GB Wind Farm Ltd.

Giant's Burn Wind Farm EIA

Technical Appendix 6.5: Biodiversity Enhancement Strategy

Final report
Prepared by LUC
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Land Use Consultants Ltd
Registered in England
Registered number 2549296
Registered office:
250 Waterloo Road
London SE1 8RD

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Chapter 1
Introduction

1.1 This Biodiversity Enhancement Strategy (BES) supports Chapter 6 of the Environmental Impact Assessment Report (EIA Report) and provides an outline of proposed habitat restoration, enhancement and management measures related to the proposed Giant's Burn Wind Farm (hereafter referred to as 'the Proposed Development'). This BES aims to improve the overall biodiversity value and condition of the Site whilst responding to national policy requirements.

1.2 The document has taken a holistic approach to the management and enhancement of biodiversity, peat and forestry. As such:

- Proposed interventions have been identified and discussed collectively by specialists in ecology, ornithology, peat, and forestry to maximise environmental benefits and to avoid conflict between environmental topics.
- As the majority of the proposed restoration and management measures relate to peatland habitats and the Site's peat resource, this document has been prepared with cognisance with Appendix 8.1, which is presented within the EIA Report.

1.3 This document provides outline proposals only. In accordance with standard practice, it is intended that the outline proposals are used as a basis for a detailed Biodiversity Enhancement Plan (BEP), which is to be agreed with Argyll and Bute Council under a condition attached to any consent granted to the Proposed Development in consultation with NatureScot, Scottish Environmental Protection Agency (SEPA), and other relevant stakeholders.

Policy Context

1.4 Adopted in early 2023, National Planning Framework 4 (NPF4), recognises the global climate and nature crises and sets out to enhance and restore nature through the planning process. Policy 3 introduces a new requirement for all developments in relation to the enhancement of biodiversity. Relevant aspects of the policy include:

Policy 3: Biodiversity

a) Development proposals will contribute to the enhancement of biodiversity, including where relevant, restoring degraded habitats and building and strengthening nature networks and the

connections between them. Proposals should also integrate nature-based solutions, where possible.

b) Development proposals for national or major development, or for development that requires an Environmental Impact Assessment will only be supported where it can be demonstrated that the proposal will conserve, restore and enhance biodiversity, including nature networks so they are in a demonstrably better state than without intervention. This will include future management. To inform this, best practice assessment methods should be used. Proposals within these categories will demonstrate how they have met all of the following criteria:

i. the proposal is based on an understanding of the existing characteristics of the site and its local, regional and national ecological context prior to development, including the presence of any irreplaceable habitats;

ii. wherever feasible, nature-based solutions have been integrated and made best use of;

iii. an assessment of potential negative effects which should be fully mitigated in line with the mitigation hierarchy prior to identifying enhancements;

iv. significant biodiversity enhancements are provided, in addition to any proposed mitigation. This should include nature networks, linking to and strengthening habitat connectivity within and beyond the development, secured within a reasonable timescale and with reasonable certainty. Management arrangements for their long-term retention and monitoring should be included, wherever appropriate; and

v. local community benefits of the biodiversity and/or nature networks have been considered.

1.5 Notwithstanding the detail of the policy, at the time of writing, the Scottish Government is yet to provide explanatory guidance on its interpretation of '*significant biodiversity enhancements*'. However, in September 2023[1], the Scottish Government confirmed its commitment to biodiversity enhancement, indicating the development and future use of a Biodiversity Metric, as a means of quantifying biodiversity enhancement at any given site.

1.6 In the absence of statutory guidance on biodiversity enhancement, NatureScot published an advice document[2] in 2023, that sought to set parameters for biodiversity compensation and enhancement in the peatland context.

1.7 NatureScot advises that where development affects priority peatland habitat, applicants will be expected to deliver compensatory offsetting in the order of 1:10 (lost:restored). NatureScot further advises that in order to achieve enhancement for priority peatland habitats (in addition to compensation), an additional 10% of a site's priority peatland habitat baseline should be restored. In addition to direct loss and gain, a suitable buffer should be used to capture indirect impacts. The project's hydrogeology specialist identified that a dewatering effect may be expected up to 10 m from the infrastructure. This 10 m buffer is used as a conservative assumption to account for potential indirect impacts on priority peatland habitat, specifically considering potential dewatering effects.

1.8 In addition to the above, consideration has been given to NatureScot's guidance, "*Guidance on the Use of Existing Biodiversity Metrics in the Scottish Planning System*", which was published in June 2025[3]. The guidance highlights that a Scottish metric is in development but is currently not available for use, and states that, whilst there are some benefits to using non-approved metrics for the Scottish system, there are also issues and limitations. The guidance states that NPF4 Policy 3b "*doesn't specify that a particular assessment tool or methodology must be used*" in order to demonstrate that a proposal will "*conserve, restore and enhance biodiversity*", and instead sets out general principles which should be adhered to in order to ensure meaningful biodiversity benefits are provided. The assessment provided within this document aligns with the recommended approach of following the principles, whilst using a qualitative approach using professional judgement from independent ecologists to demonstrate that the Proposed Development provides significant biodiversity enhancement in accordance with Policy 3b of NPF4.

1.9 At the time of writing, Argyll and Bute Council has not published its own interpretation of NPF4 Policy 3 requirements. However, Policy 73 of the Local Development Plan does consider biodiversity elements (see Appendix 6.1)

[1] Scottish Government (2023). *Measuring Biodiversity: Research into Approaches*. Available at: https://www.gov.scot/publications/research-approaches-measuring-biodiversity-scotland/pages/2/ [Accessed June 2025].

[2] NatureScot (2023). *Advising on Peatland, Carbon-Rich Soils and Priority Peatland Habitats in Development Management*. Available at: https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management#:~:text=The%20purpose%20of%20this%20guidance%20is%20to%20help,on%20peatland%2C%20carbon-rich%20soils%20and%20priority%20peatland%20habitat. [Accessed June 2025].

[3] NatureScot (2025). *Guidance on the Use of Existing Biodiversity Metrics in the Scottish Planning System*. Available at: https://www.nature.scot/doc/guidance-use-existing-biodiversity-metrics-scottish-planning-system#:~:text=NatureScot%20has%20been%20commissioned%20by,those%20subject%20to%20Environmental%20Impact [Accessed June 2025].

Overall Objective of the Strategy

1.10 The overall objective of the BES is to provide a holistic framework for the enhancement of the Site with respect to biodiversity, peat resource and forestry. Measures proposed are over and above any mitigation required to address predicted effects set out in Chapter 6, Chapter 7, Chapter 8 and Chapter 12 of the EIA Report, and are considered to be appropriate based on the Site's environmental characteristics and potential for enhancement as identified through the EIA process. This BES also recognises the requirement of NPF4 Policy 3.

1.11 The measures outlined within this BES will be developed into a BEP in consultation with Argyll and Bute Council, NatureScot, SEPA and other relevant stakeholders, and thereafter implemented over the lifetime (50 years) of the Proposed Development.

1.12 The measures will conserve, restore and enhance the habitats within the Site in a manner which would not be possible without intervention. This will allow a variety of interconnected benefits to be realised, including avoidance of greenhouse gas emissions, expansion of carbon sinks, enhancements in upland biodiversity and improvements to water quality, whilst also allowing continued use of the Site for timber production.

1.13 The final BEP will include a monitoring and review framework to track and report on the efficacy of management measures, allowing interventions to be guided by emerging evidence and specialist advice, and to ensure net benefits are realised over the lifetime of the Proposed Development.

Buglife Partnership

1.14 The Applicant has a partnership with UK charity Buglife – a conservation trust focusing on the protection and enhancement of invertebrates in the UK.

1.15 Invertebrates are key to healthy ecosystems. From pollination, dispersing seeds, providing food for wildlife, recycling nutrients, and cleaning water, insects and pollinators play a critical role in life on our planet; without them whole ecosystems would collapse.

1.16 In a UK wide study, it was found that the UK's flying insect population has decreased by as much as 58.5 % in the last 20 years (Ball *et al*., 2022), this decline could potentially be fatal for habitats and ecosystems across the UK as well as many ecosystem services we rely on. Resources available, as well as the extent of habitat restoration areas provided, mean that renewable energy projects can play a pivotal role in halting this dramatic decline. The partnership between the Applicant and Buglife allows bespoke habitat management measures to be incorporated into this BES (and subsequent BEP, if the Proposed Development is consented), helping achieve sustainable populations of invertebrates locally and, in light of NPF4 Policy 3, support in delivering biodiversity enhancement within, and improving habitat connectivity through, the Site.

Chapter 2
Baseline Conditions

Non-Avian Ecology

Designated Sites

2.1 As detailed in Chapter 6 and Appendix 6.1, eight statutory designated sites (non-avian) were recorded within 10 km of the Proposed Development. Apart from the Holy Loch Local Nature Reserve (LNR) and Local Nature Conservation Site (LNCS), none of the statutory sites were structurally or functionally linked to the Proposed Development.

2.2 Several non-statutory designated sites, including Ancient Woodland, were located within 5 km. Eight Ancient Woodland Inventory (AWI) sites were located within the Site Boundary (see Figure 6.2).

Habitats and Vegetation

2.3 As noted within Chapter 6 and its associated appendices, the area of the Site which contains the proposed turbines and ancillary infrastructure is comprised of a complex habitat composition due to its topography. The Site supports a range of habitats of conservation interest[4], including heathland, bog and fen habitats. In contrast, the eastern portion of the Site, along the proposed access tracks, has a more uniform habitat composition due to the dominance of conifer plantation.

2.4 Peatland condition across the Site is highly variable with large extents of peatland habitats showing a substantial degree of modification and erosion. Grazing has affected habitat composition across the non-forested parts of the Site, resulting in extensive areas of peatland habitat being in 'modified' condition. In some cases, grazing appears to have resulted in acid grassland replacing blanket bog communities (particularly in the west of the Site), and in some areas, animal trampling and rubbing on peat hags has also contributed to active peatland erosion (see Appendix 6.2).

Protected Species

2.5 The Site is largely comprised of predominantly open expanses of heathland and bog. Vegetation is tussocky, dense and waterlogged which reduces foraging opportunities for species such as badger and otter. In addition to this,

[4] Defined as Annex 1 habitats, Scottish Biodiversity List (SBL) habitats, habitats included in the Argyll and Bute Council Local Biodiversity Action Plan (LBAP), and habitats considered to indicate potential Groundwater Dependent Terrestrial Ecosystems (GWDTEs).

stands of mixed or broadleaved woodland are mostly absent from these upland habitats, resulting in reduced breeding and foraging opportunities for badger, red squirrel and pine marten in these areas.

2.6 However, stands of conifer plantation and broadleaved woodland within the ESA do offer some limited suitability for protected species. The areas of broadleaved woodland to the north-west of the ESA are most suitable, due to their drier soils and structural complexity, and therefore offer more breeding and foraging opportunities. However, whilst Sitka spruce conifer plantation is not considered to be a high-value resource, it is still utilisable, particularly on the freer draining slopes on the Site. Therefore, plantation habitats within the ESA still provide limited, but suitable, breeding and foraging opportunities for species like badger, red squirrel and pine marten. While physical evidence of protected species was lacking within the ESA, it is not possible to rule out their presence.

2.7 It is anticipated that the Site has the potential for a low density of protected species populations, particularly pine marten and red squirrel. Red squirrel records are numerous within the wider area (see Appendix 6.1), with one record located within the Site Boundary. Pine marten is also known to utilise the wider landscape, as sightings have been reported by Kilmun Community Council in their scoping response (see Chapter 6).

2.8 The Site does provide some limited but suitable habitat for otter and water vole along the Spout Burn, Giant's Burn and other watercourses which flow through the Site. However, despite the presence of suitable habitats, no evidence of either species was recorded during the protected species surveys (see Appendix 6.3 for more details).

2.9 The Proposed Development has not been predicted to have any significant effects, under the EIA regulations, with respect to non-avian ecological features.

Ornithology

2.10 As detailed in Chapter 7 and Appendix 7.1, there are no statutory nature conservation designations with an ornithological interest within 10 km of the Proposed Development. The nearest designated site with an ornithological interest is the Renfrewshire Heights Special Protection Area (SPA), which is located approximately 10.6 km to the south-east.

2.11 The Proposed Development is located on the periphery of an active golden eagle territory. White-tailed eagle flights were recorded regularly during surveys undertaken for the Proposed Development; however, breeding sites and most flights were recorded outside the study area.

2.12 Hen harriers and goshawk were observed regularly during the study period, although there was no evidence of breeding despite extensive searches in potential breeding habitat.

2.13 Golden plovers were recorded during the surveys which were undertaken for the Proposed Development, with the majority of observations made during the non-breeding season. A very small population of black grouse were present within the study area; however, no lek sites were located. The Site currently supports a typical assemblage of moorland birds. The Proposed Development is not predicted to have significant effects upon any bird species.

2.14 The key objective for any habitat management measures at the Site is to provide improved nesting and foraging opportunities for moorland bird species through peat resource restoration and interventions relating to specific species (including golden eagle) away from development infrastructure, whilst balancing the need to avoid potentially adverse effects via changes to their habitat.

2.15 As detailed in Chapter 7 of the EIA Report, the layout of the Proposed Development has been designed to avoid existing golden eagle breeding sites, as well as 'preferred' golden eagle foraging habitat, as informed by the Golden Eagle Topographical (GET) Model. Due to the high protection awarded to golden eagle, habitat management measures have been carefully chosen to ensure that golden eagle are not negatively impacted by the proposals.

Peat Resource

2.16 As noted in Chapter 2, Chapter 8 and Appendix 8.2 of the EIA Report, the Proposed Development has been designed to minimise impacts on peat resource, in tandem with the need to take into account other environmental effects and technical design constraints. However, a large proportion of the Site is covered in peat and, as such, it has not been possible to avoid peat altogether.

2.17 Prior to mitigation and enhancement, some elements of the infrastructure have been predicted to have a 'Moderate' effect upon the Site's peat resource and therefore require mitigation through appropriate re-use of peat, excavated for construction of the Proposed Development.

2.18 Within the Site Boundary, a number of areas in the vicinity of the infrastructure have been identified as appropriate for placement of excavated peat to restore peat levels, reduce any further erosion and allow groundwater to rise, improving the adjacent peat quality. The Outline Peat Management Plan (Outline PMP, Appendix 8.1) forms part of the mitigation and details proposals for the re-use of excavated peat in the reinstatement of areas of temporary works. Furthermore, construction techniques to reduce peat

excavation are proposed where engineering requirements allow.

2.19 The Site, however, offers opportunities for peat resource management, via enhancement of currently eroded areas of peat and forest-to-bog restoration. Degraded parts of the Site are visible primarily as hagged areas (either vegetated or bare, see Annex A, Appendix 6.2), with degradation of the Site's peat resource having occurred via natural erosion and grazing.

Forestry

2.20 The east of the Site is dominated by commercial plantation, with smaller extents of broadleaved woodland generally limited to semi-natural stands of rowan and birch adjacent to the north-western boundary. The wider woodland resource outwith the Site also largely consists of conifer plantation, and as such, species diversity is considered generally low in the wider area and very low within the Site.

2.21 As detailed within Chapter 12, there will be a loss of approximately 45.77 ha of stocked woodland as a result of the Proposed Development, of which approximately 34.51 ha is proposed for forest-to-bog restoration. Forest-to-bog restoration is deemed to be acceptable woodland removal without the need for compensatory planting under the Control of Woodland Removal Policy (CoWRP)[5]. Woodland removal without the requirement for compensatory planting is most likely to be appropriate where it would contribute significantly to enhancing priority habitats and their connectivity, or improving conservation of water or soil resources.

2.22 Woodland planting is therefore required under the CoWRP, to compensate for the remaining 11.26 ha of permanent felling required to support the construction and operation of the Proposed Development. This has been achieved through the provision of 7.72 ha of replanting planting in-situ and an additional 3.54 ha of compensatory planting.

2.23 There is a desire to replace low biodiversity woodland with higher biodiversity native and riparian woodland on Site, in agreement with the landowners, where conditions do not allow for a commercially viable yield; the rest will be planted under a compensatory planting scheme to be agreed in consultation with Scottish Forestry and the landowners post-consent.

[5] Forestry Commission Scotland (now Scottish Forestry) (2009). *The Scottish Government's Policy on Control of Woodland Removal*. Available at: https://www.forestry.gov.scot/publications/285-the-scottish-government-s-policy-on-control-of-woodland-removal [Accessed June 2025].

Chapter 3
Proposed Restoration and Enhancement Measures

3.1 The parts of the Site to which the following proposals relate are illustrated in each case in Figure 6.8.

Land Use Considerations

3.2 The Site and its surroundings are in longstanding active use for plantation forestry. The proposals set out in this strategy need to achieve environmental enhancement whilst allowing economically important land uses to continue, as these are fundamental to the future management of the area. This balance has been achieved in part by defining specific restoration and enhancement areas within the Site (as shown in Figure 6.8).

Governance and Implementation

3.3 It is proposed that the final BEP is delivered by a BEP Steering Group. The BEP Steering Group will be established to discuss, coordinate, and deliver the detailed BEP. Members of the group are likely to include:

- The Applicant;
- The Landowners (or their agent/s);
- A Principal Contractor (when appointed);
- A Restoration Contractor (when appointed); and
- Various members of an appointed environmental consultant team.

3.4 The BEP Steering Group will make recommendations in conjunction with the landowners. Other parties (e.g. NatureScot) will be engaged or consulted as required on specific interventions.

Peatland Restoration

3.5 Blanket bog habitats are widespread across the Site and account for approximately 238.61 ha (34.06 %) of the habitats surveyed. However, blanket bog quality varies across the Site, as management has affected the species composition and diversity of many areas. A number of opportunities for peatland restoration have been identified within the Site, which aim to enhance the integrity and condition of peatland habitats (also see 'Summary of Potential Benefits').

3.6 Impacts to priority peatland habitats are calculated to be 14.34 ha, and guidance recommends compensation in the form of peatland restoration at a rate of 1:10 (lost:restored).

The combination of infilling peat (approximately 13.15 ha), additional peatland restoration techniques (reprofiling of eroded peat and drain blocking, approximately 46.59 ha) and forest to bog restoration (approximately 21.60 ha), represents a total of approximately 81.34 ha, representing a ratio of 1:5.7. These measures ensure compensation for priority peatland habitats is delivered within the Site.

3.7 Restoration techniques described below will be appropriate and sensitive to the nature and scale of targeted restoration areas. For example, where machinery is required, floating tracks or excavators with light tracks may be utilised, to minimise ground disturbance and facilitate access. In areas where machinery is deemed inappropriate, or for smaller-scale interventions, work will be carried out manually. This ensures a proportionate and careful approach to restoration, minimising impacts on areas of existing blanket bog.

Repair of Eroded / Bare Areas using Excavated Peat

3.8 Areas have been identified comprising eroded or bare peat that are in close proximity to the Proposed Development infrastructure (see Appendix 8.1, Figure 8.2 and Figure 6.8). These areas will be backfilled with the best quality peat that is excavated for the construction of the Proposed Development. The process will occur concurrently so that the peat is stored for the minimum amount of time possible prior to reinstatement, with direct translocation preferred. This enables the peat integrity to be maintained and offers the greatest chance of success of habitat restoration.

3.9 An experienced restoration contractor would be required to work on-site concurrently with construction. When peat is available from construction, this will be placed in eroded areas and bunds will be constructed (in steeper eroded areas) to help retain the basal catotelmic peat.

3.10 This method is proposed to be used on the areas identified in Figure 6.8 (also see Appendix 8.1), in combination with machine-based Peatland ACTION techniques to improve the conditions surrounding the translocated peat and promote recovery of peatland vegetation.

Repair of Eroded / Bare Areas using Machine-Based Peatland ACTION Techniques

3.11 Areas of eroded or bare peat that are located away from the infrastructure, but which have been assessed to be accessible by plant, will be restored using machine-based techniques. This includes conventional hagg and gully reprofiling techniques, where gullies or hagg sidewalls are bare over a sufficiently large area to merit reprofiling and where accessible by plant. Where gully floors are sufficiently wide that reprofiling will not achieve full vegetation cover and where the floors are subject to focused water flow, flow management will be undertaken through the use of surface bunds.

Repair of Eroded / Bare Areas using Hand Techniques

3.12 This includes areas that have been identified to be comprising eroded or bare peat that are not considered to be accessible by plant. In these cases, the restoration applied may involve a mulch layer with overlying textiles pegged. The source of the mulch will be determined based on the accessibility of the location to Argocats, and locations will also be assessed for exposure and growing season length and therefore any requirement for more resistant textiles.

3.13 Where exposure to wind and/or freeze-thaw is considered a limiting factor, flow management will be utilised to slow the flow of water, limit erosion and provide a more stable substrate for recolonisation of vegetation. Where access is very limited or restoration footprints are small, peat-filled geotextile sacks will be utilised for flow management. Larger gullies with only small watercourses will be restored using coir rolls pegged into the peaty floor of each gully, or timber dams if accessible by Argocat. Very large gullies with active eroding channels (up to 2 m wide) will be restored using stone dams constructed using helicoptered bags of stone.

3.14 Restoration of eroded or bare peat will comprise approximately 46.59 ha in total.

Re-Use of Translocated Peat

3.15 Peat will be reused to reinstate temporary infrastructure. It is considered that the best case for reuse is returning peat to its point of origin in the stratigraphic sequence in which it was excavated. Where peat is reinstated around temporary infrastructure, these areas are excluded from calculations of peatland restoration, as per guidance[2].

3.16 In addition to the re-use of peat through reinstatement, translocated peat will also be used to support further areas of forest-to-bog restoration in peat translocation areas. Translocated peat may be of value to forest-to-bog restoration by facilitating the creation of a smooth surface with shallow woody material, amenable to shallow water retention and facilitating recovery of bog species that require wetter conditions.

3.17 Based on the ongoing field trials overseen by Forestry and Land Scotland (FLS) (see Appendix 8.1), the optimum translocation depth for peat over formerly afforested surfaces is 0.25 m, and this depth has been specified for translocation areas identified across the Site (see Figure 8.2).

3.18 Infill using translocated peat will comprise of approximately 13.15 ha.

Forest-to-Bog Restoration

3.19 Forest-to-bog restoration requires removal of unproductive plantation and blocking of drainage ditches to 're-wet' the bog. As shown in Figure 6.8 three areas have been identified within the Site with the potential to be restored following removal of non-native conifers using established best practice techniques[6].

3.20 The forest-to-bog restoration areas were identified through a combination of desk-based analysis and field-based verification, with consideration given to their suitability (including peat depth and slope angle), and in consultation with specialists in peat and forestry.

3.21 Consideration has been given to slope to ensure that areas selected are appropriate for the proposed restoration, although existing tree cover precludes detailed consideration at this stage. Forest-to-bog will target gentle slopes of up to 5°; however, in accordance with evidence of success from case studies, some areas on slopes up to 12° may be retained to ensure contiguous areas are considered, and to capture benefits delivered at scale. Final, detailed proposals will be confirmed as part of the detailed BEP post-consent.

3.22 Extents of open ground within the Site are susceptible to encroachment as non-native conifers self-seed onto bog habitats. Encroachment of tree regeneration can therefore negatively impact upon bog habitats through interception of rainfall, enhanced evaporation and transpiration, shading, nutrient enrichment, and physical alteration of the peat through compaction, disturbance and oxidation[7].

3.23 Regeneration management, guided by the BEP Steering Group (BEPSG) and informed by site-specific conditions, will prioritise preventing erosion, promoting restoration, and creating conditions for blanket bog creation and recovery. Key management techniques, subject to refinement according to site-specific conditions, include:

- Drainage ditch and erosion channel blocking to raise the water table, rewet the bog, and reduce the potential for self-seeded trees;
- Scrub and tree control to prevent drying of the bog (including removal of brash where possible, or use in drainage blocking); and
- Sphagnum moss reintroduction (e.g. *Sphagnum papillosum*, where available from suitable donor areas) to promote recovery and function in restored areas.

3.24 The forest-to-bog restoration areas comprise approximately 21.6 ha in total.

Peatland Restoration Summary

3.25 Impacts to priority peatland habitats are calculated to be 14.34 ha, and guidance recommends compensation in the form of peatland restoration at a rate of 1:10 (lost: restored). The combination of infilling peat (approximately 13.15 ha), additional peatland restoration techniques (reprofiling of eroded peat and drain blocking, approximately 46.59 ha) and forest to bog restoration (approximately 21.60 ha), represents a total of approximately 81.34 ha, representing a ratio of 1:5.7. These measures ensure compensation for priority peatland habitats is delivered.

Ecological Compensation and Enhancement

Tree Planting

3.26 Tree planting will be comprised of both on-site and off-site compensatory planting and on-site riparian and non-riparian enhancement (see Figure 6.8). This will contribute towards the 3.54 ha of planting required under the CoWRP, due to the felling required to construct and maintain access to the Site, while also providing enhancement through the provision of ecologically diverse broadleaved woodland species (see below sections for more details).

3.27 Planting will comprise a combination of continuous and discontinuous shrub and tree-dominated planting. As per best practice, trees will not be planted on peat >0.5 m. Native tree species appropriate for the Site will be agreed post-consent, but may include the following:

- Alder *Alnus glutinosa*;
- Downy birch *Betula pubescens*;
- Pedunculate oak *Quercus robur*;
- Eared willow *Salix aurita*; and
- Grey willow *Salix cinerea*.

3.28 As soil type and hydrology play a significant role in determining which trees will thrive, careful selection of tree species in terms of density and diversity will be considered. This selection will aim to reflect a naturally occurring NVC

[6] NatureScot (2024). *Peatland Action - Technical Compendium: Forest to Bog Restoration*. Available at: https://www.nature.scot/doc/peatland-action-technical-compendium-restoration-8-forest-bog-restoration [Accessed June 2025].
[7] Thom, T., Hanlon, A., Lindsay, R., Richards, J., Brooks, S. and Stoneman, R. (2019). *Conserving Bogs: The Management Handbook. 2nd Edition*. Available at: https://www.iucn-uk-peatlandprogramme.org/sites/default/files/header-images/Conserving%20Bogs%20the%20management%20handbook.pdf [Accessed June 2025].

woodland community suited to the local conditions[8]. Alternatively, more general woodland communities appropriate for the Site e.g. Acid Upland Woodland[9] should be considered. By adopting these principles, tree planting efforts within the Site will contribute to creating a lasting positive effect for native flora and fauna.

3.29 Anticipated benefits include greater nesting and foraging opportunities for a range of breeding birds, typical of the upland landscape. In addition, such tree species will also provide food sources for black grouse in the spring and winter, together with suitable cover from predation for both adults and broods, and will provide connectivity for the species between foraging, lekking and breeding habitats. This, in turn, will optimise prey availability for golden eagle. Planting areas will be chosen carefully to ensure they do not encroach on areas important for golden eagle (see Chapter 7 and Appendices 7.1 and 7.3).

3.30 Discontinuous areas of planting will ensure that extensive shading of existing food plants (e.g. grasses and bilberry, where present) for black grouse does not occur, with planted tree and shrub species being selected for their preference by black grouse.

3.31 Regarding protected species, bats will also benefit from the subsequent increase in invertebrate abundance and diversity as a result of woodland creation. Roosting opportunities may also develop in the advanced stages of woodland, which are otherwise limited to Sitka spruce within the Site. In addition, food availability for pine marten and red squirrel would increase, as a result of berry and cone-producing trees, as well as the likely increase in nesting bird numbers; a prey species for pine marten.

3.32 During the establishment phase, trees will be protected in accordance with best practice guidance available at the time of planting, with the requirement for fencing being avoided as far as possible. Grazing management would be the preference in the first instance if beating-up indicates an issue with browsing on young trees. Biodegradable tree shelters will also be considered. Monitoring will be undertaken regularly to ensure planting is successful and does not become a shelter for deer.

Riparian Planting

3.33 Riparian planting will aim to establish small groups of native trees along the riparian corridors of several unnamed watercourses within the Site. These proposals have the potential to enable broadleaved trees to establish within the Site and provide improvements to watercourse quality through the introduction of appropriate shading, bank stabilisation and flood risk management.

3.34 Fisheries will benefit from riparian planting through the casting of shade (resulting in maintenance of cool water temperatures), provision of cover, and sources of food from in-falling litter and insects.

3.35 Mammals such as bats and pine marten will benefit from improved habitat connectivity and food availability, with resting opportunities for otter also being enhanced.

3.36 The Applicant's partnership with Buglife identifies any B-Lines ('insect pathways') which are within, or in close proximity, to the Site. No B-Lines have been identified and so riparian planting is aimed to provide a series of within-site B-Line equivalents, provide a series of pathways connecting different habitat communities for insects. In addition, riparian woodland has also been found to be beneficial for aquatic invertebrates – such as mayflies, stoneflies and caddisflies – as it provides shade and potential cooling of freshwater habitats which are particularly vulnerable to climate change.

3.37 These measures, along with non-riparian planting (see below) will serve to enhance biodiversity and watercourse quality and promote the connectivity of habitat features throughout the Site.

3.38 Small groups of native tree species are proposed to be planted along riparian corridors to provide cover which will extend into the Site. The detailed planting scheme will take Groundwater Dependent Terrestrial Ecosystems (GWDTEs) and peat depth into account, as no planting should take place on peat >0.5 m. Typically, planting would favour drier hummocks, above the very wet peat areas, as trees will grow more successfully in drier conditions and this will avoid habitats of greatest conservation interest. Suitable species include downy birch, alder and rowan.

3.39 Best practice guidance for riparian planting will be followed[10], with planting groups expected to be 5-10 m wide and 10-20 m long, depending on the width of the watercourse, speed of flow, and extent of habitat considered to be suitable for planting. Planting areas will be chosen carefully to ensure they do not encroach on areas important for golden eagle (see Chapter 7 and Appendices 7.1 and 7.3).

3.40 The search area is approximately 28.1 ha (as shown on Figure 6.8), although the extent of planting will be dependent

[8] Rodwell, J. S. and Patterson, G. S. (1994). *Creating New Native Woodlands*. Forestry Commission Bulletin 12. HMSO, London, xiii + 82pp.
[9] Hotchkiss, A. and Herbert, S. (2022). *Tree Species Handbook: A Technical Guide for Practitioners*. The Woodland Trust.
[10] The Woodland Trust (2016). *Keeping Rivers Cool: A Guidance Manual. Creating Riparian Shade for Climate Change Adaptation*. Available at: https://www.woodlandtrust.org.uk/media/1761/keeping-rivers-cool.pdf [Accessed June 2025].

on identifying sufficient suitable habitat at the stage in which detailed planting proposals are drawn up (post-consent).

Non-Riparian Tree Planting

3.41 A search area for additional, non-riparian tree planting has been identified (see Figure 6.8). The detail of planting within this area would be agreed post-consent in consultation with relevant statutory consultees, and would be based upon the following principles:

- Planting large additional woodland blocks within 'preferred' golden eagle foraging habitat would reduce the habitat suitability for golden eagles, and will therefore be avoided, notwithstanding its potential ecological benefits in other respects. Planting in riparian corridors would not have the same adverse implications for golden eagles, as long as they are outwith the eagle protection buffer; and smaller areas of tree planting (in addition to riparian planting) can also be potentially accommodated at the Site without adverse impacts upon eagles, subject to detailed design of the planted areas to limit their size and aggregate area, and achieve appropriate separation distances between them.
- Planting will be undertaken in small and/or linear groups rather than larger woodland blocks. Planting density will vary, with relatively closer spacing on lower and more sheltered ground (e.g. close to the existing Ancient Woodland), and wider spacing on higher ground.
- Native species will be selected (e.g. pedunculate oak, alder, downy birch, wild cherry, holly and willows).
- Planting will avoid the most sensitive habitats with respect to peatland (e.g. avoiding peat >0.5 m depth), and will typically favour drier hummocks, as trees will grow more successfully in drier conditions.
- Stocking density will vary from 400-1,600 stems per hectare, as appropriate to the conditions.

3.42 The search area is approximately 53.6 ha (as shown on Figure 6.8), although the extent of planting will be dependent on identifying sufficient suitable habitat at the stage in which detailed planting proposals are drawn up (post-consent).

Ancient Woodland

3.43 The proposed access track is due to pass through some Ancient Woodland (of Semi-Natural Origin) and 'Other' Ancient Woodland (on the Roy Map) at the Site entrance. While the majority of this woodland has been categorised as Antiquity 1a woodland, the habitat and vegetation surveys confirmed that this area is now a Plantation on Ancient Woodland Site (PAWS). The habitat and vegetation surveys (see Appendix 6.2) confirmed that the woodland has been planted with non-native conifers and does not currently support ancient woodland species, and no Ancient Woodland indicator species were identified at the time of surveys.

3.44 Woodland planting is required under the CoWRP to compensate for the permanent felling required to support the construction and operation of the Proposed Development, and to meet the public benefits of the woodland lost. Although this stand of woodland is registered as majority Antiquity 1a, the trees which are to be felled are largely non-native conifer, and their removal and replacement (wherever possible) with native tree species provides ecological benefits. Large conifers which have been planted in the 1940s will, however, be retained.

3.45 Although the area does not support native Ancient Woodland, and associated ground flora, the Ancient Woodland soils may remain valuable. Ancient Woodland soils will be impacted as a result of the Proposed Development. However, plants typical of Ancient Woodland do not tend to reproduce by seeds that are deposited in the seed bank. Therefore, the seeds found in the soils of Ancient Woodland often do not represent the plants or trees currently growing in the soil. The seeds within the seedbank of such woodlands tend to be dominated by more persistent ruderal species that are waiting for disturbance to provide ideal conditions for them to germinate[11]. Therefore, rather than allowing the seed bank to regenerate naturally, and risking colonisation of unwanted species, proposals aim to provide low-density native compensatory planting within these areas. This would facilitate a native woodland canopy and reduce the risk of ruderal species becoming dominant within the area.

3.46 There is currently no guidance on compensatory planting for Ancient Woodland, other than the guidance located within the CoWRP. Permanent loss of woodland listed on the AWI comprises 1.08 ha. Therefore, a ratio of 1:10 (lost:restored) is proposed, to compensate for this loss. As such 10.8 ha of compensatory planting is currently required to compensate for the woodland listed on the AWI which will not be restocked. Compensatory planting will be off-site, with the location to be determined post-consent.

3.47 Compensatory planting will align with measures set out in 'Tree Planting' above.

Pine Marten Denning Opportunities

3.48 If pre-works surveys of proposed areas of felling identify mature trees with cavities suitable for denning by pine marten, these trees will be retained wherever possible. Where

[11] Woodland Trust (n.d.). Translocation: HS2 Factsheet.

retention is not feasible, compensatory pine marten boxes will be installed (see below).

Boxes for Pine Marten / Red Squirrel

3.49 In addition, a minimum of five pine marten boxes are proposed to be installed in areas where natural tree cavities are absent, to create significant habitat enhancement by providing elevated, insulated resting and breeding dens. Locations are expected to be confirmed post-consent following further pre-construction surveys.

3.50 Five boxes for red squirrel are also proposed, on trees in the existing woodland in the east of the Site. Locations and numbers are anticipated to be confirmed post-consent following further pre-construction surveys.

Grazing Management

3.51 The baseline grazing density of deer and livestock across the Site will be established prior to the start of construction (Year 0). Detailed proposals for grazing management will be developed post-consent and will make use of the baseline data. Targets and measures to ensure sustainable grazing densities across the Site will be determined in consultation with the BEPSG and stakeholders (including NatureScot). Management of grazing density will aim to promote the success of the restoration and enhancement measures.

3.52 The BEPSG will aim to promote the success of peatland habitat restoration proposals and protect new woodland planting. Both the tree planting and peatland restoration measures outlined in this BES will, however, be monitored with regards to herbivore impacts, and should areas of concern be identified, additional interventions may be required to promote their success (for example, tree shelters or fencing).

3.53 Elements of fencing may be proposed in the final BEP to protect areas of peatland restoration, particularly from poaching by deer and livestock. If areas of the Site are fenced off to exclude grazing pressure, vegetation monitoring will be undertaken both within and outwith fenced areas to assess and compare the condition of each, and to identify if any remedial action is required (for example if habitats along a fence are becoming excessively poached).

3.54 Stock fencing would require marking to reduce black grouse collisions. Markers such as larch droppers (approximately 450 mm by 50 mm by 16 mm, at a spacing of 2-3 droppers per metre) or chestnut fencing could be used[12].

3.55 Should fencing be required, grazing animals could also be displaced to unfenced areas of the Site. This could result in additional pressure on these areas. Additional management measures would be proposed in this respect, to include vegetation monitoring of fenced and unfenced areas. Should a deterioration in condition of the vegetation as a result of grazing pressure be identified during monitoring surveys, measures to address this would be agreed by the BEPSG.

3.56 The availability of live medium-sized prey (e.g. grouse, hares or rabbits), where influenced by the competitive effects of grazing by larger herbivores (e.g. sheep and deer), has been suggested as a factor influencing eagle range occupancy and productivity[13,14]. The influence of grazing upon the availability of live prey for eagles and species productivity is, however, complex. The Proposed Development therefore provides the opportunity for the introduction of a grazing management scheme, with associated monitoring, to further understand the relevant relationships, and with the aim of enhancing the availability of live prey within golden eagle ranges which overlap with the Site.

Enhancement of Habitat for Bird Species

3.57 In addition to the measures set out above (notably 'Ecological Enhancement' and 'Grazing Management'), measures have been designed to improve feeding opportunities for key species, principally by enhancing prey populations or improving feeding habitat, and to ensure continued and enhanced availability of nesting areas.

3.58 Following best practice, all restoration works (peatland and woodland) will take place outwith the bird breeding season (taken to be Feb to Aug) to prevent disturbance to all breeding wild birds.

Golden Eagle

3.59 Management of habitat within the Site will aim to:

- Maintain and/or expand existing heather stands;

[12] Forestry Commission (2012). Technical Note 19: Fence Marking to Reduce Grouse Collisions. Available at: https://www.forestresearch.gov.uk/publications/fence-marking-to-reduce-grouse-collisions/ [Accessed June 2025].

[13] Moss, D. and Walker, D. (2008). *Golden Eagle Monitoring at Beinn Ghlas Windfarm 2000-2007*. A Report by Wildlife Advice and Natural Research to Beaufort Wind Ltd.

[14] Whitfield, D. P., Fielding, A. H., McLeod, D. R. A. and Haworth, P. F. (2008). *A Conservation Framework for Golden Eagles: Implications for Their Conservation and Management in Scotland*. Scottish Natural Heritage Commissioned Report No.193.

- Enhance the structural diversity of dry wet heath habitats within the Site through peatland resource restoration; and
- Enhance the abundance of heather on blanket bog habitats.

3.60 There is an opportunity for positive management of heathland vegetation to benefit bird life, in particular raptors (including golden eagle and hen harrier), which make use of several zones within the Site, especially the southern and central areas where foraging habitat occurs within range of nesting areas (Figure 6.8 and Chapter 7).

3.61 Areas identified as suitable for raptors will not be subject to burning or cutting, and any establishing non-native trees in these areas will be identified and removed. Any burning or cutting of other dry heath habitats, outside these zones, will be appropriate and monitored.

Black Grouse

3.62 Peatland resource restoration and vegetation management will aim to enhance the structural diversity of dry and wet heath habitats within the Site, including through an appropriate, monitored programme of cutting and burning. The abundance of heather on blanket bog habitats will be monitored and enhanced where appropriate.

3.63 Areas of trees and shrubs will be established to improve foraging habitat and cover (see 'Tree Planting' above). Fencing, where required, will be designed such that collision risk of black grouse is reduced through the use of marking (see 'Grazing Management' above), with such measures to reduce collision risks for black grouse with respect to existing fencing also being identified and implemented.

Chapter 4
Monitoring

Peatland Restoration

4.1 As outlined above, the efficacy of peatland restoration measures and ongoing grazing management will be subject to monitoring. Monitoring is likely to be resource-intensive in the initial years, while the success of implementation will require close attention. The monitoring programme will ensure that appropriate mechanisms are in place to remediate any failed measure, or implement necessary management, throughout the operational lifetime of the Proposed Development.

4.2 Details of the monitoring will be confirmed as part of the BEP; however, such monitoring will make use of published methodologies[15] and is anticipated to include measures such as:

- Fixed point photography at key locations of restoration;
- Quadrats at sample locations, including, for example, assessment of the extent of vegetation cover, NVC community, and extent of bare peat;
- Assessment at sample plots with regards to signs of grazing activity; and
- Control plots in locations that have not required restoration.

4.3 Monitoring will record trends in the condition, distribution and abundance of dwarf shrubs including heather (and including recording signs of heather beetle if present). The abundance and distribution of other key bog species will also be recorded (e.g. *Eriophorum vaginatum*, *Sphagnum papillosum* and *Sphagnum medium*).

4.4 In addition, monitoring will assess the extent of regeneration occurring along the various watercourses, and the efficacy of the regeneration and grazing management measures.

Ecological Enhancement

Tree Planting

4.5 Areas of planted native trees will be monitored annually in the initial 5 years after planting, and any failed trees will be replaced. Subsequent monitoring will be undertaken to ensure

[15] For example, Macdonald et al. (2007). *A Guide to Upland Habitats: Surveying Land Management Impacts*.

the trees remain healthy, and to check for any issues with regards to disease or grazing. Details of the regime will be agreed post-consent.

Ornithology

Moorland Breeding Birds

4.6 Moorland breeding bird surveys will be undertaken to monitor the effect of peat resource restoration measures on moorland breeding birds within the Site. An updated baseline (Year 0) to map the presence and distribution of moorland breeding birds will be undertaken prior to the commencement of construction works, with monitoring subsequently undertaken in Years 1, 2, 3, and 5 of wind farm operation, then subsequently every five years subject to review.

4.7 The survey will employ an adapted Brown & Shepherd (1993) methodology[16] for censusing upland breeding waders, comprising a four-visit survey between April and July of each monitoring year.

Black Grouse

4.8 Black grouse lek surveys will be undertaken to monitor the effect of peat resource restoration and tree planting measures on local black grouse populations. An updated baseline (Year 0) will be undertaken prior to commencement of construction works, with monitoring subsequently undertaken in Years 1, 2, 3 and 5 of wind farm operation, then subsequently every five years subject to review.

4.9 Monitoring in each year will comprise black grouse lek site surveys employing methods based on those described in Gilbert et al. (1998)[17]. The aim of these surveys is to count the maximum number of male black grouse attending lek sites and to map the location of each lek. Monitoring will also inspect black grouse collision avoidance measures.

Golden Eagle

Prey Species Monitoring

4.10 Golden eagle prey species monitoring surveys will be undertaken to monitor the effect of peat resource restoration measures (including grazing management) on golden eagle prey abundances. A baseline (Year 0) will be undertaken prior to commencement of construction works, with monitoring subsequently undertaken in Years 1, 2, 3 and 5 of wind farm operation, then subsequently every five years subject to review. Monitoring in each year will comprise prey transects, adopting protocols to be agreed in consultation with Argyll and Bute Council and NatureScot.

Eagle Monitoring

4.11 In addition to the above, annual monitoring of the location and breeding performance of eagle species within 6 km of the Proposed Development would be commissioned. An updated baseline (Year 0) will be undertaken prior to commencement of construction works, with monitoring subsequently undertaken annually.

Satellite Tagging

4.12 To increase our understanding of the effects of wind farms on golden eagles, and to evaluate the effectiveness of habitat enhancement measures, satellite tagging of one or both territory-holding golden eagles will be undertaken. Data from satellite tags would be supplemented with annual monitoring of breeding success of the territory-holding pair.

[16] Brown, A. F. and Shepherd, K. B. (1993). *A Method for Censusing Upland Breeding Waders*. Bird Study, 40, pp. 189-195.

[17] Gilbert, G., Gibbons, D. W. and Evans, J. (1998). *Bird Monitoring Methods*. RSPB Sandy, Bedfordshire.

Chapter 5
Summary of Potential Benefits

Habitats and Vegetation

Peat Resource and Restoration

- Impacts to priority peatland habitats are calculated to be 14.34 ha, and guidance recommends compensation in the form of peatland restoration at a rate of 1:10 (lost: restored). The combination of infilling peat (approximately 13.15 ha), additional peatland restoration techniques (reprofiling of eroded peat and drain blocking, approximately 46.59 ha) and forest to bog restoration (approximately 21.60 ha), represents a total of approximately 81.34 ha, representing a ratio of 1:5.7. These measures ensure compensation for priority peatland habitats is delivered.
- Peatland restoration measures aim to restore the function of the peat substrate, promoting the growth of peatland species. This will benefit flora and fauna reliant on a healthy peatland, including plant species, invertebrates, small mammals and upland bird assemblages.

Tree Planting

- Tree planting will create a more diverse native species mix within the Site, enhancing the Site's woodland habitats and improving the visual quality by softening plantation edges.
- The proposed tree species will provide additional food sources and cover for upland birds like black grouse. Discontinuous areas of planting will ensure that existing food plants are not shaded extensively.
- Riparian planting will improve watercourse quality through the introduction of shading, enhancing watercourse functioning, with additional benefits including flood risk management and bank stabilisation, with these in turn protecting freshwater habitats used by a range of species. Fisheries will benefit from riparian planting through the casting of shade (resulting in maintenance of cool water temperatures), provision of cover, and sources of food from in-falling litter and insects.

Regeneration Management

- Targeted management of blanket bog susceptible to tree encroachment (notably the proposed forest-to-bog restoration area) will ensure the integrity of peat and peatland vegetation, reducing the risk of peat degradation and oxidation.

Protection and Grazing Management

- Monitoring grazing pressure and implementing interventions as necessary will promote the success of other restoration and enhancement measures and ensure the ongoing management of sensitive upland habitats.

Protected Species

5.1 The installation of pine marten and red squirrel boxes will enhance the provision of sheltering opportunities for these species, which are otherwise limited within the Site.

Ornithology

5.2 Creation of a mosaic of habitats through forest-to-bog restoration areas and targeted woodland creation will improve the overall quality of the Site for black grouse, potentially enhancing breeding success and contributing to population recovery.

5.3 The structural diversity of habitats will be enhanced through restoration and enhancement of wetland habitat within peatland, tree planting, restructuring of woodland edges, and sustainable management of grazing. This will improve the resources available for black grouse and a range of other bird species.

5.4 The creation and management of peatland and woodland habitats will enhance conditions for upland bird assemblages and provide additional cover and foraging habitat for raptors.

5.5 Monitoring programmes for black grouse and golden eagle will allow for the evaluation of the effectiveness of mitigation and habitat enhancement measures. This will allow for adjustments to habitat enhancement measures to improve their effectiveness if necessary.

Conclusion

5.6 The BES outlines a multifaceted approach to enhancing biodiversity within the Site, and has been designed to tie into the existing Sandbank Forest Long-Term Biodiversity Plan.

5.7 The areas dedicated to forest-to-bog restoration will not only offset development impacts but also contribute substantially to enhancing peatland habitat quality. This will lead to improved carbon sequestration and the recovery of peatland flora.

5.8 Strategic riparian and native tree planting will provide benefits for various species typical of the upland setting by increasing food and shelter resources, as well as connectivity for wildlife across the Site. In addition, riparian tree planting will enhance habitats for fish by providing shaded pools, as well as improving resting opportunities for otter. Targeted management of tree encroachment onto areas of blanket bog, in combination with a grazing management regime, will further enhance and maintain habitat quality.

5.9 The combined effects described above will create a more diverse and interconnected habitat mosaic. This increased structural diversity will benefit a wide range of species including, black grouse, raptors, otters, pine marten, red squirrel and bats. Overall, this multifaceted approach will substantially enhance biodiversity across the Site, as well as increasing the Site's ecosystems' resilience to climate change and other environmental pressures.

5.10 Subject to the principles set out above being taken into account when the detailed BEP is drafted and agreed post-consent, the proposals described in this BES offer opportunities for significant, interrelated environmental enhancements at the Proposed Development with respect to biodiversity, peat resource and forestry, which will satisfy the requirements of NPF4 Policy 3.