atmos CONSULTING

Environmental Impact Assessment Report

Swarclett Wind Farm

Technical Appendix 6-4: Outline Habitat Management Plan

Swarclett Wind Energy Limited

wind2

June 2024

Contents

Contents

Tables

Figures

Document Prepared For

Hannah Brown
Wind 2 Limited

Document Prepared By

David Braidwood
Ecological Consultant
david.braidwood@atmosconsulting.com

Document Approved By

James Wilson
Principal Ecologist
james.wilson@atmosconsulting.com

Version	Date	Reason
1.1	December 2023	Original Issue

1 Introduction

1.1 Terms of Reference

This outline Habitat Management Plan (HMP) is provided in support of a planning application for the Proposed Development. This report has been informed by the results of baseline ecology and ornithology studies.

This outline HMP will be finalised following the completion of the planning process in collaboration with The Highland Council (THC) and at this stage should be regarded as a first iteration.

1.2 Site Details and Project Description

The Proposed Development, henceforth called the "Site", is located approximately 10km south-east of Thurso in the Scottish Highlands and is centred on National Grid Reference (NGR) ND 20915 62900 (Figure 1-1-1 EIA Report Volume 4).

The Site is located in an area of agricultural land, including improved, semi-improved neutral, and marshy grasslands mainly used for rough grazing, and fields of crop. There remains a small band of forestry adjacent to, but outwith, the eastern boundary, and adjacent to, but outwith, the southern boundary is a strip of felled and windblown trees with some young natural regeneration. To the west is an un-named single track road running between the B874 and B876. To the north there are fields of rough grazing.

The Proposed Development will consist of two three-bladed horizontal axis wind turbines, each up to 149.9m above ground level (agl) maximum blade tip height and a rotor diameter of 133m.

The Proposed Development area equates to approximately 81.86 hectares (ha). The new development footprint of the wind farm including all associated permanent infrastructure such as turbine bases, crane hardstandings, on-site access tracks and turning heads, and an on-site substation compound with battery storage equates to around 2.05ha or 2.51% of the total site area. Temporary infrastructure including a construction compound equates to around 0.74ha or 0.90% of the total site area.

1.3 Aims and Objectives

The main objective of the outline HMP is to enhance the habitats on site for described ecological receptors, particularly rush-pasture habitats. This will be achieved through a programme of habitat management and enhancement with the aim of improving semi-natural habitats on Site.

1.4 Scope of the Outline Habitat Management Plan

This is a framework document intended to be a work in progress, modified, developed and refined throughout the monitoring period of the HMP. The proposed methodologies will therefore be refined in light of emerging monitoring results.

The HMP considers the specific features of the Site, the local area, existing and future land use, and the Proposed Development in making recommendations based on best information currently available. If aspects relating to the Proposed Development are

altered, or new ecological information emerges, then the HMP will be required to be adapted accordingly. The HMP is an iterative document which will be revised, updated and re-issued throughout the construction and operational phases of the Proposed Development. In this way, the HMP through monitoring will take account of the successes and failures of the management measures; modifications to the management regime can then be proposed as necessary.

The HMP considers the management of the habitats and species over the expected 30 year operational life of the Proposed Development.

Any reinstatement works required as a result of the construction of the Proposed Development will be covered within the other elements of the Construction Environmental Management Plan (CEMP) and will not be included within this HMP.

2 Ecological Features on Site

The background information presented in this section of the HMP has been sourced from the technical studies carried out to inform the Proposed Development EIA Report (EIAR).

2.1 Habitats

2.1.1 Overview

Both Phase 1 habitat and National Vegetation Classification (NVC) surveys were undertaken and included the whole site plus a buffer of 250m, where access permitted. For the purposes of this outline HMP, only those NVC communities recorded within the site boundary are described, although habitat descriptions include some contextual information from the wider survey buffer where relevant. For further information on NVC communities recorded, please refer to the EIAR Volume 3 Technical Appendix 6-1.

The dominant Phase 1 habitat types recorded within the site are 'semi-improved neutral grassland', 'improved grassland', and ''cultivated'/'disturbed land – arable'; these constitute 32.21%, 24.27%, and 19.21% of the area respectively.

The dominant NVC community types recorded within the site are MG7 *Lolium perenne* leys, and MG9 *Holcus lanatus – Deschampsia cespitosa* grassland, representing 28.67% and 15.65% of the total site area respectively. In addition, fields of barley *Hordeum vulgare* amounted to 20.57% of the area.

A summary of the Phase 1 habitat composition of the site is detailed in Table 6-4-1, with habitats ordered in decreasing order of abundance. Phase 1 habitats recorded within the Site can be seen in Figure 6-4-1.

Table 6-4-1: Phase 1 habitats recorded within the Site

Habitat	Area (m2)	Area (ha)	% of total
Semi-improved neutral grassland	263,697	26.37	32.21
Improved grassland	198,701	19.87	24.27
Cultivated/disturbed land – arable	157,262	15.73	19.21
Marsh/marshy grassland	67,687	6.77	8.27
Dry modified bog	59,084	5.91	7.22
Wet dwarf shrub heath	22,676	2.27	2.77
Dense/continuous scrub	10,971	1.10	1.34
Semi-natural mixed woodland	7,188	0.72	0.88
Track	3.910	0.39	0.48
Road	2,710	0.27	0.33
Buildings	388	0.04	0.05
Standing water	354	0.04	0.05
Mosaics			
Marsh grassland/wet dwarf shrub heath	23,981	2.40	2.93
Total		81.88	100

A summary of the NVC vegetation communities recorded within the Site are detailed in Table 6-4-2 and can be seen in Figure 6-4-2.

Table 6-4-2: NVC communities recorded within the Site

NVC communities	Area (m2)	Area (ha)	% of total
MG7 *Lolium perenne* leys and related grasslands, sub-community a	234,763	23.48	28.67
MG9 *Holcus lanatus – Deschampsia cespitosa* grassland	128,185	12.82	15.65
M17 *Trichophorum germanicum – Eriophorum vaginatum* blanket mire	74,122	7.41	9.05
MG6 *Lolium perenne – Cynosurus cristatus* grassland, sub-community a	73,745	7.37	9.00
M23 *Juncus effusus / acutiflorus – Galium palustre* rush-pasture, mosaic of sub-communities a and b	53,744	5.37	6.56
M23 *Juncus effusus / acutiflorus – Galium palustre* rush-pasture	23,118	2.31	2.82
M15 *Trichophorum germanicum – Erica tetralix* wet heath, sub-community d	22,252	2.23	2.72
MG9 *Holcus lanatus – Deschampsia cespitosa* grassland, sub-community a	14,278	1.43	1.74
W23 *Ulex europaeus – Rubus fruticosus* scrub	10,437	1.04	1.27
Unclassified habitat			
Barley	168.457	16.85	20.57
Semi-Natural Mixed Woodland	10,163	1.02	1.24
Road	5691	0.57	0.69
Total		81.88	100

2.1.2 *MG7 Lolium perenne leys*

This is a species poor grassland community that is found throughout much of lowland Britain. These are grasslands that are usually sown specifically for agriculture or recreational use and are usually derived from *Lolium - Cynosurus* grassland (MG6) by improvement from frequent addition of fertiliser, heavy grazing, trampling or natural enrichment (Rodwell *et al.*, 1992; Cooper, 1997).

The stands of this community type present within the survey area most closely align with the **MG7a *Lolium perenne – Trifolium* repens leys sub-community** which indicate that these areas of pasture are very species poor and likely highly fertilised to maximise production of vegetation for hay and / or silage. This community type was the most common and widespread across the survey area and reflects the agricultural nature of the site in general.

2.1.3 *MG9 Holcus lanatus – Deschampsia cespitosa grassland*

The MG9 grassland community is highly characteristic of permanently moist, gleyed and periodically inundated circumneutral soils across large areas of the British lowlands. It often occurs in pastures and meadows which are level to moderately sloping in topography. It is also often associated with roadside verges, forest rides and clearings

and fen / wetland margins. The community usually contains a coarse and tussocky sward dominated by Yorkshire-fog and tufted hair-grass (Rodwell *et al.*, 1992; Cooper, 1997).

MG9 was recorded towards the south-east of the survey area where the sward most closely aligns with the **MG9a *Poa trivialis* sub-community** which is defined as more of an ungrazed open sward on moister soils. Here, it is indicated by the presence of white clover and meadow buttercup, set amongst a grassy sward dominated by Yorkshire-fog and tufted hair-grass (Rodwell *et al.*, 1992; Cooper, 1997).

2.1.4 M17 *Trichophorum germanicum – Eriophorum vaginatum* blanket mire

This community is typically found on blanket bogs occurring extensively on permanently waterlogged, deep peat in the more oceanic parts of Britain where the climate is mild and wet. It is usually on acidic peat at lower altitudes, where in Scotland this includes the south-west, western highlands and Western Isles (Elkington *et al.*, 2002) and is typically found on level ground or gentle slopes (Averis *et al.*, 2004). Modification of the vegetation through land management practises such as peat-cutting, burning and drainage often results in surface drying of the peat (Elkington *et al.*, 2002).

These communities typically comprise a mixture of grasses including common cottongrass, hare's-tail cottongrass *Eriophorum vaginatum*, deergrass and purple moor-grass. Common heather and cross-leaved heath clumps are also present and tormentil *Potentilla erecta* is a constant which helps to distinguish this community from other *Sphagnetalia* mires (Elkington *et al.*, 2002). The ground layer is made up of various *Sphagnum* species which form a rich carpet underneath the vascular plants (Averis *et al.*, 2004) of which red bog-moss *Sphagnum capillifolium* and papillose bog-moss are constants and may be accompanied by other *Sphagnum* species (Elkington *et al.*, 2002).

M17 is present alongside M15 in the north-east of the survey area. Common heather is the dominant ericoid followed by cross-leaved heath, and both are widespread within the community. Beneath the heath lies a bold orange grassland composed of deergrass and bog asphodel *Narthecium ossifragum*, with scatterings of red fescue and purple moor-grass. Lustrous bog-moss is the most frequent and widespread *Sphagnum* species and is found alongside the infrequent red bog-moss and occasional flat-topped bog-moss *Sphagnum fallax* and soft bog-moss *Sphagnum tenellum*. Tormentil and *Cladonia* species such as reindeer lichen *Cladonia portentosa* are present but infrequent. The community lies on relatively level ground with no hummock and hollow features present. The *Sphagnum* moss layer is noticeably wet and boggy but with no bog pools present.

2.1.5 MG6 *Lolium perenne – Cynosurus cristatus* grassland

In lowland Britain, the *Lolium – Cynosurus* grassland is a major permanent pasture type on moist but freely draining or moderately impeded circumneutral, mesotrophic brown soils. Enclosed stands form the bulk of agricultural pasture in the country and it is also found widespread on roadside verges and lawns (Rodwell *et al.*, 1992; Cooper, 1997). This grassland community is usually characterised by a short, tight sward which is grass dominated by species including perennial rye-grass and varying levels of crested dog's-tail (Rodwell *et al.*, 1992; Cooper, 1997).

MG6 covers an area beyond the Site boundary to the east with a smaller area in the centre of the south of the survey area. Domestic livestock are present, resulting in a heavily grazed environment. The variable **MG6a typical sub-community** is closely aligned to the MG6 communities recorded within the survey area, and this is indicated by the presence of white clover and occasional meadow buttercup *Ranunculus acris*. The infrequent presence of tufted hair-grass suggests this community maybe of the *Deschampsia cespitosa* variant.

2.1.6 M23 *Juncus effusus / acutiflorus – Galium palustre* rush-pasture

This rush-pasture occurs over a variety of moist, moderately acid to neutral, peaty and mineral soils in the cool and rainy lowlands of western Britain including Skye and Caithness. It is usually found on gently-sloping ground around the margins of soligenous flushes, as a zone around topogenous mires and wet heaths, and is especially widespread in ill-drained, comparatively unimproved or reverted pasture (Elkington *et al.*, 2002). Grazing helps to maintain this community and prevent it from succeeding to woodland.

The bounds of this community are considered difficult to define due to the diversity of associated species. It is characterised by the abundance of soft-rush or sharp-flowered rush *Juncus acutiflorus* or both. Rushes often have a high cover, with soft-rush and sharp-flowered rush having an easterly and westerly distribution respectively. Yorkshire-fog is the most frequent grass and the ground layer typically consists of mesophytic herbs common in moist agricultural grassland including common marsh-bedstraw *Galium palustre* and marsh thistle (Elkington *et al.*, 2002).

Areas of M23 were recorded on the southern edge of the survey area, running adjacent to the clear-fell woodland. Both soft-rush and sharp-flowered rush were present, with the former being the more abundant species. Compact rush was also present in significant quantity. Yorkshire-fog and perennial rye-grass are the most frequent grasses here but other species were present including red fescue and tufted hair-grass. Notable herbs present include marsh thistle and common marsh-bedstraw.

2.1.7 M15 *Trichophorum germanicum – Erica tetralix* wet heath

This wet heath community is associated with thinner or better drained areas of ombrogenous peat in the wetter western and northern parts of Britain. Land management practises have a significant effect on the structure and composition of this community. Although it is common in the west and south-west of Scotland, draining and peat-cutting have extended its coverage to formerly deeper and wetter peats (Elkington *et al.,* 2002). Species dominance and associated flora can vary widely however purple moor-grass *Molinia caerulea,* deergrass, cross-leaved heath and heather are all of high frequency and it is mixtures of these species that give the vegetation its general character (Elkington *et al.*, 2002).

M15 is restricted to a small pocket in the south-east of the survey area and occurs in the margins of M17, occurring in the form **M15d *Vaccinium myrtillus* sub-community** which tends to be distributed in drier regions of the country. Common heather cover is widespread with cross-leaved heath also present. *Sphagnum* species are almost totally absent and have been replaced by an extensive carpet of red-stemmed feather-moss *Pleurozium schreberi* which helps point towards a drier habitat.

Typical of this community type, deergrass and cross-leaved heath are present and uneven in distribution. There are infrequent tussocks of wavy hair-grass *Deschampsia flexuosa* and heath rush *Juncus squarrosus* along with scatterings of purple moor-grass and red fescue *Festuca rubra*. Bilberry *Vaccinium myrtillus* is absent and may have been replaced by the other ericoids present in the community.

2.1.8 W23 *Ulex europaeus – Rubus fruticosus* scrub

The W23 scrub occurs on acid, freely draining soils on gentle to very steep, rocky slopes at low altitudes. Its highest localities are at about 300 – 350m on south-facing slopes as far apart as the eastern Highlands and south-west England. The vegetation is mainly secondary, developing after woodland clearance or on abandoned pasture. Progression to woodland may be held in check by reintroduction of stock or by burning. The natural habitats of W23 scrub are likely to be steep, rocky slopes on thin soils that cannot support a continuous canopy of tall trees, unstable habitats such as riverside shingle banks, and temporarily disturbed ground after fires in woodland and heath.

W23 was recorded immediately adjacent to the Site boundary to the north. Here, the community is dominated by gorse. The understorey layer is relatively sparse, with a species-poor flora of bramble *Rubus fruticosus*, Yorkshire-fog, false oat-grass *Arrhenatherum elatius*, tufted hair-grass, and soft-rush at the periphery.

2.1.9 Tracks

There is currently a track to the north of the site, initially running eastwards, and then turning towards the south, grading from hardcore to a vegetated running surface.

2.1.10 Water

There are no areas of standing water, e.g. pools, within the site. There are some small agricultural and forestry drainage ditches running through the Site but are prone to have little water flow in drier months. During the winter months these are likely to be running freely, contributing to the water table in some of the lower areas of the site. There is a likelihood that some of the lowest areas, including that of the M23 area, will be saturated to the surface at times.

2.2 Fauna

2.2.1 Mammals

There were no direct signs of protected mammals within the Site, though there were some mammal holes along clear fell drainage ditches which may relate to water vole *Arvicola amphibius*. The Site does provide suitable habitat for some protected mammal species, such as wildcat *Felix silvestris*, badger *Meles meles*, and formerly for pine martin *Martes martes*; however, no evidence of presence was recorded. The Site is considered as being poor quality habitat for otter *Lutra lutra*; no evidence of this species was recorded.

A habitat assessment for bats concluded that there is a general lack of any substantial stands of trees or bushes in the Site to provide suitable foraging habitat. Caithness flagstone walls and associated bands of thick vegetation provide good commuting corridors, though there is little suitable foraging habitat within or surrounding the Site.

Static detectors identified common pipistrelle *Pipistrellus pipistrellus* passes on 32 occasions and a single pass of an unidentified *Pipistrellus* spp., and consequently the Site is regarded as being of low value for commuting and foraging bats.

2.2.2 Birds

Numerous bird species were observed during ornithology surveys undertaken between September 2019 and August 2023. These include the following species: common scoter *Melanitta nigra*, cormorant *Phalacrocorax carbo*, curlew *Numenius arquata*, golden plover *Pluvialis apricaria*, greylag goose *Anser anser*, hen harrier *Circus cyaneus*, lapwing *Vanellus vanellus*, mute swan *Cygnus olor*, oystercatcher *Haematopus ostralegus*, peregrine *Falco peregrinus*, pink-footed goose *Anser brachyrhynchus*, pochard *Aythya ferina*, snipe *Gallinago gallinago* and whooper swan *Cygnus cygnus*.

The ornithological baseline is presented in EIAR Volume 3 Technical Appendix 7-1. Assessment of effects on ornithology receptors is presented in EIAR Volume 2 Chapter 7 Ornithology.

2.2.3 Herptiles

The Proposed Development Site contains dry and wet habitats, varied vegetation structure, open areas and ecotones, and is considered generally suitable for a variety of reptile and amphibian species. However, no species were recorded during surveys.

2.2.4 Deer

No evidence of wild deer utilising the Proposed Development Site was recorded during surveys.

2.2.5 Aquatic Fauna

Watercourses within the survey area are limited to agricultural field drainage ditches. Therefore, their potential to support fish is limited.

3 Outline Habitat Management Plan

3.1 Outline HMP area

It is proposed that the outline HMP area will be the same as the planning application boundary (the "Site"). Within this, certain areas will be identified for specific management measures depending on their particular characteristics.

There are some areas within the site that have a dependence upon groundwater to maintain the vegetation community present. These are NVC communities MG9 (moderate dependence) and M23 (high dependence) on groundwater. In general, these are areas with shallow soil that have been less impacted by agriculture than the improved and semi-improved fields.

Creation of a wildflower meadow within areas of the Site is proposed. This created meadow will require more intense management post-construction than some other areas of the site to ensure that it reaches the desired community.

3.2 Outline HMP Heads of Terms

With consideration of the habitats and species present and the aim for no net loss of biodiversity, the following broad heads of terms are identified at this stage.

Outline prescriptions are allocated a unique identifier in the following text, consisting of the text Swar followed by the prescription number. Outline prescriptions are summarised in Table 6-4-3.

3.3 Natural Regeneration of Vegetation

3.3.1 Aim

To enable natural regeneration of vegetation with particular focus on species within the M23 *Juncus effusus / acutiflorus – Galium palustre* rush-pasture NVC community, and to monitor this post construction to ensure regeneration is successful.

3.3.2 Background and Justification

As a way to maintain local provenance of the species growing in an area, natural regeneration is the best method. It will ensure that only those species that can disperse naturally onto the Site are able to grow there. Careful construction methods will limit wider damage to habitats across the Site, and especially in areas immediately adjacent to the project infrastructure (i.e. areas adjacent to newly-constructed access tracks). Here, the plant communities adjacent to the track route will be able to spread through natural dispersal up to the edge of the track to infill any areas that become damaged during construction. Maintaining the current hydrological gradients to the soil across these areas of site, through conduits under or through constructed tracks, will allow for the soil to maintain its ability to support those communities currently present.

3.3.3 Outline Prescriptions

Swar1: Promoting natural regeneration of vegetation.

In order to enable natural regeneration of vegetation on Site, care should be taken during construction of the project infrastructure to not mix soils between different areas of the Site, thereby limiting potential for seeds in the soil bank being moved too far, and potentially outcompeting species from another community. Any gaps between vegetation cover and project infrastructure should be filled with topsoil from that area to allow for vegetation to spread.

3.4 Wildflower Meadow Creation

3.4.1 Aim

To create an area of wildflower meadow, providing greater diversity of flora on Site, and potentially attracting a greater number of pollinator species, and providing support for a greater biomass of individuals.

3.4.2 Background and Justification

Creation of a wildflower meadow provides much needed habitat in the UK that has been declining in recent decades through changes in land management. Provision of a wider range of plant species has elevated benefits, including attraction of a greater number of pollinator species and numbers. The meadow will grade floristically towards the M23 community, both increasing the size of the meadow area and species diversity.

3.4.3 Outline Prescriptions

Swar2: Wildflower Meadow Creation.

Swar3: Maintaining hydrology across site to support habitats.

Meadow Creation

Existing vegetation should be removed from the area, and the soil prepared for the wildflower seed. The soil will ideally be reduced in fertility (assuming that the soil has been fertilised in recent years for cereal crop production), either through removal of some topsoil or mixing with subsoil. This reduction in fertility will allow the desired species to compete, preventing species such as docks from becoming dominant. There should be relatively few seeds in the natural soil seed bank as it has been recently cultivated. However, it may be worth allowing remaining seeds to germinate before ploughing them back into the soil before sowing.

The resultant soil should have as fine a particle size as is reasonable to achieve prior to sowing, and the seed sown at the recommended sowing density, likely to be approximately $2g/m^2$ - $3g/m^2$. The exact species mix will need to be decided on as it is recommended that only those species recorded as native to the Caithness vice county (VC109) are within the mix, although the provenance of the seed will likely be from outwith due to a lack of availability. A mix from which a suitable species mix could be

adapted, and which will be from best available provenance, will be available from a company such as Scotia Seeds (www.scotiaseeds.co.uk).

Mechanical sowing is recommended due to the size of the area that will need sown and should be rolled lightly. Sowing in late April / early May would be preferable, although a month either side may also work, dependent upon prevailing climatic conditions at the time. The seed mix selected will dictate the management plan for the meadow over subsequent years. Some meadows require vegetation to be cut back and removed in the autumn, once the flowers have seeded and the seed has been dispersed. This helps remove excess nutrients from the site, allowing for the desired species to maintain dominance over competitors.

Hydrological Management

In order to maintain the plant community in areas of the site with a moderate dependence upon groundwater, hydrological management will be necessary. To do this, the current levels of soil moisture and groundwater supply to the moderately groundwater dependent M23 will be identified and maintained throughout. This will be important to maintain a species-rich naturally regenerated M23 community adjacent to the implemented wildflower meadow.

This can be achieved by blocking some key ditches to raise groundwater levels, and ensuring that the Drainage Impact Assessment and Management Plans take the M23 water supply into account when planning drainage such that the current or enhanced groundwater flow in the south of the site can be maintained.

3.5 Monitoring the effect of the Proposed Development

3.5.1 Aim

To ensure the effect of the Proposed Development is measured.

3.5.2 Outline Prescriptions

Swar4: Post-construction breeding bird surveys to monitor effect of the wind farm.

Swar5: Post-construction vantage point (VP) surveys undertaken during the non-breeding season to monitor the effect of the wind farm on qualifying species of the Caithness Lochs Special Protection Area (SPA)

Swar6: Post-construction monitoring of created and regenerated habitat

Although the effect of wind farms on flora and fauna is relatively well understood, it is important that models and understanding of the effect is continuously refined in order to inform future developments.

Ornithological post-construction monitoring should be undertaken in years 1, 3 and 5 following the commencement of operation, with a review being undertaken as to the need for any further monitoring following year 5 (**Swar4** and **Swar5**). At these times it will be appropriate to monitor for the state of the constructed and remediated habitats (Swar6).

The aim of monitoring would be to monitor bird populations within the Proposed Development to ensure that the wind farm is not having unpredicted adverse effects

on the bird populations present, and to ensure that the HMP is effective in supporting the bird populations on site.

Although the detailed scope of the monitoring will be agreed with THC, NatureScot and RSPB Scotland, the following surveys will be carried out:

- Breeding bird surveys (using a Brown and Shepherd approach (Brown, 1993) to allow breeding waders to be monitored across the site and 500m buffer (**Swar3**); and
- Vantage Point (VP) surveys undertaken during the non-breeding season to monitor the effect of the wind farm on qualifying species of the Caithness Lochs SPA (**Swar4**).

The outline monitoring scheme should be reviewed on a 5-yearly basis. On-going monitoring commitments will be reviewed and, if necessary, any adjustments to the HMP will be carried out.

In order to assess the effectiveness of the creation of the wildflower meadow, long-term vegetation / habitat monitoring will be undertaken commencing in the year following seeding, with the aim being to monitor the long-term condition of the Site through a programme of fixed point photography and quadrat monitoring (**Swar5**) in years 1, 3 and 5. The monitoring will be used to assess the effectiveness of the HMP, which can be updated in relation to this data if required. These surveys will be undertaken for the life of the project and target the areas of wildflower creation.

3.6 Outline Prescription Summary

Table 6-4-3 summarises the outline prescriptions and proposed monitoring schedule.

Table 6-4-3: Outline Prescriptions and Proposed Monitoring Schedules

ID	Target Feature	Survey Type	Timing	Programme	Responsibility
Swar1	Natural Regeneration of Vegetation		Summer	During construction	Applicant / Suitably Qualified Ecologist
Swar2	Wildflower Meadow Creation		Summer	During construction with subsequent regular monitoring (Swar6)	Applicant / Suitably Qualified Ecologist
Swar3	Hydrology		Summer / Autumn	During construction with subsequent regular monitoring (Swar6)	Applicant / Suitably Qualified Ecologist
Swar4	Across Site and 500m buffer	Breeding birds (Brown and Shepherd)	April - July	Years 1, 3, and 5 (frequency of subsequent monitoring dependent on initial	Applicant / Suitably Qualified Ecologist

ID	Target Feature	Survey Type	Timing	Programme	Responsibility
				monitoring results)	
Swar5	Across Site and buffer (where visible)	Vantage Point (VP) surveys during the non-breeding season	August - March	Years 1, 3, and 5 (frequency of subsequent monitoring dependent on initial monitoring results)	Applicant / Suitably Qualified Ecologist
Swar6	Post-construction monitoring of created and remediated habitat	Fixed point photography and quadrat monitoring	Summer / Autumn	Years 1, 3, and 5 (frequency of subsequent monitoring dependent on initial monitoring results)	Applicant / Suitably Qualified Ecologist

3.7 Management

In accordance with good land management practice, a register of management works undertaken on site will be maintained to monitor that such works are consistent with the agreed objectives of the HMP.

3.8 Development and Implementation of Final HMP

It is proposed that once the Proposed Development is granted planning permission, a suitably worded condition will be attached requiring the development of a full HMP be actioned.

4 References

Averis, A. M., Averis, A. B. G., Birks, H. J. B., Horsfield, D., Thompson, D. B. A., and Yeo, M. J. M. (2004). *An illustrated Guide to British Upland Vegetation*. Joint Nature Conservation Committee, Peterborough.

Cooper, E. A. (1997). *Summary descriptions of National Vegetation Classification grassland and montane communities*. UK Nature Conservation No.14. Joint Nature Conservation Committee, Peterborough.

Elkington, T., Dayton, N., Jackson, D. L., and Strachan, I. M. (2002). *National Vegetation Classification: Field guide to mires and heaths*. Joint Nature Conservation Committee, Peterborough.

Rodwell JS (Ed.) (1991 *et seq.*). *British Plant Communities*. 5 volumes: Vol. 1 (1991) - *Woodlands and Scrub*; Vol. 2 (1991) - *Mires and Heaths*; Vol. 3 (1992) - *Grasslands and Montane Communities*; Vol. 4 (1995) - *Aquatic Communities, Swamps and Tall-herb Fens*; Vol. 5 (2000) – *Maritime Communities and Vegetation of Open Habitats*. Cambridge University Press, Cambridge.

Swarclett Wind Farm

wind2

Figure 6-4-1
Extended Phase 1 Survey Results

Key

- Site boundary
- Vegetation assessment area
- Proposed turbine
- Proposed infrastructure
- Running water
- Mixed woodland - semi-natural
- Scrub - dense/continuous
- SI — Neutral grassland - semi-improved
- I — Improved grassland
- Marsh/marshy grassland
- Wet dwarf shrub heath
- Marshy grassland/wet dwarf shrub heath
- Dry modified bog
- Swamp
- Standing water
- A — Cultivated/disturbed land - arable
- Buildings
- Track

atmos CONSULTING

0 75 150 300
Metres

N

Scale @ A3:
1:5,000

03/10/2023 TL01i 40422/HB/033e
Drawn by: AF Checked by: TH Approved by: JW

Swarclett Wind Farm

wind2

Figure 6-4-2
NVC survey results

Key
- ☐ Site boundary
- ⬚ Vegetation assessment area
- ⅄ Proposed turbine
- ☐ Site infrastructure

NVC Community
- ▨ Barley
- ▤ MG7a
- ▤ MG9a
- 🟩 Semi-natural Mixed Woodland
- ▩ MG6a
- ▨ MG9
- ▩ M15d
- ▤ M17
- ▨ M23
- ▤ M23a/b

atmos consulting

0 62.5 125 250
Metres

N

Scale @ A3:
1:5,000

02/10/2023 TL01i 40422/HB/032g
Drawn by: AF Checked by: TH Approved by: JW