the proposed development and is compliant with the relevant policy and guidance.

¹ <https://cieem.net/wp-content/uploads/2022/08/Net-Benefits-briefing.pdf>