# Technical Appendix 7.5

# Outline Habitat Management and Enhancement Plan (OHMEP)

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# Contents



# Annexes



# Figures

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# 1 Introduction

1.1.1 The Applicant is seeking to develop a combined wind, solar PV and battery energy storage system (BESS) development known as the Hagshaw Energy Cluster - Western Extension (Phase 1) (hereafter referred to as the Proposed Development).

1.1.2 The Proposed Development is located on the border between South Lanarkshire and East Ayrshire, situated in coniferous plantation forestry (northern development area – wind farm) and rough pasture farmland (southern development area – Solar PV and BESS). The location of the Proposed Development and associated layout is shown in **Figures 1.1** and **1.2** of the **EIA Report**. Details of the Proposed Development are provided in **Chapter 3** of the **EIA Report**.

1.1.3 The Proposed Development has gone through a number of design iterations (52 in total) over the last 4 years, many of which have been made to reduce the potential effects it may create to sensitive ecological and ornithological receptors (refer to **EIA Report Chapter 2** for further details) following consultation with statutory consultees. Key to these are the surrounding designated sites which include the Muirkirk and North Lowther Uplands Special Protection Area (SPA) designated for its breeding and non-breeding hen harrier (*Circus cyaneus*) as well as breeding populations of short-eared owl (*Asio flammeus*), merlin (*Falco columbarius*), peregrine (*Falco peregrinus*) and golden plover (*Pluvialis apricaria)*. The SPA also overlaps with the commensurate area of the Muirkirk Uplands Special Site of Scientific Interest (SSSI), designated for its upland habitat, breeding bird assemblage, as well as breeding and non-breeding hen harrier and breeding short-eared owl. **EIA Report Figure 1.3** provides an overview of the Proposed Development's location and the surrounding designated sites.

1.1.4 Consideration has also been given in this Outline Habitat Management and Enhancement Plan (OHMEP) to other developments in the surrounding area, along with the mitigation, compensation and enhancement each of these developments has bought forward associated with their EIAs and conditions of their relevant consents.

1.1.5 The purpose of consideration of these developments is to ensure alignment of the proposed mitigation, compensation and enhancement measures proposed for the Proposed Development to maximise the benefits to biodiversity in the surrounding area; the rational being the coordination of landscape scale measures spanning multiple developments to provide aggregative benefits to sensitive receptors in the region i.e the neighbouring SPA and SSSI, rather than purely considering the area of the Proposed Development, its impacts and effects, in isolation.

### *Document Purpose*

1.1.6 Considering the aspirations set out in the above paragraphs, this document specifically seeks to:

- Provide an overview of similar developments present in proximity to the Proposed Development;
- Summarise the potential impacts and associated effects from these developments as predicted through their individual planning applications to ecological and ornithological receptors of the area;
- Summarise the proposed and implemented HMPs from these neighbouring developments and the location of these works across the wider landscape;
- Summarise the impacts and effects to sensitive receptors from the Proposed Development;
- Provide a strategy to compensate and enhance the areas in proximity to the Proposed Development in consideration of the predicted effects from construction, operation and decommissioning phases; and,
- Set out measures that would deliver significant biodiversity enhancement as required by NPF4 Policy 3 (Biodiversity).

### *Assumptions*

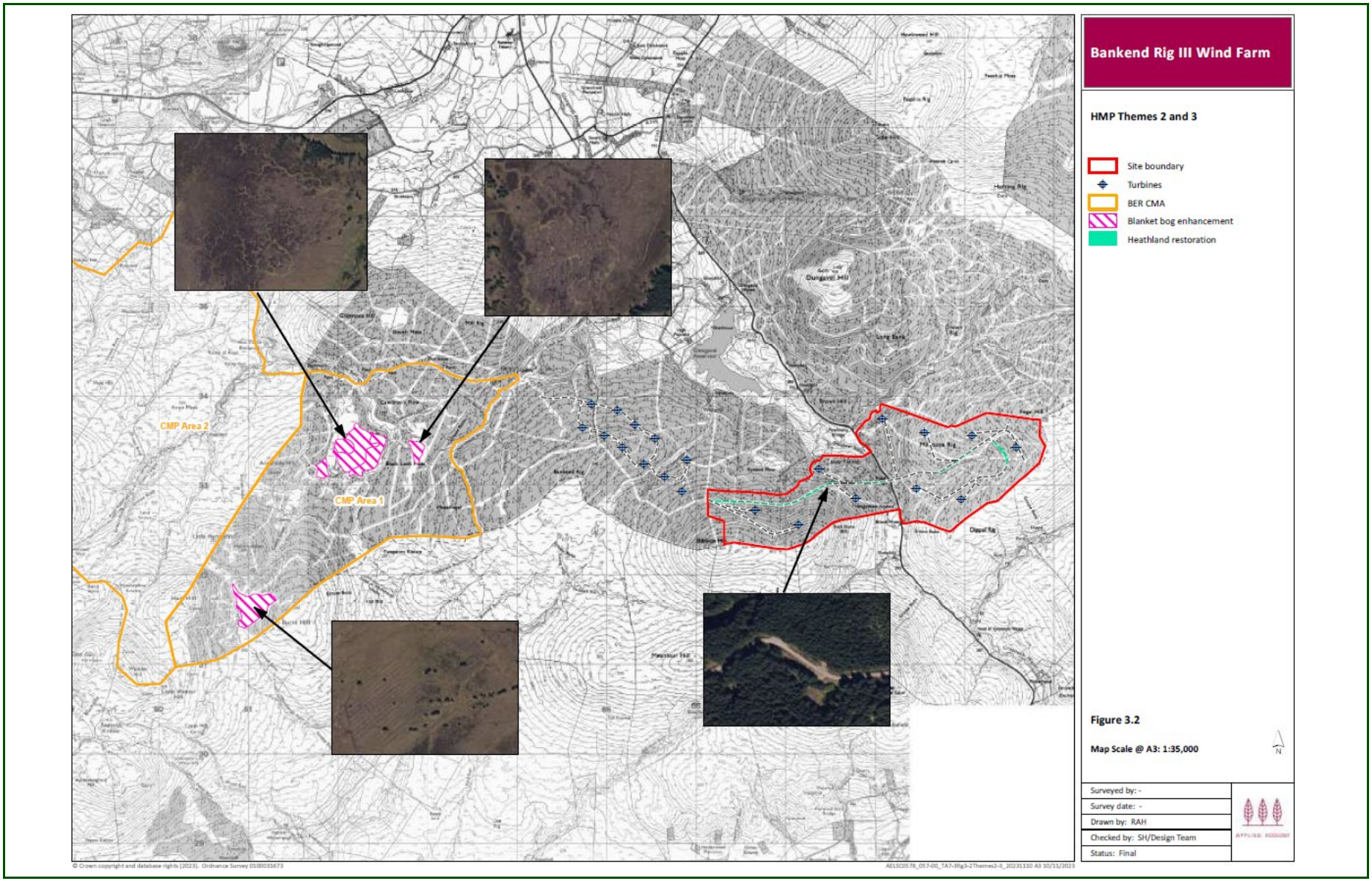
1.1.7 The approach to assessing the effects from the Proposed Development has used information available from site survey along with that available from local interest groups and web-based applications. Whilst every effort has been made to ensure these data are accurate, ecological data is open to interpretation during the collection process. However, it is determined that the baseline data set is robust and sufficient to inform the predicted effects from the Proposed Development and therefore the requirements of this OHMEP. Furthermore, the information collected for the surrounding wind farms provide landscape scale context to the measures proposed in this document, whilst publicly available, should only be considered in the contextual way they are presented, and the Applicant and this author cannot vouch for the accuracy of this data.

### *Landscape Scale Context*

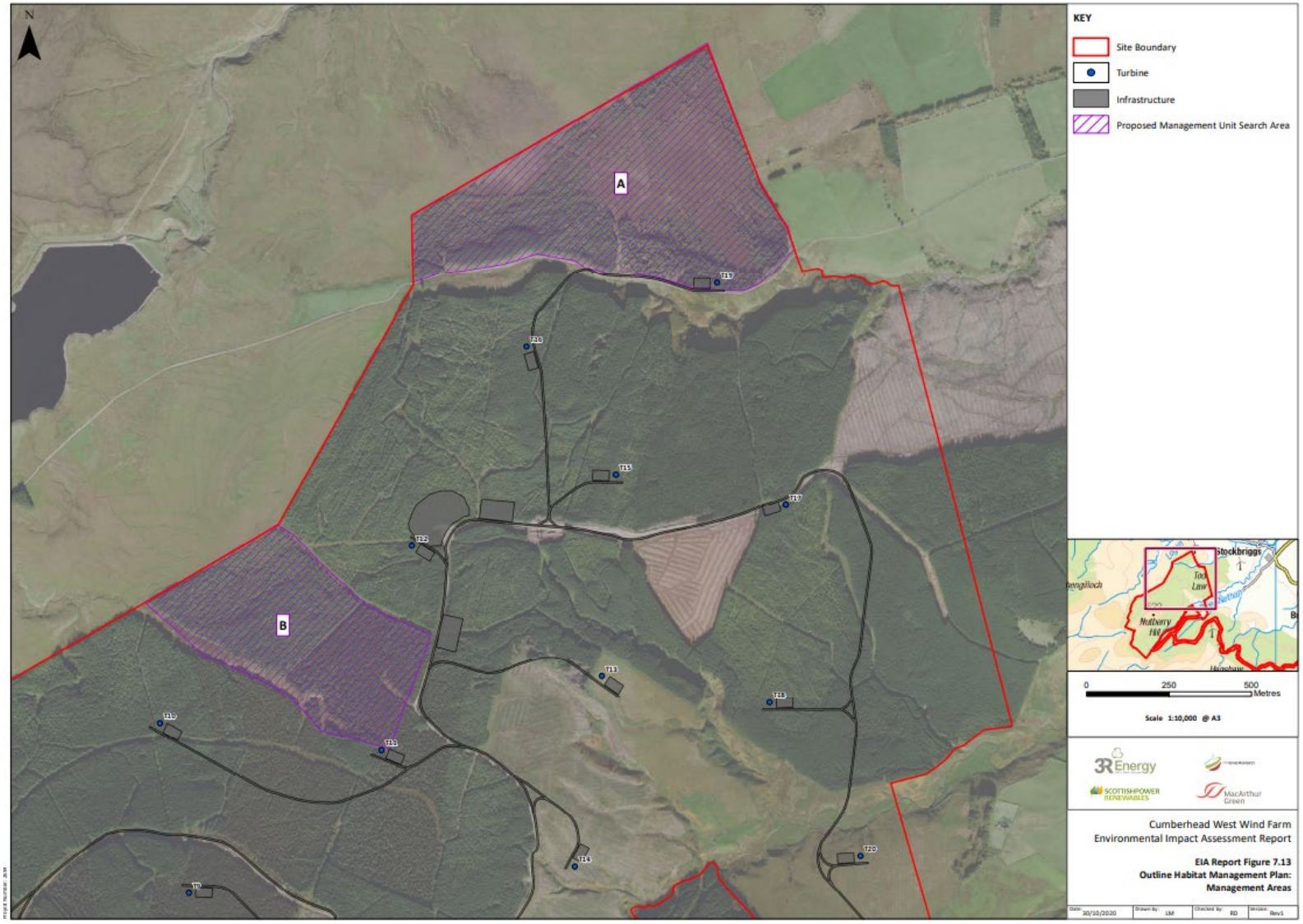
1.1.8 **Table 1** summarises each relevant local wind farm development and their associated HMPs. What is clear from the summary is that potential effects are primarily to peatland habitats and birds, with a particular emphasis on protection, mitigation, compensation and enhancement to the qualifying species of the Muirkirk and North Lowther Uplands SPA.

**Table 1 – Summary of Surrounding Wind Farm Developments, their Effects to Sensitive Receptors, and the Measures Proposed for Implementation Through their Lifespan.**

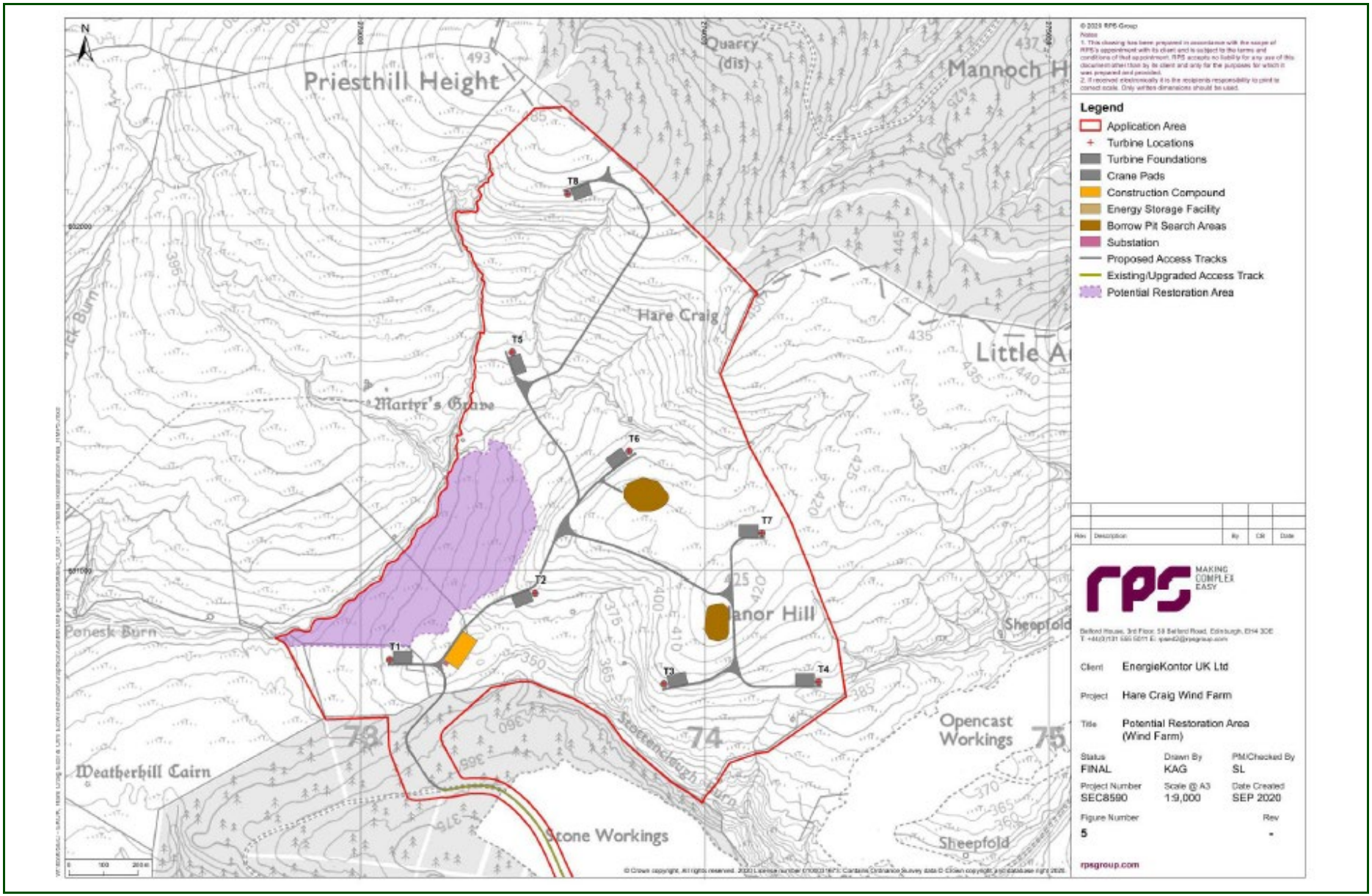
| Receptors and Effects | Mitigation, Compensation and Enhancement Measures |
|---|---|
| **Bankend Rig III** | |
| It is anticipated that construction of the Proposed Development will result in pre-mitigation adverse impacts on blanket bog, flush, heathlands and GWDTEs. An operational phase monitoring strategy will also be needed for bats.<br>With respect to ornithology, no significant residual effects of the Proposed Development have been identified. However, this conclusion was reached in part on the basis of the HMP providing embedded mitigation, to reduce further potential non-significant impacts on scarce raptors. | Objective 1.1 – Minimise the creation of open ground during wind farm construction and forestry operations.<br>Objective 1.2 – Manage non-replanted open ground so as to discourage nesting and foraging raptors and waders.<br>Objective 1.3 – Provide diversionary feeding at a distance from the wind farm site and in proximity to breeding sites on the SPA.<br>Objective 2.1 – Improve the water retention capabilities of Anderside Flow and other peat masses within the BER HMA through interruption of existing drainage features.<br>Objective 2.2 – Decrease the extent of bare peat within Anderside Flow and Black Loch Moss through appropriate manipulation or restoration or the bog surface.<br>Objection 3.1 – Restore heathlands on infrastructure batter edges. |


Bankend Rig III Wind Farm
HMP Themes 2 and 3
Site boundary
Turbines
BER CMA
Blanket bog enhancement
Heathland restoration
CMP Area 2
CMP Area 1
Figure 3.2
Map Scale @ A3: 1:35,000
Surveyed by: -
Survey date: -
Drawn by: RAH
Checked by: SH/Design Team
Status: Final

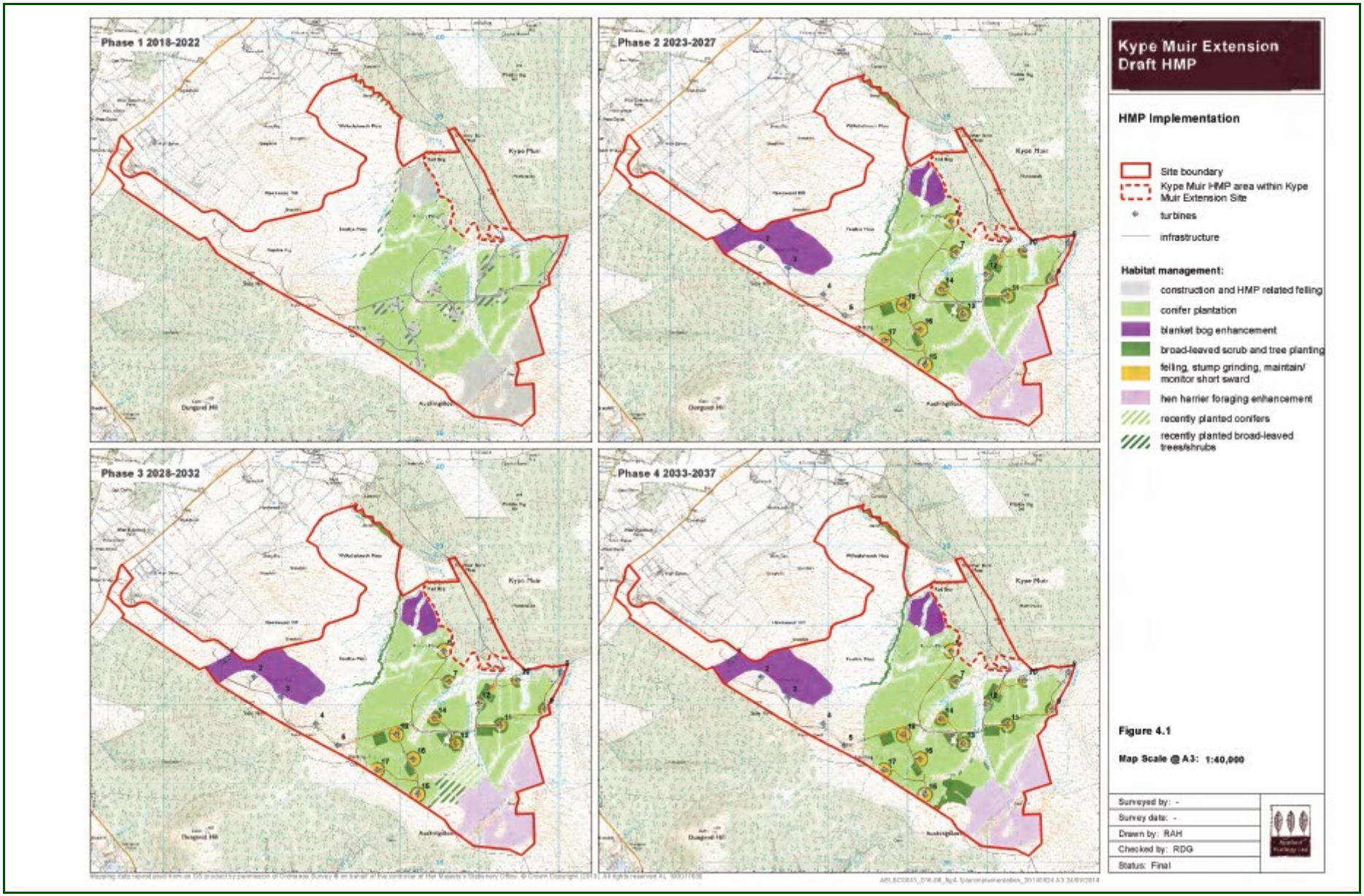
| Cumberhead West | |
|---|---|
| The impact assessments predicted no significant effects on habitats or ornithology that would require mitigation, the HMP proposes habitat enhancement measures to increase the quality and extent of upland habitats of conservation value within the site. | Objective 1 .1 – Increase the extent of blanket bog habitats within Management Unit A compared to current conditions.<br>Objective 1.2 – Create / restore / enhance / maintain bog habitats within management Units A and B so that is classified as being in favourable condition, as per JNCC (2009) Common Standards Monitoring guidance.<br>Objective 2.1 - Create blanket bog habitat within Management Unit B be restoration of post-felling ground conditions.<br>Objective 2.2 – Create suitable conditions (e.g. raising water table, removing ridge-furrow profile) for key indicator bog species such *Sphagna* within Management Unit B.<br>Objective 3.1 – Increase native tree cover within Management Unit B. |


N
A
B
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
T13
T14
T15
T16
T17
T18
T19
T20
KEY
Site Boundary
Turbine
Infrastructure
Proposed Management Unit Search Area
Stockbriggs
Toe Law
Nutberry Hill
0
250
500
Metres
Scale 1:10,000 @ A3
3R Energy
SCOTTISHPOWER RENEWABLES
MacArthur Green
Cumberhead West Wind Farm
Environmental Impact Assessment Report
EIA Report Figure 7.13
Outline Habitat Management Plan:
Management Areas
Date 30/10/2020
Drawn by LM
Checked by RD
Version Rev1

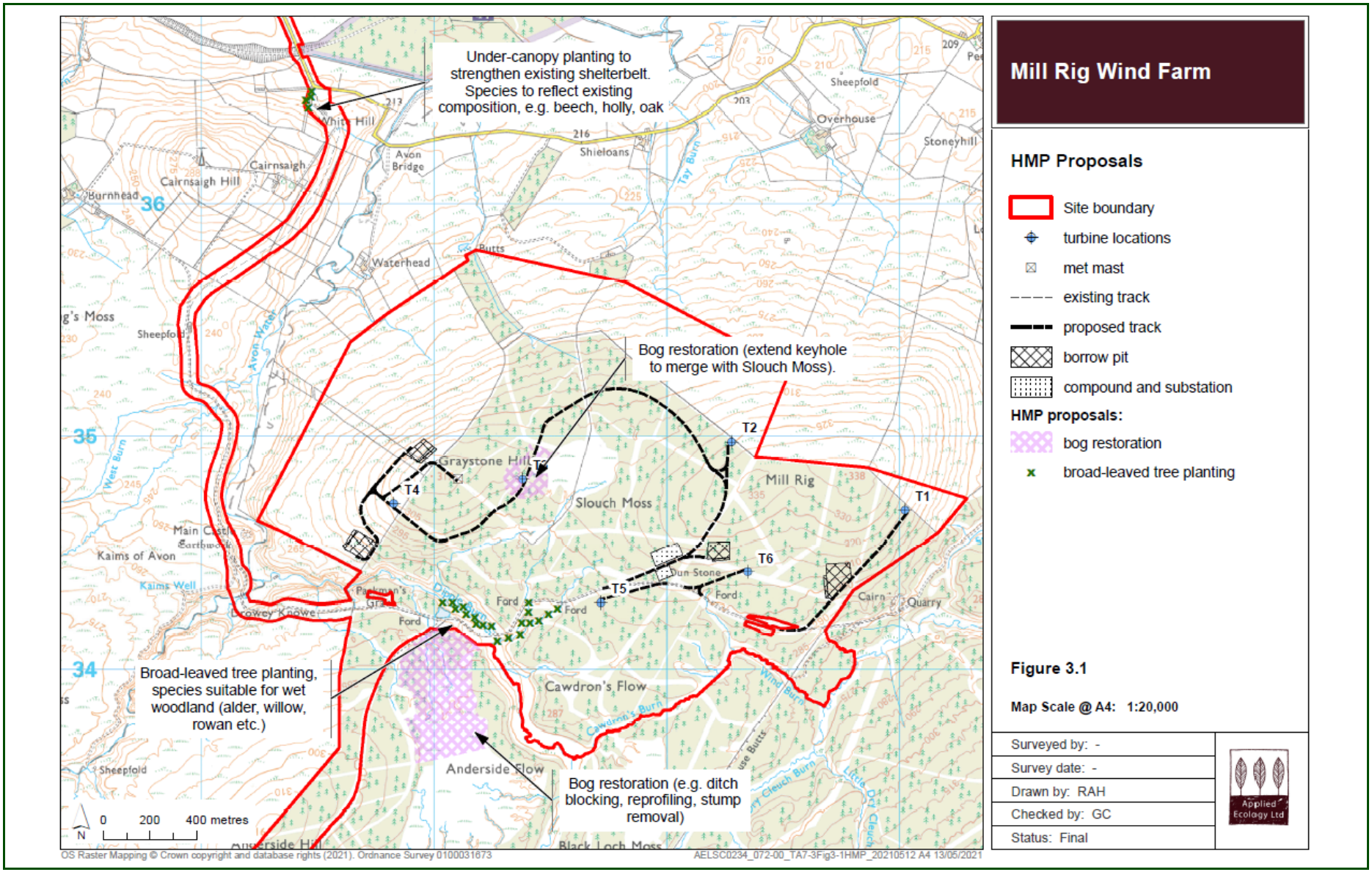
| Hare Craig | |
|---|---|
| Potential effects from the development were limited to:<br>• the loss and damage of peatlands (annex 1 habitats); and,<br>• displacement of important bird species through avoidance or habitat loss. | Objective 1.1 – to enhance approximately 30 ha of peatland habitat, resulting in a measurable increase in watertable and peat forming species' abundance through the duration of the development's lifetime.<br>Objective 2.1 – Improve the quality and increase the quantity of habitat suitable for breeding and foraging curlew and snipe which will result in increased abundance of these species within the improved area following the first ten years of the development operation. |


Priesthill Height
Quarry (dis)
Mannoch H
Hare Craig
Little A
Martyr's Grave
Manor Hill
Opencast Workings
Weatherhill Cairn
Stone Workings
Sheepfold
Sheepfold
Ponesk Burn
T1
T2
T3
T4
T5
T6
T7
T8
Legend
Application Area
Turbine Locations
Turbine Foundations
Crane Pads
Construction Compound
Energy Storage Facility
Borrow Pit Search Areas
Substation
Proposed Access Tracks
Existing/Upgraded Access Track
Potential Restoration Area
MAKING COMPLEX EASY
Client EnergieKontor UK Ltd
Project Hare Craig Wind Farm
Title Potential Restoration Area (Wind Farm)
Status FINAL
Drawn By KAG
PM/Checked By SL
Project Number SEC8590
Scale @ A3 1:9,000
Date Created SEP 2020
Figure Number 5
Rev -
rpsgroup.com

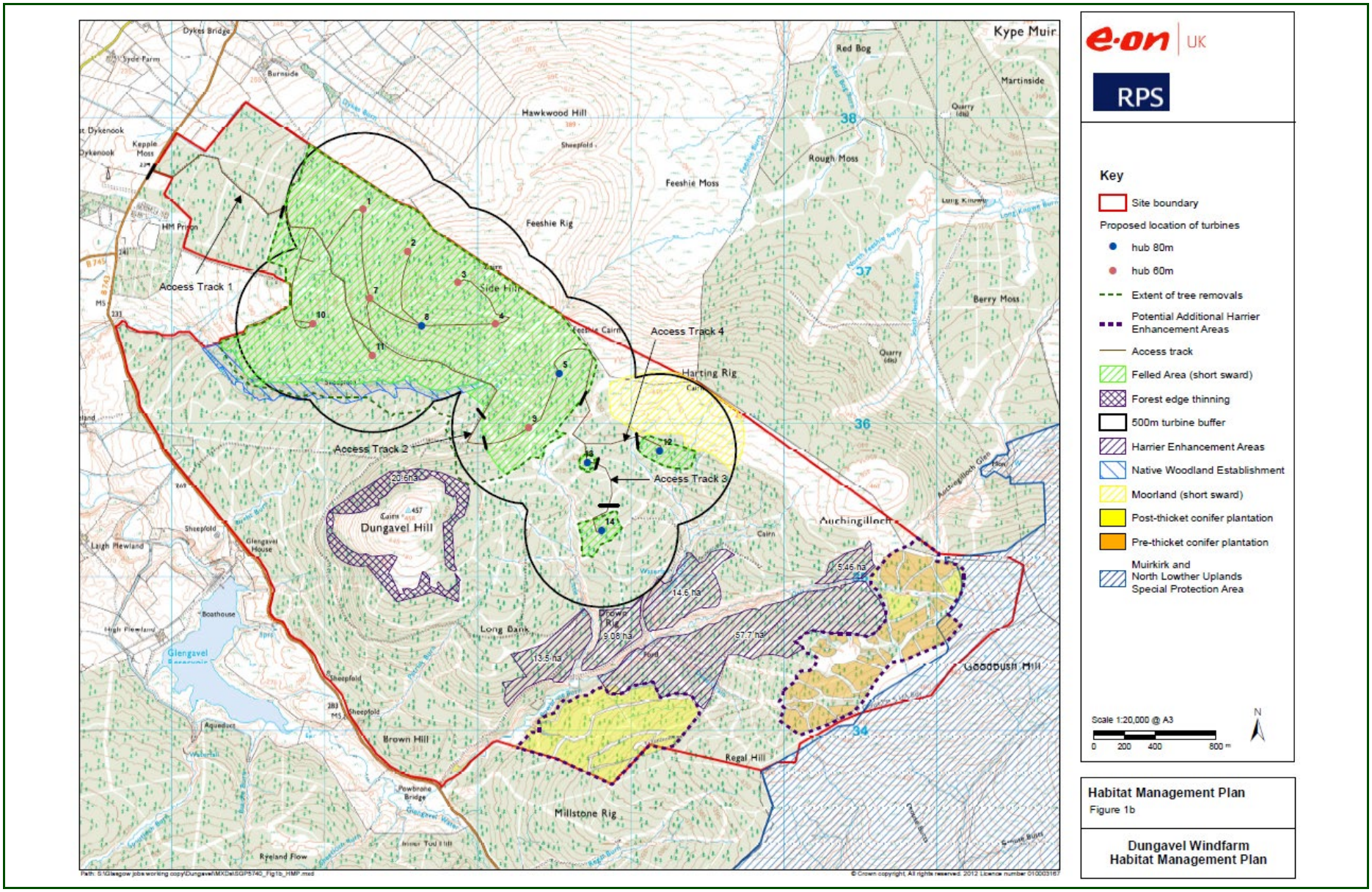
| Kype Muir Extension | |
|---|---|
| The habitats of the site are unattractive to key ornithological species (hen harrier, merlin, golden plover, black grouse and no records of these species breeding were located within the site. The primary aim of the HMP with regards to ornithological species is to maintain this low level of bird interest in close proximity to the development.<br>Habitats present on the site are predominately coniferous plantation woodland interspersed with areas of open ground dominated by peatland habitats. Steeper areas of the site include acid grassland and mosaics of wet and dry heath.<br>Key fauna species identified were otters and bats (using the site at low activity levels).<br>The main purpose of the HMP is to minimise the potential effects to the Muirkirk and North Lowther Uplands SPA and associated SSSIs. | Objective 1.1 – Minimise the creation of open ground during wind farm construction and forestry operations.<br>Objective 1.2 – Manage non-replanted open ground so as to discourage nesting and foraging raptors.<br>Objective 2.1 – Provide enhanced foraging habitat for hen harrier, merlin and short-eared owl, away from turbines, and adjacent to the SPA.<br>Objective 3.1 – Increase the area of broad-leaved woodland and scrub habitat within the Site.<br>Objective 3.2 – Improve the quality of blanket bog habitats within the site.<br>Objective 4.1 – Ensure maximisation of cumulative effect of adjacent HMPs. |


Phase 1 2018-2022
Phase 2 2023-2027
Phase 3 2028-2032
Phase 4 2033-2037
Kype Muir Extension Draft HMP
HMP Implementation
Site boundary
Kype Muir HMP area within Kype Muir Extension Site
turbines
infrastructure
Habitat management:
construction and HMP related felling
conifer plantation
blanket bog enhancement
broad-leaved scrub and tree planting
felling, stump grinding, maintain/ monitor short sward
hen harrier foraging enhancement
recently planted conifers
recently planted broad-leaved trees/shrubs
Figure 4.1
Map Scale @ A3: 1:40,000
Surveyed by: -
Survey date: -
Drawn by: RAH
Checked by: RDG
Status: Final

| Mill Rig | |
|---|---|
| **Ecology**<br>Potential construction and/or operational phase impacts were identified for designated sites occurring within or adjacent to the proposed development area, blanket bog, heathlands, marshy grasslands, GWDTEs and otter. However, as a result of embedded mitigation and/or application of a hierarchy of other mitigation measures, none of these were considered to be significant. Embedded mitigation measures include the use of 'stand-off' zones to protect bats and the adoption of standard pollution prevention measures to protect other ecological features within the study area.<br>**Ornithology**<br>No SPA raptors were found breeding within the proposed development area. Occasional foraging flights by merlin, peregrine and wintering hen harrier, were recorded within the 500 m buffer of the turbine envelope, and flights of golden plover were also recorded in both the breeding and wintering seasons. Black grouse were not confirmed as being present within the proposed development area, although historic records of this species occur within 1.5 km. Mortality from collision with turbine blades was modelled on a precautionary, worst case basis, and were found to be insignificant for wintering hen harrier and breeding peregrine and merlin. No breeding season flights for hen harrier were observed and therefore collision calculations could not be made. Predicted golden plover collisions were higher than for the raptor species, but were still considered not to be significant in population terms. This was the case across both the proposed development in isolation and cumulatively with other wind farms. | Objective 1.1 - Increase the area of broadleaved woodland and scrub habitat within the site.<br>Objective 1.2 - Strengthen the shelterbelt at the road junction with underplanting.<br>Objective 2.1 - Extend the blanket bog of Slouch Moss into the clear-felled keyhole at T3.<br>Objective 2.2 - Improve the quality of existing blanket bog habitats within the Site.<br>Objective 3.1 - Devise and execute appropriate post-construction monitoring programme for bird species associated with the Muirkirk and North Lowther Uplands SPA.<br>Objective 3.2 - Devise and execute appropriate post-construction monitoring programme for bats. |


Under-canopy planting to strengthen existing shelterbelt. Species to reflect existing composition, e.g. beech, holly, oak
Bog restoration (extend keyhole to merge with Slouch Moss).
Broad-leaved tree planting, species suitable for wet woodland (alder, willow, rowan etc.)
Bog restoration (e.g. ditch blocking, reprofiling, stump removal)
T1
T2
T3
T4
T5
T6
Graystone Hill
Mill Rig
Slouch Moss
Cawdron's Flow
Anderside Flow
Black Loch Moss
Kaims of Avon
Cairnsaigh
Cairnsaigh Hill
Burnhead
Waterhead
Sheepfold
Overhouse
Shieloans
Avon Bridge
Dun Stone
Cairn
Quarry
0 200 400 metres
N
OS Raster Mapping © Crown copyright and database rights (2021). Ordnance Survey 0100031673
AELSC0234_072-00_TA7-3Fig3-1HMP_20210512 A4 13/05/2021
Mill Rig Wind Farm
HMP Proposals
Site boundary
turbine locations
met mast
existing track
proposed track
borrow pit
compound and substation
HMP proposals:
bog restoration
broad-leaved tree planting
Figure 3.1
Map Scale @ A4: 1:20,000
Surveyed by: -
Survey date: -
Drawn by: RAH
Checked by: GC
Status: Final
Applied Ecology Ltd

| Dungavel | |
|---|---|
| Potential impacts identified as effects to qualifying interests of the Muirkirk and North Lowther Uplands SPA along with peatland habitats, black grouse and breeding waders. | Aim 1 - to minimise the risk to breeding hen harrier, short-eared owl, peregrine, merlin or golden plover associated with the Muirkirk and North Lowther Upland SPA, from collision with the wind turbines through limiting nesting habitat in proximity to the turbines and providing additional nesting habitat away from areas of potential collision risk.<br>Aim 2 – to encourage at appropriate locations active peat-forming vegetation, to contribute to the restoration and enhancement of blanket bog<br>Aim 3 – to enhance the habitat of site to benefit black grouse, aiming to retain it as a breeding species.<br>Aim 4 – to enhance the habitat on site to benefit breeding waders, notably lapwing and snipe.<br>Aim 5 – to establish native broadleaved riparian woodland.<br>Aim 6 – to implement off-site habitat management work to benefit the qualifying species of the Muirkirk and North Lowther Uplands SPA and underlying SSSIs. |


Kype Muir
Dykes Bridge
Hawkwood Hill
Feeshie Moss
Feeshie Rig
Rough Moss
Red Bog
Martinside
Berry Moss
Harting Rig
Side Hill
Access Track 1
Access Track 2
Access Track 3
Access Track 4
Dungavel Hill
Auchingilloch
Goodbush Hill
Long Bank
Brown Hill
Regal Hill
Millstone Rig
Glengavel Reservoir
HM Prison
20.6 ha
14.6 ha
57.7 ha
13.5 ha
9.08 ha
5.45 ha
Key
Site boundary
Proposed location of turbines
hub 80m
hub 60m
Extent of tree removals
Potential Additional Harrier Enhancement Areas
Access track
Felled Area (short sward)
Forest edge thinning
500m turbine buffer
Harrier Enhancement Areas
Native Woodland Establishment
Moorland (short sward)
Post-thicket conifer plantation
Pre-thicket conifer plantation
Muirkirk and North Lowther Uplands Special Protection Area
Scale 1:20,000 @ A3
0 200 400 800 m
N
Habitat Management Plan
Figure 1b
Dungavel Windfarm
Habitat Management Plan

1.1.9 As shown in Table 1 and with regard to the Dungavel Wind Farm, the Proposed Development (northern development area) overlaps with some areas previously included in the Dungavel Wind Farm Habitat Management Plan (DWHMP). Specifically, the areas that will be affected in the DWHMP are the proposed Hen Harrier Enhancement Areas (c. 101 ha) and Potential Additional Hen Harrier Enhancement Areas (c.107 ha).

1.1.10 However, it is important to note that only a relatively small proportion of the DWHMP Hen Harrier Enhancement Areas and Potential Additional Hen Harrier Enhancement Areas within the northern development area has been implemented to date (approx. 28 ha out of a total of 208 ha proposed), therefore, this is more of a theoretical impact than an actual impact at this stage.

1.1.11 Notwithstanding the above, so as not to reduce the overall compensation and enhancement provided by developments in the region, the loss of these areas as potential measures for sensitive receptors has been considered and additional measures included in this OHMEP to compensate for any loss.

### *Ecology and Ornithology Baseline Conditions and Predicted Effects from Proposed Development*

1.1.12 The baseline conditions of the Proposed Development area are set out in **EIA Report Chapter 6** (Ornithology) and **EIA Report Chapter 7** (Ecology), and the associated **Technical Appendices**. A summary of the predicted effects of the Proposed Development to identified sensitive receptors is provided in **Table 2**, below.

**Table 2 – Summary of the Predicted Effects to Sensitive Ecological and Ornithological Receptors from Construction and Operation of the Proposed Development**

| ECOLOGY RECEPTORS | | | | | | |
|---|---|---|---|---|---|---|
| **Description of Effect** | | **Significance of Potential Effect** | | **Mitigation Measure** | **Significance of Residual Effect** | |
| | | **Significance** | **Beneficial/ Adverse** | | **Significance** | **Beneficial/ Adverse** |
| **During Construction** | | | | | | |
| Loss of habitat within Muirkirk Uplands SSSI. | | None | N/A | Implementation of Habitat Management and Enhancement Plan (HMEP). | Minor/Moderate | Beneficial |
| Loss of habitat within Dungavel HMA. | | Minor | Adverse | Implementation of HMEP. | Minor/Moderate | Beneficial |
| Loss of assemblage of upland habitats. | | Minor | Adverse | Implementation of HMEP. | Minor/Moderate | Beneficial |
| Disturbance of otter holts and foraging/commuting otter. | | Negligible | Adverse | Pre-construction surveys and obtaining licence for disturbance from NatureScot (if required). | Negligible | Adverse |
| Loss of roosts, foraging and commuting habitat for bats. | Northern development area | Minor | Adverse | Bat Protection Zones embedded in design mitigation. Implementation of landscape strategy. | Negligible | Adverse |
| | Southern development area | Negligible | Adverse | | | |
| Habitat fragmentation and destruction of spawning habitat for fish during construction of new watercourse crossings. | | Minor | Adverse | Pre-construction surveys of spawning habitat.<br>Avoiding instream works will need to avoid spawning and incubation periods (October to April) where spawning habitat identified upstream of the watercourse crossing.<br>Design of new watercourse crossings to maintain connectivity. | Negligible | Adverse |

| ECOLOGY RECEPTORS | | | | | | |
|---|---|---|---|---|---|---|
| **Description of Effect** | | **Significance of Potential Effect** | | **Mitigation Measure** | **Significance of Residual Effect** | |
| | | **Significance** | **Beneficial/ Adverse** | | **Significance** | **Beneficial/ Adverse** |
| **During Operation** | | | | | | |
| Injury or mortality of bats through collision with turbines or barotrauma | | Minor | Adverse | Embedded mitigation with buffers around turbines to key habitat features to be calculated and implemented | Negligible | Adverse |
| **Decommissioning** | | | | | | |
| Impacts to Muirkirk Uplands SSSI | | No effect | N/A | N/A | No effect | N/A |
| Loss of infrastructure during reversion to farmland | Southern development area | Minor | Beneficial | N/A | Minor | Beneficial |
| Roads and hardstanding retained | Northern development area | No change | N/A | N/A | No change | N/A |
| **Cumulative Effects** | | | | | | |
| Impacts to upland assemblage habitats from other developments within 2 km. | | Minor | Adverse | Each development has a mitigation enhancement area that will improve the condition or restore large areas of these habitats. Minor losses are therefore compensated for, and additional habitat created or improved. | Minor/Moderate | Beneficial |
| Otter - Nearby developments may affect the same otter population as they are located on watercourses that also run through the Proposed Development. Impacts may be through noise and disturbance and may need to close resting sites or holts. | | Minor | Adverse | Each development will implement best practice measures to reduce or eliminate impacts and where resting sites/ holts needs to be closed licences will be obtained from NatureScot. Each development should consider the impacts from the others when determining mitigation for licences to ensure that otters conservation status is maintained. | Negligible | Adverse |

| ECOLOGY RECEPTORS | | | | | |
|---|---|---|---|---|---|
| **Description of Effect** | **Significance of Potential Effect** | | **Mitigation Measure** | **Significance of Residual Effect** | |
| | **Significance** | **Beneficial/ Adverse** | | **Significance** | **Beneficial/ Adverse** |
| Fish – the fish population in nearby developments may be affected through runoff and sedimentation or through habitat fragmentation however all nearby developments will adhere to best practice mitigation measures and design watercourse crossings to maintain fish passage | Negligible | Adverse | N/A | Negligible | Adverse |
| Bats -operational impacts through injuring and mortality resulting from collision with wind turbines. There are a large number of wind farms in the local area, and while they are generally located in areas where low levels of bat activity have been recorded and development adhere to NatureScot guidance to keep standoff distances to key habitat areas there is an overall cumulative impact due to the area of the landscape occupied by wind turbines | Moderate | Adverse | Additional mitigation to include monitoring and if required, feathering based on results of monitoring results. | Minor | Adverse |

| ORNITHOLOGY RECEPTORS | | | | | |
|---|---|---|---|---|---|
| **Description of Effect** | **Significance of Potential Effect** | | **Mitigation Measure** | **Significance of Residual Effect** | |
| | **Significance** | **Beneficial/ Adverse** | | **Significance** | **Beneficial/ Adverse** |
| **During Construction & Decommissioning** | | | | | |
| Muirkirk Uplands SSSI - Breeding Bird Assemblage: displaced due to disturbance/habitat loss. | Minor | Adverse | Appointment of ECoW.<br>Pre-construction nest checks.<br>Breeding Bird SPP.<br>Timing of works.<br>CEMP. | Negligible | Adverse |
| Waders: displaced due to disturbance/habitat loss. | Negligible | Adverse | Appointment of ECoW.<br>Pre-construction nest checks.<br>Breeding Bird SPP.<br>Timing of works.<br>CEMP | Negligible | Adverse |
| Dungavel HMPA | Negligible | Adverse | Appointment of ECoW.<br>Pre-construction nest checks.<br>Breeding Bird SPP.<br>Timing of works.<br>CEMP | Negligible | Adverse |
| **During Operation** | | | | | |
| Muirkirk Uplands SSSI Breeding Bird Assemblage: displaced due to operating turbines or solar farm and/or habitat loss. | Minor | Adverse | Habitat Management and Enhancement Plan | Minor | Beneficial |
| Dungavel HMPA | Moderate | Adverse | Habitat Management and Enhancement Plan | Minor-Moderate | Beneficial |

| ORNITHOLOGY RECEPTORS | | | | | |
|---|---|---|---|---|---|
| **Description of Effect** | **Significance of Potential Effect** | | **Mitigation Measure** | **Significance of Residual Effect** | |
| | **Significance** | **Beneficial/ Adverse** | | **Significance** | **Beneficial/ Adverse** |
| Breeding/foraging waders displaced due to operating turbines or solar farm and/or habitat loss. | Negligible | Adverse | Habitat Management and Enhancement Plan | Minor | Beneficial |
| Potential injury or mortality of all IOFs to collision risk. | Negligible | Adverse | n/a | Negligible | Adverse |
| Aviation lighting-all IOFs | Negligible | Adverse | n/a | Negligible | Adverse |
| **Cumulative Effects** | | | | | |
| All IOFs | Negligible | Adverse | n/a | Negligible | Adverse |

1.1.13 In consideration of the proposed mitigation as set out within the **EIA Report** the residual effects to sensitive receptors identified within and in proximity to the Proposed Development are assessed as not significant.

# 2 HMEP delivery

2.1.1 It is considered that this OHMEP is a live document and will be updated on a regular basis based on activities completed on site, monitoring results as generated through site based assessments of the effectiveness of the Aims, Objectives and Prescriptions described in the following sections, and ongoing improvements in knowledge surrounding the effects of wind farms, solar PV and BESS to sensitive environmental receptors.

2.1.2 Delivery of the HMEP will be fully funded by the Applicant over the 40 year operational life of the Proposed Development, and will be overseen by an appropriately qualified body (the HMEP Manager) reporting to a Habitat Management Steering Group (HMSG) made up of representative of the local planning authority, NatureScot, the RSPB, and the Applicant. Annual reporting will be presented by the HMEP Manager to the HMSG describing the actions completed through the year, compliance with the finalised HMEP, and recommendations for alterations or improvements to the Aims, Objectives and Prescriptions. Delivery of the HMEP, the appointment of the HMEP Manager and formation of the HMSG can be secured by planning condition.

2.1.3 The HMEP Manager will look to collaborate closely with the South Strathclyde Raptor Study Group in delivery of this project.

# 3 HMEP Aims, Objectives, Prescriptions and Monitoring

3.1.1 In consideration of the predicted effects of the Proposed Development to sensitive environmental receptors, the following Aims, Objectives, Prescriptions, and associated monitoring and reporting will be completed to mitigate and compensate for the effects of the Proposed Development. This OHEMP also seeks to provide additional biodiversity enhancement to the surrounding landscape in compliance with Policy 3 of NPF4, requiring applicants to deliver significant biodiversity enhancement and to demonstrate that biodiversity will be in a "demonstrably better state" than prior to the development commencing.

## 3.2 HMEP Aim 1 – Peat Restoration

***Undertake peatland restoration activities to mitigate for the effects of the Proposed Development on peatland habitats and to provide additional enhancement over and above these potential effects***

3.2.1 Effects on peatland habitats are predicted in the region of c.2.8 ha from construction and operation of the Proposed Development. In recognition of these effects, an area of c. 56 ha of peatland restoration is proposed in the Dungavel Forest part of the site, in areas of poor timber growth and deep peat as identified through field surveys. **EIA Report Figure 13.5** shows the area of proposed peatland restoration. This forest to bog restoration project will be undertaken by a qualified and experienced peat restoration contractor with a robust aftercare and monitoring programme overseen by the HMEP Manager to ensure successful establishment. The initial 28ha of restoration will be to provide mitigation for the predicted effects to peatlands from construction and operation of the Proposed Development, following the requirements of NatureScot to provide a 1:10 ratio of peatland loss to restoration. A further 28ha of peatland restoration will be completed as enhancement in meeting the requirements of NPF4 to provide a significant enhancement to biodiversity.

**Objective 1.1 – To undertake forest removal using suitable techniques to enable restoration post deforestation.**

*Prescription 1.1*

3.2.2 Tree removal will be undertaken through the construction phase of the Proposed Development. Trees will either be harvested or mulched in-situ and any remaining brash material recovered (where practical) for chipping at trackside. Where possible, stumps will be cut sufficiently low so as not to impede machine access for restoration purposes. Any remaining protruding stumps, where excessively high, will be reduced by machine mulching or manually with chainsaws where required, and this will not cause additional damage to the peat substrate. These operations would be prioritised to remove the influence of trees (lowering water table levels and shading out peat-forming vegetation) and restore the homogeneity of the ground surface.

*Monitoring*

3.2.3 Monthly mapping of forest removal will be completed on a compartment by compartment basis to ensure the rate of forest clearance is documented. Ground cover will be assessed post-harvesting and any potential management interventions will be identified as necessary. Initial assessments will include peat depth mapping across each felled area to ensure sufficient peat is present to enable restoration activities to take place. Further forestry measures following this initial assessment may comprise mulching of remnant brash material and conifer stumps to ensure that the ground is suitably prepared for peatland restoration activities.

**Objective 1.2 - To re-establish a functional water table close to the surface providing conditions for specialist bog species and "active" bog to develop.**

*Prescription 1.2*

3.2.4 For successful restoration of peatland habitats, the initial step is stabilisation or reinstatement of a hydrological regime suitable for supporting peat-forming species, including Sphagnum mosses.

3.2.5 Following tree removal within each hydrological unit, an assessment of ground conditions (including presence / absence of any sub-surface cracking) within felled compartments will be undertaken alongside a peat depth survey of these areas to further inform the most appropriate restoration technique(s).

3.2.6 Once the type and depth of peat within a felled area is confirmed, appropriate forest-to-bog restoration methods within each hydrological unit will be implemented based on specific felling / harvesting methods, localised ground conditions, presence/extent of sub-surface cracking, slope gradient, average peat depth, and associated hydrological data.

3.2.7 If deemed appropriate, the stabilisation and revegetation of any eroding haggs/gullies will be carried out in affected areas using suitable methods and the latest techniques available. These activities would aim to stabilise eroding haggs and/or gully walls by reprofiling the exposed bare peat face to a shallower angle and then revegetating the newly reprofiled slope using 'borrowed' vegetated turves to offer complete coverage.

3.2.8 Any forest to bog restoration, drain and furrow blocking/reprofiling and the restoration of erosion features will be completed by a competent contractor.

*Monitoring*

3.2.9 A hydrological monitoring programme will be established immediately post-felling and at least 3 months prior to restoration works commencing. Dipwells (piezometers) will be installed across each hydrological unit and monitored on a monthly basis for the first 2 years post restoration to assess the stabilisation of the watertable. Following this initial monitoring period and on review of the data, further monitoring may be required along with follow up management activities if the watertable has failed to stabilise across seasons.

3.2.10 Water samples using the monitoring regime set out within the CEMP will be obtained from established monitoring locations within the downstream catchment as part of the construction works

environmental management commitments. Analyses should include suspended solids (SS), dissolved organic carbon (DOC), Nitrates (N), and Phosphates (P) as these have the potential to be release from forestry works and peatland restoration activities. Based on the results from the Proposed Development's ongoing water quality commitments, if appropriate these will be extended to cover the total wind farm deforestation period if this falls outwith the Proposed Development construction period.

3.2.11 In addition to the dipwell monitoring, ground-truthing of restoration will be undertaken one to three months post implementation to ensure successful establishment of restoration measures and that areas are retaining water. Any modification to restoration will be undertaken at this juncture and a record made of the actions.

3.2.12 Baseline vegetation monitoring at fixed locations will be completed for the first five years post-restoration. Subsequent monitoring of vegetation recolonisation will be conducted in years 5, 10, 15, 25, 35 and 40 post-construction. Given the slow rate of recolonisation for these species such a timescale is required to be able to discern changes in vegetation structure and species assemblages. Vegetation monitoring will utilise 100m transects crossing restoration areas with measurements of vegetation coverage taken every 10m. Start and end points of the transects will be GPS referenced to ensure repeatability. The direction of each transect will similarly be noted. Transects will be planned to either run along or perpendicular to the ridge furrow system of the plantation forestry to capture any differences in hydrological regime and topography within any felled area.

3.2.13 Fixed point photography will be conducted at two separate locations within each felling compartment across the peat restoration area. Points will be selected to ensure sufficient coverage of the peat restoration area is achieved incorporating 180$^{o}$ panoramic photography. This will allow an assessment of the success of restoration actions on a landscape scale. These actions will similarly provide a photographic record of the rate of tree removal during the initial construction period. The record will commence prior to tree removal, immediately following deforestation, immediately following restoration, and for years 1, 5, 10, 15 and 25, 35 and 40 post-construction.

3.2.14 All monitoring will be reported to the HMSG in the year that works are undertaken and no later than six months post completion.

**Objective 1.3 - To control non-peat forming vegetation where this impacts on peatland restoration.**

*Prescription 1. 3*

3.2.15 Given the nature of the peat restoration area and current conifer crop it is likely that some level of conifer regeneration will occur. This is likely to be greater in more sloping, better drained areas where a more mature crop currently exists. Conifer regeneration occurs from the remaining seed bank once tree removal has taken place. Typically for Sitka spruce this occurs in the first two years following such activities. An assessment of the level of regeneration will be undertaken within each forestry compartment three years post-felling in conjunction with the vegetation monitoring as described in Prescription 1.2.

3.2.16 Unwanted species including regenerating conifer trees will be controlled where these may reduce the long-term effectiveness of restoration activities. Appropriate control methods will be implemented dependent upon the type of vegetation present. Some conifer regeneration can be removed during restoration operations but otherwise must be removed by additional treatment depending on size and density.

3.2.17 Removal of conifer regeneration shall be ongoing over the lifetime of the Proposed Development. Targeted control of rushes may also be required over the lifetime of the Proposed Development, where this is considered necessary for the restoration of peatland habitat. Finalisation of the extent of these areas and methods used to maintain them in an optimal condition will be achieved through consultation with the HMSG, and other relevant parties.

*Monitoring*

3.2.18 The rate of conifer regeneration for each compartment would be ascertained in conjunction with the vegetation monitoring for Prescription 1.2. This will enable the requirement for controlling actions to

be assessed. Control measures will either be through manual or mechanical means and will also be dependent on the accessibility of the compartments.

3.2.19 'Invasive' species such as rushes or aggressive recolonising species such as tufted hair-grass (*Deschampsia cespitosa*) which can, if left unchecked, out-compete other mire forming species, will similarly be monitored. Monitoring will be completed in years 1, 5, 10, 15 and 25, 35 and 40 post-construction with appropriate methods of removal determined dependent on the species present.

**Objective 1.4 – Manage non-replanted open ground so as to discourage nesting and foraging raptors and waders**

*Prescription 1. 4*

3.2.20 Felling of areas of commercial plantation in the northern development area has the potential to create areas of open ground suitable for ground nesting bird species which are qualifying interests of the neighbouring designated sites.

3.2.21 Where areas of deep peat are present, these areas have been identified for peatland restoration, and the management of these areas is likely to create habitats that are not conducive to species which might be at risk of collision e.g. raptor species.

3.2.22 Out with peatland restoration areas, consideration will be given to controlling sward regeneration in felled areas to reduce the attractiveness of the habitats to ground nesting species. This may include mechanical control of the returning grass, rush, bracken or dry heath swards where this is deemed to provide suitable habitats and create risk of bringing birds into areas of high collision risk with turbines.

*Monitoring*

3.2.23 Given the likely slow regeneration of habitats within these felled areas it is proposed that monitoring of vegetation sward heights are completed every five years during the operational lifespan of the Proposed Development. Once vegetation has recolonised the area and the rate of growth has been ascertained, these monitoring periods may be revised to reflect the change in habitats and their likely suitability to support ground nesting bird species.

3.2.24 Monitoring will include transects crossing the open ground areas (100m transects) with maximum vegetation height, species composition and density (using the drop-disc method) completed every 20 m. The surveys will seek to identify if vegetation is becoming sufficiently tall and dense that it might provide suitable habitat. As a rule, if mean vegetation heights exceed 30 cm, measures to control or reduce the height and density of the vegetation should be considered. Furthermore, if pockets of vegetation such as rushes or bracken that aren't captured by the wider transect monitoring but are noted during the operational period are identified, consideration should be given to adhoc control of these to further reduce the suitability of habitats to support ground nesting birds.

## 3.3 HMEP Aim 2 – Hen Harrier Enhancement

**Objective 2.1 – To mitigate for the loss of, and provide additional enhancement over and above, the proposed DWHMP hen harrier enhancement areas by providing a much larger alternative solution within the Muirkirk and North Lowther Uplands SPA and SSSI.**

**Objective 2.2 - Provide enhanced foraging habitat for hen harrier (and merlin and short-eared owl) away from turbines, within the SPA and SSSI**

3.3.1 A long-term pilot project will be delivered across an area of c.592 ha in the Muirkirk and North Lowther Uplands Special Protection Area (SPA), which is also a SSSI, to improve habitat and foraging conditions for hen harrier (and other SPA qualifying species merlin, short-eared owl and golden plover), with the target of reversing the decline in numbers within this part of the SPA and returning qualifying species to areas of the SPA which were historically widely used. This will be in substitution for c.101 ha of proposed 'hen harrier enhancement areas' within Dungavel Forest and c.107 ha of 'potential additional hen harrier enhancement areas' within Dungavel Forest. In this regard, it is important to note that much of the DWHMP areas within the Proposed Development site are yet to

be implemented, hence this proposal constitutes more of a paper substitution than an actual physical substitution at this stage.

3.3.2 **Figure 1** illustrates the indicative area to be managed in the pilot scheme which includes a range of watercourses on the Netherwood landholding including the Polkebock Burn, Polbeth Burn, Spindle Burn and Slot Burn. When hen harrier were recorded breeding in this part of the SPA they favoured the habitat along these various watercourses. **Figure 1** shows the historic records of nesting attempts by SPA species within the Netherwood landholding dating back to the early 1990s, with the last recorded nesting attempt by hen harrier at Netherwood being in 2011. This area of land has therefore been identified for this pilot project due to its habitat suitability with it historically being favoured by SPA species for nesting, particularly by hen harrier. This parcel of land also includes some areas previously included in grazing management schemes with NatureScot and, as such, it is proposed that the HMEP measures would follow on from the end of the existing Netherwood SPA grazing scheme at the end of 2026, with the Proposed Development taking on the funding and development of an SPA habitat management regime (the HMEP) at Netherwood for the long-term (40 years) following a successful FID for the Proposed Development (currently programmed for 2027).

3.3.3 Inspiration on appropriate measures has also been taken from the Conservation Action Plan for the SPA prepared by RSPB Scotland which details a range of measures RSPB consider necessary to try and bring about recovery of the SPA. At present, key actions are proposed to include:

- New grazing management prescriptions over a larger area
- A full, legal programme of Predator Control
- Mechanical management of vegetation where requirements are identified
- Restoring heather cover
- Comprehensive monitoring programme

3.3.4 The HMEP Manager will oversee the project within the identified area, including directing farming objectives as required, predator control objectives, and seasonal fieldworkers to support a comprehensive annual monitoring programme to inform future management. The programme of work will include a full legal programme of predator control, management of stocking levels of sheep and cattle, and heather restoration including re-seeding, heather cutting and bracken control – see **Annex 2** for more details. This project will endure for the operational lifetime of the Proposed Development (40 years) and represents a long-term commitment from the Proposed Development to fund nature conservation within the SPA. The project will also look to collaborate with, and build upon, similar work being carried out in other parts of the SPA, and neighbouring land, with a view to coordinating landscape-scale enhancements in and around the SPA (refer to **HMEP Aim 4**) over the long-term to aid SPA recovery and try to reverse population declines. The HMEP Manager will look to collaborate closely with the South Strathclyde Raptor Study Group in delivery of this project.

3.3.5 In terms of meeting the requirements of NPF4, the **EIA Report** found there to be no predicted significant effects to hen harrier from the construction or operation of the Proposed Development (**EIA Report Chapter 6**). Of the c.592ha of proposed management areas included within this Objective, c.208ha of which is considered compensation for the loss of the proposed DWHMP hen harrier enhancement areas which lie within the northern development area. The remaining c.384ha of the management proposed within this Objective is provided as enhancement for the species and associated habitats. This meets the requirements of NPF4 which requires developments to provide significant biodiversity enhancements in addition to any mitigation or compensation.

3.3.6 Further details on outline prescriptions for **HMEP Aim 2** are provided in **Annex 2**.

## 3.4 HMEP Aim 3 – Wader Management

**Objective 3.1 – To mitigate for the loss of habitat suitable for foraging and nesting waders and other grassland species such as skylark within the solar development area and provide additional enhancement.**

3.4.1 In conjunction with the pilot project outlined under **HMEP Aim 2** above, and with regard to the previous NatureScot wader schemes implemented within Netherwood Farm's landholding, the HMEP Manager will oversee suitable management of c. 136 ha of land to the west of the solar development area, and c.11.5 ha within the solar development area, for the benefit of skylark and wader species (refer to **Figure 1**). It is presently envisaged that management methods will include:

- Grazing management to improve sward structure and species diversity;
- Alterations to land management regimes including the use of cattle to break up the swards and soil monitoring to manage nutrient input to benefit invertebrate assemblages;
- A restriction on the use of pesticides to improve invertebrate assemblages;
- Creation of wader scrapes in appropriate locations in proximity to the Greenock Water which would flood in spring and provide foraging for wader species in late spring and early summer;
- Creation of flower rich meadow grassland where soils are suitable to improve habitats for ground nesting birds, including invertebrate assemblages and diversity; and,
- Rush pasture management to reduce rush dominance while retaining protection and cover for wader species.

3.4.2 It is envisaged that wader management activities will follow on from the end of the existing Netherwood wader management scheme with NatureScot at the end of 2026, with the Proposed Development taking on the funding and development of this habitat management regime at Netherwood for the long-term (40 years) following a successful FID for the solar component of the Proposed Development (currently programmed for 2027). **Figure 1** provides the locations of the proposed wader mitigation areas.

3.4.3 In consideration of NPF4, the implementation of these activities are considered to be compensation as it is recognised that the construction and operation of the solar component of the Proposed Development will have an effect on the foraging and nesting resource available for wader species in this part of the site, and as such, measures need to be implemented to mitigate for these effects and compensate for the loss of habitat.

3.4.4 Further detail on outline prescriptions for **HMEP Aim 3** are provided in **Annex 2**.

## 3.5 HMEP Aim 4 – Engagement with Neighbouring HMPs

**Objective 4.1 – Collaborate with other surrounding developments and Habitat Management Groups to knowledge share**

3.5.1 In line with the collaborative spirit of the Hagshaw Energy Cluster Development Framework, the HMEP Manager will engage with other neighbouring developments in a bid to coordinate habitat management works to create a landscape scale initiative for the benefit of biodiversity across the wider area. The appointment of the HMEP Manager, and their overview of activities being completed within this HMEP and the wider landscape, will provide a coordinated approach to management of biodiversity in the area, and will aid in delivering the requirements of NPF4 in providing significant enhancements to biodiversity.

*Prescription 4.1*

3.5.2 Prior to implementation of this HMEP, or any subsequent versions of this document, the HMEP Manager will review and collaborate on habitat management plan delivery associated with other wind

farm developments in proximity to the Proposed Development and the SPA, with a view to coordinating, what together can be considered, landscape-scale improvement to habitats within and around the Muirkirk and North Lowther Uplands SPA (and SSSI).

*Monitoring*

3.5.3 The HMEP Manager will report on an annual basis to the HMSG regarding progress with collaborating on the delivery of habitat management plans with neighbouring wind farm developments for the benefit of biodiversity within the wider landscape.

# 4 Summary

4.1.1 The development of this OHMEP has considered the predicted effects of the Proposed Development to sensitive environmental receptors through construction, operation and decommissioning phases. This assessment has been informed by a robust baseline of field and desk based data collected in compliance with relevant guidance. Further consideration has been given to the potential cumulative effects of the Proposed Development with others in the wider landscape, including consideration of their proposed and ongoing plans to mitigate, compensate and enhance biodiversity in the local area, and how the Proposed Development can complement the measures being brought forward to the benefit of biodiversity.

4.1.2 This OHMEP has been fully cognisant of current and emerging guidance and policy surrounding biodiversity, including NPF4 and policy 3 (Biodiversity) which states the requirement to provide a significant biodiversity enhancement, and to consider the wider landscape, green networks, and connectivity in so doing. These points have all been addressed within this OHMEP through:

- significant peatland restoration meeting NatureScot's requirements for a 1:10 loss:restoration ratio, but going considerably further to provide significant biodiversity enhancement to this priority habitat;
- landscape scale measures for hen harrier in improving breeding and foraging habitats for the species within the neighbouring SPA over a 40 year period;
- providing enhancement for waders and other priority bird species, and those qualifying species of the SPA, through targeted habitat management over a 40 year period; and,
- considering the surrounding developments, corroborating in a positive manner with the aim of establishing a coherent landscape scale strategy between developments to benefit the wider biodiversity of the area.

4.1.3 It is noted that NPF4 makes a clear distinction between what can be considered mitigation and compensation for the effects of any Proposed Development, and that which can be considered enhancement for the purposes of biodiversity. **Table 2** of this OHMEP summarises the predicted effects of the Proposed Development to sensitive receptors and these are discussed in detail in the relevant **Chapters** (Ornithology – 6 and Ecology – 7) of the **EIA Report**. In this regard, the following is noted:

- Peatland restoration which includes a 1:10 ratio of peatland restoration to account for the predicted 2.8 ha that will be lost through construction and operation of the Proposed Development would equate to a total restoration area of 28 ha. This OHEMP proposes to implement a total of c.56 ha of peatland restoration. The initial 28 ha of that restoration will be to provide mitigation for the predicted effects to peatlands from construction and operation of the Proposed Development. The additional 28 ha of peatland restoration will be completed as an enhancement measure to meet the requirements of NPF4 to provide a significant enhancement to biodiversity.

- Significant resources are being put forward to improve the quality of the habitats of the neighbouring SPA with the aim of encouraging hen harrier (and other qualifying species) back to the area by providing improved nesting and foraging habitats. Of the c.592ha of proposed management areas for hen harrier included within this OHMEP, c.208ha of which is considered compensation for the loss of the proposed DWHMP hen harrier enhancement areas which lie within the northern development area. The remaining c.384ha of the management proposed within this OHMEP is provided as enhancement for the species and associated habitats. This meets the requirements of NPF4 which requires developments to provide significant biodiversity enhancements in addition to any mitigation or compensation.
- Measures to compensate for the loss of wader habitat in fields surrounding Netherwood Farm have been proposed. These are not considered as enhancement as it is recognised that the Proposed Development is altering the habitats available to these species and therefore appropriate alternative habitats and management measures are included.
- Additional habitat benefits will accrue from the screen planting works associated with the southern development area landscape plan (**EIA Report Figure 5.26**).
- Finally, this document has considered the wider landscape, how other developments are engaging with biodiversity, and how the Proposed Development can enhance this strategy through both the comprehensive package of measures proposed, but further consideration of how these measures might link together with those already ongoing. This again complies with the requirements of NPF4 to consider biodiversity on a landscape scale and look to improve green networks and provide significant enhancement to the biodiversity of the area.

4.1.4 If is therefore considered that this OHMEP goes beyond the requirements to mitigate and compensate for the potential effects of the Proposed Development as assessed in the relevant chapters of the **EIA Report** and will in addition provide significant biodiversity enhancement to local receptors through a substantial long-term commitment to funding habitat management and biodiversity enhancement in the landscape that surrounds the Proposed Development.

# 5 References


TNEI (2024) Bank Rig III Wind Farm Environmental Impact Assessment Report

3R Energy (2020) Cumberhead West Wind Farm Environmental Impact Assessment Report

John Laing Group (2005) Dungavel Wind Farm Environmental Impact Assessment Report

RPS (2023) Dungavel Wind Farm Habitat Management Plan

Energiekontor (2020) Hare Craig Wind Farm Environmental Impact Assessment Report

Banks Renewables (2014) Kype Muir Extension Wind Farm Environmental Impact Assessment Report

Banks Renewables (2021) Mill Rig Wind Farm Environmental Impact Assessment Report

# Annex 1 – Gantt Chart of Activities

| Aim | Objective | Prescription | Monitoring | Construction | | Operation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2038 | 2043 | 2053 | 2063 | 2068 |
| 1. Peatland Restoration | 1.1 Forestry Removal | • Harvesting or mulching of conifer crop | • Monthly mapping of forestry removal<br>• Initial ground condition assessment post-harvesting including updates to peat depth information | | | | | | | | | | | | |
| | 1.2 Re-establishment of a functioning water table | • Assessment of ground conditions including hydrological regime<br>• Identification of appropriate forest to bog restoration techniques on a compartment-by-compartment basis<br>• Stabilisation of any erosion feature such as hags or gullies<br>• Drain and furrow blocking | • Continued hydrological monitoring post felling and during restoration to monitor potential effects of works to sensitive watercourses<br>• Implement dipwell monitoring of watertable for 2-year period post restoration.<br>• Vegetation monitoring using 100m transects with | | | | | | | | | | | | |

| Aim | Objective | Prescription | Monitoring | Construction | | Operation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2038 | 2043 | 2053 | 2063 | 2068 |
| | | | measurements of cover and species composition captured every 10m<br>• Fixed point photograph in each compartment | | | | | | | | | | | | |
| | 1.3 Control of non-peat forming vegetation | • Removal of unwanted species including conifer regeneration, rushes and tussock grasses | • Monitor vegetation recolonisation in line with Prescription 1.2 to identify the requirements for vegetation control measures | | | | | | | | | | | | |
| | 1.4 Manage non-replanted open ground so as to discourage nesting and foraging raptors and waders | • Mechanical cutting of regenerating sward if deemed necessary to deter ground nesting birds in area of potential collision risk | • Monitor recolonising vegetation trends and implement management activities if average sward height exceeds 30cm. | | | | | | | | | | | | |
| 2. Hen Harrier Enhancement | 2.1 Mitigate for the loss of, and provide additional enhancement over and above, the proposed | • New grazing management prescriptions over a larger area<br>• A full, legal programme of Predator Control | • Ongoing monitoring to assess vegetation changes through the lifetime of the | | | | | | | | | | | | |

| Aim | Objective | Prescription | Monitoring | Construction | | Operation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2038 | 2043 | 2053 | 2063 | 2068 |
| | DWHMP hen harrier enhancement areas by providing a much larger alternative solution within the Muirkirk and North Lowther Uplands SPA and SSSI.<br><br>2.2 Provide enhanced foraging habitat for hen harrier (and merlin and short-eared owl) away from turbines, within the SPA and SSSI | • Mechanical management of vegetation where requirements are identified<br>• Restoring heather cover<br>• Comprehensive monitoring programme | Proposed Development.<br>• Ornithological monitoring to assess the changes in assemblages / abundance of key ornithological receptors. | | | | | | | | | | | | |
| 3. Wader Management | 3.1 Mitigate for the loss of habitat suitable for foraging and nesting waders and other grassland species such as skylark within the solar development area and provide | • Grazing management to improve sward structure and species diversity.<br>• Alterations to land management regimes including the use of cattle to break up the swards and soil monitoring to manage nutrient input to benefit invertebrate assemblages.<br>• A restriction on the use of pesticides to improve invertebrate assemblages. | • Ongoing monitoring to assess vegetation changes through the lifetime of the Proposed Development.<br>• Ornithological monitoring to assess the changes in assemblages / | | | | | | | | | | | | |

| Aim | Objective | Prescription | Monitoring | Construction | | Operation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2038 | 2043 | 2053 | 2063 | 2068 |
| | additional enhancement. | • Creation of wader scrapes in appropriate locations in proximity to the Greenock Water which would flood in spring and provide foraging for wader species in late spring and early summer.<br>• Creation of flower rich meadow grassland where soils are suitable to improve habitats for ground nesting birds, including invertebrate assemblages and diversity.<br>• Rush pasture management to reduce rush dominance while retaining protection and cover for wader species. | abundance of key ornithological receptors. | | | | | | | | | | | | |
| 4. Engagement with Neighbouring HMPs | 1.4 Collaborate with surrounding developments and steering groups | • Formation of the HMSG for the Proposed Development and annual engagement with surrounding developments | • Progress reported in the annual compliance report for this OHMEP | | | | | | | | | | | | |

# Annex 2 – SAC Consulting Ltd Wader and Hen Harrier Enhancement Report

# Hagshaw Energy Cluster – Western Expansion (Phase 1)

# Habitat Management & Enhancement Proposals

A Woodburn & Son

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# Instruction

This report has been prepared exclusively for the use of 3R Energy and A Woodburn & Son based on information supplied, and no responsibility can be accepted for actions taken by any third party arising from their interpretation of the information contained in this document. No other party may rely on the report and if he does, then he relies upon it at his own risk.

This report has been prepared in support of proposals made between 3R Energy and A Woodburn & Son in relation to the proposed renewable energy project known as the Hagshaw Energy Cluster – Western Expansion (Phase 1).

No responsibility is accepted for any interpretation which may be made of the contents in the report.

# Executive Summary

While the section of hill covered in this report represents only a small proportion of the larger nature conservation protected site, there is significant opportunity to reinforce already good practices and secure positive momentum over the long-term (40 year funding commitment) that could see the return of notable protected species and benefit biodiversity generally. At the same time, the actions and commitments proposed would solidify nature-focused agricultural activity on the site for a generation, ensuring that the vital links between farming and nature remain and the wider benefits that come from the agricultural sector can be felt by the local economy for years to come, regardless of changes in farming policy.

The outline measures set out within this Proposal are proposed to be funded by the renewable energy project known as the Hagshaw Energy Cluster – Western Expansion (Phase 1) – hereafter referred to as the 'Proposed Development'. This Proposal should therefore be read in conjunction with the Outline Habitat Management and Enhancement Plan (OHMEP) for the Proposed Development contained within the associated Environmental Impact Assessment Report (EIAR).

# Contents

# Introduction

This biodiversity enhancement report has been requested and commissioned by 3R Energy and the farming business A Woodburn & Son (hereafter referred to as 'the business'). The business operates as a partnership between Andrew Woodburn, his mother and father and is registered with the Scottish Government's Rural Payments and Inspection Division (RPID) with the business registration number 115915. The business is split across two main location codes (MLC), with two distinct steadings, Netherwood, the main steading, and Linburn, the secondary steading.

During the last Basic Payment Scheme (BPS) application period the business declared 22 suckler cows with followers and 1,158 Blackface and Herdwick ewes with hoggs and other replacement sheep. The business is a participant of the Agri-Environment Climate Scheme (AECS) and has three contracts active and due to end in 2027, these contracts cover organic maintenance, options for wader enhancement and management beneficial to the designated sites present within the boundaries of the farm.

# Aims and Scope

This report aims to set out a series of management proposals on the Netherwood and Linburn moorland, and the inbye grass pasture to provide enhanced benefit beyond those that could be achieved under AECS or similar environmental schemes.

The first of the proposed areas is across the moorland and encompasses 592.15 hectares or thereabouts.

The second area is the wader enhancement area and covers approximately 136.4 hectares across the western half of the farmed inbye.

Both areas can be seen in Figure 1 that accompanies the Outline Habitat Management and Enhancement Plan (OHMEP) for the Proposed Development.

# Management Proposals & Commitments

3R Energy, A Woodburn and Son and associated advisors have proposed a series of management activities in connection with the Proposed Development that, while sharing some commonality with AECS, will provide greater benefit for the designated site and biodiversity, directly within the boundaries of the farm and indirectly across the broader protected area.

1. Commitment to long-term farming for nature:
    - Land abandonment is detrimental to conservation efforts generally but sadly this is the reality of many upland units as the challenges of farming in these difficult environments and diminishing support impacts businesses. Sustainable grazing is essential for the long-term success of the designated site and the business would commit to limiting maximum stocking density to 1 livestock unit per hectare and an appropriate average annual stocking density. Conservation grazing requires flexibility and the business must be able to adapt grazing and the presence of livestock as the condition of the site changes, this is even more important in the wider context of climate change and its impacts on the site. The business will also commit to away-wintering hoggs from across the site and off-wintering breeding ewes to reduce the grazing pressure on the site and prevent damage to the moorland during the wettest period of the year. The farm would also be open to limited cattle grazing across the site, weather dependent.

2. Commitment to restart predator control:
    - Predator control was discontinued in the 2021 AECS application following a review in which the business felt that the time required to undertake it in compliance with the scheme requirements is not justified by the payment available. However, the business is prepared to recontinue this practice, targeting legal corvid species, foxes and stoats, bringing in a dedicated resource to undertake predator control funded by the Proposed Development. These proposals would not only bring reduced predation pressure on nests and eggs of national priority species on the hill but also the inbye of the farm.

3. Creation of new habitats for wading birds:
    - Wader scrapes are great, providing isolated pockets of exposed soil for foraging birds and their chicks, mudding, wet and uninterrupted. However, late in the season scrapes can grass over and revert back to pasture. The business will commit to continual maintenance of the scrapes, refreshing them on an annual basis and rotating them where more appropriate. This practice would be informed by monitoring. The business has identified an area on the inbye specifically for a large scrape, that will hopefully be complimented by the nearby water environment. Details of proposed wader scrapes would be provided in the final draft of the Proposed Development's Habitat Management and Enhancement Plan (HMEP). for agreement prior to commencement of the Proposed Development.

# Conservation Strategy for SPA Moorland Areas

## Objective

The goal is to promote heather regeneration, maintain a diverse upland sward, and enhance habitat suitability for hen harrier and other ground-nesting birds. This requires careful seasonal livestock management, controlling grazing pressure, and reducing trampling damage to peat-rich soils. The proposed Moorland Management Area can be seen in Figure 1 of the Proposed Development's Outline HMEP.

Table 2: Proposed grazing strategy (indicative only)

| LPID(s) | NS/65688/31983<br>NS/65763/30776<br>NS/67479/31556 | Area (BPS eligible) | 591.36 ha |
|---|---|---|---|

| Grazing period | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Dates | 1 March – 31 May | 1 June – 31 August | 1 September – 31 October | 1 November – 28 February |
| Days | 92 | 92 | 61 | 120 |
| Number of cattle | - | 15 | - | - |
| Number of sheep | 350 | - | 450 | - |
| Livestock units per hectare | 52.5 | 15 | 67.5 | - |
| Stocking density (LU/ha/annum) | 0.022 | 0.006 | 0.019 | - |
| Annual average stocking density (LU/ha/annum) | 0.047 | | | |

The proposed grazing plan has been developed in line with current AECS guidance and information from the Farm Advisory Service (FAS) technical note 868: Conservation Grazing of Semi-Natural Habitats.

## Seasonal Grazing Plan Rationalised

Spring (March – May) – Low-intensity sheep grazing

- Objective: Maintain a short upland sward for ground-nesting birds (hen harrier, golden plover, lapwing).
- Stocking: 300-350 ewes spread over the heath and rough grazing areas.
- Impact: Promotes a diverse sward structure, prevents matting of vegetation.
- Avoid cattle grazing at this time to prevent trampling of fragile wet heath areas.

Summer (June – August) – Cattle introduced for mosaic grazing

- Objective: Encourage structural diversity, reduce dominance of purple moor grass (Molinia), and improve habitat for pollinators.
- Stocking: 15 cattle (native breeds) at 0.006 LU/ha.
- Impact: Trampling encourages seed regeneration, and dung enriches insect populations.
- Rotational grazing recommended – Divide grazing into 2-3 zones and rotate cattle every 6 weeks to prevent overgrazing.

Autumn (September – October) – Heavier grazing pulse for nutrient cycling

- Objective: Break up mature vegetation, remove excessive thatch, and encourage heather seed establishment.
- Stocking: Up to 450 sheep for 6 weeks grazing over a wider area.
- Impact: Helps suppress competitive grasses, exposes bare soil for heather seed establishment.
- Avoid grazing past mid-October to prevent damage to regenerating heather.

Winter (November – February) – Stock removal for habitat recovery

- Objective: Allow heather and sphagnum moss to regenerate without browsing pressure.
- Stocking: All sheep and cattle removed or drastically reduced.
- Impact: Reduces browsing pressure on young heather shoots, prevents excessive trampling of wet ground.
- Avoid supplementary feeding to prevent nutrient enrichment and localised poaching.

## Heather Swiping (Controlled Cutting) & Heather Restoration

- Implement a 5-year rotational cutting plan on mature, rank heather patches to create a mosaic of different-aged heather – subject to appropriateness.
- Cut patches <0.5 ha in size to mimic natural fire cycles and create better feeding areas for hen harrier.
- Prioritise areas where heather is more than 30 cm tall.
- Heather restoration programme to include re-seeding, heather cutting (as above) and bracken control.

## Capital Investment & Employment

- Maintaining effective grazing to support the betterment of the site will require capital investment over the years and indeed decades. Over a 40-year period, the entire grazing platform should be refenced within that period.
- Commitment to management of the moorland in this way over the long-term will allow the business to resource accordingly, creating local employment.

## Monitoring and Adaptive Management

Conservation must be adaptive and responsive to new information as habitats and species change and improve – or deteriorate. The business will work with the HMEP Manager (see OHMEP) to coordinate and develop an effective, practical and reasonable monitoring plan. Critical to this is that the data collected during this monitoring is used to inform management and justify changes in the management plan.

- Fixed-Point Photography – Annual photo surveys at key locations to assess vegetation structure changes.
- Heather Regeneration Surveys – Track heather growth and flowering (important for insect populations).
- Bird Surveys – Hen harrier, golden plover, and other target species should be monitored via existing RSPB collaboration and collaboration with South Strathclyde Raptor Study Group.

The HMEP Manager will oversee the project within the identified area, including agreeing farming objectives with the business as required, predator control objectives, and seasonal fieldworkers to support a comprehensive annual monitoring programme to inform future management objectives.

## Expected Outcomes

- Increased heather cover and diversity, creating better nesting sites for hen harrier and other upland birds.
- Enhanced foraging habitat for raptors (more insect life from cattle dung and heather regeneration).
- Reduced dominance of Molinia grass, creating a more structurally diverse upland sward.
- Improved soil health and reduced erosion, supporting long-term peatland restoration efforts.
- Additional employment opportunities on the farm in the form of farmhands and predator control.

# Predator Control

## Objective

To reduce predation pressure on ground-nesting birds and enhance heather regeneration by controlling key predators while maintaining ecological balance.

| Predator Species | Impact on Habitat and Wildlife | Proposed Control Method | Implementation Timing |
|---|---|---|---|
| Fox (Vulpes vulpes) | High predation risk to ground-nesting birds, especially during breeding season | Lamping (night shooting) and legal cage trapping | February – July (Breeding Season) |
| Carrion Crow (Corvus corone) | Preys on eggs and chicks of waders and hen harriers | Larsen traps and crow cage traps (under General License) | March – July (Nesting Period) |
| Stoat and Weasel (Mustela spp.) | Small mammal predators affecting chick survival | DOC Traps (tunnel trapping) | Year-round, focus on spring and early summer |
| Raven (Corvus corax) | Predates eggs and chicks, increasing impact on hen harrier nests | Licensing and deterrents (no direct control unless licensed by NatureScot) | Apply for control license if significant impact |

## Predator Control Strategy Rationalised

### Fox Control – Lamping (Night Shooting)

- Conducted using thermal imaging scopes and high-powered lamps.
- Coordinated twice monthly patrols during February – July.
- Avoids breeding hen harrier disturbance in designated nesting areas.

### Corvid Control (Carrion Crow and Raven) – Larsen and Multi-Catch Crow Traps

- Set near nesting sites and grazing fields (avoiding wetland habitats).
- Checked daily with legal decoy birds provided with food and water.
- Crow removal before peak nesting season (March – July).
- Raven deterrents and licensing
- Apply for NatureScot license if raven predation significantly impacts ground-nesting birds.

### Stoat and Weasel Control

- DOC Traps (Tunnel-Based Trapping)
- Set in covered tunnels to target mustelids while avoiding non-target species.
- Strategic placement near stone walls, heather edges, and known prey pathways.
  Traps inspected every 48 hours (best practice for humane dispatch).

# Wader Action Plan

In addition to the action proposed on the hill at Netherwood and Linburn, the business proposes a continuation of the current wader enhancement plan under their current AECS contract (21AEC20232). The area proposed for this wader action plan is based around the western half of Netherwood and can be seen on Figure 1 of the OHMEP for the Proposed Development. The area is comprised of a range of different habitats that includes improved permanent pasture, unimproved grassland, riparian scrub and woodland. Parts of the farm are hedged, and this should be a serious consideration. Some studies have shown that the presence of hedges can inhibit waders through provision of cover for predatory birds and animals. Implementation of predator control across the inbye in addition to the hill could help mitigate against the threat of predation.

## Objectives

- Increase the breeding success of wader species through habitat management.
- Reduce pressures from predation and agricultural activities.
- Maintain and restore historical breeding sites within the boundaries of the farm.

## Grazing, Cropping and Livestock Management:

- Implement restricted grazing from March 15th to June 15th (the nesting and fledging period).
- Maintain grazing levels below 1 Livestock Unit (LU)/ha during the restricted period.
- Outside of the nesting season, grazing levels may fluctuate between 0-2 LU/ha, depending on grass availability.
- Use cattle grazing to create poached ground and short sward structures beneficial to waders.
- Taking advice from the relevant professionals, the business would commit to undertaking liming of the fields included within the proposed management area, doing so should aid in building pH of the soil and making the soil more hospitable to earthworms.
- Soil sampling to inform liming as discussed above, supported by the Preparing for Sustainable Farming (PSF) scheme.
- Recognising the significance of forage brassicas and their beneficial impact on wading birds, the business will also continue with a rotation of forage brassicas as set out in his AECS contract, established after 15th June and grazed over the winter period, leaving stubble for nesting waders in the spring.

## Habitat Enhancements:

- Wader scrapes: Creation and maintenance of small wetland features (20-40m²) to provide feeding and breeding sites. In conversation with the business, multiple sites have been selected for the creation of large scrapes also.
- Rush pasture management: Reduce rush dominance while retaining some cover for protection.
- Wetland restoration: Improve wet grasslands and associated water features.
- Creation of wildflower meadow in appropriate locations to increase invertebrate abundance and diversity.

### Monitoring and Signposting

Monitoring is particularly important with wading birds, as populations can fluctuate year-on-year independently of actions taken on a single farm, being clear about what actions are having impact, what should be replicated and what should not is crucial. Groups like Working for Waders are well established in the local area and in Lanarkshire and the business is well acquainted with them, building on this relationship is recommended. Additionally, FAS offers free advice via their helpline and online materials promoting conservation. Specialist advice grants are also available through FAS, worth up to £3,200 per business per calendar year for independent assessments and reports to promote biodiversity enhancement and a range of other topics.

## Conclusion

The actions proposed across the hill and inbye at Netherwood and Linburn, the combination of sustainable grazing management, habitat creation and restoration could, over the correct period of time, have a transformative impact on the farm and landscape generally. Conservation grazing on the hill, particularly with cattle in the summer will promote and aid the regeneration that has already begun through previous AECS contracts and a commitment to wader grassland management and creation of wader scrapes, supported with appropriate grazing, predator control and a commitment to monitoring with the appropriate partners should have a measurable, meaningful impact on biodiversity in the local area.

# Figure 1 - Proposed HMEP Areas