

Appendix 5.7 Outline Habitat Management Plan

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Appendix 5.7 Outline Habitat Management Plan

5.1 Introduction

- 5.1.1 This Outline Habitat Management Plan (OHMP) sets out the proposed measures for habitat restoration and enhancement within the field study area and the surrounding area. The field study area is the area within the Site boundary and up to 250m beyond the Site boundary, as shown on Figure 5.2.
- 5.1.2 The field study area is dominated by wet heath, blanket bog and wet modified bog, as shown on Figure 5.2. Without the application of mitigation, significant effects are predicted on blanket bog from habitat loss and degradation, and on Levishie Wood Site of Special Scientific Interest (SSSI) from potential temporary displacement of deer from the Proposed Development. Mitigation is required to restore poor quality and inactive areas of peatland habitat and to minimise the impact of deer grazing, as discussed in Chapter 5. The conditions in the field study area are favourable for the active regeneration of peatland habitats due to the presence of natural erosion, with the majority of peatland areas being drier and modified. Deer numbers are currently managed by the landowner and in accordance with the Glenmoriston Deer Management Group (GDMG) Deer Management Plan (Boulton, 2016).
- 5.1.3 There is also the opportunity for habitat enhancement in the form of riparian woodland and montane scrub planting and artificial nesting rafts for divers (*Gavia sp.*), as detailed in Chapter 6. The enhancement measures discussed are additional good practice measures that are not required as mitigation for the Ecological Impact Assessment (EclA) but are proposed as opportunities for where biodiversity enhancements can be achieved in the field study area.
- 5.1.4 A final Habitat Management Plan (HMP), which will include specific prescriptions and confirmation of the peatland restoration and riparian woodland and montane scrub planting location(s), and the design and location of the artificial nesting rafts for divers (*Gavia sp.*) will be agreed with The Highland Council (THC), in consultation with the landowner (Glenmoriston Lodge Estate) and NatureScot (NS), prior to the commencement of construction of the Proposed Development.

5.2 Objectives of Outline Habitat Management Plan

- 5.2.1 This OHMP has been completed following best practice guidance from Scottish Natural Heritage (SNH) (SNH, 2016). The purpose of the OHMP is:
- To restore and enhance a minimum of 6.93ha of peatland habitat in the field study area within five years of commissioning of the Proposed Development. This area (6.93ha) includes the amount of blanket bog being permanently lost or degraded as a result of the Proposed Development (4.88ha) and, as a good practice measure, it also includes the amount of blanket bog being temporarily lost or degraded as a result of the Proposed Development (2.05ha). The restoration and enhancement of a comparable area is intended to offset both the permanent and temporary loss or degradation and, where possible, a larger area of peatland will be restored than the area lost or degraded. This will increase the quality and extent of an Annex I (UK Government, 1994) habitat and compensate for habitat loss and degradation incurred as a result of the Proposed Development.
 - To work in conjunction with the Deer Management Plan provided as Appendix 5.6, where required, to ensure success of peatland habitat restoration proposals and protect habitats in the surrounding area, such as Levishie Wood SSSI.
 - To enhance the field study area and the wider estate through new riparian woodland and montane scrub creation and the installation of artificial nesting rafts.

- 5.2.2 The implementation of the final HMP will also take into account the existing land management practices undertaken in the field study area and the wider estate and will work in tandem with these practices.
- 5.2.3 The design and implementation of the final HMP will be managed by the Applicant in consultation with the landowner and statutory consultees. Detailed method statements will be developed for the specific measures of the final HMP, such as restoration methods that will encourage the abundance of bog-moss (*Sphagnum sp.*).

5.3 Mitigation Measures

- 5.3.1 The following measures are required as mitigation to compensate for and reduce the significant effects of the Proposed Development.

Peatland Restoration

- 5.3.2 Suitable areas for peatland restoration comprise modified habitat containing eroding channels suitable for damming, infilling and reprofiling, which were identified during the peatland condition assessment. Compartments with the potential for restoration are detailed in Table 1. The full methodology and results of the peatland condition assessment are provided in Appendix 5.5. Peatland compartments suitable for peatland restoration are shown on Figure 5.11 and provide a combined potential peatland restoration search area of 64.31ha. Within these areas, damming, infilling and reprofiling could restore a minimum of 8ha of peatland, as discussed in Table 5.7.1.

Table 5.7.1 – Potential Restoration Areas

Compartment	Grid Reference	Condition	Restoration Potential
1a	NH 38321 20099	Bog 95%. Near-natural 5%, Modified 80%, Highly Modified 15%.	This is a relatively small area but a dam in the eroded channel around NH 38370 20164 (2m deep x 6m wide) will create some degree of restoration.
5a	NH 37900 21200	Bog 100%. Modified 50%, Highly Modified 50%.	A dam at NH 37967 21117 (2m deep x 4m wide), another 10m further upstream and one towards the mouth of the channel will help to restore a relatively large area. The erosion at NH 37916 21141 from when the water level was high could also be halted by a dam, which could help restore 1.5 to 2ha of bog.
7	NH 38242 21996	Bog 60%. Near-natural 5%, Modified 30%, Highly Modified 65%.	A dam at NH 38237 21980 (2m deep x 6-8m wide) will help to restore a relatively large area (possibly 3 to 4ha). Opportunities for use of peat excavated from the proposed nearby turbine and track will be reviewed during detailed design stage as this restoration area may benefit from peat back-

Compartment	Grid Reference	Condition	Restoration Potential
			fill. This will depend on a number of factors, such as construction phasing coinciding with habitat management works, track construction methods, dam construction design, availability of peat not required for reinstatement of construction areas etc.
10	NH 39305 21551	Bog 60%. Modified 90%, Highly Modified 10%.	At NH 39331 21498, a dam (2m deep x 3-4m wide) with two additional slightly smaller dams, one on each fork of the channel upstream, will significantly assist restoration.
11	NH 38945 21478	Bog 60%. Modified 5%, Highly Modified 95%.	Though there is erosion to the south, which might be reduced by the construction of a small dam, the flow of the main channel is to the north and a few small dams (around 2m deep x 3m wide) will assist with restoration of this less modified area.
12	NH 38926 20868	Bog 100%. Modified 60%, Highly Modified 40%.	A dam at NH 38816 20797 (2m deep x 5m wide) will significantly aid restoration. Some back-filling may also be beneficial as a high proportion of peat has been eroded from this location. As with compartment 7, opportunities for use of construction excavated peat will be explored during the detailed design stage prior to commencement of construction.
14b	NH 39390 20551	Bog 80%. Modified 40%, Highly Modified 60%.	Natural channels at NH 39376 20564 may have been artificially lowered in the past. Several small dams (1m deep x 2-3m wide) will raise the water table and significantly aid restoration of adjacent Compartment 14c.

Compartment	Grid Reference	Condition	Restoration Potential
14c	NH 39380 20700	Bog 70%. Modified 60%, Highly Modified 40%.	On the margins of Compartments 14 and 15 at NH 39287 20923, there is a major point of drainage for Compartment 15. A series of small dams (1m deep x 2m wide and 2m deep x 3-4m wide) will significantly aid restoration of Compartment 15 over an area of around 2ha.
15	NH 39202 21106	Bog 90%. Near-natural 5%, Modified 95%.	At NH 39202 21106, two small dams (around 1m deep x 2m wide) will raise the water table and significantly aid restoration.
17	NH 39595 21049	Bog 90%. Near-natural 5%, Modified 90%, Highly Modified 5%.	A series of small dams (1-2m deep x 4m wide) in the areas of NH 39483 21001 and NH 39481 21010 will aid restoration.
22	NH 40175 21300	Bog 75%. Highly Modified 100%.	Hydrological assessment identified several gullies in this area suitable for damming, particularly north of the area of proposed access track.

5.3.3 Raising the water level in blanket bog areas will also benefit surrounding wet heath habitat by improving hydrological connectivity.

5.3.4 The extent of the restoration areas will be subject to refinement prior to completion of the final HMP but the area identified for restoration will be no less than 6.93ha to account for the blanket bog predicted to be permanently and temporarily lost or degraded as a result of the Proposed Development. Restoration will aim to restore an area of at least the same size as the area lost or degraded as a result of the Proposed Development. Ideally, there will be an overall increase of improved blanket bog and other peatland habitat in the field study area. The confirmed peatland restoration areas will be shown on a figure in the final HMP. The final HMP will include all peatland restoration and management/monitoring activities under a 'Peatland Management Plan' as requested by NS in their scoping response.

5.3.5 Management of peat excavated during construction and the reinstatement of construction disturbed areas during and following construction are detailed in the Construction and Environmental Management Plan (CEMP) and the Peat Management Plan (PMP), provided as Appendix 2.1 and Appendix 10.3, respectively.

Management Prescriptions

5.3.6 With reference to the compartments provided in Table 1, the following measures will be undertaken to encourage the active regeneration of degraded peatland:

- Raise the water table by blocking channels and gullies up to 4m wide to prevent the drainage of water from bog areas. Determination of the most appropriate method of blocking will take place in year 1 of the implementation of the final HMP. A survey will be carried out prior to

blocking to confirm the number, location and spacing of artificial dams required. Peatland restoration measures will be subject to refinement in consideration with current best practice techniques (SNH, 2019) and expert knowledge gathered from other projects. Work will occur between September and March to avoid the breeding bird season.

- Prevent further erosion of channels and gullies. Gully sides will be reprofiled, revegetated and, where required, reseeded with a heather-dominated species mix. In some exceptional situations, geotextiles may need to be used to stabilise the peat (Yorkshire Peat Partnership, 2011a). Where overhanging vegetation is present, vegetation and root structure will be kept intact and will be reinstated following reprofiling works (Yorkshire Peat Partnership, 2011b). The feasibility and methodology of slope reprofiling and revegetation/reseeding will be assessed during the detailed survey.
- Increase the abundance and distribution of bog-moss (*Sphagnum sp.*) and other bog species. If suitable habitat conditions are recreated, this should occur through natural regeneration. There is considered to be a sufficient abundance and range of bog-moss (*Sphagnum sp.*) and other bog species in the field study area to make natural recolonisation feasible. However, active measures will be considered in the unlikely event that natural regeneration is unsuccessful.
- Deer will be managed in accordance with the Deer Management Plan for the Proposed Development, provided as Appendix 5.6, and with the GDMG Deer Management Plan (Boulton, 2016).

Levishie Wood SSSI

- 5.3.7 Upland birch-juniper woodland, the qualifying feature of the SSSI, is likely to be damaged by deer displacement during construction of the Proposed Development due to an increase in grazing pressure on a feature that is already considered to be in unfavourable condition. Management will include the continuation and monitoring of the current annual deer cull plan, removal of deer fencing around established estate native woodland areas (where appropriate) to open up areas previously inaccessible to deer, and vegetation monitoring within Levishie Wood SSSI to guide the requirement for additional measures, as detailed in Appendix 5.6.
- 5.3.8 Active management measures are also being undertaken by the landowner within Levishie Wood SSSI, in conjunction with NS, and these measures are outwith the remit of the OHMP.

5.4 Enhancement Measures

- 5.4.1 The following measures are offered as additional good practice measures to enhance the biodiversity of the field study area and the wider estate.

Riparian Woodland and Montane Scrub Planting

- 5.4.2 No woodland would be lost as a result of the Proposed Development but an opportunity exists to enhance the habitat in the field study area and the wider estate through the creation of new riparian woodland habitat and montane scrub, which will provide shelter and foraging habitat for mammals, such as mountain hare (*Lepus timidus*) and birds, such as golden eagle. All riparian woodland and montane scrub planting will be undertaken at locations to be confirmed post-consent and in discussion with the landowner. Provisional riparian woodland and montane scrub planting search areas are provided on Figure 5.11. The extent of the planting within the search areas will be subject to refinement prior to completion of the final HMP. The confirmed woodland and montane scrub planting areas will be shown on a figure in the final HMP.

Management Prescriptions

5.4.3 The following measures will be undertaken to provide woodland of a high ecological value:

- Where possible, woodland planting areas will incorporate broadleaved woodland and mixed woodland. Broadleaved woodland will include species such as downy birch (*Betula pubescens*), silver birch (*B. pendula*), sessile oak (*Quercus petraea*) and alder (*Alnus glutinosa*), which have previously been planted in the surrounding area. Where possible, mixed areas will be planted and will include the aforementioned broadleaved species plus species such as Scots pine (*Pinus sylvestris*).
- Woodland creation will follow Forestry Commission Scotland Bulletin Guidance (Rodwell & Patterson, 1994). Species mix, planting densities and tree protection measures will be dictated by the character of the planting site determined by further ground investigation in year 1 of the implementation of the final HMP. Where possible, new woodland will provide connectivity to existing woodland, and include both trees and shrubs, and unplanted/open areas to provide a diverse habitat structure and increase the ecological value.
- A potentially suitable area for woodland planting occurs on the lower slopes of the Carn Mor around the Allt Saigh to create an area of riparian planting, as shown on Figure 5.11. The species of tree to be planted and the suitability of the Allt Saigh will be determined by further ground investigation in year 1 of the implementation of the final HMP. Riparian woodland acts as a corridor to enhance connectivity by creating links within and between woodland habitats, providing routes for dispersing or migrating mammals, such as otter (*Lutra lutra*) as well as foraging or commuting bats. Trees help prevent bank erosion and give shelter and shade for salmonid fish. Riparian vegetation also increases biodiversity and provides habitat for water vole (*Arvicola amphibius*). The creation and management of riparian vegetation will follow the Scottish Environment Protection Agency (SEPA) good practice guide (SEPA, 2009).

5.4.4 A potentially suitable area for montane scrub planting has been identified on Carn Mor, as shown on Figure 5.11. Montane scrub creation will follow Montane Scrub Action Group (MSAG) guidance (Morris, T., unknown). The species of tree to be planted, any required ground preparation, scrub protection and maintenance, and the suitability of Carn Mor will be determined by further ground investigation in year 1 of the implementation of the final HMP. Species to be planted will include higher altitude specialist species as well as other lower altitude species where there is connectivity with existing woodland. Montane scrub planting will take place in agreement with the landowner. Where possible, montane scrub planting will occur in areas with existing remnants of mountain woodland and where the habitat is connected with woodland at a lower altitude to increase ecological value. Where possible, species will be sourced locally.

Artificial Nesting Rafts for Divers

5.4.5 There have been few breeding attempts by divers (*Gavia sp.*) recorded in the field study area despite a number of lochs being used by red-throated diver (*Gavia stellata*) and black-throated diver (*G. arctica*), as detailed in Chapter 6. This may be due to the unsuitability of lochs for natural nest sites, the risk of flooding or the risk of predation. Artificial nesting rafts will help combat these risks and provide a more secure nesting site, thereby enhancing the field study area for both diver species.

Management Prescriptions

5.4.6 The following measures will be undertaken to provide artificial nesting rafts for divers (*Gavia sp.*):

- At least one artificial nesting raft for divers will be installed and maintained on a suitable loch, the location of which will be determined after a site visit and confirmed in the final HMP. Potential locations include on Loch na Chrathaich, which would be of a suitable size for black-throated diver, and on one of the lochans around Lochan Coire na Rainich, which would be of suitable size for red-throated diver. Raft construction, siting and maintenance will consider

guidance from the Royal Society for the Protection of Birds (RSPB) (RSPB, 2008) and any other more recent guidelines and expert knowledge gathered from other projects.

5.5 Work Programme

- 5.5.1 A detailed work programme will be developed in consultation with THC, NS and the landowner as part of the development of the final HMP.

5.6 Funding and Duration

- 5.6.1 The final HMP and implementation will be funded in full by the Applicant and will continue for the lifetime of the Proposed Development i.e. approximately 50 years.

5.7 Monitoring

Peatland Restoration

- 5.7.1 Vegetation surveys undertaken by suitably qualified ecological professionals will monitor the success of peatland restoration and highlight the need for any further management measures. Surveys will collect data on the structure and composition of the vegetation, and plant species abundance and diversity in the restored areas. Monitoring will commence in the summer of year 1 of the implementation of the final HMP (during the first year of operation of the Proposed Development) and will be repeated during the operational life of the Proposed Development i.e. following initial baseline surveys in year 1, surveys will also occur in at least years 3, 5, and 10. The requirement for longer-term monitoring, e.g. in years 15, 20 and 25, and potentially beyond, will be subject to ongoing review of the results and agreement with statutory consultees.
- 5.7.2 Monitoring of restoration activities, e.g. ditch/drainage blocking will also be undertaken to record progress in the completion of the physical works to install, maintain and, where necessary, repair those features. This monitoring will be completed over the course of the first five years of operation of the Proposed Development. Any faults or issues identified during this monitoring will be addressed as required.

Levishie Wood SSSI

- 5.7.3 The monitoring of Levishie Wood SSSI will be undertaken as detailed in Appendix 5.6, with the condition of vegetation in permanent sampling points monitored annually during construction of the Proposed Development then every five years in early spring following the completion of construction. Baseline monitoring for the Operational Development in 2018 recorded a moderate grazing impact, with a higher level of grazing recorded on juniper (*Juniperus sp.*) compared to birch (*Betula sp.*) (Applied Ecology, 2018).

Riparian Woodland and Montane Scrub Planting

- 5.7.4 New areas of riparian woodland and montane scrub planting will require monitoring and management, particularly in the first 2-3 years when immature trees and scrub are establishing themselves. New trees and scrub will be inspected once a year to ensure they are not being choked by other vegetation, such as grass species.
- 5.7.5 Beating-up surveys will be undertaken during the first 2-3 years following initial planting. Surveys will monitor the success of woodland and montane scrub planting and highlight the need for any further management measures. Surveys will also monitor the integrity of any planting protection measures (i.e. fencing, tree tubes) and advise of any remedial action (if required). Measures for confirming the success of planting and the required threshold for further planting intervention will be confirmed in the final HMP.
- 5.7.6 The requirement of any long-term management of new woodland and montane scrub areas within the lifetime of the Proposed Development will be subject to discussions with THC and NS, where required.

Artificial Nesting Rafts

- 5.7.7 To ensure the best chance of breeding success, the artificial nesting rafts for divers (*Gavia sp.*) will be monitored and maintained on an annual basis. Monitoring will commence in the spring of year 1 of the implementation of the final HMP (during the first year of operation of the Proposed Development) and will be repeated during the operation of the Proposed Development i.e. following initial baseline surveys in year 1, surveys will also occur in year 2, 3, 4 and 5. If rafts are found to be damaged or degraded during monitoring surveys, they will be replaced. The requirement for longer-term annual monitoring will be subject to ongoing review of the results and agreement with statutory consultees.

Summary

- 5.7.8 The methodology for all monitoring surveys will be agreed with THC and NS. Reports will be submitted to THC and NS highlighting the management measures completed to date, the results of the surveys and any measures proposed for the next reporting period. The results will be regularly reviewed, to ensure the HMP objectives are being met and to determine any appropriate amendments, where practicable.

5.8 Amendments

- 5.8.1 The final HMP will be a live document and will be updated following monitoring results, unexpected events or changes in guidance. Approval by THC and NS will be sought for any amendments before revised measures are implemented.

5.9 References

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