

Document history

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Appendix 6.3

Outline Biodiversity Enhancement and Restoration Plan

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Glossary

Term	Definition
Environmental Impact Assessment	Environmental Impact Assessment (EIA) is a means of carrying out, in a systematic way, an assessment of the likely significant environmental effects from a development.
Environmental Impact Assessment Regulations	The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (EIA Regulations)
Environmental Impact Assessment Report	A document reporting the findings of the EIA and produced in accordance with the EIA Regulations
Mitigation	Measures, including any process, activity or design to avoid, reduce, remedy or compensate for negative effects of a development.
Proposed Development	The South Kyle II Wind Farm development
Proposed Development Area	The area within the “Site boundary” as illustrated on Figure A1 which the Proposed Development will be located
Site boundary	Land within the red line area associated with the Proposed Development

List of Abbreviations

Abbreviation	Description
BAI	Bat Activity Index
BERP	Biodiversity Enhancement and Restoration Plan
BSG	Biodiversity Steering Group
CEMP	Construction Environment Management Plan
CSM	Common Standards Monitoring
EIA	Environmental Impact Assessment
EclA	Ecological Impact Assessment
EIAR	Environmental Impact Assessment Report
EMMP	Ecological Management and Monitoring Plan
FLS	Forestry and Land Scotland
GFT	Galloway Fisheries Trust
ha	Hectares
HMA	Habitat Management Area
IEF	Important Ecological Feature
JNCC	Joint Nature Conservancy Council
km	Kilometres
mph	Miles per hour
NDSFB	Nith District Salmon Fishery Board
NPF4	National Planning Framework 4
SEPA	Scottish Environment Protection Agency

Executive Summary

The measures proposed in this outline Biodiversity Enhancement and Restoration Plan (BERP) will increase habitat diversity within the South Kyle 2 Wind Farm Site boundary (Proposed Development). The areas to be managed under the outline BERP prescriptions include degraded bog habitats, broadleaved woodland and habitats that are, or have been, conifer plantation and require to be felled as part of the Proposed Development. Management proposals include the restoration of bog habitats and an increase in native broad-leaved woodland. Appropriate monitoring methods are proposed in order to quantify the results of the proposed management and inform whether they have been successful as well as monitoring local bat and fish populations. The prescriptions proposed in this outline BERP will result in a significant biodiversity net benefit as a result of the Proposed Development in line with requirements of the National Planning Framework 4 (NPF4).

6.3.1 Introduction

- 6.3.1.1 This outline BERP for South Kyle 2 Wind Farm has been prepared by Natural Power Consultants, on behalf of Vattenfall UK Ltd.
- 6.3.1.2 The Proposed Development is located predominantly within productive forestry and thus coniferous woodland plantation or associated habitats, such as recently felled plantation, are the primary habitat types present representing 73.9% of the habitats within the Site boundary. Additional habitats present include dry modified bog and blanket bog (11.2%), marshy grassland, acid grassland (3.3% each) and broadleaved woodland (2.7%). Full details of all habitats present within the boundary of the Proposed Development are provided in Volume 1; Chapter 6 - Ecology, of the Environmental Impact Assessment Report (EIAR).
- 6.3.1.3 As set out in Chapter 6 Habitat Loss Calculations (HLC) undertaken have identified that 0.4 hectares (ha) of heath and bog habitats and 2.10 ha of broadleaved woodland habitats (plus 0.2 ha of habitats associated with broadleaved woodland such as scrub and tall herbs) would be permanently lost as a result of the Proposed Development.
- 6.3.1.4 Discussions were initiated in 2024 with Forestry Land Scotland (FLS) and are still ongoing in order to identify the most suitable locations for compensation and enhancements to be undertaken on land that is within their ownership which may be outwith the boundary of the Proposed Development. Areas have been identified where there is the potential to undertake bog and broadleaved woodland restoration, both within the Site boundary and within adjacent land which is under the control of the developer (Figure A1, Appendix A). This includes 30 ha of bog habitats and 15 ha of broadleaved planting. The final areas where enhancements will be undertaken will be detailed within the final BERP, should consent be granted for the development, following agreement with FLS and in order to discharge any conditions associated with consent.
- 6.3.1.5 The Ecological Impact Assessment (EclA) provided in Chapter 6 of the EIAR did not identify any habitats as important ecological features (IEFs) due to the low level of habitat loss resulting from the construction and operation of the Proposed Development. Therefore, any habitat management measures undertaken for the Proposed Development are not required as mitigation measures for the purposes of the assessment, but rather are compensation and enhancement measures in line with NPF4.
- 6.3.1.6 The EIAR did identify common pipistrelle, soprano pipistrelle, Leisler’s, noctule and *Nyctalus* sp. as IEFs, minor negative but not significant impacts anticipated as a result of the Proposed Development. Despite the absence of significant effects, habitat management and monitoring measures were proposed for bats and are included within this outline BERP.

6.3.1.7 This outline BERP should be considered a draft document that is subject to refinement. The BERP will be finalised post consent as part of a planning condition and approved by the planning authority in consultation with statutory consultees post consent. An initial meeting was undertaken with Forestry and Land Scotland (FLS) in February 2024 to discuss the aim of this outline BERP and potential areas where it would be suitable to undertake management of bog habitats. Discussions on suitable locations are still ongoing. Full detail on the locations of restoration areas, the prescriptions which will be implemented to deliver these objectives, and the monitoring methods which will be used to measure their success, will be included in the final BERP in order to encapsulate the most appropriate methods and practices available at the time. Once finalised, the BERP will remain a working document that may require changes to be made over its lifetime. This outline BERP has been written following a review of the Habitat Management Plan (HMP)<sup>1</sup> for the adjacent operational South Kyle Wind Farm and discussions with FLS in order that the prescriptions proposed complement the FLS long-term plans for the wider area.

### Supporting documents

- 6.3.1.8 Documents which provide information that further supports the outline BERP are:
- Chapter 6 Ecology: South Kyle 2 Wind Farm Environmental Impact Assessment (2025);
  - Chapter 7 Ornithology: South Kyle 2 Wind Farm Environmental Impact Assessment (2025);
  - Chapter 8 Hydrology: South Kyle 2 Wind Farm Environmental Impact Assessment (2025);
  - Vattenfall (2019) South Kyle Wind Farm Habitat Management Plan<sup>1</sup>; and
  - FLS Carsphairn Forest Land Management Plan.

### BERP implementation

- 6.3.1.9 Delivery of the outline BERP will be undertaken through the establishment of a Biodiversity Steering Group (BSG). The BSG would ideally include representation from:
- The Developer;
  - Local Planning Authority;
  - FLS;
  - Galloway Fisheries Trust (GFT);
  - Nith District Salmon Fishery Board (NDSFB); and
  - NatureScot.
- 6.3.1.10 The BSG will be chaired by the developer or their appointed representative (e.g. ecological consultant).
- 6.3.1.11 The final BERP will include monitoring methods and a timetable for both management prescriptions and monitoring surveys. An outline schedule for the first ten years of operation is provided in Appendix B. The lifetime of the wind farm could extend up to 40 years and the BERP is considered a live document. As such, it is proposed that a review of the objectives and the success of management measures in the first ten operational years is undertaken in Year 10, before a proposed schedule of future management measures and monitoring is agreed with the BSG.
- 6.3.1.12 The results of monitoring and any recommendations will be included in a summary report produced after each monitoring year and shared with the BSG to inform ongoing review of the management prescriptions and monitoring methods.

6.3.1.13 A meeting of the BSG will be held following circulation of the summary report, where it is agreed by the members that a meeting is necessary to discuss the results of the report or agree any changes to the scheduled management or monitoring. As a minimum, a BSG meeting will be held in Year 10 to agree the proposed future management and monitoring schedule.

### Biodiversity Net Benefit

- 6.3.1.14 As detailed within policy<sup>2</sup>, NPF4 Policy 3b requires an EIA to demonstrate that biodiversity will be in the “demonstrably better state” and that the five criteria of Policy 3b have been met. These criteria are that:
1. 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;
  2. wherever feasible, nature-based solutions have been integrated and made best use of;
  3. an assessment of potential negative effects which should be fully mitigated in line with the mitigation hierarchy prior to identifying enhancements;
  4. 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
  5. local community benefits of the biodiversity and/or nature networks have been considered.
- 6.3.1.15 In order to fulfil these criteria, the EIA provided baseline survey information, an assessment based on mitigation hierarchy (avoid, mitigate, compensate) and details of the compensation and enhancements proposed. This outline BERP provides the appropriate information required in relation to management and monitoring of the proposed compensation and enhancements, taking into account community benefits of the biodiversity and/or nature networks.

## 6.3.2 Aim and objectives

- 6.3.2.1 This document details a range of measures/prescriptions to be implemented in relation specifically to habitat management in the Proposed Development. The aim is to provide an increase in habitat diversity within the Proposed Development and provide significant biodiversity enhancement in accordance with NPF4.
- 6.3.2.2 The key objectives are:
- Restoration of bog habitats;
  - The creation of new broadleaved woodland; and
  - To reduce the suitability of habitat around the turbines for bats in order to reduce bat collisions.
- 6.3.2.3 Management prescriptions to achieve the above are likely to include the measures listed below:
- Ditch blocking;
  - Forest to bog restoration;
  - Riparian tree planting;
  - Tree / scrub clearance; and
  - Invasive plant species control.
- 6.3.2.4 Monitoring methods to quantify results of management and to comply with requirements of the EIAR are:

<sup>1</sup> Natural Power (2019) South Kyle Wind Farm Habitat Management Plan. (Doc Ref 1164619)

<sup>2</sup> Scottish Government. (2023). National Planning Framework 4. Scottish Government, Edinburgh.

- Common Standards Monitoring (CSM);
- Fixed-point photography;
- Bat monitoring; and
- Fish monitoring.

6.3.2.5 The areas proposed under the outline BERP measures all lie within the site boundary of the Proposed Development. These areas are shown in Figure A1, Appendix A.

### 6.3.3 Site Walkover

6.3.3.1 In order to apply the most appropriate and current techniques/prescriptions for habitat management and enhancement, a site walkover will be undertaken prior to the start of operation and in advance of the start of management works to inform the most appropriate prescription measures to be applied for each objective. Where appropriate this will include a hydrological assessment to identify areas for suitable ground improvements and new or updated vegetation surveys depending on the availability of existing baseline data.

6.3.3.2 If over the course of the timescales of the BERP it appears that any of the objectives are not going to be met, then alternative options will be discussed and agreed by the BSG.

### 6.3.4 General Mitigation

6.3.4.1 In accordance with the EIAR there is the potential for operational impacts on habitats and wildlife through disturbance and accidental pollution whilst undertaking maintenance of the infrastructure or management of the habitats, although all impacts are considered to be negligible following the implementation of embedded mitigation. As such, the following good practice measures to mitigate the potential for these impacts will be followed:

- Any routine maintenance works will take place during the day, where practicable, to minimise the potential for disturbance to protected species within the Proposed Development (since these are mostly nocturnal/crepuscular);
- A speed limit of 15 mph will be enforced for any vehicles going onto the Proposed Development, in order to reduce the risk of collision with protected species; and
- All works will take place under strict adoption of Scottish Environment Protection Agency (SEPA) good practice guidance<sup>3</sup> including in relation to refuelling and appropriate maintenance of vehicles used in maintenance of the Proposed Development and habitats.

6.3.4.2 Where habitat management works are required within the bird nesting season these will be preceded by an experienced ecologist checking for active nests no more than 48 hours prior to the works. If any active nests are identified within the area these will be protected, from harm and disturbance, with an appropriate buffer (dependant on the species and type of works) until all chicks have fledged.

6.3.4.3 In addition, prior to the start of any works associated with this BERP, the landowner will be notified in writing of any works to be undertaken.

<sup>3</sup> Natural Resources Wales, the Northern Ireland Environment Agency and the Scottish Environment Protection Agency (SEPA), (2017). Works and maintenance in or near water: Guidance for Pollution Prevention 5 January 2017 SEPA.

<sup>4</sup> NatureScot (November 2023) Advising on peatland, carbon-rich soils and priority peatland habitats in development management accessed at: <https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland->

### 6.3.5 Prescriptions

6.3.5.1 A schedule for all works is provided in Appendix B.

#### Objective 1: Restoration of bog habitats

6.3.5.2 Restoration of existing bog habitats is proposed as part of this BERP in order to provide compensation and enhancement as required by guidance<sup>4</sup> for the permanent loss of heath and bog habitats (0.37 ha to be lost equating to 3.7 ha of compensation). This value is based on direct habit loss as calculated from HLC and does not account for indirect effects that may result of altered hydrology beyond the actual footprint.

6.3.5.3 The exact locations of potential bog restoration areas have not yet been agreed, and as such additional techniques may be implemented. Methodologies are included here as examples and these will be refined once discussions with FLS have concluded and all potential compensation and enhancement areas have refined. The currently proposed area is outwith, but adjacent to, the boundary of the Proposed Development and is land which is within the control of the Developer. This area is approximately 30 ha which is significantly more than is required, which will provide enhancement over and above the compensation requirements. At present, potential works in this location are proposed to be limited to conifer control and ditch blocking by peat / composite dams. Example techniques are provided below, including those that would be appropriate if there is the potential to undertake forest to bog restoration on FLS controlled land. Discussions are ongoing with FLS in order to assess and confirm suitable locations as well as the restoration measures to be used. Additionally, as detailed in Section 1.3, once locations are confirmed then a survey will be carried out to accurately map peatland features (such as drainage furrows, peat hags and areas of bare peat) following felling and ahead of restoration commencement, to ensure the correct methods are being applied in the correct areas within the Site. All restoration would be timed to complement any works that are being undertaken by FLS. Management techniques will be based on best practice guidelines, as currently detailed by NatureScot<sup>5</sup>.

#### Potential bog restoration techniques

##### Furrow blocking

6.3.5.4 Good condition blanket bog requires a consistently high-water table, to enable the growth of Sphagnum mosses and anaerobic decomposition of plant matter. Drainage gullies lower the water table and increase water flow, leading to potential erosion and release of carbon from peat to the atmosphere. Blocking furrows that were created during forestry activities can be undertaken by the use of both peat and composite dams.

##### Ditch blocking

6.3.5.5 Where ditch blocking is required, wet and structured catotelmic peat removed as part of the Development will be used as much as is feasible to create them. The use of this peat will aid the formation of a watertight dam, which is unlikely to be successfully achieved by the use of cracked peat. If peat is to be reused as for damming purposes, peat damming will occur during the construction phase, where possible, as catotelmic peat has limited transportation and storage potential.

6.3.5.6 Acrotelmic peat (comprising vegetation and/or a natural seedbank) will ideally be placed on top of each dam in the form of peat turves to prevent the peat drying out and to aid regeneration of the peat dam. The peat dam will be constructed higher than the surrounding ground level to allow for any potential peat shrinkage.

habitats-development-management#Assessing+the+Impacts+of+Development+on+Peatland,+Carbon-Rich+Soil+and+Priority+Peatland+Habitats

<sup>5</sup> <https://www.nature.scot/doc/peatland-action-technical-compendium>



6.3.5.7 Where practicable, dams should be installed at the narrowest point of drainage channels up to 1.5 m wide over deep peat, and at a spacing of no more than 15 m apart, to maximise water retention. Dams should span the full width of the oxidised (sunken) cross-section of the drainage channel to prevent continued seepage and/or erosion of peat around the dam feature. Dams should be slightly higher than the fall line of the drainage channel to prevent overtopping and constructed with a longer spur on the downhill side to encourage water to seep into adjoining peatlands (rather than creating pools of water). Dams should be installed to a minimum depth of 50 cm to establish a good seal with the dam feature and care should be taken to tamp down peat dams with an excavator bucket to make sure it is well consolidated.

6.3.5.8 Donor turves required to dress the peat dam should be gathered from a donor site located both upstream and upslope of the dam. Vegetation from the drains themselves should be left intact. Turves should be taken from shallow borrow pits adjacent to (but not too close to) drainage channels. Borrow pits should be reinstated. Hand dug dams should be avoided; as these typically provide inadequate levels of consolidation and may exacerbate erosion.

6.3.5.9 If peat dams are not possible, cardboard or timber dams should be used.

### Ground Smoothing

6.3.5.10 Where peatlands have been ploughed for forestry plantations and then cleared the water level is often at, or below the bottom of the ditch. To raise the water table to allow for peatland restoration, the ridges and furrows need to be removed, and a flatter topography created similar to near natural peatlands. This method aids re-wetting and helps produce conditions conducive to the recovery of peatland species.

6.3.5.11 Ground smoothing can also be used to remove/ fill-in smaller drains with low flows, and so reduce the number of dams required along their length. The technique must, however, be used in conjunction with peat dams wherever peat depths allow, to ensure that water preferential pathways do not develop along the base and sides of the drains in the future. Vegetation recovery on the resultant smooth surface can be rapid, with good cover of species seen within a matter of 1-5 years in the right climatic condition and where there are local seedbanks.

6.3.5.12 Ground smoothing covers a range of operations, frequently carried out in combinations, such as:

- Stump flipping,
- Furrow reprofiling following furrow blocking (see also previous section),
- Cross-tracking.

6.3.5.13 Stump flipping is a technique that peels off the shallow root systems from the underlying peat, flipping them over, followed by compressing them upside down into the furrows with the back of the bucket.

6.3.5.14 Furrow reprofiling/blocking is similar to standard drain blocking and reprofiling/regrading (see below), but with the added complexity of dealing with tree roots and stumps. It can only be carried out on sites with more rotten stumps and roots, and is therefore not possible on recently harvested sites.

6.3.5.15 Cross-tracking involves an excavator driving back and forth over the ground so that the whole surface gets flattened, any mulch or brash is distributed, and any stumps or woody debris do not spring back up. This method tends to only be used as a secondary technique on sites where previous efforts have failed to completely remove the ridges and furrows.

### Conifer Regeneration Management

6.3.5.16 Open habitats that are adjacent to coniferous plantation can often become colonised by regenerating conifers that result in a change in the open habitats present. The following removal methods are commonly used for the removal of conifer regeneration.

- **Spot spraying:** This is the most commonly used technique in which herbicide (glyphosate/triclopyr) is applied to control vegetation in a 1-metre diameter spot around the base of the trees;
- **Manual removal:**
  - **Hand pulling:** Physical removal of scattered small seedlings by hand. Seedlings over 30 cm tall can be difficult to remove by hand pulling. Secateurs or a small jacksaw useful as standby for larger seedlings. Typical removal method for scattered small/medium trees at low to moderate densities.
  - **Lopping:** Physical removal of seedlings using a hand tool. Used commonly to remove widely scattered individuals and denser growing seedlings under 50 cm.
- **Mechanical treatment**
  - **Brushcutting:** Physical removal using a power tool. Commonly used for dense growing seedlings under 50 cm and most effective on areas of denser trees up to 15 cm in diameter at base.
  - **Chainsawing:** Physical removal using a power tool. Most common means for removing medium size trees, scattered individuals to densely growing seedlings greater than 1 m. Cut trees are usually left on site.
  - **Mulching:** Using a 360-degree excavator fitted with a mulching head. Recommended removal method for dense patches of small trees under 50 cm and medium size trees over 1 m. The aim of the clearance method is to convert all above-ground tree biomass into chip material and spread over the peat soil. This method removes all tree material leaving no brash on the ground.
- **Thinning to waste**
  - Selectively removing coniferous trees that are regenerating.

### Objective 2: Broadleaved riparian planting

6.3.5.17 In order to compensate for the loss of 2.10 ha of broadleaved woodland, it is proposed that broadleaved riparian planting is undertaken along the Benbrack burn, and Penniquite burn which flows towards the Linn water where appropriate locations also exist. Locations are shown on Figure A1, Appendix A. These areas total approximately 15 ha, providing compensation for the loss as well as additional areas of enhancement for this habitat.

6.3.5.18 During the site survey outlined in Section 1.3, an assessment will be undertaken along these watercourses in order to prepare a planting plan which will detail the exact planting coupes, stocking density and species mix agreed prior to planting. A range of native broadleaf tree and shrub species suitable to the site-specific conditions will be used. The results of this assessment and the planting plan will be provided in the Year 1 report for discussion with the BSG with works to be undertaken in Year 2.

6.3.5.19 The planting aims to increase habitat diversity for a variety of species, including plants, fungi, mosses and lichens, otters, bats and birds. Riparian woodland is also beneficial to freshwater species, creating shade to help prevent water temperatures from increasing which is known to have a negative effect on freshwater fish and their spawning habitats. In addition, broadleaf planting along rivers can act in favour of flood management and riverbank stabilisation.

- 6.3.5.20 It is proposed that planting will be undertaken to achieve a density of one tree per 3-3.5 m<sup>2</sup>. The following species are recommended however the final species list, density and proportions would be discussed with agreed with the BSG prior to finalisation of the BERP:
- Rowan;
  - Bird cherry;
  - Downy birch;
  - Alder; and
  - Aspen.
- 6.3.5.21 Saplings will be protected against damage through appropriate measures such as tree guards, stock-, deer- or rabbit-proof fencing, and will be adequately weeded until established (approximately 10 years from planting).

**Objective 3: To reduce the habitat suitability for bats surrounding turbines in order to reduce bat collisions.**

- 6.3.5.22 Operational turbines (specifically the blade tips) will have a 50 m separation distance from high-value bat habitats, such as riparian features and forest edges. Although this offset has been included in the design of the Proposed Development, it must be maintained throughout the operational phase, such as by ensuring tree and scrub regeneration does not take place within this offset buffer. Within the Proposed Development, buffers are primarily located as keyholes within commercial coniferous plantation and do not result in the loss of high-value bat habitats. The buffer will be calculated following the below calculation at the end of the construction period:

$$\sqrt{(50 + bl)^2 - (hh - fh)^2}$$

Where *bl* = blade length (83.35 m); *hh* = hub height (115 m); and *fh* = feature (tree) height, estimated here as 20 m.

- 6.3.5.23 The buffer outlines that turbines must remain more than 93.5 m from suitable habitats. Following completion of construction, but in advance of monitoring year 1, a site walkover, as outlined in Section 1.3 will be undertaken to assess the requirement for vegetation removal surrounding the turbines to monitor the regrowth of scrub or conifer saplings within each keyhole. The need for vegetation removal will be reassessed each monitoring year in conjunction with vegetation surveys.
- 6.3.5.24 Management prescriptions in order to reduce bat collisions within the keyholed locations include weed/scrub control within the keyholed turbine locations.

**Scrub and conifer clearance**

- 6.3.5.25 Areas within the calculated buffer distance of the turbines will be kept free of conifer regeneration and scrub to reduce the habitat suitability for bats. Areas will be kept free from scrub and conifers by a suitably qualified contractor.
- 6.3.5.26 The methodology for removal of scrub/conifer will depend on the quantity and type of vegetation to be removed. The following removal methods are commonly used for the removal of conifer regeneration.

- **Hand pulling:** Physical removal of scattered small seedlings by hand. Seedlings over 30 cm tall can be difficult to remove by hand pulling. Secateurs or a small jacksaw useful as standby for larger seedlings. Typical removal method for scattered small/medium trees at low to moderate densities.
- **Lopping:** Physical removal of seedlings using a hand tool. Used commonly to remove widely scattered individuals and denser growing seedlings under 50 cm.
- **Brushcutting:** Physical removal using a power tool. Commonly used for dense growing seedlings under 50 cm and most effective on areas of denser trees up to 15 cm in diameter at base.

**6.3.6 Monitoring**

- 6.3.6.1 This section outlines the proposed monitoring strategy to assess the success of management prescriptions in delivering the aims and objectives of the outline BERP which includes measures to benefit biodiversity as well as compensate for impacts. A timetable of all works is provided in Appendix B.
- 6.3.6.2 The operational monitoring of the adjacent South Kyle Wind Farm includes requirements for bats<sup>6</sup>, and in order to provide comparable data between the two sites it is proposed that a similar methodology for bat species is conducted at the Proposed Development. Details on the methodology used are provided below in the relevant section.
- 6.3.6.3 South Kyle Wind Farm includes monitoring for raptors as a result of the wider habitat changes and potential for ground nesting raptors, however due to the smaller scale nature of the Proposed Development and because the EIA did not identify ground nesting raptor species as an Important Ornithological Feature (IOF), this is not considered necessary.
- 6.3.6.4 In each monitoring year a report of the findings will be produced along with any recommendations for changes to the OEMP. Should changes to the management prescriptions be required these would be discussed and agreed with the BSG.

**Habitats**

- 6.3.6.5 A site walkover will be undertaken in advance of the start of management works as stated in Section 6.3.3.
- 6.3.6.6 The primary assessment of the success of the prescriptions will be observed through repeated vegetation monitoring in the areas being created, restored or enhanced. Vegetation monitoring will take place in years 1, 2, 5 and 10 following construction after which the need for further monitoring will be reviewed. Different methods will be used in order to provide robust monitoring data of the different areas:
- Common Standards Monitoring (CSM); and
  - Fixed-point photography.
- 6.3.6.7 The combination of these different types of surveys will provide specific information on both target habitats and plant species and an overall indication of habitats present within the wider site.

**CSM**

- 6.3.6.8 The CSM would broadly follow the methods as set out in the Joint Nature Conservancy Council (JNCC) 2009 CSM for upland habitats<sup>7</sup>. CSM allows a simple, quick assessment of feature condition, using criteria such as frequency of taxa which are indicators of favourable condition, cover of taxa which are indicators of unfavourable condition,

<sup>6</sup> Natural Power (January 2023) South Kyle Wind Farm: Operational Monitoring Plan: Bats and birds (Doc. Ref. 1211313)

<sup>7</sup> JNCC, 2009. Common Standards Monitoring Guidance. Available from: [http://jncc.defra.gov.uk/pdf/CSM\\_Upland\\_jul\\_09.pdf](http://jncc.defra.gov.uk/pdf/CSM_Upland_jul_09.pdf) [Accessed 27/02/2023]

etc. The monitoring will use a combination of walkover and fixed-point sampling survey methodologies (quadrats). The survey will aim to visually assess the vegetation present, determine the condition of vegetation communities using target indicator species, and identify any obvious effects of the outline BERP management prescriptions. The location, distribution and number of quadrat locations will be designed prior to the survey.

- 6.3.6.9 CSM will be undertaken in April-July of operational years 1, 5 and 10 to monitor the condition of the restored and enhanced habitats across the Proposed Development.

#### **Fixed point photography**

- 6.3.6.10 The fixed-point photographs will be taken at a series of locations (to be determined) overlooking each of the survey areas. They will provide permanent records for comparison of the effectiveness of management works.

#### **Monitoring of bat buffer**

- 6.3.6.11 Monitoring of the scrub / tree regeneration in the bat buffers will take place every two years until year 10 following construction to enable any failures or encroachment to be identified as soon as possible, after which the need for further monitoring will be reviewed.

#### **Monitoring of broadleaved riparian planting**

- 6.3.6.12 The ecologist will undertake checks of broadleaved riparian planting with notes and photographs taken on the number and/or proportion of losses (i.e. dead trees, including species proportions lost if feasible).
- 6.3.6.13 If additional broadleaved planting is required, the success of new broadleaved tree planting will be measured against the following indicators:
- 6.3.6.14 The following monitoring measures will be undertaken to facilitate the success of planting:
- During monitoring years 2, 3 or 5 (depending upon growth of the whips), all tree guards will be checked, maintained and replaced as appropriate; and
  - Following monitoring replacement of failed trees may be required in October - March, following the above whip planting methodology, to maintain the minimum survival rate of 75 % after monitoring year 5.

#### **Bat Monitoring**

- 6.3.6.15 Nine species/species groups were recorded during static detector surveys undertaken as part of the assessment. These were soprano pipistrelle, common pipistrelle, Nathusius' pipistrelle, *Pipistrellus* sp., *Myotis* sp., noctule, *Nyctalus* sp., Leisler's bat and brown long-eared bat.
- 6.3.6.16 The overall bat activity level (BAI) within the Proposed Development is considered to be medium for common pipistrelle and low for all other species at the median percentile, and high at the maximum percentile for common pipistrelle, *Myotis* sp. and Leisler's bats. The Proposed Development is therefore considered of Local conservation importance for all occurring species of bats. For common and soprano pipistrelle species and Leisler's bats which are at high collision risk and had higher BAI, the predicted collisions were considered to be minor negative and not significant.
- 6.3.6.17 In order to provide comparable data with South Kyle Wind Farm, it is proposed that six full spectrum static detectors are placed at different locations within the Proposed Development. Turbines chosen for survey locations should represent habitats and altitudes on site rather than their proximity to bat features, in order to prevent an overestimation of site activity. The detectors will run continuously from 1 April to 30 September inclusive for each monitoring year. Detectors will be programmed to commence recording from 0.5 hour before sunset and continue

until 0.5 hour after sunrise, to cover the active period for all species potentially encountered on site. Bat calls will be analysed using an appropriate automatic identification software.

- 6.3.6.18 Following recommendations within guidance<sup>8</sup>, each year of operational monitoring survey data will be entered into the online resource Ecobat<sup>9</sup>. Ecobat allows a user to compare bat data for a specific site with other sites for which data have been uploaded, within a given geographical area and time period. All data submitted to Ecobat are pooled, which then allows a statistical comparison to be made regarding relative bat activity and provides contextual data as to the importance of a particular site in a regional context. This will then provide an objective comparison of activity levels and results will be provided as a classification of low, low / medium, medium, medium / high or high activity at the site for all species recorded. Bat activity data will be collected and analysed under this procedure for the first two years of operation to allow for inter-annual variation in activity levels to be taken into account.
- 6.3.6.19 Should activity levels of high risk bat species (Leisler's) over the two years be greater than the low-medium Ecobat category, a third year of monitoring will be undertaken which will include a continuation of static bat detector surveys to be conducted in conjunction with weekly carcass searches (using trained sniffer dogs) to determine if collisions are occurring.
- 6.3.6.20 The approach is summarised by the bullets below:
- Stage 1. Activity monitoring years 1 and 2 of operation and analysis using Ecobat.
  - Stage 2. Should activity of Leisler bats be greater than the baseline activity category (as defined by Ecobat) then carcass searches with dogs would be undertaken at relevant turbines in year 3 (activity monitoring would also be extended into this year).
  - Stage 3. Should mortality be detected above an agreed threshold (to be confirmed with NatureScot) then further monitoring and mitigation requirements will be discussed and agreed with NatureScot.

#### **Carcass search methodology**

- 6.3.6.21 If required, carcass searching using trained sniffer dogs will be undertaken within the Proposed Development to detect the presence of bat casualties. Surveys will be undertaken within a search area of a minimum of 50 m by 50 m grid centred on turbine locations, exact distance will be determined by the turbine blade lengths.
- 6.3.6.22 Searching will be undertaken at each turbine base starting at sunrise once a week for 13 consecutive weeks, between July and September (inclusive). Surveyors will record all carcasses on a tablet using a mobile app. The following information will be recorded:
- Turbine number;
  - Date and time of when the carcass was found;
  - Ten figure grid reference of carcass location;
  - Distance from turbine;
  - Orientation (by taking a compass bearing) relative to the turbine;
  - Perpendicular distance from the transect line to the carcass;
  - Photograph number;
  - Species, age and sex if known;
  - Condition (i.e. intact, scavenged, any obvious injuries, etc);
  - Pre-defined criteria to describe search visibility; and

<sup>8</sup> NatureScot (August 2021). Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation.

<sup>9</sup> Ecobat (2017) Available at - [www.ecobat.org.uk](http://www.ecobat.org.uk)



- Any other comments/observations.

6.3.6.23 Once the required information has been recorded, carcasses will be collected by surveyors wearing appropriate gloves and placed within plastic containers to be stored in a freezer under licence, for later identification by hand and / or DNA.

Searcher Efficiency Trial

6.3.6.24 In order to identify the efficiency of the search dogs, efficiency tests will be carried out using a minimum of 10 appropriate carcasses. Carcasses will preferably be bat, however due to difficulties associated with obtaining bat carcasses these may be substituted for mouse. Unobserved by the dog handler and search dog, up to 10 carcasses will be positioned in random points within the search radius of turbines. Appropriate gloves will be worn at all times during handling to avoid contamination with human DNA or cross contamination between samples. The handler and dog will then search the location as part of the standard carcass searches, recording any carcasses present within the search area.

Carcass Persistence Trials

6.3.6.25 Site-specific carcass persistence trials will be undertaken to quantify the probability that a carcass will remain on site between carcass searches using a minimum of 10 appropriate carcasses. Carcasses will preferably be bat, however due to difficulties associated with obtaining bat carcasses these may be substituted for mouse. Appropriate gloves will be worn at all times during handling to avoid contamination with human DNA or cross contamination between samples. Monitoring of placed carcasses will be undertaken by a combination of manual checking and the continuous deployment of trigger sensitive trail cameras. Carcasses were considered to be removed when no body parts remain at the location or within a 5 m radius. If a carcass is moved in the immediate locale, the new location will be recorded and subsequently monitored.

Fish monitoring

6.3.6.26 Given the presence of the fish populations within watercourses which are hydrologically linked to the Proposed Development and the potential for construction phase impacts, monitoring will be undertaken to confirm success of the Construction Environmental Management Plan (CEMP) in avoiding such negative impacts. The fish monitoring will involve the following work in year 1.

- Monitoring will commence in the summer season prior to the onset of construction of the Proposed Development to establish pre-construction (baseline) conditions, including monitoring site selection, electrofishing and macro-invertebrate surveys; and
- Electrofishing and macro-invertebrate monitoring will be further undertaken during construction and for one year post-construction at the Proposed Development;

6.3.6.27 Surveys will be undertaken at the same locations used during the baseline data collection for the EIAR as provided in Table 1.

Table 1: Fish monitoring locations

Site Code	Watercourse /River Order	Easting	Northing	Survey district
DDV1	Pochriegavin Burn	254318	604183	GFT
DDV3	Un-named Pochriegavin Tributary	253287	604671	GFT
DKSB1	Stonecross Burn	254093	604272	GFT
1	Pendinnan Burn	253946	608364	NDSFB

Site Code	Watercourse /River Order	Easting	Northing	Survey district
2	Knockenlee Burn	253155	608817	NDSFB
3	Knockenlee Burn	253418	609105	NDSFB
4	Polmath Burn	254490	609906	NDSFB
5	Knockburnie Burn	256307	610535	NDSFB
6	River Nith	253890	611248	NDSFB
7	Mennock Water – control site	283777	609803	NDSFB

Source: GFT and NDSFB

6.3.6.28 Benthic macro-invertebrates are identified as key indicator groups for assessing prevailing site water quality and ecological conditions. The assemblage of macro-invertebrate communities at a given site responds to the biotic and abiotic factors present, effectively providing a biological indicator of water quality. Therefore, macro-invertebrate sampling is included here as part of the overall programme of surface water quality monitoring.

6.3.6.29 If monitoring during year 1 identifies impacts, then the need for additional monitoring will be reviewed and discussed with both the local fisheries trust.

Reporting and Review

6.3.6.30 The final BERP will include monitoring methods and a timetable for both management prescriptions and monitoring surveys. Table A3.1 in Appendix B outlines the proposed schedule. The results of the above-detailed monitoring will be made available to the BSG each monitoring year.

6.3.6.31 A review of the BERP will be undertaken in year 10 following the commissioning of the Proposed Development. The review will include an evaluation of the success of the management prescriptions in meeting the objectives of the BERP. Subsequent reviews and the need for continuation of work beyond year 10 will be at the discretion of the BSG.

6.3.7 Conclusion

6.3.7.1 This outline BERP builds on the existing works by the landowner and aims to increase habitat connectivity and diversity or otherwise benefit biodiversity located within and surrounding the Proposed Development. This will be undertaken through the improvement of bog habitats, protection of broadleaved woodland areas and conservation management.

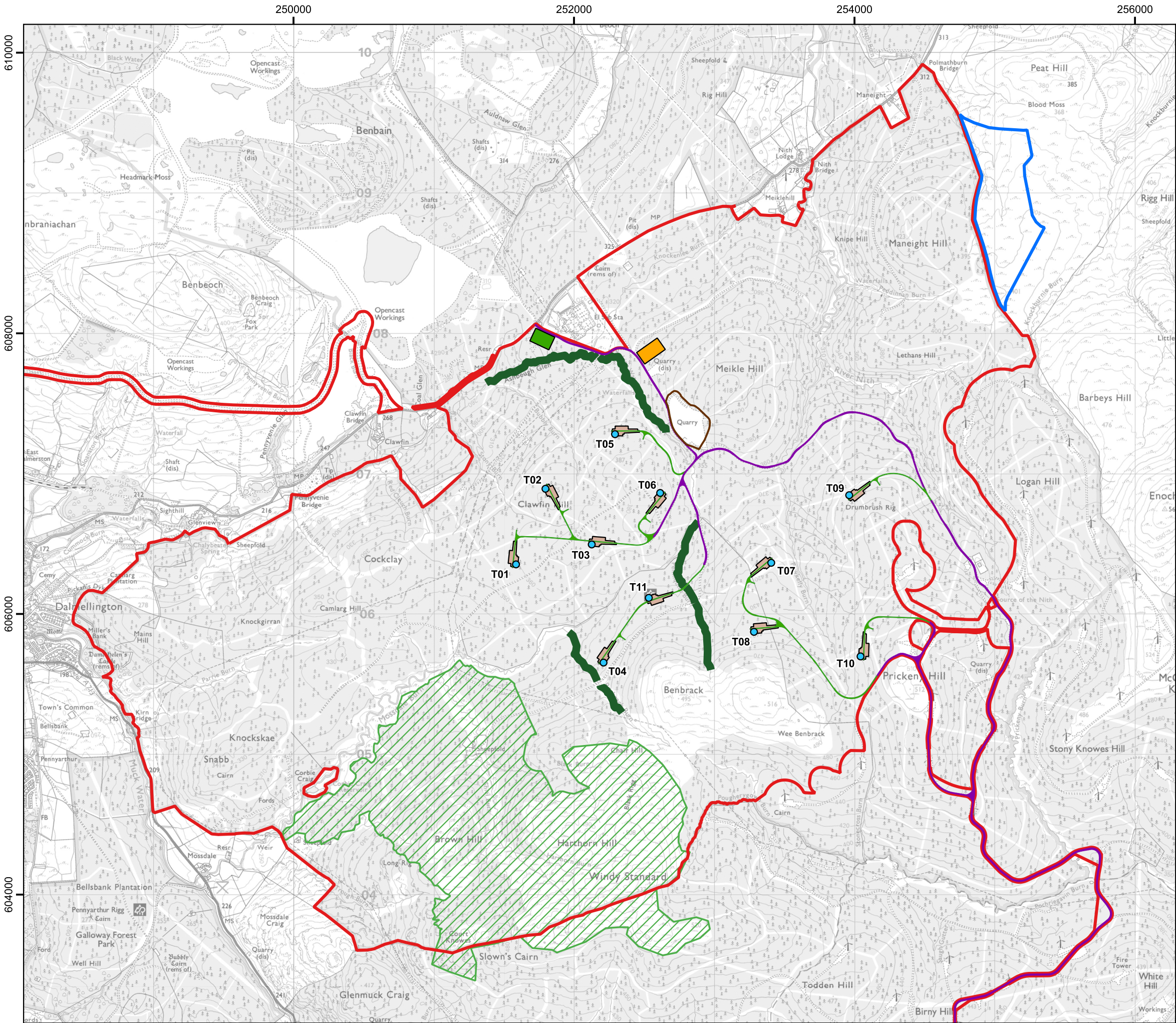
6.3.7.2 Objective 1 will restore bog habitats providing compensation and enhancements for the permanent loss of 0.37 ha. Objective 2 provides riparian broadleaved woodland planting to compensate and enhance for the permanent loss of 2.10 ha. Objective 3 provides long term monitoring options for bat species in order to identify the need for further mitigation.

6.3.7.3 The measures proposed in this outline BERP will increase habitat diversity through the creation of better condition bog habitats as well as the enhancement of broadleaved woodland and provide additional mitigation for wildlife during the operational phase. Overall, the Proposed Development is considered to provide a significant biodiversity benefit in accordance with NPF4.



Appendix A. Figures





Project:  
**South Kyle II Wind Farm,  
East Ayrshire**

Title:  
**Figure A1: Habitat Management  
Areas**

**Key**

- Site boundary
- Proposed turbine
- Proposed crane hardstanding
- Existing track (to be upgraded)
- Proposed new track
- Proposed substation and battery storage
- Proposed temporary construction compound
- Proposed borrow pit
- South Kyle I Habitat Management Area
- Applicant controlled land (potential bog restoration area)
- Potential areas for broadleaved riparian planting

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**Scale @ A3: 1:27,000**  
Coordinate System: British National Grid

0 0.5 1 1.5 2 km

N

Date: 01-04-25	Prepared by: LG	Checked by: LS
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Appendix B. Outline Schedule

Table A3.1: Proposed operational management and monitoring years

Task	Construction	Operational year									
		1	2	3	4	5	6	7	8	9	10
Habitat creation, restoration and enhancement measures											
Site walkover		Y*									
Bog restoration		Y									
Riparian broadleaved planting			Y								
Habitat Management											
Clearance of scrub and trees within bat buffer	Y	Y	Y				As required following monitoring				
Monitoring											
CSM of habitats and fixed-point photography		Y				Y					Y
Monitoring of bat buffer					Y		Y		Y		Y
Riparian broadleaved planting monitoring		Y	Y	Y		Y					Y
Bat monitoring		Y	Y	Y							
Fish monitoring	Y	Y									
Reporting		Y	Y	Y		Y					Y
Review						Y					Y

Source: Natural Power

Y = Year task will be undertaken \* = prior to year 1