LIMEKILN WIND FARM

HABITAT MANAGEMENT PLAN

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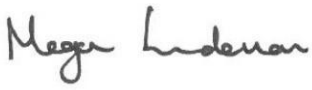

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EXECUTIVE SUMMARY

Nevis Environmental Ltd has been commissioned by Limekiln Wind Ltd to produce a Habitat Management Plan (HMP) for the construction of a windfarm at Limekiln, near Reay, Caithness in northern Scotland. The purpose of the HMP is to outline the management and monitoring measures that would be implemented during the construction and operation of the development to facilitate nature conservation, enhance biodiversity on site and comply with relevant regulatory policies. It should be considered as a live document and allow for flexibility as information from ongoing research becomes available and is applicable to the site.

The site boundary covers approximately 1,140 ha and comprises of dense conifer plantation, woodland and grassland communities interspersed with wet heath, blanket bog, mire plant communities and running and standing water.

Breeding birds, Eurasian otter *Lutra lutra*, water vole *Arvicola amphibius*, pine marten *Martes martes*, common pipistrelle bats *Pipistrellus pipistrellus*, salmonid fish *Salmo spp.* and European eel *Anguilla anguilla* were recorded on site during ecological surveys carried out between 2010 and 2020.

Following a review of the key habitats and species identified on site, as well as an assessment of other existing plans and policies, the following aims have been identified for this HMP:

1. To improve the biodiversity and structure of the woodland environment within the site boundary.
2. To enhance watercourse and riparian habitats for water vole, otter and fish.
3. To increase the quality and extent of bog habitats within the site boundary.
4. To minimise the collision risk to birds and bats around the turbines.
5. To minimise the impact of deer on Caithness and Sutherland Peatlands SAC.

The following management measures are proposed:

- Implement the staged felling and restocking plans.
- Restock the stands identified on the approved felling and restocking plans with broadleaved species.
- Provide 4 bat and 5 pine marten boxes within the site to accommodate roosting and breeding activities.
- Construction design should incorporate open bottomed culverts or bridging structures and sensitive sizing, which incorporates a dry passage that is accessible during floods.
- Once the identified stands in the south of the site have been felled, a detailed survey and peat restoration plan shall be produced and then implemented.
- Maintain vegetation in permanent large, open areas within 500m of each turbine at a maximum height of 30 cm, either through grazing, or if necessary mechanical cutting.
- Management of deer numbers within the fenced woodland, as detailed within separate reports, Deer Management Plan and Deer Fence Management Plan.

The following monitoring measures are proposed:

- Confirmation with landowner that felling and restocking regime is being implemented as agreed.
- Monitor establishment rates of broadleaved woodland and bracken/Juncus encroachment.
- Monitor activity around and/or use of roost/den boxes.
- Surveys for water vole and otter along river corridors within HMP enhancement areas.
- Assessment of bog surface wetness through the installation of dipwells.
- Condition assessment of bare peat and prevalence of peat forming species through JNCC's Common Standards Monitoring (CSM) *Guidance for Upland Habitats*

- Assessment of grazing and trampling impacts on the area of Caithness and Sutherland Peatlands SAC located within the deer fence, following SNH's *A Guide to Upland Habitats - Surveying Land Management Impacts - Volumes 1 and 2.*
- Assessment of average vegetation height in open areas within 500 m of turbines. Checks for evidence of bat or bird collisions with turbines.

1 INTRODUCTION

1.1 OVERVIEW

Nevis Environmental Ltd has been commissioned by Limekiln Wind Ltd to produce a Habitat Management Plan (HMP) for the construction of a windfarm near Reay, Caithness in northern Scotland, hereafter referred to as 'the site'. The purpose of the HMP is to outline the management and monitoring measures that would be implemented during the construction and operation of the development to facilitate nature conservation, enhance biodiversity on site and comply with relevant regulatory policies. It should be considered as a live document and allow for flexibility as information from ongoing research becomes available and is applicable to the site.

1.2 SITE SUMMARY

The site is located at the Limekiln Estate, Caithness, Highland; approximately 1.5 km to the south of the village of Reay and 3 km south-west of the Dounreay Nuclear Power Station; centred roughly on Ordnance Survey grid reference NC 98270 60620. The site covers approximately 1,140 hectares.

The site comprises mainly commercial coniferous woodland plantation, with an area of undulating moorland and semi-improved agricultural land to the north, coniferous woodland to the east and open moorland to the west and south. The altitude within the site ranges between 40 m and 160 m; higher ground is present around Beinn Ratha, with a height of 242 m AOD, which is located approximately 1.2 km west of the site.

The proposed development is to construct, and operate, 21 wind turbines with an installed capacity exceeding 50 MW. The key infrastructure consists of:

- 21 wind turbines (15 with a maximum blade tip height of 139 m, and 6 with a maximum blade tip height of 126 m);
- Turbine foundations and associated hard standings;
- Onsite network of underground tables linking the turbines to a grid connection;
- Onsite access tracks connecting each turbine location;
- Onsite substation, and control/maintenance building;
- Two borrow pits;
- A new vehicular access from the A836 at the Bridge of Isauld; and
- Temporary works including a construction compound.

1.3 PLANNING REQUIREMENTS

Condition 24 of the Section 36 consent states that:

No development shall commence unless a Habitat Management Plan (HMP) which will include the measures described within Appendix 11.L of the Environmental Impact Assessment Report entitled Environmental Statement dated 2016, has been submitted to and approved in writing by the Planning Authority in consultation with SNH and SEPA.

The HMP shall set out the proposed habitat management of the site during the period of construction, operation, decommissioning, restoration and aftercare, and shall provide for the maintenance, monitoring and reporting of habitat on site.

The HMP shall include provision for regular monitoring and review to be undertaken to consider whether amendments are needed to better meet the HMP objectives. In particular, the HMP shall be updated to reflect current ground condition surveys undertaken following construction and prior to the date of final commissioning and submitted for the approval of the Planning Authority in consultation with SNH and SEPA.

Unless and until agreed in advance in writing with the Planning Authority, the approved HMP (as amended from time to time) shall be implemented in full.

1.4 REPORT RATIONALE

This report has been produced to review and update the HMP produced by EnviroCentre in 2016 which formed Appendix 11.L of the Environmental Impact Assessment Report. The updated HMP will meet the requirements of condition 24 of the Section 36 consent and subsequently ensure that the project is compliant with its planning permission.

2 CURRENT SITE CONDITIONS

The following information has been extracted from Chapters 11, 12 and 13 of the Limekiln Windfarm Resubmission Environmental Statement (Infinergy Ltd, 2016), as well as subsequent update surveys carried out between 2017 and 2020.

2.1 LOCATION

The site lies approximately 1.5 km to the south of the village of Reay and 3 km south-west of the Dounreay Nuclear Power Station; centred roughly on Ordnance Survey grid reference NC 98270 60620. The site covers approximately 1,140 hectares.

2.2 CLIMATE

The nearest weather station is Strathy East, which is located approximately 15 km north-west of the site. The average annual rainfall for Strathy East is 1002.4 mm, compared to the UK average of 1154 mm, and average temperatures range from 4.9 °C to 11.1 °C (Met Office, 2020).

2.3 TOPOGRAPHY

Ground elevations at the site range from ~45 m Above Ordnance Datum (AOD) at the northernmost tip of the site (NC 986 639) to ~170 m AOD at the southernmost tip (NGR NC 995 578). South of the site, elevations climb steadily to the summit of Beinn nam Bad Mòr, some 3 km beyond the site boundary, at 291 m AOD.

The site contains the upper reaches of Reay Burn and Achvarasdal Burn, and their tributaries.

2.4 DESIGNATED SITES

The closest conservation interests to the site are the Caithness and Sutherland Peatlands Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site and the East Halladale Site of Special Scientific Interest (SSSI). The Sutherland and Caithness and East Halladale designated sites (all NC 945 555) cover much of the same relatively large area, lying to the west, south west and south of the site and straddling the Caithness/Sutherland border.

The Caithness and Sutherland SAC and Ramsar site, and East Halladale SSSI are designated for the following features:

- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* types;
- Natural dystrophic lakes and ponds;
- Blanket bogs (a priority feature);
- North Atlantic wet heaths with *Erica tetralix*;
- Marsh saxifrage *Saxifraga hirculus;* and
- Eurasian otter.

The Caithness and Sutherland SPA is designated for its breeding bird interests only.

Sandside Bay SSSI (NC 965 655) is located ~1.5 km north of the site. The Sandside Bay SSSI is designated for its foreshore, dunes and dune slacks. It is also designated for its herb-rich grassland within a small pocket of land located within the golf course ~3 km north of the site and ~150 m south of the Reay Burn.

There are no Local Nature Reserves, wildlife sites or other local designated sites within 2 km of the proposed wind farm development, although there is one area of ancient woodland located approximately 2 km to the north of the site.

The site falls within Zone 2 of Scottish Natural Heritage's (SNH) Strategic Locational Guidance (SLG) indicating that there are some sensitivities to wind farms. The reason for this is the presence of a sensitive bird area which covers much of northern Scotland.

2.5 HABITATS

A Phase 1 habitat survey undertaken by Aquaterra Ecology in 2010 identified that the site predominantly comprises of coniferous forestry plantation (over 90%). In addition to coniferous plantation, bog habitats were recorded within the majority of the fire breaks and rides, swamp and valley mire habitats were located in the areas surrounding the watercourses and areas of dwarf shrub heath habitats were identified on knolls around the site. A total of 162 plant species were identified during the survey, but no rare or notable species were found.

National Vegetation Classification (NVC) surveys were undertaken by EnviroCentre in 2011 and identified a total of 33 plant communities. None of the communities identified are rare at the national level, but some of the fen communities recorded may be scarce locally or regionally. The following key habitats are thought to be present on site.

2.5.1 CONIFEROUS FORESTY

Over 90% of the site is currently coniferous forestry plantation. It is understood that a condition of the felling and restocking plans associated with the site being approved by Scottish Forestry is that the site remains an active commercial forest.

2.5.2 MIRE AND WET HEATH HABITATS

Relatively intact blanket bog vegetation was recorded in several areas during the NVC survey in 2011, these were located on the western edge of the clearings around Cnocan Dubh nan Eun and Cnocan nan Eun and in the saddle between Creag Leathan and Creag Bheag.

The condition of the blanket bog was assessed at seven locations using methodology outlined in Joint Nature Conservation Committee's (JNCC) Common Standards Monitoring for Designated Sites. All of the areas failed on at least 4 of the 14 targets; with adverse impacts to the blanket bog coming from multiple sources including the presence of non-native tree species, artificial drainage and damage from red deer *Cervus elaphus*, heather beetle *Lochmaea suturalis* and magpie moth caterpillar *Abraxas glossulariata*.

The area of blanket bog habitat with the greatest diversity of bog plant species was located adjacent to Lochan nan Eun; however, this area of habitat was not considered completely intact, due to the effects of historical peat cutting.

2.5.3 GROUNDWATER DEPENDENT TERRESTRIAL ECOSYSTEMS (GWDTE)

Plant communities, including uncommon fen communities, associated with calcareous groundwater were recorded close to Achvarasdal burn, at the base of the valley slope to the east of the limekiln. A number of the plant communities identified reflected those that are categorised as GWDTE by the Scottish Environment Protection Agency (SEPA) (SEPA, 2017).

2.5.4 GRASSLAND AND SCRUB HABITATS

The habitats located along the proposed access route from the village of Milton were found to be a mosaic of grassland habitats and scrub. These were deemed to be relatively unremarkable and some parts were overlying peat. It was suggested that this reflects the historical influences from grazing, crop cultivation and artificial drainage.

2.6 SOILS

The soil type present on the site is predominantly blanket peat. In the north and west of the site, the soils comprise peaty podzols, peat and peaty gleys. In the north these drifts are derived from middle Old Red Sandstone Barren Group sandstones and conglomerates. The soils in the west of the site are derived from granites and granitic rock.

Peat depth surveys were carried out as part of the Environmental Impact Assessment, with survey effort focussed around the infrastructure locations. Peat depths ranged from 0.1 – 2.5 m deep across the site, with an average depth of 0.65 m.

2.7 LAND USE

The land use across the site is predominantly commercial forestry. The forest is also managed as an enclosed commercial sporting estate and supports a population of red deer to which new stock is periodically introduced to allow outbreeding. Although a census has not been carried out recently at the estate there is estimated to be around 100 deer within the site, equating to approximately 9 deer per km^2.

There is a deer-proof fence surrounding the estate which follows the boundary of the site and is checked and maintained on a regular basis. As such, deer are not able to pass freely between the estate and open ground surrounding the site.

2.8 HYDROLOGY

2.8.1 SURFACE WATER

The site lies within the surface water catchments of the Reay Burn to the west and the Achvarasdal Burn to the east. The Sandside Burn lies to the west of the site and touches the site boundary at Helshetter (NC 963 628).

The Reay Burn drains the western side of the site and discharges to the sea through the Sandside Bay SSSI at Sandside Bay. The headwaters of this watercourse lie just south of the application site boundary.

The Achvarasdal Burn becomes the Burn of Isauld from the Bridge of Isauld, some 1.5km north of the site. This, in turn, discharges to sea at Sandside Bay. The banks of the Burn of Isauld form part of the Sandside Bay SSSI. The headwaters of the Achvarasdal Burn lie south of the site on the slopes of Beinn nam Bad Mòr. The burn forms the eastern site boundary.

The Sandside Burn also flows in a northerly direction, through designated land (Caithness and Sutherland Peatlands and East Halladale SSSI) from its headwaters at Cnoc Maol Donn to Sandside Bay. The Sandside Burn receives the majority of its water from headwater tributaries ~1.2km south west of the site.

Lochan nan Eun (NC 978 607) is located close to the centre of the application site. It is situated on a high ridge within an area of particularly wet, boggy ground, to the south of a large rock outcrop. With no discernible flow into or out of the lochan, it is likely that the majority of the water within this water body originates from rainfall, and therefore its bed is most likely comprised of a low permeability material, e.g. peat.

2.8.2 GROUNDWATER

The Hydrogeological Map of Scotland (BGS, 1988) indicates that the region is underlain by an aquifer of limited to low potential, generally without significant groundwater except at shallow depth.

The Bedrock Aquifers map for Scotland indicates that the region including the site is underlain by an aquifer of low productivity, where flow is predominantly through fractures. The Superficial Aquifers map for Scotland

indicates an aquifer of low productivity along the course of the Achvarasdal Burn, where the drift comprises alluvium (clay, silt, sand and gravel). Elsewhere, no drift aquifer is designated.

The presence of low hydraulic conductivity bedrock underlying a quaternary aquifer of low productivity suggests that groundwater levels in these areas are perched and, therefore, relatively close to ground surface.

The site lies within both the Thurso bedrock and localised sand and gravel groundwater aquifer, which was classified as being at 'Good' status for its groundwater chemistry and quantity in 2014. The site sits within the Thurso bedrock and localised sand and gravel aquifers Drinking Water Protection Zone.

2.9 PROTECTED SPECIES

The protected species surveys undertaken within the period 2010 to 2015, and in 2019 identified the following protected species:

2.9.1 BIRDS

The bird surveys assessed the site and species-dependent buffer zones for the presence/absence, signs of breeding and flight activity of raptors, waders, moorland and woodland birds. The bird species with breeding territories identified as 'confirmed' or 'probable' and located within 500 m of the site were snipe *Gallinago gallinago*, common sandpiper *Actitis hypoleucos* and red grouse *Lagopus lagopus*; all of these were identified in 2010. In addition, seven woodland bird species of conservation concern were identified within 500 m of the site; these were cuckoo *Cuculus canorus*, tree pipit *Anthus trivialis*, dunnock *Prunella modularis*, song thrush *Turdus philomelos*, linnet *Linaria cannabina*, lesser redpoll *Acanthis cabaret* and crossbill *Loxia curvirostra*.

The following bird species were identified as having flight activity within 500 m of the site: greylag goose *Anser anser*, pink-footed goose *Anser brachyrhynchus*, red-throated diver *Gavia stellata*, white-tailed eagle *Haliaeetus albicilla*, hen harrier *Circus cyaneus*, peregrine *Falco peregrinus*, osprey *Pandion haliaetus*, merlin *Falco columbarius*, golden plover *Pluvialis apricaria* and curlew *Numenius arquata*. All species had flight heights within or below the height band of 100-150 m on at least one occasion. The closest record of golden eagle *Aquilla chrysaetos* was 900 m from the nearest proposed turbine.

2.9.2 EURASIAN OTTER

In 2011, signs of recent otter *Lutra lutra* activity, including four resting sites, were found along the two main watercourses on site; Reay Burn and Achvarasdal Burn. Further surveys in February 2020 identified multiple signs of otter activity including spraints, but no confirmed resting sites.

The western boundary of the site is directly adjacent, and hydrologically linked, to the Caithness and Sutherland Peatlands SAC; for which otter is a qualifying feature. It is considered probable that otters will range between the site and the SAC.

2.9.3 WATER VOLE

In 2011 and 2012, fourteen active water vole colonies were located within the catchment of Reay Burn and Achvarasdal Burn. Surveys of the water crossing locations in 2015 found no signs of water vole activity within a 100 m buffer of any of the five proposed water crossing locations. Repeat surveys of the water crossing locations in 2019 did not find any signs of water vole within 200 m of the crossing points.

2.9.4 PINE MARTEN

In 2011, signs of recent pine marten *Martes martes* activity were found across site, including 26 scats. The majority of foraging activity was deemed likely to occur at the woodland edges and riparian zone where their main prey items, the field vole *Microtus agrestis*, are most populous.

Repeat surveys in February 2020 again found multiple signs of pine marten throughout the site, but no evidence of dens/resting sites.

2.9.5 BATS

In 2011, common pipistrelle *Pipistrellus pipistrellus* were the only bat species recorded using the site and their low-level activity was predominantly located within the northern areas of the site. One small summer roost was identified in the north-west of the site (grid reference: NC 97352 62819). In 2019, this bat roost was found to be unoccupied.

In 2019, a single additional structure within 30 m of the proposed infrastructure was found to have potential for hibernation roosts. A bat static bat detector was deployed across the winter period but did not detect any signs of use by bats.

2.9.6 AQUATIC ECOLOGY

In 2011 and 2012, the fish surveys identified the presence of salmonids *Salmo* spp. within Reay Burn and Achvarasdal Burn; Atlantic salmon *Salmo salar* were only found in Achvarasdal Burn however. European Eels *Anguilla anguilla* were present in the lower reaches of Meur a Chrochain Ghill and Meur Fhraoich Ghill. Lamprey *Lampetra* spp. were absent from all watercourses, but sections of suitable larval lamprey habitat were found in Achvarasdal Burn.

In 2019, both salmon and brown trout *Salmo trutta* were recorded in both Achvarasdal burn and Sandbank Burn, with low population densities estimated. It was concluded that annual spawning within these watercourses was unlikely, but both have high suitability for the growth and development of salmonid parr.

3 REGULATORY CONTEXT AND RATIONALE

3.1 LEGISLATION

The following environmental legislation relating to habitats and protected species must be adhered to throughout the life cycle of the project:

3.1.1 THE CONSERVATION (NATURAL HABITATS, &C.) (AS AMENDED) REGULATIONS 1994

The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2012, henceforth referred to as Habitat Regulations 2012, consolidate and update the Conservation (Natural Habitats, &c.) Regulations 1994 and all its various amendments. This legislation is the principal means by which the European Union's ECC Directive 92/43 (The Habitats Directive) as amended is transposed into Scottish law.

The Habitat Regulations 2012 place duty upon the relevant authority of government to identify sites which are of importance to the habitats and species listed in Annexes I and II of the Habitats Directive. Those sites which meet the criteria are, in conjunction with the European Commission, designated as Sites of Community Importance, which are subsequently identified as Special Areas of Conservation (SAC) by the European Union member states. The regulations also place a duty upon the government to maintain a register of European protected sites designated as a result of EC Directive 79/409/EEC on the Conservation of Wild Birds (The Birds Directive). These sites are termed Special Protection Areas (SPA) and, in conjunction with SACs, form a network of sites known as Natura 2000. The Habitats Directive introduces for the first time for protected areas, the precautionary principle; that is that projects can only be permitted having ascertained no adverse effect on the integrity of the site. Projects may still be permitted if there are no alternatives, and there are imperative reasons of overriding public interest.

The Habitat Regulations 2012 also provide for the protection of individual species of fauna and flora of European conservation concern listed in Schedules 2 and 5 respectively. Schedule 2 includes species such as otter and great crested newt for which the UK population represents a significant proportion of the total European population. It is an offence to deliberately kill, injure, disturb or trade these species. Schedule 5 plant species are protected from unlawful destruction, uprooting or trade under the regulations.

With respect to protected species, the Conservation (Natural Habitats &c.) Amendment (Scotland) Regulations 2012 makes it an offence to deliberately or recklessly:

- Capture, injure or kill a wild animal of a European protected species;
- Harass a wild animal or group of wild animals of a European protected species;
- Disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
- Disturb such an animal while it is rearing or otherwise caring for its young;
- Obstruct access to a breeding site or resting place of such an animal, or otherwise to deny the animal use of the breeding site or resting place;
- Disturb such an animal in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species to which it belongs; or
- Disturb such an animal in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young;
- Damage or destroy a breeding site or resting place of such an animal.

Of the species recorded during protected species surveys carried out between 2010 and 2019, otter and common pipistrelle bat are European Protected Species (EPS).

3.1.2 DIRECTIVE 2009/147/EC ON THE CONSERVATION OF WILD BIRDS

The European Union meets its obligations for protecting bird species under the Bern Convention and Bonn Convention, and more generally, by means of Directive 2009/147/EC on the conservation of wild birds, more commonly known as the 'Bird Directive'. The Directive provides a framework for the conservation and management of birds, including management of human-avian interactions. Member States are obliged to take special action for a range of species, which are listed on Annex 1, taking account of their likely extinction, vulnerability to changes in their habitats and their rarity. This includes measures such as the identification of Special Protection Areas for rare or vulnerable species, including both resident and migratory species, particularly with regard to protection of wetlands.

3.1.3 CONVENTION ON WETLANDS OF INTERNATIONAL IMPORTANCE

The UK has a commitment to the meet the Convention on wetlands of international importance, otherwise known as the 'Ramsar Convention'. Protection of Ramsar sites is achieved through co-designation with Natura 2000 sites and/or SSSI. Sites with both a Natura and Ramsar designation receive statutory protection under The Wildlife and Countryside Act 1981 (as amended) via protection of their constituent Sites of Special Scientific Interest (SSSI).

3.1.4 WILDLIFE & COUNTRYSIDE ACT (AS AMENDED) 1981

Breeding Birds

The Wildlife & Countryside Act 1981 (as amended) (WCA) protects all breeding birds in the UK, with a few exceptions (i.e. sporting birds listed in Schedule 2 and for certain specified purposes under licence). The WCA makes it an offence to 'intentionally or recklessly':

- Kill, injure or take a wild bird;
- Take, damage, destroy or interfere with a nest of any wild bird whilst it is in use or being built (or at any time for a nest habitually used by any bird listed in Schedule A l);
- Obstruct or prevent any wild bird from using its nest;
- Take or destroy an egg of any wild bird;
- Disturb any wild bird listed on Schedule 1 whilst it is building a nest or is in, on, or near a nest containing eggs or young, or whilst lekking;
- Disturb the dependent young of any wild bird listed on Schedule 1.

'Recklessly' in this context is to be understood as pursuing a course of action while consciously disregarding the fact that the action gives rise to a substantial and unjustifiable risk. Schedule 1 is a list of rare breeding species.

Water Vole

Water voles themselves are not legally protected in Scotland. However, their places of protection or shelter are afforded protection in Scotland under Section 5 of the Wildlife and Countryside Act 1981, as amended by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2011, with the protection extended to include 'reckless' acts (continuing with an action in the knowledge of the consequences of that action) and acts of 'interference', as an addition to destructive acts cited in the 1981 Act.

Under the terms of Section 5 it is an offence to "intentionally or recklessly":

- Damage, destroy or obstruct access to any structure or place which a water vole uses for shelter or protection; and
- Disturb a water vole while in a place of shelter.

3.1.5 THE WILDLIFE & NATURAL ENVIRONMENT (SCOTLAND) ACT 2011 (AS AMENDED)

Public sector bodies in Scotland have a duty to have regard for the conservation of biodiversity under The Wildlife and Natural Environment (Scotland) Act 2011 (as amended) (WANE Act).

The Scottish Biodiversity List comprises a list of species (SPI) and habitats (HPI) considered to be of principal importance for the conservation of biodiversity in Scotland and aids public bodies in carrying out their biodiversity duty during decision-making processes. Otters and water voles are included on the Scottish Biodiversity List.

3.1.6 OTHER LEGISLATION

The following additional environmental legislation relating to the water environment must be adhered to throughout the life cycle of the project:

- Water Environment and Water Services (Scotland) Act 2003.
- Water Environment (Oil Storage) (Scotland) Regulations 2006.
- Water Environment (Controlled Activities) (Scotland) Regulations 2011.

The site specific measures that should be implemented to ensure the protection of the water environment prior to, during, and following construction are detailed in the site Water Quality Management and Monitoring Plan, produced by Nevis Environmental in February 2020 (Nevis Environmental, 2020).

3.2 GUIDANCE

The following guidance should be followed for all management and monitoring works on site:

- The UK Forestry Standard (2017)
- Scottish Forestry Grazing Management Guidance: Relative palatability and resilience of native tree seedlings and saplings to browsing
- Wind farm proposals on afforested sites – advice on reducing suitability for hen harrier, merlin and short-eared owl (2016)
- SNH Guidance for Bats and Onshore Wind Turbines: Survey Assessment and Mitigation (2019)
- Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016)
- MoorLIFE 2020 Guidance for land managers on managing blanket bog (2017)
- Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10 (Chanin, 2003)
- The Water Vole Mitigation Handbook (Dean, *et al.*, 2016).

4 FHMP AIMS AND OBJECTIVES

Following a review of the key habitats and species identified on site, as well as an assessment of other existing plans and policies, including the requirement for the majority of the site to remain as commercial forestry, and the approved felling and restocking plans, the following aims have been identified for this HMP:

1. To improve the biodiversity and structure of the woodland environment within the site boundary.
2. To enhance watercourse and riparian habitats for water vole, otter and fish.
3. To increase the quality and extent of bog habitats within the site boundary.
4. To minimise the collision risk to birds and bats around the turbines.
5. To minimise the impact of deer on Caithness and Sutherland Peatlands SAC.

The following objectives are proposed to achieve these aims:

1.1 Vary the age and structure of trees within the forest.
1.2 Increase the number of forest stands replanted with broadleaved species instead of conifers.
1.3 Improve available resources for wild fauna within the site.

2.1 Remove conifer plantation from riparian corridors.
2.2 Plant riparian corridors with broadleaved woodland including species such as willow and aspen.
2.3 Maintain suitable riparian corridors for otter and water vole throughout the site.

3.1 Do not restock forest stands where they are adjacent to the SAC and SSSI and associated blanket bog habitats.
3.2 Design a programme of bog restoration works on suitable areas where restocking is not taking place.
3.3 Monitor impacts of deer on SAC/SSSI habitat within the site boundary fence prior to construction, during construction and post construction.

4.1 Maintain a maximum vegetation height of 30 cm within open areas in 500m of each turbine.
4.2 Manage collision risk associated with artificial bat roost sites.

5.1 Manage deer population within the windfarm site (fenced woodland) to maintain population at sustainable levels

5 MANAGEMENT MEASURES

The following management measures are proposed to meet the objectives of the HMP:

Table 1: Proposed habitat management measures to be implemented at Limekiln Wind Farm.

Objective	Management Measure
1.1 Vary the age and structure of trees within the forest.	Implement the staged felling and restocking plans, as approved, to vary the age structure of trees within the forest.
1.2 Increase the number of forest stands replanted with broadleaved species instead of conifers.	Restock the areas on the approved felling and restocking plans with broadleaved species such as oak *Quercus spp.*, downy birch *Betula pubescens,* silver birch *Betula pendula*, grey willow *Salix cinereal*, goat willow *Salix caprea*, rowan *Sorbus aucuparia*, alder *Alnus glutinosa*, hazel *Corylus avellane* and aspen *Populus tremula*.
1.3 Improve available resources for wild fauna within the site.	Provide 4 bat and 5 pine marten boxes within the site to accommodate roosting and breeding activities.
2.1 Remove conifer plantation from riparian corridors.	Implement the staged felling and restocking plans, as approved. Where stands are to be re-stocked with conifer, maintain a buffer zone of at least 20 m between re-stocked conifer plantation and watercourses, in line with current guidance (Forestry Commission, 2017).
2.2 Plant riparian corridors with broadleaved woodland including species such as willow and aspen.	Re-stock targeted riparian areas identified on the approved restocking plan with broadleaved woodland including species such as downy and silver birch, grey and goat willow, rowan, alder, hazel and aspen. Riparian woodland to be graded into shrub species adjacent to the watercourse.
2.3 Maintain suitable riparian corridors for otter and water vole throughout the site.	Construction design should incorporate open bottomed culverts or bridging structures and sensitive sizing, which incorporate a dry passage that is accessible during floods (e.g. ledge or underpass).
3.1 Do not restock forest stands where they are adjacent to the SAC and SSSI and associated blanket bog habitats	Implement the staged felling and restocking plans, as approved. Where identified, stands adjacent to the SAC and SSSI should not be restocked.
3.2 Design a programme of restoration works on suitable areas where restocking is not taking place.	Once the identified stands in the south of the site have been felled, a detailed peatland restoration survey will be undertaken, and a peat restoration plan produced, and agreed through consultation with SNH and then implemented.
4.1 Maintain a maximum vegetation height of 30 cm within 500m of each turbine.	Maintain vegetation in cleared areas within 500 each turbine at a maximum height of 30 cm, either through grazing, or if necessary mechanical cutting, to dissuade breeding raptors (e.g hen harrier) from collision risk areas.
4.2 Manage collision risk associated with artificial bat roost sites.	Bat boxes provided under 1.3 are to be located on buildings away from key collision risk areas.
5.1 Manage deer population within the windfarm site (fenced woodland) to maintain population at sustainable levels and reduce grazing/trampling damage to Caithness and Sutherland SAC	Management of deer numbers and deer fencing as detailed within the separate Deer Management Plan (DMP)_ and Deer Fence Management Plan (DFMP).

5.1 FELLING AND RESTOCKING REGIME

The site is currently an active conifer plantation, and it is understood that Scottish Forestry require the site to remain so throughout the construction and operation of the wind farm. In order to enable the construction of the wind farm, consultation was carried out between Scottish Forestry, the landowner, the developer, forestry consultant and environmental consultant, and a proposed felling and restocking plan was produced. This aims to strike an appropriate balance of ecological improvement whilst maintaining forest productivity.

The felling and restocking plans were issued to Scottish Forestry in January 2020 as part of a felling licence application. It is anticipated that a condition of the licence will be that all works are implemented in accordance with the submitted plans. The timing of the habitat management works will therefore be dictated by the felling plan, with works implemented as areas become available. The felling and restocking plans are contained in Appendix A.

All felling and restocking will take place in accordance with the UK Forestry Standard guidelines (Forestry Commission, 2017) . Where riparian stands are to be re-stocked with conifers, a buffer zone of at least 20 m will be maintained between re-stocked conifer plantation and watercourses. All forestry operations must meet relevant general binding rules and any divergence must be licensed or registered with SEPA.

The wind farm developer will be responsible for all initial keyhole, phase 1 and phase 2 felling, which will take place to enable the wind farm construction and subsequent HMP works. The wind farm developer will also be responsible for restocking those areas felled within phases 1 and 2 as defined in the Restocking Plan

All felling and restocking of subsequent phases identified in the approved felling plan will be the responsibility of the landowner. However, although the landowner has the responsibility for the felling and restocking of phase 3 onwards, the wind farm developer will have ‘step-in rights’ to make sure that if for whatever reason the landowner does not comply with their obligations under the felling and HMP plan, the wind farm developer will carry out the required works on their behalf.

5.2 BROADLEAVED PLANTING

The areas to be restocked with broadleaved woodland as part of the HMP are shown on Figure 1. The wind farm developer will be responsible for the restocking of all initial keyhole, phase 1 and phase 2 felling, as defined in the Felling and Restocking Plans. All restocking of subsequent phases identified in the approved felling and restocking plans will be the responsibility of the landowner. However, although the landowner has the responsibility for the felling and restocking of phase 3 onwards, the wind farm developer will have ‘step-in rights’ to make sure that if for whatever reason the landowner does not comply with their obligations under the felling and HMP plan, the wind farm developer will carry out the required works on their behalf.

The broadleaved planting scheme has been designed to break up the current largely Sitka spruce *Picea sitchensis* forest and provide habitat corridors between areas of broadleaved woodland and open habitat. The aim is to increase the amount of native woodland on site, increasing biodiversity and addressing current SEPA concerns on water acidification related to conifer afforestation.

Pine marten are the key protected species known to be present within the wider forest area. The woodland currently offers little in the way of elevated den sites for this species; the addition of broadleaved woodland to the restocking scheme will lead to the creation of den sites once trees are mature. The key protected species/groups identified as having potential to use the aquatic or riparian habitats on site are otter, water vole and fish. All these species utilise the burns on site and their riparian habitats. Broadleaved planting will target the riparian habitats along the Reay Burn, with some planting also taking place along the Achvarasdal and Sandside burns, and will aim to create sheltered and shaded areas of riverbank and watercourse.

Stands will be restocked with a range of broadleaved tree species, including oak, downy and silver birch, grey and goat willow, rowan, alder, hazel and aspen. Species distribution will be dictated by conditions on site; for example, willow and aspen will be planted in wetter areas, with oak in drier areas. Along riparian corridors, tree species will give way to shrubs, with species such as gorse *Ulex spp.* and juniper *Juniperus communis* adjacent to the watercourse. Tree and shrub species will be selected with a preference to those that are less palatable to deer, or more resilient to grazing pressure, in line with Scottish Forestry guidance (Scottish Forestry, 2020).

Planting will consist of a total of 135 ha of broad-leaved shrubs and trees, including restocked stands and riparian planting, to be phased in line with the felling and restocking plans, with 38 ha planted after phase 1, 41 ha after phase 2, 41 after phase 3 and 15 after phase 4. Tree and shrub planting in these areas will be at a density of c. 1200 stems per hectare (to achieve a final density of no less than 1100 stems per hectare) and all trees sourced will be of local provenance.

The forest is managed as an enclosed commercial sporting estate, and therefore supports a population of red deer. There are estimated to be around 100 deer within the site, equating to approximately 9 deer per km^2. In order to minimise grazing pressure and maximise tree establishment, the areas of broadleaved woodland will need to be fenced to exclude deer.

5.3 BLANKET BOG RESTORATION

Eleven stands within the forest felling plan will be felled during phase 2 of the approved felling plan (2023-2027) and not restocked (stands 19i, 19j, 20c, 20f, 20h, 20i, 20j, 21e1, 21f, 22h and 22i). Felling of this area will be the responsibility of the developer. These stands are adjacent to Caithness and Sutherland SAC and Ramsar site, and East Halladale SSSI, which are designated for their bog and wet heath habitats. Once felled, these areas will not be restocked, and instead options will be assessed for a programme of bog restoration works to return them to blanket bog, therefore extending and buffering the habitats which the surrounding area is designated for and providing a buffer between the designated sites and the forest.

It is thought that the soil conditions underlying the forest are dominated by peat. However, peat depths in the area identified for blanket bog restoration cannot be determined until felling is complete. Vegetation types within the forest rides are predominantly variants of M15 *Trichophorum cespitosum-Erica tetralix* wet heath and M17 *Trichophorum cespitosum-Eriophorum vaginatum* blanket mire, which suggests that the underlying habitat is a suitable target for bog restoration.

Once felling has been completed in the areas identified as not being restocked, a site survey will be carried out with input from a specialist habitat restoration contractor, to identify areas of deeper peat and/or wetter ground where bog restoration works would be most successful. The results of the survey will be used to produce a detailed bog restoration plan, which will detail the following:

- the baseline condition of the site;
- target condition;
- proposed restoration methods, following MoorLIFE2020 guidance (MoorLIFE 2020, 2017);
- a monitoring scheme; and
- a bill of quantities to allow the works to be costed.

Restoration works should aim to take place within 24 months of the completion of felling to minimise the dominance of coarse grasses and rush species, and to allow machines to utilise still intact brash mats for access.

The area to be felled prior to 2028 and not restocked is shown on Figure 1 and covers approximately 50 ha. It is not expected that the entire area will be restored, but that works will target areas of deeper peat (>0.5 m), where they are likely to be most successful.

5.4 VEGETATION MANAGEMENT AROUND TURBINES

Closed canopy commercial forestry is not a favoured habitat for hen harrier, merlin or short-eared owl *Asio flammeus*. However, opening up such forestry for wind farm development through keyholing, restructuring or clear-felling can create more suitable foraging and nesting habitat close to turbines. This may attract these birds into the wind farm site and increase the risk of collision mortality to levels above those predicted on the basis of pre-application survey (SNH, 2016).

Following the completion of felling, ground vegetation typically regenerates quickly to produce a sward that is dominated by coarse grass species with small self-seeded trees. If left unmanaged, such vegetation can provide suitable nest sites for raptors, and habitat for their main prey, voles and small birds, increasing the risk of collision with the turbines.

It is anticipated that an 80 m radius around each turbine will not be restocked with trees in order to minimise interference with wind yields. The vegetation in these areas and any permanent, large, open areas within 500m of a turbine will therefore be monitored and managed, if required, to maintain a vegetation height of <30 cm as per SNH guidance (SNH, 2016). Maintaining a vegetation height of <30 cm will be carried out either through unmanaged grazing by deer or through mechanical cutting, or a combination of these methods. If mechanical cutting is required, it will be carried out in February/early March and late August/September, outside of the bird breeding season.

Maintaining these clear areas around each turbine would help the development to meet SNH guidance (SNH, 2019), which recommends that wind turbines should be located at least 50 m (to blade tip) from the maximum theoretical height of trees, field boundaries, and other well-used features, to minimise the potential for impacts on foraging bats.

5.5 PROVISION OF RESOURCES FOR FAUNA ON SITE

5.5.1 MAINTENANCE OF RIPARIAN CORRIDORS

The protection and maintenance of riparian corridors for otter and water vole will be incorporated into the construction design, which will make use of open bottomed culverts or bridging structures. These will maintain a dry passage during periods of seasonal high flow, either through appropriate sizing or the use of ‘dry pipes’ within the embankment.

5.5.2 PROVISION OF NEST/ROOST BOXES FOR PINE MARTEN AND BATS

Evidence of pine marten is present throughout the site. Whilst pine martens prefer native woodlands, they can also live in conifer plantations and on rocky hillsides. Whilst the increase in broadleaved woodland should eventually enhance pine marten habitat as it matures, the forest currently offers little in the way of elevated den sites for this species. Therefore, 5 den boxes will be installed within the forest to increase the number of suitable breeding sites. The den boxes will be placed in stands of forestry which are not due to be felled until beyond 2033 but are close to stands which will have been restocked immediately following construction of the wind farm, ideally with broadleaved woodland. Boxes should be attached to trees approximately 4 m above ground, out of the way of ground-based predators and people (Vincent Wildlife Trust, 2014). Approximate proposed locations for the den boxes are shown on Figure 1.

Previous surveys recorded bats in low numbers, predominantly in the north of the site. In order to enhance the habitat for bats away from the turbine infrastructure, 4 roost boxes will be installed on site. Boxes will be

located where there is known bat activity in the north of the site and will be attached to the existing building at Helshetter, and the shed building at NC 97352 62819. Two boxes will be put on each building, ideally at least 4 m above ground, and facing in different directions, sheltered from strong winds, and exposed to the sun for part of the day (Bat Conservation Trust, 2020). Approximate proposed locations for roost boxes are shown on Figure 1.

6 MONITORING MEASURES

The following monitoring measures are proposed to meet the objectives of the HMP:

Table 2: Proposed monitoring measures to be implemented at Limekiln Wind Farm.

Objective	Monitoring Measure	Target
1.1 Vary the age and structure of trees within the forest.	Confirmation with landowner that felling and restocking regime is being implemented as agreed.	Felling and restocking plans being implemented as agreed.
1.1 Increase the number of stands replanted with broadleaved species instead of conifers.	Monitor establishment rates of broadleaved planting and bracken/Juncus encroachment in years 1, 3 and 5 after planting and 5-yearly intervals thereafter.	Successful establishment at or above 1,100 healthy trees per ha.
1.3 Improve available resources for fauna within the site.	Monitor activity around and/or use of roost/den boxes.	Evidence of roost/den boxes being used by target species.
2.1 Remove conifer plantation from riparian corridors.	Confirmation with landowner that felling and restocking regime is being implemented as agreed.	Felling and restocking plans being implemented as agreed.
2.2 Plant riparian corridors with broadleaved woodland including species such as willow and aspen.	Monitor establishment rates of broadleaved woodland and bracken/Juncus encroachment in years 1, 3 and 5 after planting and 5-yearly intervals thereafter.	Successful establishment at or above 1,100 healthy trees per ha.
2.3 Maintain suitable riparian corridors for otter and water vole throughout the site.	Surveys for water vole and otter along river corridors within HMP enhancement areas prior to enhancement works and in years 1, 3 and 5 after enhancement and 5-yearly intervals thereafter.	Evidence of sustained water vole populations and continued foraging / commuting by otter within the HMP enhancement areas. Subsidiary tunnels/ledges to be in good condition and free of blockage.
3.1 Do not restock stands where they are adjacent to the SAC and SSSI and associated blanket bog habitats	Confirmation with landowner that felling and restocking regime is being implemented as agreed.	Felling and restocking plans being implemented as agreed.
3.2 Design a programme of restoration works on suitable areas where restocking is not taking place.	Assessment of bog surface wetness through the installation of dipwells. Assessment of bare peat and prevalence of peat forming species through Common Standards Monitoring (CSM). To be carried out prior to restoration and in years 1, 3 and 5 after restoration and 5-yearly intervals thereafter.	Water table at or within 10 cm of the bog surface; favourable condition blanket bog with increased abundance of peat forming species, with likely NVC target community of M17 or M19.
3.3 Monitor impacts of deer on SAC/SSSI habitat within the site boundary fence	Baseline and construction phase assessment of deer grazing and trampling within the area of the SAC that falls within the deer fence, in the south-eastern part of Limekiln plantation. Monitoring and management of deer population (through DMP)	Negligible impact of deer on SAC/SSSI condition.

4.1 Maintain a maximum vegetation height of 30 cm around each turbine.	Assessment of average vegetation height around turbines and in any permanent, large, open areas within 500 m. Checks for evidence of bird/bat collisions with turbines to be carried out twice yearly in March and August.	Vegetation height at or below 30 cm. No evidence of bird or bat collisions with turbines.
4.2 Manage collision risk associated with artificial bat roost sites.	Monitor use of roost/den boxes. To be carried out in years 1, 3 and 5 after installation and 5-yearly intervals thereafter.	Evidence of roost/den boxes being used by target species.

6.1 FELLING AND RESTOCKING REGIME

Responsibility for the implementation of the felling and restocking regime will be split between the developer and landowner. The wind farm developer will be responsible for the restocking of all initial keyhole, phase 1 and phase 2 felling and restocking as defined in the Felling and Restocking Plans. All felling and restocking of subsequent phases will be the responsibility of the landowner, who will continue to operate the site as a productive commercial forest. On an annual basis, the landowner shall confirm compliance with the approved plans and provide a brief summary of works implemented, so that the information can be included in the annual HMP implementation report. The developer will retain step in rights to make sure the work is carried out if the landowner should fail to carry out the work defined in the Habitat Management Plan.

6.2 BROADLEAVED WOODLAND

Following planting, establishment rates, tree health, and encroachment levels in the broadleaved planting areas will be monitored 1, 3, and 5 years after planting and at 5-yearly intervals thereafter. The length of each planting area will be walked, with two stratified sample points taken per ha, at roughly equal intervals. At each sample point the following information will be recorded within a 5 m radius:

- Total number of trees;
- Number of dead trees;
- Number of trees in poor health;
- Approximate percentage of each tree species;
- Evidence of grazing pressure; and
- Percentage cover of bracken

The results will be analysed and used to recommend further management works as required. Additional management may include:

- Beating up (replacement of failed trees);
- Removal of self-seeded conifer saplings;
- Bracken/grass control; and
- Deer control.

In addition to the tree health survey, the condition of the deer fencing will be assessed, 1, 3, and 5 years after planting and at 5-yearly intervals thereafter, to ensure that deer cannot access the newly planted areas of broadleaved woodland. The entire perimeter of the fence will be walked by a surveyor, who will record any damage to the fence, to be scheduled for immediate repair. Where any damage to the fence is noted, the following information will be recorded:

- Observation identification reference.

- Grid reference, in British National Grid.
- Date and time.
- Description of fault.
- Category (Red = damage to extent that fence not stock proof - immediate repair. Orange = fence damaged but still stock proof - repair within 6 months. Green = early signs of damage, still stock proof – monitor.)
- Photograph of damage.

The monitoring maintenance of the deer fences will be the responsibility of the wind farm owner or contracted operator.

6.3 BLANKET BOG

A monitoring scheme for the proposed bog restoration works will be drawn up as part of the detailed restoration plan, once felling has been completed in the relevant stands. As a minimum, it is recommended that monitoring consists of water level and vegetation monitoring, to be carried out prior to restoration and 1, 3, 5 years after restoration and at 5-yearly intervals thereafter. The following provisional scope is proposed:

6.3.1 WATER LEVEL

It is recommended that WALRAG (WAter Level RAnge Gauge) dipwells are installed across the restoration area on an approximate grid pattern. These use an internal weight and two Styrofoam rings to record the minimum and maximum water levels across the recording period, as well as the water level at the time of visit. This has a significant benefit over traditional dipwells, which afford no insight into events occurring between site visits unless expensive dataloggers are used. Readings should be taken in the February, May, August and November of each monitoring year.

6.3.2 VEGETATION MONITORING

Common Standards Monitoring (CSM) for blanket bog habitat should be carried out at fixed location 2 x 2 m quadrats, which should be located roughly in the vicinity of each WALRAG and permanently marked with a small post or cane. CSM involves monitoring a series of interest features against target conservation objectives which are specific to the target habitat type. Each quadrat is then categorised into variations of favourable or unfavourable condition. A photo of each quadrat should be taken at head height from the middle of the northern boundary. Vegetation monitoring should be carried out in summer when vegetation is in full growth.

6.3.3 CAITHNESS AND SUTHERLAND PEATLANDS SAC

Baseline monitoring will be undertaken to assess the current level of deer impact on the area of Caithness of Sutherland SAC that lies within the existing deer fence. The assessment will aim to quantify current levels of tracking, trampling and grazing. Twenty five points will be visited within this part of the site and relevant attributes following guidance in SNH's A Guide to Upland Habitats - Surveying Land Management Impacts - Volumes 1 and 2 and JNCC Common Standards Monitoring guidance, where appropriate, will be recorded to quantify current levels of herbivore impacts.

An ongoing monitoring schedule and protocol will be devised after completion of the baseline monitoring, which will be undertaken prior to construction starting. The monitoring scheme will run in conjunction with the deer management plan, but will as a minimum include monitoring during construction and post construction. The results of the bog monitoring will be reported back to the landowner and should be used to inform the cull effort and cull targets for the season ahead. See Deer Management Plan for additional information.

6.4 VEGETATION AROUND TURBINES

The average vegetation height at each of the turbine location will be measured twice per year to ensure that vegetation height does not exceed 30 cm. The cleared area around each turbine will be walked and a minimum of 10 vegetation height measurements will be taken at random locations to calculate the average vegetation height. Monitoring will be carried out in February and mid-August to allow time for management works to take place should they be required.

During the survey, any collision evidence (e.g. bird/bat carcasses in the vicinity of the turbines) will be recorded, reported to the operator and included in the annual report.

6.5 FAUNA

6.5.1 OTTER AND WATER VOLE

Surveys for water vole and otter will be carried out along river corridors within HMP enhancement areas prior to enhancement works and 1, 3, and 5 years after initial HMP works are complete and at 5-yearly intervals thereafter.

Surveys will follow recognised guidelines (Dean, et al., 2016) (Chanin, 2003) and will be carried out 100 m upstream and downstream of each watercourse crossing, and where riparian planting has taken place. Two surveys will be carried out between May and September and will include searching along watercourses and up to 2 m from the water's edge. All evidence of otter and water vole activity will be recorded including:

- Burrows
- Holts
- Lay-ups
- Droppings/Spraints
- Feeding remains
- Feeding stations and 'lawns'
- Footprints and runs

6.5.2 PINE MARTEN

Monitoring of activity around and/or use of den boxes will be carried out 1, 3, and 5 years after installation, and at 5-yearly intervals thereafter.

Surveys for pine marten will be carried out within 250 m radius of each installed den box. Surveys will include a systematic search for signs of pine marten presence; as pine martens are elusive and largely nocturnal, their distinctive scats are the most commonly encountered field sign. Surveys will be carried out between May and September, and ideally in June-August when scats are most abundant.

Evidence of use of the den boxes will be assessed from at least 25 m distance, using binoculars. Closer inspection of the den boxes may require a survey licence from SNH.

6.5.3 BATS

Monitoring of activity around and/or use of roost boxes will be carried out 1, 3, and 5 years after installation, and at 5-yearly intervals thereafter. During each monitoring year, the roost boxes will be checked by an appropriately licensed ecologist, for signs of use. The condition of the boxes will also be assessed, with any damaged boxes flagged for repair or replacement as necessary.

7 REPORTING AND REVIEW

A Habitat Management Committee should meet at the end of each management or monitoring year. The committee shall be formed by representatives from the wind farm owner, landowner, local planning authority, SNH, SEPA and the appointed environmental manager. At each meeting the results from that year's monitoring shall be reviewed and amendments to management measures proposed where necessary.

A HMP implementation report, detailing the findings of all management and monitoring activities, shall be produced at the end of each monitoring year, and will be submitted to the Habitat Management Committee and to the local planning authority as evidence of compliance. The report will present a summary of the activities undertaken over the course of each year, and state whether these activities meet the requirements of the HMP and relevant planning conditions.

The HMP shall remain a live document which will be informed by ongoing monitoring and maintenance. It can be reviewed and modified if deemed necessary, pending submission to and approval by the Local Planning Authority. As a minimum, the HMP should be reviewed and updated to include detailed bog restoration prescription once phase 2 felling is complete (2027).

8 SCHEDULE

Table 3 provides a complete overview of the programme of habitat management and monitoring activities over the lifetime of the project.

Table 3: Anticipated HMP management, monitoring and reporting schedule.

Objective	Details	Timing	Responsibility	Years																																				
				Pre-Construction	Construction	Year 1 - 2023	Year 2 - 2024	Year 3 – 2025	Year 4 - 2026	Year 5 - 2027	Year 6 - 2028	Year 7 - 2029	Year 8 – 2030	Year 9 - 20231	Year 10 - 2032	Year 11 - 2033	Year 12 - 2034	Year 13 - 2035	Year 14 - 3036	Year 15 - 2037	Year 16 - 2038	Year 17 - 2039	Year 18 - 2040	Year 19 - 3041	Year 20 - 2042	Year 21 - 2043	Year 22 - 2044	Year 23 - 2045	Year 24 - 2046	Year 25 - 2047	Year 26 - 2048	Year 27 - 2049	Year 28 - 2050	Year 29 - 2051	Year 30 - 2052
Management Measures																																								
1.1, 2.1, 3.1	Keyhole felling - Implement the staged felling and restocking plans.	-	Developer	✓																																				
1.1, 2.1, 3.1	Phase 1 felling and restocking (2018-2022)	-	Developer	✓	✓																																			
1.1, 2.1, 3.1	Phase 2 felling and restocking (2023 – 2027)	-	Developer			✓	✓	✓	✓	✓																														
1.1, 2.1, 3.1	Phase 3 felling and restocking (2028 - 2032)	-	Landowner								✓	✓	✓	✓	✓																										
1.1, 2.1, 3.1	Phase 4 felling and restocking (2033 onwards)		Landowner													✓	✓	✓	✓	✓																				
1.2, 2.2	Restock the identified stands on the approved felling and restocking plans with broadleaved species (Phase 1).	Sept - Mar	Developer			✓																																		
1.2, 2.2	Restock with broadleaved species (Phase 2).	Sept - Mar	Developer								✓																														
1.2, 2.2	Restock with broadleaved species (Phase 3).	Sept - Mar	Landowner													✓																								
1.2, 2.2	Restock with broadleaved species (Phase 4).	Sept - Mar	Landowner																	✓																				
1.3, 4.2	Provide 4 bat and 5 pine marten boxes within the site to accommodate roosting and breeding activities.		Developer			✓																																		
2.3	Construction design should incorporate open bottomed culverts and sensitive sizing.	-	Developer		✓																																			
3.2	Once the identified stands in the south of the site have been felled, a detailed survey and peat restoration plan shall be produced and then implemented.	-	Developer / Env consultant							✓	✓																													
4.1	Maintain vegetation in cleared areas around each turbine and in permanent large, open areas within 500 m at max height of 30 cm, through grazing, or cutting.	Mar and Aug	Developer / Env consultant			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

5.1	Manage deer population within the windfarm site (fenced woodland) to maintain population at sustainable levels and reduce grazing/trampling damage to Caithness and Sutherland SAC	Refer to deer managem ent plan.	Refer to deer management plan.																														

Objective	Details	Timing	Responsibility	Years																														
				Pre-Construction	Construction	Year 1 - 2023	Year 2 - 2024	Year 3 – 2025	Year 4 - 2026	Year 5 - 2027	Year 6 - 2028	Year 7 - 2029	Year 8 – 2030	Year 9 - 20231	Year 10 - 2032	Year 11 - 2033	Year 12 - 2034	Year 13 - 2035	Year 14 - 3036	Year 15 - 2037	Year 16 - 2038	Year 17 - 2039	Year 18 - 2040	Year 19 - 3041	Year 20 - 2042	Year 21 - 2043	Year 22 - 2044	Year 23 - 2045	Year 24 - 2046	Year 25 - 2047	Year 26 - 2048	Year 27 - 2049	Year 28 - 2050	Year 29 - 2051	Year 30 - 2052
Monitoring Measures																																		
1.1, 2.1, 3.1	Confirmation with landowner that felling and restocking regime is being implemented as agreed.	-	Developer / Env consultant			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1.2, 2.2	Monitor establishment rates of broadleaved woodland. (Phase 1).	June - Sept	Developer / Env consultant				✓		✓		✓					✓					✓					✓					✓				
1.2, 2.2	Monitor establishment rates of broadleaved woodland. (Phase 2).	June - Sept	Developer / Env consultant									✓		✓		✓					✓					✓					✓				
1.2, 2.2	Monitor establishment rates of broadleaved woodland. (Phase 3).	June - Sept	Developer / Env consultant														✓		✓		✓					✓					✓				
1.2, 2.2	Monitor establishment rates of broadleaved woodland. (Phase 4).	June - Sept	Developer / Env consultant																			✓		✓		✓					✓				
1.3, 4.2	Monitor activity around and/or use of roost/den boxes.	June - Sept	Developer / Env consultant				✓		✓		✓					✓					✓					✓					✓				
2.3	Surveys for water vole and otter along river corridors within HMP enhancement areas.	June - Sept	Developer / Env consultant	✓	✓		✓		✓		✓					✓					✓					✓					✓				
3.2	Assessment of bog surface wetness, bare peat and prevalence of peat forming species. (Felling phase 2)	Feb, May, Aug, Nov June - Aug	Developer / Env consultant							✓		✓		✓		✓					✓					✓					✓				
3.3	Monitor impacts of deer on SAC/SSSI habitat within the site boundary fence prior to construction (during	June - Sept	Developer / Env consultant	✓	✓	✓																												

	construction and post construction programme tbc).																																			
4.1	Assessment of average vegetation height in areas around turbines and within 500m. Checks for evidence of collisions with turbines.	Mar and Aug	Developer / Env consultant			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reporting																																				
Annual Report			Developer / Env consultant			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HMP review			Developer / Env consultant							✓																										

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FIGURES

LIMEKILN WIND FARM

Legend

- Site boundary
- Turbine location
- Forestry compartments

Broadleaved planting areas

- Phase 1 - 2023 (Developer)
- Phase 2 - 2028 (Developer)
- Phase 3 - 2033 (Landowner)
- Phase 4 - 2038 (Landowner)
- Potential bog restoration areas

Animal boxes

- Bat roost box
- Pine marten den box

Figure 1 - Habitat Management Plan

nevis ENVIRONMENTAL

Scale: 1:22824

N

Drawn by: ML
Checked by: RG
Approved by: ML
Ref Number: ENVd1016C
Project Number: 16266
Issue Date:18/05/2020
Projection: OSGB 1936/British National Grid - EPSG 27700

APPENDIX 1 – FELLING AND RESTOCKING PLANS

Limekiln
Forest Plan
Amended Felling Map November 2019

North

0.25 0 0.25
1:18,000 km

EJ Downs Forestry
Cringles View, Langbar, Ilkley. LS29 0EP
Tel. 07973 401982 edward.downs1@btinternet.com

Legend

- Boundary
- Compartment
- Phase 1 2018-2022 150 ha
- Turbine/windfarm infrastructure 60 ha
- Phase 2 2023 -2027 243 ha
- Phase 3 2028-2032 192 ha
- Phase 4 2033 and beyond 140 ha
- Retentions/Continuous Cover 17 ha
- Open Ground
- SSSI

KILOMETRES 0.1 0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 KILOMETRES

Limekiln
Forest Plan
Amended Restocking Map November 2019

North

0.25 0 0.25 0.50
1:18,000 km

EJ Downs Forestry
Cringles View, Langbar, Ilkley. LS29 0EP
Tel. 07973 401982 edward.downs1@btinternet.com

Legend

- Boundary
- Compartment
- SS/LP
- SP
- NBL
- NS
- SS
- Retained conifer
- Not restocked
- Open Ground
- SSSI
- Forest road - not restocked
- Turbine/windfarm infrastructure - not restocked