

EARBA STORAGE

A GILKES ENERGY COMPANY

Earba Pumped Storage Hydro Scheme EIA Report

Chapter 8: Terrestrial Ecology

February 2024



Quality Information

Prepared by

SLR Consulting

Checked by

Chris Pasteur

Approved by

Gavin McGill

Revision History

Revision

01

Revision Date

February 2024

Details

Issue to ECU

Authorised

Gavin McGill

© 2024 Gilkes Energy Ltd. All Rights Reserved

Contents

Contents1

8.1	Executive Summary	1
8.2	Introduction	3
8.3	Scope of Assessment	3
8.4	Legislation, Policy and Guidance	22
8.5	Methodology	24
8.6	Baseline Conditions	34
8.7	Mitigation by Design	72
8.8	Potential Significant Effects	82
8.9	Additional Mitigation, Compensation and Enhancement	121
8.10	Residual Effects	121
8.11	Conclusion	121

List of Figures

- Figure 8.1: Locations of Designated Sites
- Figure 8.2: Woodland mapped on the Ancient Woodland Inventory database
- Figure 8.3: Phase 1 and NVC habitat map with proposed infrastructure overlain
- Figure 8.4: Potential GWDTE habitats with proposed infrastructure overlain
- Confidential Figure 8.5: Protected mammals field signs with proposed infrastructure overlain
- Confidential Figure 8.6: Bat survey summary with proposed infrastructure overlain
- Figure 8.7: Outline BEMP Overview Drawing

List of Appendices

- Appendix 8.1: Results of Desk Study
- Appendix 8.2: Extended Phase 1 Habitat Survey (2022)
- Appendix 8.3: Habitat Survey Report (2023)
- Appendix 8.4: Protected Mammal Survey Report (2023)
- Appendix 8.5: Bat Survey Report (2023)
- Appendix 8.6: Outline Biodiversity Enhancement and Management Plan (OBEMP)
- Appendix 8.7: NatureScot Peatland Guidance Site Visit Template

8.1 Executive Summary

The potential effects of the Proposed Development on designated sites (selected for non-avian, terrestrial ecology features), terrestrial habitats, and non-avian terrestrial species, during construction and operation have been assessed. A detailed assessment of effects on Ben Alder and Aonach Beag Special Area of Conservation (SAC), which is hydrologically linked to the Site, is provided in a separate Habitats Regulations Appraisal (HRA) report.

The assessment of effects within this Chapter is informed by desk based and field survey data. Baseline habitat and protected mammals surveys were undertaken in accordance with relevant good practice guidelines, in summer 2022 – autumn 2023.

No significant residual adverse effects have been identified upon Ben Alder and Aonach Site of Special Scientific Interest (SSSI) or SAC, once mitigation measures have been applied, including stringent pollution prevention and sediment management measures, implementation of a Biosecurity Management Plan (BMP), and maintenance of the natural flow regime of the Allt a' Bhealaich Leamhain during construction and operation. All other designated sites (selected for non-avian terrestrial ecology features) were scoped out of assessment, due to a lack of potential pathways for significant effects.

A locally significant effect was identified for the loss of a 5.35 ha strip of habitat mapped on the Ancient Woodland Inventory (AWI), which was found to support scattered mature trees on purple-moor grass dominated vegetation, comprising remnant ancient woodland in poor condition.

With the application of embedded and best practice mitigation to minimise impacts where possible and adherence to relevant legislation, significant adverse residual effects from habitat loss have been identified during construction for: blanket bog and modified bog including montane bog (at the County to national level); montane willow scrub (at the national level); unimproved calcareous grassland, base-rich marshy grassland, upland species-rich ledges, montane heath / dwarf herb, basic flush and bryophyte-dominated spring (at the County level); semi-natural woodland, wet and dry dwarf shrub heath, unimproved acid grassland, acid / neutral flushes and watercourses (at the local level). A small number of locations of some of these habitats are assessed as being sustained by groundwater. These effects would be compensated for by a significant positive effect through implementation of a Biodiversity Enhancement and Management Plan (BEMP), which includes extensive bog restoration, native woodland restoration / creation, montane willow scrub and other montane habitat restoration, heathland restoration and management, aquatic and riparian enhancement, and other habitat restoration and management measures.

Significant adverse residual effects have been identified at the local level upon invertebrates and reptiles, due to habitat loss during construction. These effects would be compensated for through habitat works and species-specific habitat features, delivered via the BEMP. Once embedded and best practice mitigation has been applied, including protected species licensing where required, non-significant residual adverse effects have also been identified upon water vole, otter, bats, red squirrel and pine marten.

Additional to the compensation proposed, the woodland restoration / creation, montane willow scrub and other montane habitat restoration, heathland enhancement and positive management of a range of other upland habitats via deer control, as well as the provision of bat, red squirrel and pine marten boxes, would provide a significant enhancement, which would be delivered via the BEMP.

With the implementation of continued best practice measures, no significant negative effects are predicted during the operational phase.

No potentially significant cumulative effects were identified.

8.2 Introduction

- 8.2.1 This Chapter assesses the potential effects, including cumulative effects, of the Proposed Development on terrestrial ecology during construction and operation (see **Chapter 2: The Proposed Development** for a project description). The content within this Chapter considers terrestrial habitats and non-avian terrestrial animal species. Potential effects on birds are considered separately in **Chapter 10: Ornithology**, and aquatic features are addressed separately in **Chapter 11: Aquatic Ecology**. This Chapter includes an assessment of effects on woodland habitats (and associated species) but effects on forestry are addressed separately in **Chapter 9: Forestry**.
- 8.2.2 This Chapter is supported by **Appendix 8.1: Results of Desk Study**; **Appendix 8.2: Extended Phase 1 Habitat Survey (2022)**; **Appendix 8.3: Habitat Survey Report**; **Appendix 8.4: Protected Mammal Survey Report**, **Appendix 8.5: Bat Survey Report** and **Appendix 8.6: Outline Biodiversity Enhancement and Management Plan (OBEMP)**. This Chapter is also supported by **Figures 8.1 – 8.5**. This Chapter should be read in conjunction with the separate **Habitats Regulations Appraisal (HRA) Report** for Ben Alder and Aonach Beag Special Area of Conservation (SAC).
- 8.2.3 There are no current plans for decommissioning. As detailed in **Chapter 2: of the Proposed Development**, with proper maintenance the Proposed Development should remain functional indefinitely. If the project were to be decommissioned, it is anticipated that the potential effects on Terrestrial Ecology would be equal to and/or lesser than the construction impacts. As such, a separate assessment of potential decommissioning effects on Terrestrial Ecology is not included in this Chapter. Where likely significant effects are predicted during construction and operation, appropriate mitigation measures are proposed, and the significance of predicted residual effects are assessed.
- 8.2.4 This assessment has been carried out by SLR Consulting Ltd. A table presenting relevant qualifications and experience of key staff involved in the preparation of this Chapter is included in **Appendix 1.1 – EIA Specialist Team** of this EIA Report. Field survey work was carried out by Blairberg Consulting Ltd and Tracks Ecology Ltd., as detailed in **Appendices 8.2 – 8.5**.

8.3 Scope of Assessment

Study Area

- 8.3.1 The Study Area encompasses the area over which all desk-based and field data were gathered to inform the assessment presented in this Chapter. The Study Area differs according to the ecological feature concerned, based on relevant good practice guidance, and agreed at Scoping. The Study Area for the desk study is a 10 km radius from the Site boundary for statutory designated sites, and a 2 km radius for protected and notable species records, habitats, and non-statutory designated sites. The field survey Study Area used for habitats is shown on **Figure 1** in **Appendix 8.3** and covers a minimum 250m buffer from proposed infrastructure. The relevant Study Areas for faunal species are described within **Appendices 8.3 - 8.5**. For ease of reference, the field survey Study Areas included suitable habitat within a 250 m buffer from proposed above ground infrastructure for protected mammal species. Desk-based and field data has also

been gathered for surrounding areas within the wider Ardverikie Estate, within which the Site is located, to inform habitat restoration, creation and management work proposed within the OBEMP, as detailed in **Appendix 8.6**, and illustrated in **Figure 8.7**.

Consultation Responses

- 8.3.2 To inform the scope of the assessment for the Proposed Development, consultation was carried out with statutory and non-statutory organisations. **Table 8.1** summarises the scoping and consultation responses relevant to the Terrestrial Ecology assessment and provides information on where and/or how points raised have been addressed in this assessment.
- 8.3.3 Full details on the consultation responses and scoping opinion can be reviewed in **Chapter 4: Assessment Methodology, Scoping and Consultation**, and associated appendices.

Table 8.1 Consultation Responses

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
The Highland Council (THC)	Pre-application advice	08.03.23	Woodland THC highlight that the Site supports native pine and birch woodland and stands of woodland that are listed in the Ancient Woodland Inventory (AWI) as 'Ancient woodland, semi-natural origin'¹. THC highlight that loss of woodland listed in the Native Woodland Survey of Scotland (NWSS)² is likely. THC recommend identifying woodland on Site in a Tree/ Woodland Constraints Plan to help inform the layout of the development, wherever possible, in order to minimise the impact on existing trees and woodland. An Arboricultural Impact Assessment (AIA), Tree Protection Plan (TPP), and Compensatory Tree Planting Plan has also been requested.	Woodland is addressed within this Chapter and Chapter 9: Forestry. A Tree Constraints Plan, AIA and TPP are contained in Appendices 9.1 and 9.2. Tree and woodland loss has been minimised, however due to the nature of the Proposed Development, some small-scale native woodland and AWI habitat loss is unavoidable. Compensatory woodland planting that accords with the Scottish Government's Policy on Control of Woodland Removal (CoWRP), is detailed in Chapter 9 – Forestry and Appendix 8.6.
THC	Pre-application advice	08.03.23	Planning Policy: Highland-wide Local Development Plan (HwLDP) Policy 51 (Trees and Development) – THC requested details of woodland impacts, including any proposed felling, replanting, and compensatory planting. Policy 58 (Protected Species) – THC requested protected species surveys.	Assessment of effects upon woodland are contained within this Chapter and Chapter 9: Forestry. Compensatory planting is detailed within Appendix 8.6.

¹ The Ancient Woodland Inventory is available online at <https://www.nature.scot/doc/guide-understanding-scottish-ancient-woodland-inventory-awi>. 'Ancient woodland' refers to semi-natural woodland interpreted from maps of 1750 or 1860 and continuously wooded to the present day.

² Information relating to the Native Woodland Survey of Scotland is available online at: <https://forestry.gov.scot/forests-environment/biodiversity/native-woodlands/native-woodland-survey-of-scotland-nwss>

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
				A suite of protected species surveys were carried out in 2022 and 2023, full details of which are provided within Appendices 8.2 – 8.5 .
THC	Pre-application advice	08.03.23	Ecological Assessment THC requested a full Ecological Assessment, to include (but not be limited to): • Desk study records, from NatureScot Sitelink, the NBN atlas and local biodiversity record groups; • Specific surveys to identify any protected or otherwise notable species and habitats, including those listed within the Highland Nature Biodiversity Action Plan (HNBAP)³; and • An assessment of ecological effects and relevant mitigation and compensation measures.	This Chapter provides a full Ecological Impact Assessment for terrestrial ecology, using the standard methodology⁴. Desk study details are provided in Appendices 8.1 and 8.3 – 8.5, and are summarised where relevant within this Chapter. Habitat (Phase 1 and National Vegetation Classification (NVC)) surveys and protected species surveys are detailed in Appendices 8.2 – 8.5 and summarised within this Chapter. An assessment of ecological effects is provided in Section 8.8, mitigation is provided in Sections 8.7 and 8.9, and compensation is detailed in Appendix 8.6 and summarised in Section 8.9.

³ Highland Nature Biodiversity Action Plan [online] Available at: <https://www.highlandenvironmentforum.info/biodiversity/action-plan/> [Accessed in August 2023]

⁴ CIEEM (2022) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
THC	Pre-application advice	08.03.23	Biodiversity Enhancement THC requested a Biodiversity Enhancement and Management Plan (BEMP), detailing how National Planning Framework (NPF) 4, Policy 3, and HwLDP Policies 57-60, will be met, by demonstrating that the Proposed Development will significantly enhance the biodiversity of the site from its pre-development state. Where the BEMP is unable to demonstrate to the satisfaction of the planning authority that the development will conserve, restore and enhance biodiversity, the proposal will not be supported. In rare cases where site constraints result in the applicant being unable to deliver one or more of the above criteria, consideration may be given to developer contributions to enable biodiversity enhancements to be implemented elsewhere in line with the mitigation hierarchy to allow offset, off- site measures. Depending on the baseline ecological condition of the site, and level and type of biodiversity enhancement measures proposed, there may be an additional requirement for a developer contribution (taken annually over the lifetime of the project) to contribute towards the funding of new and / or existing long-term biodiversity enhancement projects in the wider area.	Habitat restoration and biodiversity enhancement measures are detailed within an Outline Biodiversity Enhancement and Management Plan (OBEMP) (Appendix 8.6) and summarised in Section 8.9.
Scottish Environmental Protection Agency (SEPA)	Pre-application advice	08.03.23	Peat SEPA requested: a detailed map of peat depths with all built elements overlain to demonstrate how the development avoids areas of deep peat and other sensitive features such as Ground Water Dependant Terrestrial Ecosystems (GWDTEs); details of peat re-use and reinstatement; and a draft Peat Management Plan (PMP).	Information relating to peat depths, peat loss and proposed re-instatement is provided in Chapter 12: Geology, Soils and Water . A PMP is provided in Appendix 12.2: Peat Management Plan , and GWDTE assessment provided in Appendices 8.3 and 12.4: GWDTE Assessment . Details of proposed peatland restoration are provided in Appendix 8.6 .

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
NatureScot	Pre-application advice	08.03.23	Peat NatureScot encourage the applicants to avoid adverse impacts upon priority peatlands as far as possible, in accordance with the mitigation hierarchy, and to minimise any residual impacts through best practice. Following detailed ground investigations, the final Construction Environmental Management Plan (CEMP) and PMP should demonstrate that this approach has been followed.	The Proposed Development avoids and minimises effects upon priority peatland as far as possible, through design and best practice (see Section 8.7, Chapter 12: Geology, Soils and Water, and Appendix 2.3: Outline Construction Environmental Management Document (CEMD). The PMP is contained in Appendix 12.2.
NatureScot	Pre-application advice	08.03.23	Protected Species NatureScot recommended that appropriate surveys are undertaken, and any necessary mitigation for protected species is implemented in line with relevant NatureScot guidance.	A suite of protected species surveys was carried out in 2022 and 2023 following standard guidance, full details of which are provided within Appendices 8.2 – 8.5. Mitigation is detailed in Sections 8.7 and 8.9.
NatureScot	Pre-application advice and scoping response	08.03.23 & 24.03.23	Nature Conservation Sites NatureScot highlight that the site lies adjacent to the boundary of Ben Alder and Aonach Beag Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC). These designated sites lie to the south-east of the proposed upper loch, 'Loch Leamhain'. This loch discharges into the Allt Cam river which feeds Loch Pattack, of which is part of the SSSI and SAC. Loch Pattack and loch margin habitats could therefore be affected by flooding and / or pollution events potentially caused during construction of the Leamhain dam. A pollution prevention plan needs to be included which fully details mitigation and emergency measures to prevent pollution entering the watercourses 'Allt Loch a' Bhealaich Leamhain' and 'Allt Cam', and ultimately Loch Pattack and surrounding habitats of nature conservation interest.	A separate Habitat Regulation Appraisal (HRA) Report, containing information to inform an Appropriate Assessment, has been completed for Ben Alder and Aonach Beag SAC. An assessment of effects upon Ben Alder and Aonach Beag SSSI is provided within this Chapter. Details of water management and pollution prevention measures are provided in Chapter 12:

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
				Geology, Soils and Water, Chapter 6: Hydrology and Water Management , the HRA Report, and Appendix 2.3: Outline CEMD .
THC	Scoping response	13.03.23	Terrestrial Ecology THC state that the Environmental Impact Assessment Report (EIAR) should provide information on the following: • Baseline survey results relating to bird and animal interest on site, including species presence and location; • An account of baseline habitats present within the site, including rare and threatened habitats, and those protected by European or UK legislation, or identified in national or local Biodiversity Action Plans (BAPs); • An assessment of the likely impacts on the nature conservation interest of all designated sites within the vicinity of the Proposed Development and proposed mitigation measures to avoid such impacts or reduce to a level where they are not significant; • Details of habitat enhancement and mitigation measures proposed (e.g. blanket bog restoration / native tree planting / stock exclusion) and associated delivery programmes; • An evaluation of whether or not the Proposed Development may assist or impede delivery of elements of relevant BAPs; and • Consideration of priority species listed within the HNBAP, of which is required to fulfil policies 57-60 of the HwLDP. THC agreed that reptiles, amphibians and terrestrial invertebrate surveys can be scoped out of the EIA, however, Species Protection Plans (SPPs) should be provided for reptiles and amphibians detailing how these will be protected, should they be encountered on site.	Details of baseline ecological studies (desk study and field surveys) conducted to inform this Chapter are provided in Appendices 8.1 – 8.6, and an assessment of likely impacts and proposed mitigation measures are provided in Sections 8.8 – 8.11, or the separate HRA Report in the case of Ben Alder and Aonach Beag SAC. Proposed habitat restoration and enhancement measures are detailed within the OBEMP (Appendix 8.6). Mitigation measures to protect protected species are detailed in Section 8.7, which would be delivered via SPPs post-consent.
			Protected Species The presence of protected species such as Schedule 1 Birds or European Protected Species must be included and considered as part of the planning application process, not as an issue which can be considered at a later stage. Any consent given without	Baseline information relating to (non-avian terrestrial) protected species presence / potential presence is detailed in Appendices 8.2, 8.4 and 8.5,

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
			due consideration to these species may breach European Directives with the possibility of consequential delays or the project being halted by the European Commission.	and relevant mitigation measures are provided in Section 8.7. Birds are addressed separately within Chapter 10: Ornithology , and aquatic species are addressed separately within Chapter 11: Aquatic Ecology .
			Aquatic Environment An assessment of the impact of reduced water flow into outflow watercourses from both lochs (Loch Earba and Loch Leamhain) and Loch Laggan will be required as part of the EIAR. An assessment of aquatic interests within local watercourses, including downstream interests that may be affected by the proposed development is required. Consultation input from local fisheries board(s) should also be evidenced within the EIAR, where relevant.	An assessment of impacts relating to aquatic ecology is addressed in Chapter 11: Aquatic Ecology. An assessment of the impacts of water flow as a result of the Proposed Development upon Ben Alder and Aonach Beag SAC is addressed in the HRA Report, and impacts upon Ben Alder and Aonach Beag SSSI within this Chapter.
			Deer If wild deer utilise the site, an assessment of the potential impact on deer will be required as part of the EIA. This should address deer welfare, habitats and other interests.	Information relating to potential impacts upon deer and deer management is addressed in paragraphs 8.8.62 - 8.8.64, 8.8.98 - 8.8.100 and Appendix 8.6 .
			Biodiversity Enhancement As per pre-application advice, THC advise that a BEMP will be required in order to demonstrate how the requirements Policy 3 within NPF4, and Policies 57-60 of the HwLDP, will be met. Use of a metric to present biodiversity enhancement (such as Natural England's Biodiversity Net Gain (BNG) Metric) is recommended.	Habitat restoration and biodiversity enhancement measures are detailed within an OBEMP (Appendix 8.6).
			Forestry	Following consultation with THC and NatureScot on 01.08.23

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
			THC state that the EIAR should provide a baseline survey of the plants (including fungi, lichens and bryophytes) and trees present on the site to determine the presence of any rare or threatened species. The assessment should indicate areas of woodland / forestry plantation which may be felled to accommodate new development (including the access), including any off-site works / mitigation. Compensatory woodland is a clear expectation of any proposals for felling, and thereby such mitigation needs to be considered within any assessment. If trees are to be removed, compliance with the Scottish Government's Control of Woodland Removal Policy must be demonstrated. Areas of retained forestry or tree groups should be clearly indicated and methods for their protection during construction clearly described. Consideration must be given to the full area required for the construction access road through trees / woodlands and the impacts on these identified. Any areas of woodland listed in the AWI should be safeguarded from adverse impacts. Further, as part of habitat management proposals and to offset the carbon of the construction process, it is considered that areas of woodland should be planted.	(see below), the requirement for specialist fungi, lichen and bryophyte surveys associated with ancient woodland within the proposed inundation zone is no longer considered necessary for the context of the EIAR. Woodland is addressed within this Chapter and Chapter 9: Forestry. A Tree Constraints Plan, AIA and TPP are contained in Appendices 9.1 and 9.2. Tree and woodland loss has been minimised, however due to the nature of the Proposed Development, some small-scale native woodland and AWI habitat loss is unavoidable. Compensatory woodland planting that accords with the Scottish Governments Policy on Control of Woodland Removal (CoWRP), is detailed in Chapter 9 – Forestry and Appendix 8.6.
SEPA	Pre-application advice and scoping response	13.03.23	Invasive Non-native Species The developer should address any issues associated with Invasive Non-Native Species (INNS) as outlined in the SEPA Position Statement on Transfer of Raw Water across catchment boundaries⁵.	Transfer of invasive non-native species within the aquatic environment is addressed in Chapter 6: Hydrology and Water Management, and

⁵ https://www.sepa.org.uk/media/594214/wat-ps-22-01_raw-water-transfers.pdf

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
				Chapter 11: Aquatic Ecology. Where relevant to Ben Alder and Aonach Beag SAC and SSSI, information is also contained within this Chapter and the separate HRA report.
			Fish The loss of brown trout habitat will need to be assessed.	Fish are addressed in Chapter 11: Aquatic Ecology.
			GWDTE SEPA state that the following information must be included in submission of the EIAR: - Results of a site-specific assessment determining whether such potential GWDTE habitats are actually groundwater dependant in the particular setting; - Finalised habitat plans detailing NVC results; - Tables quantifying the area of GWDTE that will be lost by the development (including inundation) and details of proposed compensation measures; - A map demonstrating that all GWDTE are positioned at least 100m from all excavations shallower than 1m, and at least 250m from excavations deeper than 1m and proposed groundwater abstractions. If micro-siting is to be considered as a mitigation measure, the distance of survey needs to be extended by the proposed maximum extent of micro-siting. The survey will need to extend beyond the site boundary where the distances require it. If the minimum buffers above cannot be achieved, a detailed site specific qualitative and/or quantitative risk assessment will be required. We are likely to seek conditions securing appropriate mitigation for all GWDTE affected.	Results of a NVC survey of land within 250m of proposed infrastructure are summarised within this Chapter, with full details provided in Appendix 8.3 and mapping shown in Figure 8.3 . A detailed GWDTE assessment and mapping is presented in Appendix 12.4 .
			Peat A PMP has been requested. All excavated peat must be reused on site or elsewhere for environmental benefit, with permanent storage or disposal not being acceptable.	A PMP is provided in Appendix 12.2: Peat Management Plan.

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
			Disturbance of peat should be minimised and the final submission should include a plan showing the extent of disturbed area. The area of peatland disturbed (including due in maximum inundation and the effects of inundation due to erosion on the surrounding peat) should be confirmed. Information should be provided on how areas of disturbed and undisturbed peat within the inundation area will be managed so that carbon loss is reduced. Development should avoid disturbing the area of deep peat south of the existing track to Lochan Earba. We note that the other areas surveyed at this time generally have shallow peat. The existing track to Lochan Earba should be utilised and new floating track should be used where possible to reduce the volume of excavated peat and should be shown on a clear plan. Any proposals for peatland restoration should be contained within a Habitat Management Plan (HMP). This Plan should include proposals for peatland restoration works on the site as mitigation for peat habitat loss and make use of disturbed peat, including for example, restoration of any redundant tracks or historic peat cuttings. Such works could also help compensate for loss of GWDTE. We encourage the applicant to go beyond the minimum restoration area to compensate for the lost peat and habitat area; this is to allow a margin for uncertainty about how well the modified bog will respond to the restoration, and beyond that, enhancement as a gain for the environment.	Details of proposed peatland restoration are provided in Appendix 8.6 .
Scottish Forestry	Scoping response	21.02.23	Forestry The EIAR should contain detailed information on the types and areas of woodland to be felled and restocked as a result of the proposed development, for both proposed inundation area and all associated infrastructure (e.g. proposed grid connections). Detailed information on any compensatory planting proposals should also be provided. All felling, restocking and compensatory planting proposals must be compliant with the UK Forestry Standard. Any compensatory planting required as a result of the proposed development may also need to be considered under The Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017⁶ and should follow the process for preparing a woodland creation proposal, as set out in relevant guidance⁷.	Woodland is addressed within this Chapter and Chapter 9: Forestry. Compensatory woodland planting that accords with the Scottish Government's Policy on Control of Woodland Removal (CoWRP), is detailed in Chapter 9 – Forestry and Appendix 8.6.

⁶ <https://forestry.gov.scot/support-regulations/environmental-impact-assessment>
⁷ <https://forestry.gov.scot/publications/support-and-regulations/109-woodland-creation-application-guidance>

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
Jim McIntosh	Scoping response	24.02.23	Terrestrial Ecology The Lochan a' Bhealaich Leamhainn area has the same solid (bedrock) geology⁸ which outcrops in the adjacent Ben Alder and Aonach Beag SSSI and SAC, where it results in very important and rare plant communities. Whether there are any outcrops of the same solid geology with similar communities is unknown, however a detailed survey of rare⁹ Arctic-alpines plants and habitats in the vicinity of the lochan is recommended.	A detailed NVC survey of all land within 250m of proposed infrastructure was carried out in July 2023, and Jim Mackintosh was consulted in this process. The results of the survey, including information on rare plant species, are summarised within this Chapter, with full details provided in Appendix 8.3.
THC and NatureScot	Additional Consultation: meeting to discuss approach to compensation and enhancement	01.08.23	NatureScot requested the NVC report to confirm that the coverage is sufficient. NatureScot recommended that a separate HRA for Ben Alder and Aonach Beag SAC is provided, and the assessment of the SAC should therefore be removed from the EIA chapter and added to the HRA, with cross-referencing applied in order to avoid duplication. NatureScot requested that access tracks, the extent of hairpin bends and benching requirements for access tracks should be mapped and associated land take included in habitat loss calculations. The potential risk of habitat fragmentation between hairpin bends was also raised. NatureScot commented that the presence of montane peatland is one of NatureScot's key concerns at this site, therefore accurate mapping and descriptions of this habitat type are required. Impacts upon montane bog in good condition will result in an objection from NatureScot on the grounds of national interest and impacts on eroded or bare montane bog may still raise an objection, but NVC data and condition information is important for this assessment. A 10:1 restoration ratio, in	Following receipt of the NVC baseline survey report, NatureScot confirmed that the NVC survey coverage was sufficient for impact assessment purposes (by email dated 16.10.23). A separate HRA Report has been produced for Ben Alder and Aonach Beag SAC. Access track cut and fill requirements have been modelled and the required working corridor calculated and mapped, which have been included in habitat loss

⁸ Coire Cheap Formation – Semipelite, metacarbonate-rock and calcsilicate-rock

⁹ The terms 'rare species' refers to those designated as Nationally Rare or Scarce, those on the Great Britain Red List, and Scottish Biodiversity List species.

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
			accordance with most recent guidance¹⁰, is expected for bog compensation, including specifically for montane bog. Interpretation of NatureScot's recent peatland guidance¹⁰ was discussed, and several clarifications made by NatureScot, including: bog pools should be considered as part of the whole bog unit; and the NatureScot guidance spreadsheet should be filled in with the application, along with gpx information supplied for points included in the guidance template. THC confirmed that there is no specific requirement to use the Natural England metric, nor any other metric, when demonstrating compensation and significant enhancement. A metric can however be used for ease of demonstrating enhancement. Should a metric be applied, this should exclude irreplaceable habitat which would be addressed under bespoke compensation agreements (i.e through liaison with NatureScot for priority peatland and the THC Forestry Officer for ancient woodland). The possibility of offering different bespoke compensation and enhancement options, which would not necessarily fit into like-for-like compensation or metric trading rules, but which would offer wider benefits (such as additional woodland creation / regeneration / re-wilding / deer control / catchment enhancement), was discussed and agreed in principle. The option of deer control could be considered as an enhancement measure as part of proposals for heathland restoration or woodland creation. Meaningful enhancements should be demonstrated and a holistic approach applied.. Due to the lack of significant lichen and bryophyte assemblage identified within the strip of ancient woodland in the proposed inundation zone during forestry and NVC survey, the requirement for lichen, bryophyte and fungi surveys is no longer considered necessary, and this approach was agreed.	calculations (see Figure 8.3 and Table 8.10). The Phase 1 and NVC survey, carried out in July 2023, details the locations and descriptions of montane peatland (full details are provided in Appendix 8.3, and summarised within this Chapter). Peatland restoration proposals are contained in Appendix 8.6. NatureScot's peatland guidance spreadsheet is contained in Appendix 8.7: NatureScot Peatland Guidance Site Visit Template. Feedback from the consultation meeting has been used to develop bespoke compensation and enhancement proposals within the OBEMP (Appendix 8.6), with further consultation on development of the proposals undertaken (see below).
THC and NatureScot	Additional Consultation: meeting to discuss and	5.12.23	An overview document of emerging proposed biodiversity compensation and enhancement proposals was provided to NatureScot and THC, to allow for comment and ongoing input. In summary, the overview proposals included: 813 ha of peatland restoration, 68 ha of native woodland creation, reduced deer numbers (8 per km ²)	The initial outline OBEMP proposals have been substantially revised, and additional information provided,

¹⁰ NatureScot (2023) Advising on Peatland, Carbon-rich Soils and Priority Peatland Habitats in Development Management. [online] Available at <https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management> [Accessed in August 2023]. This guidance has since been revised (November 2023).

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
	agree emerging compensation and enhancement proposals		across c. 14,000 ha, Rhododendron and bracken control, and a range of species-specific features. The key comments provided are summarised below. Peatland Restoration and Deer Management: NatureScot's peatland adviser was unfortunately unable to attend, and therefore further detailed comments relating to peatland restoration were not able to be provided. Deer management was discussed, and concerns were expressed that the 8 deer per km² proposed in the initial outline could be too high for peatland / montane bog restoration. A proposed targeted and adaptive approach to deer management was discussed, and there was an acknowledgement that site-specific deer management is likely to be more important than the overall reduction in numbers estate-wide in terms of effects on proposed restoration areas. NatureScot's deer expert provided further written comments after the meeting (dated 12.12.23) which stated: 'A density of 7-8 deer/km² directly on upland blanket bog is likely to heavily impact on habitat and therefore any restoration. However, if this is the average density over the wider estate, blanket bog may not be as impacted as it is a less favoured habitat for deer, and actual densities / utilisation on the bogs are likely to be lower than surrounding habitat. That said, an average density of 7-8 per km² will be too high to protect and restore more sensitive habitats such as native woodlands, willow scrub and the other montane communities identified on the estate. I would advise, for biodiversity enhancement, the plan should be aiming to manage the deer population so that these rare and more sensitive communities are also improved alongside blanket bog... A dedicated deer management plan should incorporate a population model detailing how the prescribed culling regime will deliver and maintain the appropriate density over the area of ground available post losses / exclusion... The deer management plan should also incorporate a regime of regular (ideally annual) monitoring of herbivore impacts to the estate's priority habitats. In order to maintain low impacts in priority habitats culling targets in the plan will need to be adaptive for however long it takes for restoration to be successful.' Ancient Woodland and Tree Planting: It was confirmed that deer fencing would be used around all tree planting areas.	to address consultee comments received, particularly comments relating to deer. Section 5 of the OBEMP (Appendix 8.6) outlines the revised proposals, with the rationale for the revised proposals provided in Section 5.3 of Appendix 8.6. Further information on deer management and woodland proposals, along with a detailed rationale for the revised proposals and approach to deer management, including population model information is provided in Appendix 8.6.2 of Appendix 8.6. The report provided in Appendix 8.6.2 has been produced by Victor Clements, a deer and woodland specialist. Ornithology comments have also been addressed in the OBEMP (Appendix 8.6).

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
			THC's forestry officer provided written comments after the meeting (dated 11.12.23): It was confirmed that Control of Woodland Removal Policy refers to the area of woodland that would be lost, and not a number of trees lost. THC's forestry officer highlighted that NatureScot's Guide to understanding the Scottish Ancient Woodland Inventory (AWI) states that '<i>In Scotland, Ancient Woodland is defined as land that is currently wooded and has been continually wooded, at least since 1750.</i>' This relates to Ancient semi-natural woodland (ASNO1750) or category 1a in the Inventory. The area on site that is listed in the Inventory is ASNO1860 so did not exist in 1750 and would not be considered under NPF4 policy 6 b)i which notes that '<i>Development proposals will not be supported where they will result in... Any loss of ancient woodlands, ancient and veteran trees, or adverse impact on their ecological condition.</i>' THC's forestry officer commented that it appears that the area recorded on the AWI is remnants of ancient woodland but is in poor condition judging by the baseline survey information supplied, and given the poor condition of the area recorded in the AWI it would not be reasonable to try to safeguard it. THC's forestry officer confirmed that much of the woodland loss on site would have to be considered against NPF4 Policy 6 b)ii which notes that '<i>Development proposals will not be supported where they will result in... Adverse impacts on native woodlands, hedgerows and individual trees of high biodiversity value...</i>' However, the amount of compensatory woodland planting proposed in comparison with the level of total woodland removal could on this occasion be accepted providing there is a detailed and robust Compensatory Planting Plan supplied in support of any subsequent planning application. Ornithology: THC confirmed that the peatland restoration proposals would be positive for birds. THC recommended including artificial nest sites for breeding raptors, with peregrine and osprey nest sites specifically discussed. THC commented that they would like to see evidence of whether changing water levels would impact diver raft proposals. Other Matters: THC confirmed that they would want to see a general idea of the rough habitat areas involved in the deer control areas proposed for wet heath compensation, to give confidence that there is sufficient wet heath areas included. Desk-based habitat overview information will be provided in the OBEMP.	

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
			THC queried whether the proposed re-wetting of the Allt Labhrach could count towards enhancement on additionality grounds, if it is a SEPA requirement. THC confirmed that a minimum of 30 years of management / monitoring would be expected as part of the BEMP. THC's planning officer confirmed that he cannot see any issues with the compensation / enhancement proposals being outside of the red line boundary, subject to appropriate legal agreements being in place. It was confirmed that draft THC biodiversity planning guidance has just gone out to consultation and should be considered in the assessment.	
NatureScot & THC	Additional consultation: Invitation to comment on revised OBEMP proposals	22.1.24	Victor Clements' report (provided in Appendix 8.6.2, with minor revisions), outlining revised proposals, was provided to THC and NatureScot for comment. There has been insufficient time to hold a further meeting or conduct a site visit ahead of the submission of the planning application. However, THC's Ecology Officer has verbally provided some initial comments on the revised proposals, summarised as follows: A concern over whether the proposed deer numbers are compatible with deliverability of the peatland restoration was raised. More emphasis on heathland was raised. Re-wetting of the Allt Labhrach being a SEPA requirement was also raised. NatureScot's deer adviser provided comments on the revised proposals (in an email dated 2.2.24), summarised as follows: It was agreed that reducing the overall deer population density to 8 deer per km² across the estate is likely to benefit blanket bog, with existing information indicating that current herbivore impacts are sufficient to maintain the blanket bog and wet heath in its present state and possibly allow further recovery of these communities. However, other sensitive habitats (native woodland, Alpine summit communities of moss, sedge and three-leaved rush, siliceous scree, upland tall herb communities, and montane willow scrub) are less tolerant of deer pressure. If the scheme is also aiming to enhance those more sensitive plant communities, more ambitious culling would be required. Where woodland creation or restoration is proposed, densities of c. 8 deer per km² are likely to be too high for maintaining woodland regeneration without initially excluding deer. Fenced exclosures would be necessary in the short-term, but support for exclosures should be under the condition that they can only ever be a stopgap. Any agreed plan should ensure that fenced exclosures are reinforced by appropriate	Further details on heathland compensation and re-wetting of the Allt Labhrach are provided within the OBEMP (Appendix 8.6). The proposals aim to enhance the habitats which are more sensitive to deer browsing within a large 1,494 ha deer enclosure (see Appendix 8.6 for further details). The proposals include a commitment to removing the enclosure in the longer-term, once suitable conditions have been reached and can be maintained. Details of a deer population model for appropriate culling levels to support the deer management proposals are provided in Appendix 8.6.3 of Appendix 8.6. The proposed extent of bog restoration has been increased from 600 ha, up to 625 ha. Information relating to bog

Consultee	Consultation Type	Date	Issue Raised	Response / action Taken
			management, which ideally enables deer to return after a defined period of time, without a return of adverse impacts to the woodland flora. To compensate for the initial loss of shelter and forage by the construction of large fenced exclosures, additional levels of culling will be initially required to minimise the displacement of deer impacts onto neighbouring habitats. NatureScot's peatland advisor provided comments (by email dated 9.2.24) summarised as follows: It was agreed that the scale of restoration (restoring 600 ha to compensate for the loss of 74 ha of bog habitats) is reasonable, although it could closer align to the recommendations of NatureScot's guidance of 1:10 loss:restoration. The proposal to restore large areas of montane peatland was welcomed. It is advised that a review of the proposal should consider a small increase to the total area restored, but more importantly consideration of hydrological units should be carried out. It was commented that it is not clear how successful the restoration is likely to be as the proposed work is focused on the least damaged (and easiest to restore) areas, but as they are linked to areas which have greater erosion the success of these areas is less likely as they will have greater pressure on them from increased runoff from the more eroded areas. Another option would be to focus on all suitable restoration areas within specific locations. It was strongly recommended that the peatland restoration aim should be to achieve restoration of 'hydrological units' and focus on restoration of areas which the restoration is likely to be sufficient for the whole area to recover in time. This would result in the most benefit from the restoration work.	restoration and hydrological units is provided in Appendix 8.6.4 of Appendix 8.6. Bog restoration will prioritise restoring suitable areas within specific hydrological units, with the aim of achieving restoration of hydrological units. The final bog restoration areas to be restored would be determined via further survey work and risk assessment, during development of the detailed BEMP post-consent.

Features Scoped out of Assessment

- 8.3.4 Ecological features have been scoped out of further assessment where there is no potential for significant effects upon the ecological feature, or where the ecological feature is not considered important at a local level or above, is not a Groundwater Dependent Terrestrial Ecosystem (GWDTE), is considered to be likely absent from the Study Area or is not subject to legal protection.
- 8.3.5 On review of baseline data obtained through desk and field-based studies, ecological features detailed within **Table 8.2** have been scoped out of further assessment.

Table 8.2 Ecological Features Scoped out of Assessment

Feature	Justification for Scoping out of Assessment
Statutory Designated Sites	
Craig Meagaidh SAC, Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR)	Located at least 0.29 km from the proposed access off the A86 (approximately 1.2 km in the case of the SAC, and 0.4 km for the SSSI). These sites are designated for a range of upland habitats and plant species. Given their location and lack of hydrological connectivity to the Site, no pathways for direct effects have been identified. The only pathway for potential indirect effects relates to air quality, in relation to dust and exhaust emissions. However, air quality effects upon these ecological features have been scoped out from assessment at the scoping stage, given that potential construction activities are situated further than 50 m from designated sites, and that construction traffic is expected to fall below the screening criteria volume for ecological features. Scoping out of these sites has been agreed with NatureScot during Scoping.
Drumochter Hills SAC and SSSI	These sites are designated for a range of upland habitats and plant species. They are located at least 7 km from the Site with no hydrological connectivity. Given the separation distance and lack of connectivity, no potential pathways for effects have been identified. Scoping out of these sites has been agreed with NatureScot during Scoping.
Coire Bhachdaidh SSSI	This site is designated for a range of upland habitats and vascular plant species. It is located at approximately 8 km from the Site with no hydrological connectivity. Given the separation distance and lack of connectivity, no potential pathways for effects have been identified. Scoping out of this site has been agreed with NatureScot during Scoping.
River Spey SAC and SSSI	These sites lie at least 9 km from the Site, and are designated for aquatic features. They lie within a separate catchment, therefore there is no hydrological connectivity, and no effects are predicted. Scoping out of these sites has been agreed with NatureScot during Scoping.
Monadhliath SAC & SSSI	These sites lie over 9 km from the Site (and over 10 km from construction works) and are designated for a range of upland habitats and black mountain moth <i>Glacies coracina</i> . Given the separation distance and lack of ecological and hydrological connectivity, no potential pathways for effects have been identified.
Habitats	

Feature	Justification for Scoping out of Assessment
Bracken: National Vegetation Classification (NVC) codes U20a, U20b, U20c	Assessed as less than local importance ¹¹ .
Marsh/marshy grassland: NVC codes M25a, M25b, M25 (species-poor)	
Semi-improved neutral grassland: NVC code MG6b	
Unimproved acid grassland: NVC codes U4d, U4e, U5e, U6d	
Scrub: NVC code W23a	
Coniferous plantation woodland	
Built environment (existing tracks)	
Rock exposure and waste (natural): Scree - basic	
Rock exposure and waste (natural): Other exposure - basic	
Protected and notable species	
Terrestrial invertebrate survey	NatureScot guidance ¹² states that terrestrial invertebrate surveys are not normally required to inform the EIA with standard mitigation in place. Whilst this advice relates primarily to wind farms, it is still considered relevant in this context given that similar habitats would be affected. It is proposed that a habitat-based assessment will be undertaken to inform the assessment of potential impacts and the need for mitigation measures during construction. Scoping out this survey has been agreed with NatureScot during Scoping.
Amphibian survey	The Site is considered unlikely to support amphibian species of conservation concern, notably great crested newt <i>Triturus cristatus</i> due to its location (with no known records in this area of the Highlands) and setting with suboptimal habitat for breeding amphibians. Scoping out this survey has been agreed with NatureScot during Scoping.
Reptile survey	It is expected that reptiles would be present in low densities throughout the Site. Due to impracticalities of surveying over such a large area, a habitat-based assessment has been carried out to

¹¹ Within this Chapter, the importance of identified ecological features has been assessed to place their relative nature conservation value within a defined geographical context. See Section 8.6 for further details.

¹² NatureScot (2022) General pre-application and scoping advice for onshore wind farms. Available at: <https://www.nature.scot/doc/general-pre-application-and-scoping-advice-onshore-wind-farms#Purpose> [Accessed in January 2023]

Feature	Justification for Scoping out of Assessment
	inform the assessment of potential impacts and any required mitigation measures. Scoping out this survey has been agreed with NatureScot during Scoping.
Specialist bryophyte and fungi survey	A request was made by THC during scoping for surveys to include bryophytes and fungi, in relation to forestry (see Table 8.1). However, no significant potential bryophyte, lichen or fungi interest was noted by the baseline habitat surveyors or forestry consultant within forestry / AWI areas during baseline surveys, therefore further specialist survey was not considered necessary to inform the EIA. This approach was agreed with THC in a meeting on 1st August 2023.
Mountain hare <i>Lepus timidus</i>	Mountain hare was recorded in the desk study. However, due to the mobility of this species and the extensive areas of suitable habitat in the surrounding landscape it is considered unlikely to be significantly affected and detailed assessment of effects on this species have been scoped out.

8.4 Legislation, Policy and Guidance

Legislative Context

8.4.1 The following legislation has been taken into consideration during the assessment of effects on terrestrial ecology:

- *Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive'), as transposed into Scottish law through the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) (the 'Habitats Regulations');*
- *Wildlife and Countryside Act 1981 (as amended) (the 'WCA');*
- *Nature Conservation (Scotland) Act 2004 (as amended);*
- *The Wildlife and Natural Environment (Scotland) Act 2011 (as amended) (WANE Act);*
- *Protection of Badgers Act 1992 (as amended by the Nature Conservation (Scotland) Act 2004); and*
- *Statutory instrument 1143/2014 on invasive alien species (the Invasive Species Regulation) (as amended in Scotland).*

Policy Context

8.4.2 Planning policy of relevance to the assessment of effects on terrestrial ecology includes:

- *National Planning Framework 4 (NPF 4)*¹³:
 - Policy 3 (Biodiversity) intends to protect biodiversity, reverse biodiversity loss, deliver positive effects and strengthen nature networks;

¹³ Scottish Government (2023) National Planning Framework 4 [online] Available at: <https://www.gov.scot/publications/national-planning-framework-4/> [Accessed in August 2023]

- Policy 4 (Natural Places) intends to protect, restore and enhance natural assets making best use of nature- based solutions; and
- Policy 6 (Forestry, Woodland and Trees) intends to protect and expand forests, woodland and trees.
- *The Highland-wide Local Development Plan (HwLDP) 2012¹⁴:*
 - Policy 51 (Trees and Development);
 - Policy 52 (Principle of Development in Woodlands);
 - Policy 55 (Peat);
 - Policy 57 (Natural, Built and Cultural Heritage);
 - Policy 58 (Protected Species);
 - Policy 59 (Other Important Species); and
 - Policy 60 (Other Important Habitats).
- *Highland's Statutorily Protected Species Supplementary Guidance¹⁵*
- *Trees, Woodlands and Development Supplementary Guidance (2013)¹⁶*
- *West Highland and Islands Local Development Plan (WestPlan) 2019¹⁷*;
- *Cairngorms National Park Local Development Plan 2021¹⁸*;
- *The Highland Council's Draft Biodiversity Planning Guidance¹⁹*; and
- *Scottish Government's Draft Planning Biodiversity Guidance²⁰*.

Technical Guidance

8.4.3 Technical Guidance of relevance to this assessment includes, but is not limited to:

¹⁴ The Highland Council (2022) Highland Wide Local Development Plan April 2012 [online] Available at: https://www.highland.gov.uk/info/178/development_plans/199/highland-wide_local_development_plan [Accessed in August 2023]

¹⁵ The Highland Council (2013) *Highland Statutorily Protected Species Supplementary Guidance* [online] Available at: https://www.highland.gov.uk/downloads/file/3026/highland_statutorily_protected_species_supplementary_guidance [Accessed in August 2023]

¹⁶ The Highland Council (2013) *Trees, Woodlands and Development Supplementary Guidance* [online] https://www.highland.gov.uk/downloads/file/354/trees_woodlands_and_development_supplementary_guidance Available at: [Accessed in August 2023]

¹⁷ The West Highland and Islands Local Development Plan [online] Available at: https://www.highland.gov.uk/info/178/development_plans/582/west_highland_and_islands_local_development_plan [Accessed in August 2023]

¹⁸ The Cairngorms Local Development Plan [online] Available at: <https://cairngorms.co.uk/planning-development/ldp-2021/> [Accessed in August 2023]

¹⁹ The Highland Council (2023) Draft Biodiversity Planning Guidance. Report No: ECI/56/2023. Date: 16 November 2023.

²⁰ Scottish Government (2023) Draft Planning Guidance: Biodiversity. Date: 30 November 2023. Available at: [https://www.gov.scot/publications/scottish-government-draft-planning-guidance-biodiversity/#:~:text=The%20Scottish%20Biodiversity%20Strategy%20is,nature%20by%202030%20\(30x30\)](https://www.gov.scot/publications/scottish-government-draft-planning-guidance-biodiversity/#:~:text=The%20Scottish%20Biodiversity%20Strategy%20is,nature%20by%202030%20(30x30)) [Accessed in December 2023]

- *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*²¹ (henceforth referred to as the CIEEM guidelines);
- *Advising on Peatland, Carbon-rich Soils and Priority Peatland Habitats in Development Management*²². It is understood that this guidance is likely to be revised in the near future²³.
- *Highland Nature Biodiversity Action Plan (HNBAP) 2021 - 2026*²⁴;
- *The Scottish Biodiversity List (SBL)*²⁵;
- *Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (GWDTEs)*²⁶;
- *Planning for development: What to consider and include in deer assessments and management at development sites*²⁷;
- *Circular 1/2017: Environmental Impact Assessment Regulations*²⁸.

8.5 Methodology

Desk Study

- 8.5.1 Desk study data have been gathered to identify nature conservation designations and existing records of protected and notable habitats and species of relevance to the assessment. **Table 8.3** sets out key sources of desk study information and associated spatial coverage searched.

²¹ CIEEM (2022) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.

²² NatureScot (2023) Advising on Peatland, Carbon-rich Soils and Priority Peatland Habitats in Development Management. [online] Available at <https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management> [Accessed in August 2023]. This guidance has since been revised (November 2023).

²³ As indicated at the Scottish Renewables Onshore Wind and Planning and Consents Forum on 2nd November 2023, where it was noted that the guidance was produced without consultation, and is proving to be unworkable for the renewable energy industry. It was also noted at the Forum that during a meeting of the Scottish Government's Peatland Advisory Group, on 31st October 2023, NatureScot accepted that the guidance must be revised.

²⁴ Highland Nature Biodiversity Action Plan [online] Available at: <https://www.highlandenvironmentforum.info/biodiversity/action-plan/> [Accessed in August 2023]

²⁵ The Scottish Biodiversity List is a list of plants, animals and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland. The Scottish Biodiversity List is available online at <https://www.nature.scot/doc/scottish-biodiversity-list> [Accessed in August 2023].

²⁶ SEPA (2017). Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Land Use Planning System SEPA Guidance Note 31 (LUPS – GN31). Version 3 Issued 11 September 2017. [online] Available at: <https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions.pdf> [Accessed in August 2023]

²⁷ SNH (2016). Planning for development: What to consider and include in deer assessments and management at development sites. [online] Available at: <https://www.nature.scot/doc/guidance-planning-and-development-what-consider-and-include-deer-assessment-and-management> [Accessed in August 2023]

²⁸ Scottish Government (2017) Circular 1/2017: Environmental Impact Assessment Regulations [online] Available at: <https://www.gov.scot/collections/planning-circulars/> [Accessed in August 2023]

Table 8.3 Desk Study Data Sources

Feature	Description	Spatial Coverage	Data Source
Statutory designated sites of European importance	SACs and Ramsar sites	Site and associated 10 km buffer	NatureScot Sitelink online mapping tool ²⁹
Statutory designated sites of national importance	SSSI, NNR, and Local Nature Reserves (LNR)		
Locally designated sites	Local Nature Conservation Sites (LNCS)	Site and associated 2 km buffer	The Highland Biological Recording Group (HBRG) ³⁰ ; National Biodiversity Network (NBN) Atlas ³¹ (for contextual species information)
Legally protected and notable species	Habitats and species listed on Schedules II and IV of the Habitats Regulations; Legally protected species listed in Schedules 1, 5 and 8 of the WCA; Species listed within the SBL as being of principal importance of biodiversity conservation in Scotland; and Badgers, who are afforded protection under the Protection of Badgers Act 1992.		
Legally controlled species	Species listed on Schedule 9 of the WCA		
Habitats and features of interest	Watercourses and waterbodies, woodland, heath and mire habitat; Habitats within the SBL and therefore of principle importance for biodiversity conservation in Scotland.	Site itself (2 km for ancient woodland)	Habitat Map of Scotland (HabMoS) ³² ; Google Maps ³³ and Google Earth ³⁴ Websites; Ancient Woodland Inventory (Scotland) ³⁵

²⁹ The NatureScot Sitelink website [online] Available at: <https://sitelink.nature.scot/map> [Accessed in January 2023]

³⁰ The Highland Biological Recording Group (HBRG) website is available here: <https://www.mobile.hbrg.org.uk/>

³¹ www.nbnatlas.org

³² The EUNIS Land Cover Scotland map data set is available online at: https://map.environment.gov.scot/sewebmap/?layers=eunisLandCoverScotland_natWoodSurvey_habmosNVCToAnnexIAndEUNIS_HabVegSurvey1_saltmarshSurvey1_habmos-OtherLanduse_coastalVegShingle1&extent=-245528,573191,665472,1169192 [Accessed in January 2023]

³³ Google maps available online at: <https://www.google.co.uk/maps> [Accessed in August 2023]

³⁴ Google Earth available online at: <https://earth.google.com/web/> [Accessed in August 2023]

³⁵ The Ancient Woodland Inventory database [online] Available at: <https://www.data.gov.uk/dataset/c2f57ed9-5601-4864-af5f-a6e73e977f54/ancient-woodland-inventory-scotland> [Accessed in January 2023].

Feature	Description	Spatial Coverage	Data Source
Other relevant information	Relevant ecological information from surrounding large scale infrastructure projects (where available)	10 km	The Highland Council Planning Portal ³⁶
Hydrogeological information	Hydrogeological information	Site itself	British Geological Survey 2022 ³⁷ ; Scottish Government (2021) ³⁸ and SEPA (2021) ³⁹

8.5.2 In addition to above, several data sources were used to inform the development of the OBEMP, as detailed in **Appendix 8.6**. Areas of potential peatland restoration suitability across the Ardverikie Estate were initially identified by Angus Davidson Ltd (ADL), utilising data sources such as the 2016 Carbon and Peatland Map⁴⁰, NBN Gateway³¹, and aerial imagery³⁴. Desk-based information on existing habitats across the Ardverikie Estate was gathered from the Scotland land Cover Map LCS88 database⁴¹, aerial photography, and historical Herbivore Impact Assessment (HIA) data for Ardverikie.

Field Study

8.5.3 The Study Areas applied for ecological field surveys are displayed in **Table 8.4**, with a summary of methods used to gather baseline information during each field survey provided below. For full details relating to field survey methods, please refer to **Appendices 8.2 – 8.5**.

³⁶ https://www.highland.gov.uk/info/180/planning_-_applications_warrants_and_certificates/143/planning_permission/4 [Accessed in October 2023]

³⁷ British Geological Survey (2022) Geology of Britain map viewer [online] Available at: <https://mapapps.bgs.ac.uk/geologyofbritain/home.html> [Accessed in February 2023]

³⁸ Scottish Government (2021) Scotlands Soils [online] Available at: <https://soils.environment.gov.scot/> [Accessed in March 2023]

³⁹ SEPA (2021) River Basin Management Plan [online] Available at: <https://www.sepa.org.uk/data-visualisation/water-environment-hub/> [Accessed in March 2023]

⁴⁰ NatureScot (2016) Carbon and Peatland 2016 map. Retrieved from <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/soils/carbon-and-peatland-2016-map> [Accessed in August 2023]

⁴¹ <https://www.hutton.ac.uk/learning/exploringscotland/landcover-scotland-1988> [Accessed in February 2024]

Table 8.4 Ecological Field Survey Areas

Survey Type	Survey Area	Date	Figure Reference
Extended Phase 1 habitat survey	All land within the proposed Site boundary at the time of survey	Summer 2022	Figures 1a – 1c in Appendix 8.2
NVC and update Phase 1 habitat survey	All land within 250 m of proposed above ground infrastructure	July 2023	Figure 1 in Appendix 8.3
Protected mammal survey	All areas of suitable habitat within 250 m of proposed above ground infrastructure	July – August 2023	Figure 1 in Appendix 8.4
Bat Survey: habitat and Preliminary Roost Assessments	All areas within 250 m of proposed above ground infrastructure, with an emphasis on areas to be directly affected by infrastructure / inundation	July 2023	Figure 1 in Appendix 8.5
Bat activity (static detector) survey	Four static detector sample locations within proposed infrastructure / inundation areas	May - June, July, September 2023	Figure 4 in Appendix 8.5
Bat emergence/re-entry surveys of trees	Trees with moderate/high bat roosting potential, within proposed infrastructure / inundation areas	August – September 2023	Figure 3 in Appendix 8.5

Extended Phase 1 habitat survey

- 8.5.4 A Phase 1 habitat survey was carried out by Blairbeg Consulting Ltd. during summer 2022. The survey was carried out in accordance with Joint Nature Conservation Committee (JNCC)⁴² guidance to establish the pattern and distribution of habitat types present across the Study Area. During the survey, broad habitat types were recorded onto Ordnance Survey (OS) maps using Phase 1 habitat codes. Target notes were also recorded to provide further detail on habitats of nature conservation importance, features of interest, and to place areas affected by the Proposed Development in the context of the wider Site.
- 8.5.5 The Phase 1 habitat survey was also extended to include an evaluation of the suitability of habitats within the Site to support protected or otherwise notable species, including otter *Lutra lutra*, water vole *Avicola amphibious*, badger *Meles meles*, red squirrel *Sciurus vulgaris*, pine marten *Martes martes* and Scottish wildcat *Felis silvestris*. Incidental field sign observations pertaining to any of the above species were recorded on a Global Positioning System (GPS) with details provided in target note format.

⁴² JNCC (2010). Handbook for phase 1 habitat survey – a technique for environmental audit. Joint Nature Conservation Committee, Peterborough

- 8.5.6 Following alterations to the design of the Proposed Development, further Phase 1 habitat information was obtained during the NVC survey (see below).

National Vegetation Classification Survey

- 8.5.7 An NVC survey and updated Phase 1 habitat survey was carried out by Tracks Ecology, in July 2023. The survey was carried out in accordance with standard methodology and guidelines⁴³, during which NVC communities were mapped in the field by applying polygons around visible boundaries of homogenous vegetation or mosaic and/or transitional communities. Where readily identifiable, stands were classified and mapped at sub-community level.

Ground Water Dependant Terrestrial Ecosystems

- 8.5.8 Groundwater Dependant Terrestrial Ecosystems (GWDTEs) are wetland habitats that derive their water supply primarily from groundwater as opposed to being rain or surface water fed, often supporting diverse, botanically rich ground-flora communities⁴⁴. Following the NVC survey, habitat communities recorded during the survey were assessed against Scottish Environmental Protection Agency (SEPA) guidelines²⁶ for identifying potential GWDTEs, with an adjusted value based on the site specific setting of the community also provided (see **Appendix 8.3**). A more detailed assessment of the likely groundwater dependence of these communities was then conducted as part of the hydrology assessment (**Chapter 12: Geology, Soils and Water**).

Protected Mammal Survey

- 8.5.9 Surveys for otter, water vole, badger, red squirrel, pine marten and Scottish wildcat were undertaken in July and August 2023 (see **Appendix 8.4**).
- 8.5.10 Surveys followed standard methodologies in place at the time of survey^{45,46,47,48,49,50}. Any field evidence of the above listed protected mammal species was recorded onto a 1:10,000 scale survey map, and the locations of all signs were recorded via the use of a handheld GPS. In addition to field sign surveys, four camera traps were deployed across the Survey Area for a period of

⁴³ Rodwell, J.S. (Ed.) (1991 et seq.). *British Plant Communities. 5 volumes: Vol. 1 (1991) - Woodlands and Scrub; Vol. 2 (1991) - Mires and Heaths; Vol. 3 (1992) - Grasslands and montane communities; Vol. 4 (1995) - Aquatic communities, swamps and tall-herb fens*. Cambridge University Press, Cambridge.

⁴⁴ Confederation of Forest Industries (2018) Practice guide for forest managers to assess and protect Groundwater Dependent Terrestrial Ecosystems when preparing woodland creation proposals. [online] Available at: <https://www.confor.org.uk/media/246950/practice-guide-on-ground-water-dependent-terrestrial-ecosystems.pdf> [Accessed in August 2023]

⁴⁵ Bang, P. and Dahlstrøm, P. (2001) *Animal Tracks and Signs*. Oxford University Press

⁴⁶ Sargent, G. and Morris, P. (2003) *How to find and identify mammals*. The Mammal Society, London

⁴⁷ Davis, A. R. & Gray, D. (2010) *The distribution of Scottish wildcats (Felis silvestris) in Scotland (2006-2008)*. Scottish Natural Heritage Commissioned Report No. 360

⁴⁸ Scottish Natural Heritage (2011) *Scottish Wild Cat Naturally* Scottish Series. SNH Battleby. <http://www.snh.org.uk/pdfs/publications/naturallyscottish/wildcats.pdf>

⁴⁹ Neal, E. and Cheesman, C. (2006) *Badgers*. Poyser Natural History, Cambridge, UK

⁵⁰ Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). *The Water Vole Mitigation Handbook* (The Mammal Society Mitigation Guidance Series). Eds Fiona Matthews and Paul Chanin. The Mammal Society, London

48 nights from 13th July to 30th August 2023, to record evidence of Scottish wildcat or other protected mammals.

Bat Surveys

- 8.5.11 Trees within the Study Area were subject to a ground-level assessment to identify features suitable for roosting bats (Potential Roosting Features (PRF)), following guidance in place at the time of the survey⁵¹ (see Appendix 8.5). PRFs were described and their locations recorded. Trees were assessed for their potential to support roosting bats using standard guidance⁵¹ (negligible, low, moderate, high). Any field evidence of bats (such as droppings or bats themselves) within accessible PRFs (lower than approximately 3 m) was also recorded. There are no buildings within 100 m of proposed infrastructure therefore no Preliminary Roost Assessment of buildings was required.
- 8.5.12 An assessment of the Survey Area for foraging, commuting and roosting opportunities was undertaken based on aerial photography and a walkover.
- 8.5.13 Trees to be affected that were evaluated as having moderate or high suitability, or having a confirmed roost, were subject to the appropriate number of emergence/re-entry surveys, in line with the guidance in place at the time of survey⁵¹. A total of 11 trees were surveyed (see **Figure 3 in Appendix 8.5**) in August and September 2023, with repeat surveys spaced apart by at least two weeks. The surveys were undertaken by a suitably qualified surveyor with the use of a full spectrum bat detector or using high quality night vision aids coupled with bat detectors, in line with recent interim guidance⁵².
- 8.5.14 At the commencement of the surveys, the majority of the Survey Area was assessed to be of limited value to bats due to its largely open and upland habitats. Four static bat detectors were deployed across the Site to monitor bat species and activity levels, with locations targeting areas likely to be of highest value to foraging / commuting bats. Specifically, static detectors were deployed in: scattered woodland immediately north of Loch Earba (at the proposed location of the Shios dam) (location 1); at two locations amongst scattered trees or tree clumps on the north-eastern shore of Loch Earba; within a strip of land mapped on the Ancient Woodland Inventory; within the proposed inundation zone (locations 2 and 3); and on the River Spean by the proposed site access and new bridge crossing (location 4) (see **Figure 4 in Appendix 8.5** for locations). Detectors were deployed in Spring (late May-early June), Summer (mid-late July) and Autumn (late September) 2023, for a period of at least 10 days of suitable weather conditions. Further details, including details of sonogram analysis, are contained in **Appendix 8.5**.
- 8.5.15 Ornithological and aquatic ecology surveys are detailed separately in **Chapter 10: Ornithology** and **Chapter 11: Aquatic Ecology**.

⁵¹ Collins, J. (2016) Bat Surveys for Professional Ecologists. Good Practice Guidelines. Third edition. Bat Conservation Trust, London

⁵² Bat Conservation Trust (2022) Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys

OBEMP Areas

- 8.5.16 In addition to the surveys described above, some additional survey of areas across the wider Ardverikie Estate were undertaken to inform development of the OBEMP, as described further in **Appendix 8.6**. In summary, areas of potential peatland suitability across Ardverikie Estate were surveyed by ADL in 2023 via walkover and drone survey, to record the Phase 1⁴² habitat types and determine their suitability for restoration. Potential options for woodland restoration and deer enclosures were developed by Victor Clements (see **Appendix 8.6.2**), informed by a combination of a site visit in January 2024, desk study review, landowner discussion, and knowledge of the Ardverikie Estate and surrounding areas.

Assessment Methodology

- 8.5.17 The CIEEM guidelines²¹ form the basis of the terrestrial ecological impact assessment presented in this Chapter. The CIEEM guidelines have been endorsed by NatureScot.

Sensitivity of Features

- 8.5.18 In accordance with the CIEEM guidelines, only ecological features which are considered to be present and may be affected by the Proposed Development have been subject to detailed assessment. It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to impacts from the Proposed Development and will remain viable and sustainable.
- 8.5.19 The importance of identified ecological features has been assessed to place their relative nature conservation value within a defined geographical context. For this assessment the following geographic frame of reference has been used:
- International;
 - National (i.e. Scotland);
 - County (i.e. Highland);
 - Local (i.e. within circa (c.) 10 km); and
 - Less than local.
- 8.5.20 For designated sites, their importance reflects the geographical context of the designation. For example, a SSSI would normally be considered nationally important.
- 8.5.21 The value of habitats has been measured against published selection criteria and other relevant data where available. Examples of relevant criteria include Annex 1 of the Habitats Directive, the SBL, and HNBAP.
- 8.5.22 In assigning a level of value to a species, it is necessary to consider its distribution and status, including a consideration of trends based on available historical records. Reference has therefore been made to published lists and criteria where available. Examples of relevant lists and criteria include: species of European conservation importance (as listed on Schedule II and IV of the Habitats Regulations), species defined within the SBL and therefore considered to be of principal importance for biodiversity conservation in Scotland, and priority species listed within the HNBAP²⁴.

Approach

- 8.5.23 The impact assessment process involves the following steps:
- Identifying and characterising potential impacts;
 - Incorporating measures to avoid and mitigate these impacts;
 - Assessing the significance of any residual effects after mitigation;
 - Identifying appropriate compensation measures to offset significant residual effects (if required); and
 - Identifying opportunities for ecological enhancement.
- 8.5.24 When describing impacts, consideration has been given to the following, as appropriate:
- Positive or negative;
 - Extent;
 - Magnitude;
 - Duration;
 - Timing;
 - Frequency; and
 - Reversibility.
- 8.5.25 The impact assessment process considers both direct and indirect impacts. Direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat occupied by a species during the construction process. Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process or feature, e.g. the creation of roads which cause hydrological changes, which, in the absence of mitigation, could lead to the dewatering of adjacent peatland habitat.
- 8.5.26 For the purpose of this assessment, a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local and the scale of significance of an effect may or may not be the same as the geographic context in which the feature is considered important.
- 8.5.27 Consideration of conservation status is important for evaluating the effects of impacts on individual habitats and species and assessing their significance:
- Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions, as well as its distribution and its typical species within a given geographical area.
 - Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

Avoidance, Mitigation, Compensation and Enhancement

- 8.5.28 A sequential process has been adopted to avoid, mitigate and compensate for ecological impacts. This is often referred to as the 'mitigation hierarchy'. It is important for the EIA to clearly differentiate between avoidance, mitigation, compensation and enhancement, the terms of which are defined as follows:

- Avoidance is used where an impact has been avoided e.g. through changes in scheme design;
- Mitigation is used to refer to measures to reduce or remedy a specific negative impact in situ;
- Compensation describes measures taken to offset residual effects, i.e. where mitigation in situ is not possible; and
- Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

Cumulative Effects Assessment

- 8.5.29 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a particular location. The potential for cumulative effects with other developments has been assessed here. The cumulative effects assessment includes projects under construction; consented projects which are not yet under construction and projects for which planning applications have been submitted. Cumulative effects upon Ben Alder and Aonach Beag SSSI have been assessed by considering other developments within the SSSI, and other developments adjacent to the SSSI that could potentially affect it. Beyond the SSSI, for (non-avian) terrestrial features potential cumulative effects are only likely where other developments are located within very close proximity to the Site where the same habitats are being affected, or within the regular range of more mobile species. As such, the cumulative assessment has been restricted to other developments within 5 km (excluding minor developments such as individual dwellings, extensions, driveways and forestry tracks).

Habitats Regulations Appraisal

- 8.5.30 The potential effects upon Ben Alder and Aonach Beag SAC are addressed in a separate **Habitats Regulations Appraisal (HRA) Report**, and are not repeated within this EIA Chapter, as agreed in consultation with NatureScot.

NatureScot Peatland Guidance Site Visit Template

- 8.5.31 In accordance with NatureScot's peatland guidance¹⁰, the Site Visit Template contained within the guidance was completed by Tracks Ecology. It was informed by the NVC survey data collected, and using the assessment criteria contained in Annex 1 of the guidance¹⁰. The Site Visit Template is designed for NatureScot case officers, to assist in determining whether the impacts of the proposal could raise issues of national interest, and to determine whether seeking specialist advice is required.
- 8.5.32 Information on nine sample locations has been collected, sampling all bog habitat areas that lie within or in close proximity to the proposed infrastructure footprint or inundation zone. The assessment of each sample location point is based on the habitat parcel area, rather than being restricted to the specific grid reference. The completed Site Visit Template, and a map showing the locations of the sample locations, is contained in **Appendix 8.7**.

Assumptions and Limitations

- 8.5.33 For the vegetation and protected mammals survey work, the Study Area is large and distributed across rugged terrain with, in some cases, very steep ground which was not always safely accessible. As a result, small areas of steep rock

faces and areas of isolated inaccessible ledges could not be surveyed in detail. Such areas were assessed in the context of surrounding accessible areas along with the use of binoculars and aerial imagery. In addition, small sections of dense plantation woodland were present within the north and southeast of the Study Area. Access was difficult in these areas and some field signs may have been missed. Despite these factors, the limitations are not considered significant, and the results represent an accurate assessment of the Study Area at the time of survey to the best ability of the surveyors and fit for purpose of assessment.

- 8.5.34 With respect to the bat surveys, a number of minor limitations were identified (see **Appendix 8.5**). This relates to:
- Sub-optimal weather during periods of static detector deployment, which were compensated for by extending periods of monitoring to provide an acceptable baseline for 'normal' bat activity at the Site;
 - Use of the Ecobat tool for bat activity comparison purposes is currently unavailable, therefore comparative analysis could not be undertaken, but based on surveyor experience robust assessments of activity in the context of the Site could be undertaken;
 - Emergence/re-entry surveys were undertaken at the latter end of the survey season although the survey approach was in line with the guidance at the time of the surveys;
 - Tree roosts can vary significantly over short and long periods of time;
 - The static detector at location 4 malfunctioned for part of the summer sampling period, although seven nights were still captured during this period;
 - Walked bat activity transects were not undertaken due to health and safety constraints, but sufficient information to inform the assessment on bat activity was collected through static detector sampling instead.
- 8.5.35 Overall, the data obtained provides a clear picture of bat activity across the Study Area and wider environs and as a result it is not anticipated that the limitations affect the robustness of the results to a significant degree.
- 8.5.36 An ecological survey provides only a "snapshot" of the conditions prevailing at the time of survey. Whilst it is considered unlikely that any significant evidence of protected or otherwise notable mammal species was overlooked during survey work, due to the nature of the subjects of ecological surveys it is feasible that species that use the Survey Area may not have been recorded by virtue of their seasonality, cryptic behaviour, habit or random chance. It is considered unlikely however, that additional surveys of the Survey Area would materially alter the conclusions of the baseline survey work. Pre-construction surveys for protected mammal species are proposed, which are intended to address any issues resulting from future changes in the distribution of protected mammal species and provide more detailed baseline data to inform the development of more detailed mitigation proposals and support any future licence applications.
- 8.5.37 Detailed baseline survey work has not been undertaken for the proposed deer enclosure / woodland restoration and deer control areas across the wider Ardverikie Estate (see **Figure 8.7**). Baseline information on these areas has been gathered primarily using desk-based information at this stage. It is considered that sufficient baseline information has been gathered to inform the development of the OBEMP. Baseline botanical survey information would be collected as part of the development of the detailed BEMP, post-consent (see **Appendix 8.6** for further details).

8.6 Baseline Conditions

- 8.6.1 A summary description of ecological features identified through desk and field-based baseline studies are provided below. For full details, please refer to **Appendices 8.1 – 8.5**.

Existing Baseline

Statutory Designated Sites

- 8.6.2 There are no statutory sites designated for non-avian nature conservation purposes within the boundary of the Proposed Development.
- 8.6.3 Several statutory designated sites are however present within 10 km of the Proposed Development, for which details of each are provided in **Table 8.5**. The location of each site is also shown in **Figure 8.1**. **Table 8.5** excludes sites designated solely for geological, ornithological or aquatic ecology reasons⁵³, which are addressed separately in **Chapters 10 – 12**.

Table 8.5 Statutory Sites Designated for (Non-avian) Terrestrial Ecological Features within 10 km

Site Name	Designation	Reason for Designation	Distance and Direction from Site Boundary	Importance
Creag Meagaidh	SAC	Annex I habitats as primary reason for site selection: • Sub-arctic willow <i>Salix</i> scrub; • Siliceous alpine and boreal grasslands; and • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels. Annex I habitats as qualifying feature: • Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>IsoëtoNanojuncetea</i>; • Northern Atlantic wet heaths with crossed-leaved heath <i>Erica tetralix</i>; • European dry heaths; • Alpine and Boreal heaths; • Blanket bog; • Siliceous scree of the montane to snow levels; and	1.2 km north-west	International

⁵³ Specifically Kinlochlaggan Boulder Beds SSSI and Parallel Roads of Lochaber SSSI (geological designations); Creag Meagaidh SPA, Ben Alder SPA and Drummochter Hills SPA (ornithological designations).

Site Name	Designation	Reason for Designation	Distance and Direction from Site Boundary	Importance
		Calcareous and acidic rocky slopes with chasmophytic vegetation		
	SSSI	Non-avian notified features: - Rocky slopes (including inland cliff, rocky outcrops, chasmophytic vegetation); - Upland habitat assemblage; - Upland birch woodland; and - Vascular plant assemblage	0.4 km north-west	National
	National Nature Reserve (NNR)	Upland reserve covering 4,000 ha, which shares the same boundary as Creag Meagaidh SSSI.	0.3 km north-west	Local
Ben Alder and Aonach Beag	SSSI	Non-avian notified features: - Upland habitat assemblage; - Vascular plant assemblage; - Bryophyte assemblage; - Lichen assemblage; and - Geological interest	0.2 km south-east	National
	SAC	Annex I habitats as primary reason for site selection: - Alpine and Boreal heaths; - Sub-Arctic willow scrub; - Siliceous alpine and boreal grasslands; - Alpine and subalpine calcareous grasslands; - Alpine pioneer formations of the <i>Caricion bicoloris-atrofuscae</i>; - Siliceous scree of the montane to snow levels; and - Calcareous rocky slopes with chasmophytic vegetation. Annex I habitats as qualifying feature: - Blanket bog; - European dry heath; - Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels; - Northern Atlantic wet heaths with crossed-leaved heath; and - Siliceous rocky slopes with chasmophytic vegetation.	0.2 km south-east	International
Drumochter Hills	SAC	Annex I habitats as primary reason for site selection: - Alpine and boreal heaths; - Blanket bog;	7 km south-east	International

Site Name	Designation	Reason for Designation	Distance and Direction from Site Boundary	Importance
		- European dry heaths; - Sub-Arctic willow scrub; and - Siliceous alpine and boreal grasslands. Annex I habitats as qualifying feature: - Northern Atlantic wet heaths with <i>crossed-leaved heath</i>; - Siliceous rocky slopes with chasmophytic vegetation; - Siliceous scree of the montane to snow levels; - Species-rich <i>Nardus</i> grassland, on siliceous substrates in mountain areas; and - Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels.		
	SSSI	Non-avian notified features: - Montane habitat assemblage; and - Vascular plant assemblage; and - Geological interest features.		National
Coire Bhachdaidh	SSSI	Non-avian notified features: - Upland habitat assemblage; and - Vascular plant assemblage.	8 km south-east	National
River Spey	SAC	Annex II species as primary reason for site selection: - Otter - Freshwater pearl mussel <i>Margaritifera margaritifera</i> - Sea lamprey <i>Petromyzon marinus</i> - Atlantic salmon <i>Salmo salar</i>	9 km north-east	International
	SSSI	Non-avian notified features: - Otter; - Freshwater pearl mussel; - Sea lamprey; and - Atlantic salmon.		National
Monadhliath	SAC	Annex I habitats as primary reason for site selection: Blanket bog	9.7 km north-east	International
	SSSI	Non-avian notified features: - Upland habitat assemblage; - Blanket bog;		National

Site Name	Designation	Reason for Designation	Distance and Direction from Site Boundary	Importance
		Black mountain moth <i>Glacies coracina</i>		

- 8.6.4 Creag Meagaidh SAC, SSSI and NNR; Drumochter Hills SAC and SSSI; Coire Bhachdaidh SSSI; River Spey SAC and SSSI; and Monadhliath SAC and SSSI are scoped out from further assessment, for the reasons set out in **Table 8.2**. This approach has been agreed with NatureScot as part of the scoping process. Monadhliath SAC and SSSI have also been scoped out from further assessment (see **Table 8.2**).
- 8.6.5 An assessment of potential effects upon Ben Alder and Aonach Beag SSSI has been included within this Chapter, due to a hydrological connection with the Proposed Development.
- 8.6.6 Ben Alder and Aonach Beag SAC is assessed in a separate Habitats Regulations Appraisal (HRA) report, which should be read in conjunction with this Chapter. To avoid unnecessary duplication, the assessment has not been repeated within this EIA Chapter.

Non-statutory Designations

- 8.6.7 There are no non-statutory designations for nature conservation within 2km of the Site Boundary.

Ancient Woodland

- 8.6.8 One strip of land within the Site is mapped on the Ancient Woodland Inventory (AWI)³⁵ as 'ancient – of semi-natural origin,' located within the north-eastern section of Loch Earba, adjacent to the eastern shore (measuring approximately 1.3 km long by 30 m wide, totalling 5.35 ha) (see Figure 8.2). Baseline surveys (see **Appendix 8.3**) found this area to be reduced to a small number of sparsely scattered broad-leaved trees (mainly mature birch *Betula* spp. and alder *Alnus glutinosa*) along the shoreline, with marshy grassland vegetation (primarily purple moor-grass *Molinia caerulea*) with a smaller dry heath and acid grassland component. The shoreline is eroding away which is starting to affect the shoreline trees. There is also a small (0.32 ha) mixed woodland remnant copse of predominantly mature Scots pine *Pinus sylvestris*, with a purple-moor grass dominated under-storey. There are approximately 100 trees in total in the 5.35 ha strip. The trees lack an extensive lichen or bryophyte cover. There is a lack of tree regeneration and a reasonably species-poor understorey. The scattered nature of the trees and remnant nature of the habitat is likely to be influenced by the high levels of exposure in this location, along with herbivore grazing and loch shore erosion. This strip is present in the 1st Edition Ordnance Survey maps of 1860

(ASNO1860)⁵⁴, but absent from the 1750 Roy maps. As stated in **Table 8.1**, THC's forestry officer has confirmed that this strip does not qualify as ASNO1750 Ancient semi-natural woodland, or category 1a in the Inventory, as it did not exist in 1750. It would therefore not be considered under NPF4 policy 6 b)i. The current scattered trees are considered to comprise remnants of ancient woodland, in poor condition.

- 8.6.9 Large stands mapped on the AWI as 'ancient – of semi-natural origin' are also present within 2 km of the Site boundary, lining the northern and southern shoreline of Loch Laggan and surrounding slopes. A small part of this extends into the northern edge of the Site boundary, where broad-leaved and mixed semi-natural woodlands (primarily W17 and W18 NVC communities) were recorded during baseline surveys, although this area is beyond the proposed working corridor.
- 8.6.10 Due to the small extent, poor condition remnant nature of the majority of the AWI habitat within the Site, it is assessed as being of local value only.

Existing Records of Protected and Notable Species

- 8.6.11 **Table 8.6** provides a summary of the results of the protected and notable species search (excluding marine, aquatic and avian species) undertaken by HBRG within a 2 km radius of the Site. Further details are provided in **Appendix 8.1**.

Table 8.6 Existing Records of Protected and Notable Species⁵⁵

Common name	Scientific name	Number of Records within 2 km of Site	Year of most recent record	Protection/ Conservation Status
Mammals				
European otter	<i>Lutra lutra</i>	1	2021	BAP-2007, Bern-A2, ECCITES-A, FEP-007_tab2, HabDir-A2*, HabDir-A4, HabReg-Sch2, Scottish_Biodiversity_List, WACA-Sch5_sect9.4b, WACA-

⁵⁴ <https://www.data.gov.uk/dataset/c2f57ed9-5601-4864-af5f-a6e73e977f54/ancient-woodland-inventory-scotland#:~:text=A%20more%20sophisticated%20classification%20was,Ordnance%20Survey%20maps%20of%201860.> [Accessed November 2023]

⁵⁵ Table Key: Status: BAP-2007 = UK Biodiversity Action Plan priority species; Bern-A2 = Bern Convention Appendix 2; Bern-A3 = Bern Convention Appendix 3; ECCITES-A = EC CITES Annex A; FEP-001 = Farm Environment Plan Guidance 001; FEP-007_tab2 = Farm Environment Plan Guidance 007- Table 2; HabDir-A2* = The Habitats Directive (Annex 2); HabDir-A4 = The Habitats Directive (Annex 4); HabDir-A5 = Habitats Directive Annex 5; HabReg-Sch2 = The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (The Habitat Regulations) (Schedule 2); HabReg-Sch4 = The Conservation (Natural Habitats, &c.) Regulations 2010 (Schedule 4); LBAP = Highland Nature Biodiversity Action Plan 2021-2026; NS-excludes = Nationally Scarce. Excludes Red Listed taxa; RedList_ENG_post2001-CR = IUCN (2001) - Critically endangered; RedList_Global_post94-NT = IUCN (1994) - Lower risk - near threatened; RedList_GB_post2001-NT = IUCN (2001) - Lower risk - near threatened; RedList_GB_post2001-VU = IUCN (2001) - Vulnerable; RedList_GB_Pre94-R = IUCN (pre 1994) - Rare; Scottish_Biodiversity_List = Scottish Biodiversity List; WACA-Sch5_sect9.1 (kill / injuring) = Wildlife and Countryside Act 1981 (Schedule 5 Section 9.1 (killing/injuring)); WACA-Sch5_sect9.1 (taking) = Wildlife and Countryside Act 1981 (Schedule 5 Section 9.1 (taking)); WACA-Sch5_sect9.2 = Wildlife and Countryside Act 1981 (Schedule 5 Section 9.2); WACA-Sch5_sect9.4.a = Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.4a); WACA-Sch5_sect9.4b = Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.4b); WACA-Sch5Sect9.4c = Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.4c); WACA-Sch5_sect9.5a = Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.5a); WACA-Sch8 = Wildlife and Countryside Act 1981 (Schedule 8); WACA-Sch 9 = Wildlife and Countryside Act 1981 (Schedule 9).

Common name	Scientific name	Number of Records within 2 km of Site	Year of most recent record	Protection/ Conservation Status
				Sch5_sect9.5a, WACA-Sch5Sect9.4c
Red deer	<i>Cervus elaphus</i>	1	2002	Bern-A3
Mountain hare	<i>Lepus timidus</i>	1	2000	BAP-2007, Bern-A3, HabDir-A5, HabReg-Sch4, RedList_GB_post2001-NT, Scottish_Biodiversity_List, LBAP
Amphibians				
Common frog	<i>Rana temporaria</i>	1	2012	Bern-A3, HabDir-A5, WACA-Sch5_sect9.5a
Invertebrates				
Small pearl-bordered fritillary	<i>Boloria selene</i>	2	2006	BAP-2007, RedList_GB_post2001-NT, Scottish_Biodiversity_List
Large heath	<i>Coenonympha tullia</i>	4	2006	BAP-2007, RedList_GB_post2001-VU, Scottish_Biodiversity_List, WACA-Sch5_sect9.5a
Bilberry bumblebee	<i>Bombus monticola</i>	2	2000	Scottish_Biodiversity_List
Scottish wood ant	<i>Formica aquilonia</i>	1	2009	RedList_Global_post94-NT
Rannoch brindled beauty	<i>Lycia lapponaria</i>	7	2021	RedList_GB_Pre94-R
White ermine	<i>Spilosoma lubricipeda</i>	2	2010	BAP-2007, Scottish_Biodiversity_List
Plants				
Interrupted clubmoss	<i>Lycopodium annotinum</i>	1	2006	HabDir-A5, NS-excludes, RedList_ENG_post2001-VU
Parsley fern	<i>Cryptogramma crispa</i>	1	2006	RedList_ENG_post2001-VU
Dwarf birch	<i>Betula nana</i>	2	2006	NS-excludes, RedList_ENG_post2001-CR
Arctic mouse-ear	<i>Cerastium arcticum</i>	1	2006	BAP-2007, NS-excludes, Scottish_Biodiversity_List
Dwarf cornel	<i>Cornus suecica</i>	1	2006	RedList_ENG_post2001-NT, RedList_GB_post2001-NT
Dwarf willow	<i>Salix herbacea</i>	1	2006	FEP-001

Vegetation Baseline

Evaluation of Floral Receptors

- 8.6.12 Phase 1 habitats and NVC communities present within the 2023 vegetation survey Study Area are summarised within **Table 8.7**, with full habitat results provided within **Appendices 8.2 – 8.3**. Maps illustrating the distribution of Phase 1 habitats and NVC communities are provided as **Figure 8-3**.
- 8.6.13 **Table 8.7** summarises the nature conservation status of each broad habitat type and associated NVC community (often present as habitat mosaics, as further described within **Table 8.7** and **Figure 8.3**), and evaluates importance with respect to geographical context, with justification given.
- 8.6.14 The dominant habitats within the Study Area are wet dwarf shrub heath, marsh/marshy grassland, and blanket bog, as illustrated in **Figure 8-3**. Three main waterbodies (two lochs of Loch Earba, and Loch Leamhainn) and several watercourses are also present within the Study Area.
- 8.6.15 During the NVC survey, nine plant communities with potential to be highly groundwater dependent and four communities with potential to be moderately groundwater dependent were identified within the Study Area (see **Table 8.7** and Figure 8.4). Full details relating to NVC communities that may indicate the presence of Ground Water Dependent Terrestrial Ecosystems are provided within **Appendix 8.3**, with further assessment of such features provided in **Chapter 12: Geology, Soils and Water** and **Appendix 12.4 Groundwater Dependent Terrestrial Ecosystems (GWDTE) Assessment**.

Table 8.7 Phase 1 Habitats and Corresponding NVC Communities Recorded within the Survey Area

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
A1.1.1 Broadleaved semi-natural woodland (27.77 ha)	W4 <i>Betula pubescens</i> – <i>Molinia caerulea</i> woodland	SBL and HNBAP (Wet woodland)	High (Low – Moderate)	Local Small stands of W4 were present in wet areas of larger woodland stands. There is approximately 11,700ha of wet woodland in Highland, which is classified as of principal importance for biodiversity conservation in Scotland, and also maintains local nature conservation importance. Given the low species richness of these stands and the small size of the habitat recorded on the Site, this habitat has been assessed as having local importance.
	W7 <i>Alnus glutinosa</i> – <i>Fraxinus excelsior</i> – <i>Lysimachia nemorum</i> woodland	Annex I (H91E0 Alluvial forest with <i>Alnus Glutiosa</i>); SBL and HNBAP (Upland Birchwood ⁵⁸)	High (Low)	Local This community was recorded as small stands within larger areas of birch woodland. This is an Annex 1 habitat, there is approximately 44,200 ha of upland birchwood in Highland. The stands on Site are small areas within larger stands of woodland and are relatively species-poor, and are assessed as having local importance.
	W9 <i>Fraxinus excelsior</i> – <i>Sorbus aucuparia</i> – <i>Mercurialis perennis</i> woodland	Annex I (H9180 <i>Tilio-Acerion</i> forests of slopes, screes and ravines); SBL and HNBAP (Upland birchwoods)	n.a. (High)	Local A single stand of W9 was recorded in a flushed location within birch woodland habitat within the north-east of the Survey Area. This community classifies as an Annex I habitat and one of principle importance for nature conservation in Scotland. There is approximately 44,200 ha of upland birchwood in Highland. The stand is small in size but moderately species-rich with a diverse herb layer, and is assessed as having local importance.

⁵⁶ Table Key: Conservation Status: SBL = listed on Scottish Biodiversity List (SBL); HNBAP = Highland Biodiversity Action Plan Local Priority Habitat; Annex 1 = Listed on Annex 1 of the EC Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora); Priority Peatland = Priority Peatland as defined by NatureScot guidance (2023) Advising on Peatland, Carbon-rich Soils and Priority Peatland Habitats in Development Management

⁵⁷ Assessed based on: SEPA (2017). Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Land Use Planning System SEPA Guidance Note 31 (LUPS – GN31) Version 3 Issued 11 September 2017. **Appendix 8.3** also provides an adjusted value, based on the site specific setting of the community, and these values are provided in brackets within the table. Further assessment is contained in **Chapter 12: Geology, Soils and Water** and **Appendix 12.4: Groundwater Dependent Terrestrial Ecosystems (GWDTE) Assessment**.

⁵⁸ Note that small wet areas of the NVC community W7 and W9, present within larger stands of birch woodland, have been classified as 'upland birchwood' rather than 'wet woodland' in terms of SBL priority habitat type.

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
	W11 <i>Quercus petraea</i> – <i>Betula pubescens</i> – <i>Oxalis acetosella</i> woodland	SBL and HNBAP (Upland birchwoods);	-	Local This community was present as small to medium sized stands ranging from species poor to moderately species rich, on level ground and gentle slopes. Upland birchwood is classified as a habitat of principal importance for biodiversity conservation in Scotland and also maintains local nature conservation importance. There is approximately 44,200 ha of upland birchwood in Highland. Given the value to local conservation and moderate condition of the habitat, this area has been assessed as having local importance.
	W17 <i>Quercus petraea</i> – <i>Betula pubescens</i> – <i>Dicranium majus</i> woodland		-	Local This community was recorded as small to medium sized stands, with limited species richness, on steep, rocky slopes. Upland birchwood is classified as a habitat of principal importance for biodiversity conservation in Scotland and also maintains local nature conservation importance. There is approximately 44,200 ha of upland birchwood in Highland. Given the value to local conservation and low species-richness of the habitat, this area has been assessed as having local importance.
A1.1.2 Broadleaved woodland – plantation (1.53 ha)	-	HNBAP (Woodland and forest)	-	Less than local A small stand of recently planted native broadleaved woodland was present within the west of the Survey Area. Broadleaved woodland maintains local nature conservation importance and will provide high species richness and habitat for wildlife when the woodland matures. Given the small size and immaturity of the woodland stand at present, this area has been assessed as having less than local importance.
A1.2.1 Coniferous woodland – semi natural (55.58 ha)	W18 <i>Pinus sylvestris</i> – <i>Hylocomium splendens</i> woodland	HNBAP (Native pinewood)	-	Local This community was present as small to medium sized stands of low species richness. While it does not match the description for Annex I habitat 'Caledonian Forest' or the SBL habitat 'Native Pinewood' (both of which refer to relict, self-sown stands on ancient sites) it is considered to be of local nature conservation importance within HNBAP.

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
				Given the small size and low species-richness of the stand, with the local nature conservation importance, this area has been assessed as having local importance.
A1.2.2 Coniferous woodland – plantation (25.82)	-	-	-	Less than local Stands of coniferous plantation, dominated by mature Sitka spruce <i>Picea sitchensis</i> were recorded within the west and north of the Survey Area. While maturing coniferous plantation is generally considered to have limited ecological value, it has potential to provide suitable habitat for protected species such as badger <i>Meles meles</i> and red squirrel <i>Sciurus vulgaris</i>. Given the poor species-richness and low value to wildlife, this area has been assessed as having less than local importance.
A1.3.1 Mixed woodland – semi-natural (0.32 ha)	W17 <i>Quercus petraea</i> – <i>Betula pubescens</i> – <i>Dicranium majus</i> woodland /W18 <i>Pinus sylvestris</i> – <i>Hylocomium splendens</i> woodland	HNBAP (Woodland and forest)	-	Local A small area of mixed woodland was recorded on the shores of Loch Earba, with a mosaic of W17 oak woodland and W18 Scot's pine woodland, with purple moor-grass <i>Molinia caerulea</i> dominant in the understory overwhelming other species. Although the copse is small and species-poor, it is mapped within the AWI strip and is therefore assessed as having local importance.
A2 Scrub (dense/ continuous/ scattered) (12.76 ha)	W20 <i>Salix lapponum</i> – <i>Luzula sylvatica</i> scrub	Annex I (H4080 Sub-arctic <i>Salix</i> spp. scrub); SBL (Mountain heaths and willow scrub); HNBAP (Upland and moorland)	High (High)	National Numerous, very small stands of downy willow <i>Salix lapponum</i> were recorded on high crags and ledges, over a variable flora from acidic to basic, with varying species-richness recorded from species-poor to herb-rich. There is c.22.5 ha of the Annex I habitat in Scotland, however the extent in Highland is unknown. Due to the high protection of this habitat and its limited extent in Scotland, it is considered to be of National importance.
	W23 <i>Ulex europeus</i> – <i>Rubus fruticosus</i> scrub	-	-	Less than local A large stand of broom <i>Cytisus scoparius</i> dominated scrub, interspersed with scattered trees, was recorded on slopes above the southern edge of Loch Earba.

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
				This species poor habitat is considered to be of limited ecological value and has therefore been classified as being of less than local importance.
A3 Parkland and scattered trees (counted under area calculation for corresponding open habitats)	-	-	-	Local Scattered coniferous and broadleaved trees were recorded on northern and southern slopes above Loch Earba, where a gradual transition from woodland to open habitat occurs. Given the presence of native species, and potential to be affected by inundation as a result of the Proposed Development, scattered trees within the Site have been assessed as having local importance.
B1.1 Acid grassland – unimproved (29.78 ha)	U4a <i>Festuca ovina</i> - <i>Agrostis capillaris</i> - <i>Galium saxatile</i> grassland. Typical sub-community.	HNBAP (Upland and moorland)	-	Local Acid grassland was widely distributed across the survey area, occurring as scattered stands or in mosaic with other habitats. The typical U4a communities had moderate species richness and occurred frequently throughout the Survey Area, in mosaic with other habitats such as marshy grassland. Due to the moderate species-richness and frequency of this habitat on Site, this habitat has been assessed as having local importance.
	U4d <i>Festuca ovina</i> - <i>Agrostis capillaris</i> - <i>Galium saxatile</i> grassland. <i>Luzula multiflora</i> - <i>Rhytidiadelphus loreus</i> sub-community.	HNBAP (Upland and moorland)	-	Less than Local Species richness in the U4d and U4e stands are low to moderate and they have no priority or protection status. The mat-grass <i>Nardus stricta</i> and heath rush <i>Juncus squarrosus</i> dominated stands of U5 and U6 have SBL priority habitat status, however U5 and U6 acid grasslands were mostly found in small stands of low species richness within the Survey Area. Rough grazing within upland habitats (of which incorporates acid grassland) is detailed within the HNBAP. As such, acid grassland communities within the U4d, U4e, U5 and U6 categories on Site have been assessed as having less than local importance.
	U4e <i>Festuca ovina</i> - <i>Agrostis capillaris</i> - <i>Galium saxatile</i> grassland. <i>Vaccinium myrtillus</i> - <i>Deschampsia</i>	HNBAP (Upland and moorland)	-	

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
	<i>flexuosa</i> sub-community			
	U5 <i>Nardus stricta</i> - <i>Galium saxatile</i> grassland	SBL (<i>Nardus stricta</i> - <i>Galium saxatile</i> grassland); HNBAP (Upland and moorland)	-	
	U6 <i>Juncus squarrosus</i> - <i>Festuca ovina</i> grassland	SBL (<i>Juncus squarrosus</i> – <i>Festuca ovina</i> grassland); HNBAP (Upland and moorland)	Moderate (Low)	
	U6 <i>Juncus squarrosus</i> - <i>Festuca ovina</i> grassland – base rich community	SBL (<i>Juncus squarrosus</i> – <i>Festuca ovina</i> grassland); HNBAP (Upland and moorland)	Moderate (High)	Local One area of U6 habitat occurs on base rich substrate and has high species richness, indicating some flushing in this area. This is an unusual habitat not recognised in NVC but referenced in Averis <i>et al</i> (2004)⁵⁹. The extent of this habitat in the highlands is unknown. Due to the high species richness, the unknown extent of the habitat and the priority status of the habitat, it has been assessed as having local importance.
B1.2 Acid grassland – semi improved (1.99 ha)	U4 <i>Festuca ovina</i> - <i>Agrostis capillaris</i> - <i>Galium saxatile</i> grassland	HNBAP (Upland and moorland)	-	Local Semi-improved acid grassland was recorded in areas of more heavily modified, fertile soils at lower altitudes alongside watercourses. Given the nature of stands recorded (moderately species rich), and that this habitat type fits within 'upland and moorland' communities described within the HNBAP, semi-improved acid grassland within the Site has been assessed as local importance.

⁵⁹ Averis, A., Averis, B., Birks, J., Horsfield, D., Thompson, D. & Yeo, M. (2004) *An illustrated Guide to British Upland Vegetation*, JNCC, Peterborough, ISBN 86107 553 7

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
B2.1 Neutral grassland – unimproved (2.84 ha)	MG9 <i>Holcus lanatus</i> - <i>Deschampsia cespitosa</i> grassland	-	Moderate (Low)	Local Unimproved neutral grassland was recorded in the north-west of the Survey Area on level ground adjacent to the river dominated by Yorkshire fog <i>Holcus lanatus</i> and tufted hair-grass <i>Deschampsia cespitosa</i> . This habitat has no conservation status but has moderately species-rich swards that may have value to wildlife and has therefore been assessed as having local importance.
B2.2 Neutral grassland – semi-improved (1.34 ha)	MG6 <i>Lolium perenne</i> - <i>Cynosurus cristatus</i> grassland	HNBAP (agricultural land)	-	Less than local Semi-improved neutral grassland is found in one location adjacent to the river in the north-west of the Survey Area. This area has moderate species richness in an agricultural setting but has no conservation status and is considered to be of limited ecological value and has therefore been classified as 'less than local' importance.
B3.1 Calcareous grassland – unimproved (including in mosaic with exposed rock) (4.96 ha)	CG10 <i>Festuca ovina</i> - <i>Agrostis capillaris</i> - <i>Thymus polytrichus</i> grassland	Annex 1 (H6230 species-rich <i>Nardus</i> grassland, on siliceous substrates in mountain areas); SBL (Upland calcareous grassland); HNBAP (Upland and moorland)	High (Low – High)	Local Calcareous grassland in the CG10 category occurred throughout the Site on the more base-rich substrates in mosaics with other habitats on sloping ground or by watercourses where rocks are exposed. There are 4600 ha of this Annex 1 habitat recorded in Scotland, however the extent in Highland is unknown. Given the small size and moderate species-richness in these stands, it is considered to be of local importance.
	CG11 <i>Festuca ovina</i> - <i>Agrostis capillaris</i> - <i>Alchemilla alpina</i> grass-heath	Annex 1 (H6230 species-rich <i>Nardus</i> grassland, on siliceous substrates in mountain areas); SBL (Upland calcareous grassland); HNBAP (Upland and moorland)	High (High)	County Calcareous grassland in the CG11 category occurred at high altitudes on steep, flushed slopes. There are 4600 ha of this Annex 1 habitat recorded in Scotland, however the extent in Highland is unknown. Given the moderate size of the stands, the high species-richness, presence of uncommon species and the protection status of this habitat, it is considered to be of County importance.

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
B5 Marsh/ marshy grassland (including with scattered trees) (283.25 ha)	M25 <i>Molinia caerulea-Potentilla erecta</i> mire	HNBAP (Upland and moorland)	Moderate (Low)	Less than Local Purple moor-grass dominated marshy grassland occurs throughout the Site and is one of the most common communities found on Site, found on shallow and deep peat. Most areas are species-poor (M25, M25a and M25b), with an overwhelming dominance of purple moor-grass and few other species in the sward, these areas do not meet the requirements for the SBL priority habitat. Given the low species-richness and low protection of these habitats, they have been classified as 'less than local' importance.
	M25c <i>Molinia caerulea-Potentilla erecta</i> mire. <i>Angelica sylvestris</i> sub-community	HNBAP (Upland and moorland)	Moderate (Moderate)	Local One small area of M25c purple moor-grass dominated habitat on Site has moderate species-richness. The extent of this habitat in Highland is unknown. Given the moderate species-richness of this habitat, it has been classified as local importance.
	M25a <i>Molinia caerulea-Potentilla erecta</i> mire. Base rich community	SBL (Purple moor grass and rush pastures); HNBAP (Upland and moorland)	Moderate (High)	County Some areas of M25a purple moor-grass dominated habitat on Site found in base-rich soils have high species-richness, with calcareous species that are not normally associated with this community. These areas are priority habitats under SBL as Purple Moor-grass and Rush Pastures. The extent of this habitat in Highland is unknown. Given the high species-richness of these habitats and the unusual community of species in the habitat, they have been classified as having County importance.
Small sedge mire (too small to map)	-	SBL (Upland flushes, fens and swamps); HNBAP (Upland and moorland)	N/A - (High)	Local A small, herb-rich area dominated by sedges was found in a small area with wet heath and blanket bog. This habitat is not described in NVC but is referenced by Averis <i>et al</i> (2004) ⁵⁹ . The extent of this habitat in Highland is unknown but likely to be scarce. Given the high species-richness and possible scarcity of this habitat, it has been classified as having local importance.
C1.1 Bracken (including with scattered	U20 <i>Pteridium aquilinum-Galium</i>	-	-	Less than Local

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
broadleaved trees) (5.83 ha)	<i>saxatile</i> community			Bracken <i>Pteridium aquilinum</i> dominated areas were found at lower altitudes in dense stands. This habitat is generally considered to have limited ecological value, with low species diversity and limited value to wildlife. Given the poor species-richness and low value to wildlife, this area has been assessed as having less than local importance.
C2 Upland species-rich ledges (too small to map)	U17 <i>Luzula sylvatica-Geum rivale</i> tall-herb community	Annex I (H6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels); SBL (Inland rock outcrops and scree habitats); HNBAP (Upland and moorland)	High (High)	County Some smaller areas were located on ledges on the steep cliffs and crags, particularly around Loch Earba and Loch Leamhain. These areas had high species-richness, with varied communities of tall herbs. These areas were too small to map. These habitats are listed under Annex 1 tall herb communities (H6430), with c.370 ha of the habitat in the UK and c.200 ha in Scotland. Given the high protection status, limited extent and high species-richness of these habitats, these areas have been assessed as having County importance.
C3.2 Other tall herb and fern - non – ruderal (too small to map)	U21 <i>Cryptogramma crispa-Avenella flexuosa</i> community	Annex I (H8110 Siliceous scree of the montane to snow levels); SBL (Inland rock outcrops and scree habitats); HNBAP (Upland and moorland)	-	Local Small patches of parsley fern <i>Cryptogramma crispa</i> were found in the boulder fields on Site, surrounded mostly by bryophytes, representing micro-habitats within the boulder fields. This habitat is listed under Annex 1 acidic scree (H8119), with c.60,000 ha in Scotland. While these areas have a high protection status, these areas are in small scattered patches, therefore these areas have been assessed as having local importance.
D1.1 Dry dwarf shrub heath – acid (including in mosaic with acid grassland and exposed rock) (41.07 ha)	H10 <i>Calluna vulgaris-Erica cinerea</i> heath	Annex I (H4030 European dry heaths); SBL (Upland heathland); HNBAP (Upland and moorland)	-	Local Dry heath within the H10 NVC community is found commonly across the Site, in both acid and basic substrates. The acid community was most common, recorded at the low to moderate altitudes particularly on steeper slopes. The species richness was low to moderate. This habitat is listed under Annex 1 European dry heaths (H4030), with c.479,000 ha in Scotland. The extent of this habitat in Highland is unknown, though is likely to be common and widespread. The protection status of these habitats is high, however species richness is low to moderate, with large areas of cover on the Site. Therefore this area has been assessed as having local importance.

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
	H14 <i>Calluna vulgaris</i> - <i>Racomitrium lanuginosum</i> heath	Annex I (H4060 Alpine and boreal heaths); SBL (Mountain heaths and willow scrub); HNBAP (Upland and moorland)	-	County The fragile wind-clipped montane dry heath within the H14 NVC community was found at high altitudes in the south-east of the Survey Area, with heather <i>Calluna vulgaris</i> recorded alongside montane plant species. This habitat is listed under Annex 1 alpine and boreal heaths (H4060), with c.41,000 ha in Scotland. The extent of this habitat in Highland is unknown. Given the protection status of these habitats, the fragile nature of the habitats and the limited extent of this habitat in Scotland, this area has been assessed as having County importance.
	H18 <i>Vaccinium myrtillus</i> - <i>Avenella flexuosa</i> heath	Annex I (H4030 European dry heaths); SBL (Upland heathland); HNBAP (Upland and moorland)	-	Local The bilberry <i>Vaccinium myrtillus</i> dominated dry heath within the H18 NVC community was found on steep slopes at moderately high altitudes. Species richness was low to moderate and stands were relatively large. This habitat is listed under Annex 1 European dry heaths (H4030), with c.479,000 ha in Scotland. The extent of this habitat in Highland is unknown, though is likely to be common and widespread. The protection status of these habitats is high, however species richness is low to moderate, with large areas of cover on the Site. Therefore this area has been assessed as having local importance.
	H20 <i>Vaccinium myrtillus</i> - <i>Racomitrium lanuginosum</i> heath	Annex I (H4060 Alpine and boreal heaths); SBL (Mountain heaths and willow scrub); HNBAP (Upland and moorland)	-	Local The H20 montane dry heath community was found in exposed areas at high altitudes with abundant montane plant species. The habitat is fragile in nature and was found in small patches. This habitat is listed under Annex 1 alpine and boreal heaths (H4060), with c.41,000 ha in Scotland. The extent of this habitat in Highland is unknown. The protection status of these habitats is high however, species richness is low to moderate, with small patchy areas of cover on the Site. Therefore, this area has been assessed as having local importance.
	H21 <i>Calluna vulgaris</i> - <i>Vaccinium myrtillus</i> -	Annex I (H4030 European dry heaths); SBL (Upland heathland);	-	Local The damp H21 dry heath was found in sloping areas among other dry heath communities with abundant <i>Sphagnum</i> under a heather canopy. The habitat was found in small patches with low to moderate species-richness. This habitat is listed under Annex 1 European heaths (H4030), with c.479,000 ha in

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
	<i>Sphagnum capillifolium</i> heath	HNBAP (Upland and moorland)		Scotland, though most of this area is likely to be other more common types of dry heath. The extent of this habitat in Highland is unknown, but is likely to be widespread, though localised. The protection status of these habitats is high however, species richness is low to moderate, with small patchy areas of cover on the Site. Therefore, this area has been assessed as having local importance.
	H22 <i>Vaccinium myrtillus-Rubus chamaemorus</i> heath	Annex I (H4060 Alpine and boreal heaths); SBL (Mountain heaths and willow scrub); HNBAP (Upland and moorland)	-	County The damp H22 heath community occurs at high altitudes on steep slopes, often in mosaic with montane blanket bog, with the characteristic cloudberry <i>Rubus chamaemorus</i> and dwarf cornel <i>Cornus suecica</i> . The stands are small to medium sized with moderate species-richness. This habitat is listed under Annex 1 alpine and boreal heaths (H4060), with c.41,000 ha in Scotland. The extent of this habitat in Highland is unknown, likely to be widespread but localised. Given the protection status of these habitats, the fragile nature of the habitats, and the moderate species richness including uncommon species, this area has been assessed as having County importance.
D1.2 Dry dwarf shrub heath – basic (including in mosaic with calcareous grassland (61.41 ha))	H10d <i>Calluna vulgaris-Erica cinerea</i> heath. <i>Thymus polytrichus-Carex pulicaris</i> sub-community, base-rich	Annex I (H4030 European dry heaths); SBL (Upland heathland); HNBAP (Upland and moorland)	-	County The H10 dry heath was found in basic substrates where flushing had increased the species richness. This community was in small stands in mosaics with the base rich calcareous grassland communities and shared some of the basic species. This habitat is listed under Annex 1 alpine and boreal heaths (H4060), with c.41,000 ha in Scotland. The extent of this habitat in Highland is unknown, likely to be small and localised. Given the protection status of these habitats and the high species richness including base rich species, this area has been assessed as having County importance.
D2 Wet dwarf shrub heath (including in mosaic with exposed rock) (633.92 ha)	M15 <i>Trichophorum germanicum-Erica tetralix</i> wet heath	Annex I (H4010 Northern Atlantic wet heaths); SBL (Upland heathland); HNBAP (Upland and moorland)	Moderate (Moderate – Low)	Local Wet heath was found commonly throughout the Site on both shallow and deep peat, often in mosaic with blanket bog or marshy grassland. On level ground where there is deep peat this community represents a community that is most likely degraded from blanket bog. Stands are large in some places on Site, with low to moderate species richness. The habitat is listed under Annex 1

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
				North Atlantic Wet Heaths (H4010), with c. 370,000 ha in Scotland. The extent of this habitat in Highland is unknown, likely to be abundant. The protection status of these habitats is high, however species richness is low to moderate, with large areas of cover on the Site and the habitat is common across Scotland. Therefore this area has been assessed as having local importance.
D4 Montane heath/ dwarf herb (6.63 ha)	U7 <i>Nardus stricta</i> - <i>Carex bigelowii</i> grass-heath	Annex I (H6150 Siliceous alpine and boreal grasslands); SBL (Mountain heaths and willow scrub); HNBAP (Upland and moorland)	-	County Montane grasslands and heath communities were recorded in small fragile stands on the high rocky plateaus, steep ground and steep rocky habitats on the Site at high altitude. These areas were often too small to map. These habitats are listed under Annex 1 siliceous alpine and boreal grasslands (H6150), with c.70,000 ha in Scotland. The extent of this habitat in Highland is unknown. Given the protection status of these habitats and the rarity of the habitat in Scotland, this area has been assessed as having County importance.
	U9 <i>Juncus trifidus</i> - <i>Racomitrium lanuginosum</i> rush-heath			
	U10 <i>Carex bigelowii</i> - <i>Racomitrium lanuginosum</i> moss-heath			
	U13 <i>Deschampsia cespitosa</i> - <i>Galium saxatile</i> grassland	SBL (Mountain heaths and willow scrub); HNBAP (Upland and moorland)	-	County The U13 heath was recorded in small to medium sized stands on steep slopes at high altitudes, with moderate species richness. These habitats are listed under SBL mountain heath and willow scrub priority habitat, with c.60,000 ha in Scotland. The extent of this habitat in Highland is unknown. While there is no European protection status for this habitat, the priority habitat is not very widespread and this habitat is fragile with moderate species richness, therefore this area has been assessed as having County importance.
	U15 <i>Saxifraga aizoides</i> - <i>Alchemilla glabra</i> banks	SBL (Mountain heaths and willow scrub); HNBAP (Upland and moorland)	High (High)	County The damp herb rich U15 community occurs at one location on a wet rock face near Loch Leamhain, with high rich species-richness of base-rich herbs. These habitats are listed under SBL mountain heath and willow scrub priority habitat, with c.60,000 ha in Scotland. The extent of this habitat in Highland is unknown.

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
				While there is no European protection status for this habitat, the priority habitat is not very widespread and this habitat is fragile with moderate species richness, therefore this area has been assessed as having County importance.
E1.6.1 Blanket bog (147.91 ha)	M17 <i>Trichophorum germanicum</i> - <i>Eriophorum vaginatum</i> blanket mire	Annex I (H7130 Blanket bog); SBL (Blanket bog); HNBAP (Peatland and wetland)	-	County - National Blanket bog was recorded commonly across the Survey Area, in the lower areas and up to higher altitudes on flat or gently sloping ground. M19 (sub-community M19c) was recorded primarily above 600 m and is therefore classified as montane bog. M19c was primarily recorded around the southern margins and to the south-east of Loch Leamhain. In this area, where it is mapped as blanket bog, the area supports frequent to abundant heather <i>Calluna vulgaris</i> and hare's-tail cottongrass <i>Eriophorum vaginatum</i>, with occasional common cottongrass <i>Eriophorum angustifolium</i>, tormentil <i>Potentilla erecta</i> and heath bedstraw <i>Galium saxatile</i>, with increased <i>Sphagnum capillifolium</i> cover, frequent <i>Pleurozium schreberi</i> and <i>Rhytidiadelphus loreus</i>, and frequent cloudberry <i>Rubus chamaemorus</i> and dwarf cornel <i>Cornus suecica</i>. There is occasional high-altitude species cowberry <i>Vaccinium vitis-idaea</i>, montane crowberry <i>Empetrum nigrum</i> and bog bilberry <i>Vaccinium uliginosum</i>. The moss <i>Hylocomium splendens</i> is frequent to abundant and both <i>Racomitrium lanuginosum</i> and <i>Sphagnum papillosum</i> are occasional, as are <i>Cladonia</i> spp. lichens. Peat depth in this area is patchy and variable, with peat depth ranging from <0.5m to 2 m deep, with 0.5 – 1 m being most frequent, and a lack of extensive very deep peat was recorded. This area contains some scattered or patchy erosion features, such as on the sloping margins of the loch, influenced by the topography. Some of these features have bare peat exposed but others show signs of re-vegetative recovery. This area does not have restoration potential due to the peat depth and topography. On lower ground, below 600 m, blanket bog comprises of smaller patches around the margins of Loch Earba. Although these areas are small and patchy, they are relatively intact and comprise the wetter M17a and M18a dominant sub-communities. At the north-western end of the Survey Area, along the Site access route, is a more extensive area (>25 ha) of blanket bog on the lower ground. Here, M17a is dominant, and erosion features are limited.
	M18 <i>Erica tetralix</i> - <i>Sphagnum papillosum</i> raised and blanket mire			
	M19 <i>Calluna vulgaris</i> - <i>Eriophorum vaginatum</i> blanket mire			

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
				There is an estimated 2.2 million ha of blanket bog in the UK⁶⁰, and 1.8 million ha in Scotland, representing an estimated 23% of the Scottish land area⁶¹. Blanket bog is a rare habitat globally, and Scotland holds a significant proportion of the world resource⁶⁰. At a County scale, blanket bog is widespread in Highland, and Highland has internationally significant peatlands²⁴. NatureScot's Peatland Guidance¹⁰ Site Visit Template (see Appendix 8.7) denotes areas of M19c montane bog in the Loch Leamhain area as 'likely national interest,' (locations 4 – 6 in Appendix 8.7), the area of M17a/M18a in the north-western part of the Site as 'possible national interest,' (location 1 in Appendix 8.7), and other bog areas close to infrastructure as 'not a national interest' (locations 2, 3, 7, 8 and 9 in Appendix 8.7). Overall, given the status of these habitats and the importance of peat based habitat, they are assessed as having County importance, with the area of M19c montane bog at Loch Leamhain assessed as having County to national importance, based on its status as montane bog, its size, and presence of some uncommon species, but recognising the variability of peat depth, varied presence of erosion features, and mosaic with dry heath. The more extensive area of M17a/M18a in the north-western part of the Site is also assessed as having up to County to national importance due to its good condition and size.
E1.7 Wet modified bog (12.56 ha)	M2 <i>Sphagnum cuspidatum/fallax</i> bog pool community M3 <i>Eriophorum angustifolium</i> bog pool community	Annex I (H7130 Blanket bog); SBL (Blanket bog); HNBAP (Peatland and wetland).	-	County Bog pool communities were recorded within eroded M17 or M19 bog areas. These areas were often too small to map. These habitats were found to be associated with degraded or artificial features. The M3 is associated with the bases of several peat hags, comprising of abundant common cottongrass growing through the bog-moss <i>Sphagnum cuspidatum</i> . M2b was recorded within an artificially cut channel, with frequent <i>Sphagnum cuspidatum</i> .

⁶⁰ BARS (2012) *Biodiversity Action Reporting System* [Previously available on Line] Available at: www.ukbap-reporting.org.uk [Accessed November 2023]

⁶¹ Bruneau, P. M. C. & Johnson, S. M. (2014) Scotland's peatland – definitions and information resources. Scottish Natural Heritage Commissioned Report No 701

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
				Given the status of bog pool habitats and the importance of peat-based habitat, but recognising the association with degraded or artificial features, these habitats are assessed as having County importance.
	M15 <i>Trichophorum germanicum-Erica tetralix</i> wet heath	Annex I (H7130 Blanket bog); SBL (Blanket bog); HNBAP (Peatland and wetland).	-	Local Where M15 wet heath communities were found on peat deeper than 50cm, these were considered to be modified blanket bog where many of the bog indicator species have been lost. Due to the loss of peat forming species, this area has been assessed as having local importance.
	M17b <i>Trichophorum germanicum-Eriophorum vaginatum</i> blanket mire, <i>Cladonia</i> sub- community	Annex I (H7130 Blanket bog); SBL (Blanket bog); HNBAP (Peatland and wetland).	-	County M17b (a drier sub-community of M17) wet modified bog was recorded in areas where degradation has taken place, resulting in extensive haggling and exposed bare peat, where the bog habitat is drained. This habitat is located primarily to the south-west of Loch Earba and has some potential for restoration. Due to its degraded condition, the habitat type is not assessed as being of national importance. However, given the status of the habitat, the importance of peat-based habitat, and some restoration potential, this area has been assessed as having County importance.
	M20 <i>Eriophorum vaginatum</i> blanket and raised mire	Annex I (H7130 Blanket bog); SBL (Blanket bog); HNBAP (Peatland and wetland).	-	Local M20 wet modified bog was recorded in areas where degradation has taken place, resulting in haggling and exposed bare peat and low species-richness. These areas are found in small stands dominated by hare's-tail cottongrass <i>Eriophorum vaginatum</i> . Due to the loss of peat forming species and low species richness, this area has been assessed as having local importance.
	M25 <i>Molinia caerulea-Potentilla erecta</i> mire.	Annex I (H7130 Blanket bog); SBL (Blanket bog); HNBAP (Peatland and wetland).	-	Local Where M25 wet heath communities were found on peat deeper than 50cm, these were considered to be modified blanket bog where many of the bog indicator species have been lost and purple moor-grass has taken over. These habitats are listed under Annex 1 blanket bog (H7130), with c.175,900 ha in Scotland. The extent of this habitat in Highland is unknown.

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
				Due to the loss of peat forming species and low species richness, this area has been assessed as having local importance.
E1.8 Dry modified bog (45.28 ha)	M19c <i>Calluna vulgaris</i> - <i>Eriophorum vaginatum</i> blanket mire, <i>Vaccinium vitis-idaea</i> - <i>Hylocomium splendens</i> sub-community	Annex I (H7130 Blanket bog); SBL (Blanket bog); HNBAP (Peatland and wetland).	-	County - National Dry modified bog was recorded in areas of the M19 NVC category where degradation has taken place, resulting in extensive haggling and some exposed bare peat, resulting in drained bog habitat. This habitat type is located to the south-east of Loch Leamhain, above 600m, and is therefore classified as montane bog. Peat depth in this area is patchy and variable, with peat depth ranging from <0.5m to 2 m deep, with 0.5 – 1 m being most frequent, and a lack of extensive very deep peat was recorded. This area supports frequent to abundant heather and hare's-tail cottongrass, with occasional common cottongrass, tormentil and heath bedstraw, with increased <i>Sphagnum capillifolium</i> cover, frequent <i>Pleurozium schreberi</i> and <i>Rhytidiadelphus loreus</i>, and frequent cloudberry and dwarf cornel. There is occasional high-altitude species cowberry, montane crowberry and bog bilberry. The moss <i>Hylocomium splendens</i> is frequent to abundant and both <i>Racomitrium lanuginosum</i> and <i>Sphagnum papillosum</i> are occasional, as are <i>Cladonia</i> spp. lichens. There is an estimated 2.2 million ha of blanket bog in the UK⁶⁰, and 1.8 million ha in Scotland, representing an estimated 23% of the Scottish land area⁶¹. Blanket bog is a rare habitat globally, and Scotland holds a significant proportion of the world resource⁶⁰. At a County scale, blanket bog is widespread in Highland, and Highland has internationally significant peatlands²⁴. Given the status of this habitat as montane bog, its size, the importance of peat-based habitat, and some restoration potential (although this is limited to flatter areas on deeper peat), but recognising its eroded nature, this area has been assessed as having County to national importance.
E4 Bare peat (7.00 ha)		-	-	Local Bare peat was present in areas of wet and dry modified bog where erosion and drying has taken place leaving bare peat with no vegetative cover. These areas have no species and are actively eroding with low value to wildlife in its current state. However, given the restoration potential, they are assessed as having local importance.

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
E2.1 Flush and spring – acid/ neutral flush (1.37 ha)	M6 <i>Carex echinata-Sphagnum fallax/denticulatum</i> mire	SBL (Upland flushes, fens and swamps); HNBAP (Peatland and wetland)	High (Low)	Local Acid flushes were recorded in small species-poor patches across the Site in mosaic with blanket bog, wet heath, marshy grassland and damp acid grassland usually occurring in shallow channels and depressions. Given the priority status of these habitats, this area has been assessed as having local importance.
E2.2 Flush and spring – basic flush (0.19 ha)	M10 <i>Carex dioica-Pinguicula vulgaris</i> mire	Annex I (H7230 Alkaline fens); SBL (Upland flushes, fens and swamps); HNBAP (Peatland and wetland)	High (High)	County Basic flushes were located throughout the Survey Area in small patches, mostly on steep, wet rocky ground near the lochs. These areas were too small to map. Basic flushes can be species rich and in M11 flushes the uncommon plant Scottish asphodel <i>Tofieldia pusilla</i> was recorded. These habitats are listed under Annex 1 alkaline fens (H7230), with c.370 ha in Scotland, and alpine pioneer formations of the <i>Caricion bicoloris-atrofuscae</i> (H7240), with c.70 ha in Scotland. The extent of this habitat in Highland is unknown. Given the protection status of these habitats, the scarce cover of these habitats in Scotland, the high species richness and the presence of uncommon species, this area has been assessed as having County importance.
	M11 <i>Carex demissa-Saxifraga aizoides</i> mire	Annex I (H7240 Alpine pioneer formations of the <i>Caricion bicoloris-atrofuscae</i>); SBL (Upland flushes, fens and swamps); HNBAP (Peatland and wetland)	High (High)	
E2.3 Flush and spring – bryophyte-dominated spring (too small to map)	M31 <i>Anthelia julacea-Sphagnum denticulatum</i> spring	SBL (Upland flushes, fens and swamps); HNBAP (Peatland and wetland)	High (High)	Local Bryophyte dominated spring in the M31 and M32 categories were located in numerous places in small patches in the montane areas, usually on slopes below cliffs. These habitats (particularly M32) often represent areas where groundwater emerges from the surface. These habitats were very small with low species-richness. These habitats were too small to map and too numerous to record every occurrence. Given the priority status of these habitats, this area has been assessed as having local importance despite the small size and low species richness.
	M32 <i>Philonotis fontana-Micranthes stellaris</i> spring		High (High)	
	M37 <i>Palustriella commutata</i>	Annex I (H7220 Petrifying springs with tufa formation); SBL (Upland flushes,	High (High)	County The M37 springs were recorded commonly on the sloping ground below cliffs in the montane areas, often associated with the above M11 flushes. These

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
	<i>Festuca rubra</i> spring	fens and swamps); HNBAP (Peatland and wetland)		habitats were relatively species-poor, representing areas where groundwater emerges from the surface. These habitats were too small to map and too numerous to record every occurrence. These habitats are listed under Annex 1 petrifying springs with tufa formation (H7220), with c.57 ha in Scotland. The extent of this habitat in Highland is unknown. Given the protection status of these habitats and the scarce cover of these habitats in Scotland, this area has been assessed as having County importance.
E3.2 Fen - Basin mire	M4 <i>Carex rostrata</i> - <i>Sphagnum fallax</i> mire	Annex I (H7140 Transition mires and quaking bogs); SBL (Upland flushes, fens and swamps); HNBAP (Peatland and wetland)	-	Local The single species-poor fen habitat is represented by the <i>Sphagnum</i> and bottle sedge <i>Carex rostrata</i> dominated M4 community in a waterlogged depression in the west of the Survey Area, too small to map. These habitats are listed under Annex 1 transition mires and quaking bogs (H7140), with c.1420 ha in Scotland. The extent of this habitat in Highland is unknown. While this habitat is protected, given the small size and low species richness of the habitat, this area has been assessed as having local importance.
F1 Swamp	S9 <i>Carex rostrata</i> swamp	SBL (Upland flushes, fens and swamps); HNBAP (Peatland and wetland)	-	Local Three small areas of swamp were recorded in areas too small to map. These areas were species poor and mostly comprised of bottle sedge <i>Carex rostrata</i> . Given the priority status of these habitats, this area has been assessed as having local importance.
F2.1 Marginal/inundation - marginal	S10 <i>Equisetum fluvatile</i> swamp	SBL (Rivers); HNBAP (Freshwater: rivers, burns and lochs)	-	Local Marginal/inundation habitat was recorded as a species poor stand in one location at the edge of a stream. The habitat was too small to map. Given the priority status of these habitats, this area has been assessed as having local importance.
G1 Standing water (204.11 ha)	-	SBL (Ponds); HNBAP (Freshwater: rivers, burns and lochs)	-	Local

Phase 1 habitat	NVC Community Name	Conservation Status ⁵⁶	Potential Groundwater Dependency ⁵⁷	Evaluation and Justification
G2 Running water (9.79 ha)		SBL (Rivers); HNBAP (Freshwater: rivers, burns and lochs)		Standing and running water was recorded as lochs, reservoirs and a number of watercourses in the survey area. Given the priority status of these habitats, this area has been assessed as having local importance.
I1.2 Scree (10.66 ha)	-	-	-	Less than local Boulder fields were recorded in the north-east and south-east of the survey area on steep slopes with exposed rocks. These areas have no priority status and low species richness, with low value to wildlife, this area has been assessed as having less than local importance.
I1.4 Other exposure (6.96 ha)	-	-	-	Less than local Exposed bedrock was recorded in the mountain tops area in the south-east of the Survey Area. Additionally a dried up river bed had exposed rocks and stones in the north-east of the Survey Area. These areas have no priority status and low species richness, with low value to wildlife, this area has been assessed as having less than local importance.
I2.1 Quarry (0.92 ha)	-	-	-	Less than local An existing borrow pit was recorded in the west of the Survey Area. This has no priority status and low species richness, with low value to wildlife, this area has been assessed as having less than local importance.
J3.6 Buildings / Built environment (6.16 ha)				Less than local A number of existing estate tracks occur across the Survey Area. These areas have no priority status and low species richness, with low value to wildlife, and has been assessed as having less than local importance.

Notable plant species

- 8.6.16 Several notable plant species were identified during the field survey, details of which are provided in **Table 8.8** (with location information provided in **Appendix 8.3**). No species listed on Schedule 8 of the *Wildlife and Countryside Act 1981 (as amended in Scotland)* were recorded within the Survey Area.

Table 8.8 Notable Plant Species Recorded Within the Study Area

Species	Location of record	SBL	HNBP	GB Red List	Nationally Rare or Scarce	Importance
Common juniper <i>Juniperus communis</i>	Steep rock faces that were inaccessible to deer	✓	✓	-	-	Local
Aspen <i>Populus tremula</i>	Rocky outcrops	-	✓	-	-	Local
Downy willow <i>Salix lapponum</i>	Crags and ledges	✓	✓	Vulnerable	Nationally scarce	National
Field gentian <i>Gentianella campestris</i>	Rare occurrences in acid grassland	✓	-	Vulnerable	-	County
Hawkweed <i>Hieracium spp.</i>	Locally common on base-enriched herb ledges.	✓	-	-	-	Less than local to National
Lesser butterfly orchid <i>Platanthera bifolia</i>	Base-rich marshy grassland	✓		Vulnerable	-	County
Small white orchid <i>Pseudorchis albida</i>	Wet heath/marshy grassland	✓	✓	Vulnerable	-	County
Petty whin <i>Genista anglica</i>	Adjacent to access track	-	-	Near threatened	-	Local
Dwarf birch <i>Betula nana</i>	Blanket bog	-	-	-	Nationally scarce	County
Dwarf cornel <i>Cornus suecica</i>	Blanket bog habitat alongside the scarce species Bog bilberry <i>Vaccinium uliginosum</i> .	-	-	Near Threatened	-	Local

Invasive non-native species

- 8.6.17 Rhododendron *Rhododendron ponticum*, an invasive non-native plant species listed on Schedule 9 of the *Wildlife and Countryside Act 1981 (as amended in Scotland)* was recorded in nine locations across the Survey Area (see **Figure 3** in **Appendix 8.3**), primarily scattered around the north end of Loch Earba.

Faunal Baseline

- 8.6.18 A summary of the protected or otherwise notable fauna recorded within the relevant Survey Areas during baseline surveys and / or which are considered likely to be present, based on desk study, is provided below. For full details on the findings of the protected species field surveys, please refer to **Appendices 8.4 – 8.5**.

Invertebrates

- 8.6.19 This invertebrate assessment is based on desk study data and a qualitative habitat assessment.
- 8.6.20 The desk study identified records of six notable invertebrate species within 2 km of the Site. Of these, the Survey Area supports suitable habitat for small pearl-bordered fritillary (within marshy grassland, moorland and woodland clearings), large heath (bog and wet habitat), bilberry bumblebee (grassland and heathland habitat), Scottish wood ant (mature woodland habitat), Rannoch brindled beauty (boggy acid moorland and dry heath) and white ermine (a common generalist found in a variety of habitats).
- 8.6.21 The Survey Area does not have the potential to support any protected terrestrial invertebrates due to being outside of the known range and / or lacking suitable habitat for such species. Aquatic invertebrates are covered separately in **Chapter 11: Aquatic Ecology**.
- 8.6.22 The open heath, bog and marshy grassland habitat comprising the majority of the Survey Area, including within the proposed inundation zones, are likely to support a number of moorland, heath and bog specialists. The habitat mosaics within these open areas, and the montane habitats surrounding Loch Leamhain in the eastern part of the Survey Area, offer a variety of habitat niches for a range of invertebrate species. These areas provide suitable habitat for a limited number of local priority species, most ostensibly moss carder bee *Bombus muscorum*, a generalist species of bogs, marshes, moorlands and coastal grasslands which is scarce but widespread within Scotland⁶². The high-altitude wet habitats have some suitability for local priority species cloud-living spider *Semljicola caliginosus*, although the absence of records of this rare species within the area limits the likelihood that this species would occur within the Survey Area. The Survey Area supports some ostensibly suitable habitat for local priority species marsh fritillary *Euphydryas aurinia*, across the marshy grassland and wet moorland habitat surrounding Loch Earba. However, the fact that the species' foodplant devil's-bit scabious *Succisa pratensis* is reasonably scattered across the Survey Area and tends to occur primarily on the slopes above the Proposed Development area, and the fact that the Survey Area is located beyond the core Scottish population area for this species⁶³, limits the likelihood of this species occurring within the Survey Area. The widespread nature of many of the open habitat types within the local

⁶² <https://scotland-species.nbnatlas.org/species/NHMSYS0000875572> [Accessed in October 2023]

⁶³ <https://butterfly-conservation.org/sites/default/files/habitat-marshfritillary-scotland.pdf> [Accessed in October 2023]

landscape limits their importance for invertebrates beyond the local geographical scale.

- 8.6.23 The areas of wet woodland in mosaic with drier semi-natural woodland, and the mature scattered native trees and areas of coniferous, mixed and broad-leaved native woodland, located along the River Spean corridor at the Site entrance, and on the margins and slopes surrounding the northern waterbody of Loch Earba, represent the highest habitat quality for a range of invertebrate species, including saproxylic and fungivorous species and other woodland specialists, given the presence of mature trees (including Scot's pine and birch) and diversity of habitat mosaics.
- 8.6.24 Local priority species for which the woodland and edge habitats provide suitable conditions for comprise pearl-bordered fritillary *Boloria euphrosyne* (a widespread but declining butterfly species of woodland clearings and edges⁶⁴) and pinewood mason bee *Osmia uncinata* (a rare species which nests in dead Scots pine trees in open areas with bare ground and bird's-foot trefoil *Lotus corniculatus*)⁶⁵, although there are no nearby records for this latter species. Lemon slug *Malacolimax tenellus*, a local priority species of ancient woodland, is less likely to occur within the Survey Area due to the limited extent of suitable habitat, and lack of nearby records⁶⁶). Local priority species lichen running spider *Philodromus margaritatus* (a species of limited distribution which lives on tree trunk lichens)⁶⁷, is also less likely to occur within the Survey Area, given the lack of widespread tree trunks with extensive lichen cover, and lack of nearby records.
- 8.6.25 Areas of non-native conifer plantation, located at the north-eastern and north-western ends of the Survey Area, have limited value for invertebrates, given their species-poor and non-native character.

Amphibians

- 8.6.26 The desk study did not identify any great crested newt *Triturus cristatus* records within 2 km of the Site. Highland is beyond the core range of great crested newt, and there are no known records in this area of the Highlands. The Survey Area is considered suboptimal for this species, with the standing water habitat primarily comprising medium and large upland lochs and lochans of low suitability for this species. Therefore overall, great crested newt is considered unlikely to occur within the Survey Area.
- 8.6.27 It is likely that the Survey Area supports other common amphibian species, and a record of common frog was returned in the desk study. However, given the extensive areas of similarly suitable habitat in the surrounding landscape, including further lochs, lochans, smaller ponds and watercourses, it is considered unlikely that the Survey Area is important or critical to any locally occurring amphibian populations, and the Survey Area is assessed as being of less than local importance for amphibians. Amphibians are therefore scoped out from further assessment.

⁶⁴ <https://butterfly-conservation.org/butterflies/pearl-bordered-fritillary> [Accessed in October 2023]

⁶⁵ <https://www.buglife.org.uk/projects/scottish-mason-bees/> [Accessed in October 2023]

⁶⁶ <https://www.woodlandtrust.org.uk/trees-woods-and-wildlife/animals/slugs-and-snails/lemon-slug/> [Accessed in October 2023]

⁶⁷ [https://species.nbnatlas.org/species/NBNSYS0000008751#:~:text=Philodromus%20margaritatus%20\(Clerck%2C%201757\)](https://species.nbnatlas.org/species/NBNSYS0000008751#:~:text=Philodromus%20margaritatus%20(Clerck%2C%201757)) [Accessed in October 2023]

Reptiles

- 8.6.28 No reptile records were returned in the desk study. The Survey Area supports large areas of habitat suitable for common lizard *Zootoca vivipara*, specifically the open bog, heath, grassland and woodland edge habitats, and common lizard was recorded incidentally during habitat survey work. Common lizard is therefore assumed to be present in all suitable habitat within the Survey Area.
- 8.6.29 It is also possible that the Survey Area could support other common reptile species such as adder *Vipera berus* and slow-worm *Anguis fragilis* although no records have been provided within 2 km for these species.

Otter

- 8.6.30 Extensive suitable habitat was recorded within the Survey Area including the River Spean and its tributary Abhainn Guilbinn, Loch Earba and the Allt Labhrach watercourse to the north, and Loch Leamhain. It was noted that all locations except for Loch Leamhain have been modified with barriers to migratory fish.
- 8.6.31 The desk study identified existing records on Loch Earba within the Survey Area, as well as several further records within 1 km.
- 8.6.32 The field surveys confirmed the presence of otter in a number of locations within the Survey Area (see Confidential Figure 8.5). Field signs were restricted to Loch Earba and the Allt Labhrach watercourse in the northern part of the Survey Area. In 2023, spraints were identified in three locations on Loch Earba, with two probable couch locations recorded due to the sheltered location and the presence of spraint under the small bridge separating the two sections of the Loch, and on the western banks of the northern half of the Loch. Two fresh spraints were also recorded on the shores of the northern part of Loch Earba, during the 2022 survey. Two sprainting locations were also recorded along the Allt Labhrach watercourse in 2023, on large boulders, with no signs of couches or holts in this area.
- 8.6.33 Camera traps recorded otter on six occasions at the northern end of Loch Earba, with a maximum of two otters recorded at one time. Camera trap images indicated that the otters were foraging at night in Loch Earba and returning to a holt in the woodland area to the north of the Survey Area, although this is not confirmed.
- 8.6.34 No otter activity was recorded along the River Spean and Abhainn Ghulbinn, or in Loch Leamhain, although the habitat was considered to be suitable for otter.

Water Vole

- 8.6.35 The desk study identified numerous records of water vole within 10 km, primarily around Loch Ghulbinn to the west of the Survey Area. There were no records of water vole within the Survey Area.
- 8.6.36 The main watercourses within the Survey Area including the River Spean and Abhainn Ghulbinn were unsuitable for use by water vole with the channels relatively wide and in the majority of locations fast moving with rocky banks and substrates.
- 8.6.37 However, smaller watercourses in the Survey Area provide sections of optimal habitat for water vole. In 2023, field signs of several water vole colonies were recorded between the River Spean and Loch Earba, with the extent of field signs restricted to relatively short sections (see Confidential Figure 8.5). Frequent evidence of water vole was recorded along the watercourse south of Loch Earba, and two active burrows were recorded along a small tributary of the Allt Loch

a'Bhealaich Leamhain. Field signs recorded include active burrows on exposed banks and on top of banks in the dense grassy vegetation, and a small number of latrines on rocks in the small burns. Two burrows were also recorded on Loch Earba between the two lochs, in 2022.

- 8.6.38 Other watercourses within the Survey Area supported no signs of water vole and were primarily poor habitat for water vole with fast flowing water on rocky and steep terrain.
- 8.6.39 Water vole colonies in upland areas can change their distribution frequently year to year or even seasonally. Signs of small water vole colonies at relatively high altitude can indicate overwintering sites. Scattered burrows in sub-optimal habitat at lower altitudes may indicate transitional habitats where the colonies are commuting between areas of higher quality habitat and will only stay for a short period of time.

Badger

- 8.6.40 The desk study identified one record of badger, more than 20 years old, approximately 6 km east of the Survey Area. There were no records of badger within the Survey Area.
- 8.6.41 Habitat within the Survey Area was predominantly sub-optimal for badger with poor sett building soils and little forage for badger in upland areas. Some lowland areas had potential habitat for badger, such as along the River Spean.
- 8.6.42 No field signs of badger were recorded in the Survey Area and no badger were recorded on camera traps.

Red Squirrel

- 8.6.43 The desk study identified numerous records of red squirrel within 10 km of the Survey Area along the A86 corridor, with some records within 1 km of the Site. There were no records of red squirrel within the Survey Area.
- 8.6.44 There was limited suitable habitat for red squirrel within the Survey Area, with suitable habitat restricted to the woodland areas around the northern end of Loch Earba and the small pockets of woodland along the River Spean and Abhainn Ghuilbinn.
- 8.6.45 In 2023, field signs for red squirrel were recorded at two locations within the Survey Area, on the forest track in the woodland area north of Loch Earba, and adjacent to the River Spean. Field signs were all feeding signs under Norway spruce *Picea abies*. No dreys were located in the Survey Area, and no field signs were recorded in 2022.
- 8.6.46 Camera traps confirmed the presence of red squirrel by the River Spean with one camera trap observation.

Pine Marten

- 8.6.47 The desk study identified numerous records of pine marten within 10 km of the Survey Area in the woodland blocks along Loch Laggan and to the west of the Site. There were no records of pine marten within the Survey Area.
- 8.6.48 Pine marten evidence was very limited within the Survey Area. In 2023, two pine marten scats were recorded, one on a forest track north of Loch Earba, and one on the footpath between Loch Earba and Loch Leamhain, in exposed habitat sub-

optimal for pine marten. No signs of dens were recorded, however suitable habitat for dens exists within the woodland habitats in the Survey Area. No field evidence was recorded in 2022.

- 8.6.49 Camera traps captured pine marten on four occasions, at woodland areas close to the River Spean, and in woodland north of Loch Earba, suggesting relatively low pine marten activity within the Survey Area.

Scottish Wildcat

- 8.6.50 The desk study identified one record of Scottish wildcat within the last 15 years, approximately 5 km east of the Survey Area.
- 8.6.51 No evidence of Scottish wildcat was recorded within the Survey Area, with no field signs recorded. The majority of the Survey Area was considered to be sub-optimal with limited cover for Scottish wildcat and a limited prey source. Areas of scattered woodland along the River Spean offer good suitability for Scottish wildcat, however no signs were recorded during field surveys or camera trap surveys.

Bats

- 8.6.52 The desk study did not identify any records of bats within 5 km of the Survey Area.

Habitat Assessment

- 8.6.53 The majority of the Survey Area comprises open uplands with low suitability for commuting and foraging bats. Suitable commuting and foraging habitat for bats was found along Loch Earba, with trees located along the shores and a connecting woodland pocket to the east. Suitable commuting and foraging habitat for bats was additionally found in the lower part of the Site in the north with woodland pockets and tree lines, including the riparian corridor along the River Spean.

Preliminary Roost Assessment

- 8.6.54 Ten trees with potential roost features (PRFs) with moderate or higher bat roost suitability were identified along the shore of Loch Earba, within the proposed inundation area (see Confidential Figure 8.6). Most features were cracks or cavities in mature trees, with one tree assessed as having low-moderate bat roost suitability, three with moderate-high bat roost suitability, and the remaining with moderate bat roost suitability. PRFs are unlikely to provide optimal hibernation conditions as trees are exposed and are unlikely to retain the stable cool but frost-free conditions suitable for hibernating bats.

Emergence / Re-Entry Surveys - Trees

- 8.6.55 A small non-breeding roost was confirmed in a mature sycamore *Acer pseudoplatanus* tree on the eastern shore of Loch Earba, in a small rot hole (see Confidential Figure 8.6). A single common pipistrelle *Pipistrellus pipistrellus* was recorded displaying re-entry swarming behaviour and entering the roost on 30 August 2023.
- 8.6.56 During these surveys, foraging common pipistrelle and soprano pipistrelle *Pipistrellus pigmaeus* were recorded frequently, and *Myotis* sp. occasionally, on the margins of Loch Earba, with up to three bats observed at any one time. Observations of flight direction during surveys suggest that bats observed foraging are roosting to the north of the trees surveyed.

Static Detector Surveys

- 8.6.57 Static detector surveys identified the presence of at least four species of bat; common pipistrelle, soprano pipistrelle, *Myotis* sp. and brown long-eared bat *Plecotus auratus* (see Confidential Figure 8.6 for detector locations). Although *Myotis* sp. bats were not identified to species level, based on the known distribution of bat species in Scotland and the habitats present at the Site, it is likely that both Daubenton's bat *Myotis daubentonii* and Natterer's bat *Myotis nattereri* would be present. Out of 66,907 passes recorded across four detector locations, 79% were common and soprano pipistrelle (recorded at approximately the same frequency), 21% were *Myotis* sp. and <1% brown long-eared bat.
- 8.6.58 The highest levels of activity were recorded at detector no. 3, on the southern shore of the northern loch of Loch Earba, and detector no. 4, on the River Spean. Bat activity levels were markedly lower at detector no. 1 and 2, at the northern end of Loch Earba.
- 8.6.59 Common pipistrelle median activity rates ranged from 7.6 passes per hour at location 1, to 31.98 at location 4. Soprano pipistrelle bats had a peak of 21.78 median bat passes per hour at location 3. Median rates for *Myotis* sp. Were highest at location 4. Activity levels for brown long-eared bat remained below 0.4 passes per hour at all locations. The frequency of common and soprano pipistrelle records within or before the recognised emergence times would suggest a roost is close to locations 1 and 4, and locations 1, 3 and 4 for *Myotis* sp.
- 8.6.60 The species assemblage recorded is in line with the anticipated species assemblage considering the habitats present and known species distribution. Overall, the survey area is considered to support moderate activity at locations 1 and 2, with moderate to high activity at locations 3 and 4 for the region.

Deer

- 8.6.61 The desk study returned a record of red deer within 2 km of the Site, and small numbers of deer were observed incidentally during baseline surveys on an occasional basis. The Site, and the majority of the wider Ardverikie estate within which the Site is located, is within the Mid West Association Deer Management Group (MW DMG). Ardverikie estate currently supports an average deer density of 13.2 per km², recorded during the last helicopter deer count undertaken for the MW DMG in 2021^{68,69} (previous helicopter counts were also undertaken in 2006, 2011 and 2017). The average deer density across the full MW DMG (which includes over c. 106,000 ha) has been decreasing overall, from 12 per km² (in 2006) to 8.4 per km² (in 2021)⁷⁰, although this varies across the MW DMG area, with deer numbers in the western section (west of the Site and Ardverikie estate) increasing over this period⁷¹. Within Ardverikie Estate itself, higher deer densities are recorded within the eastern area of the estate, with lower densities recorded in the western area of the estate. The current MW DMG Deer Management Plan

⁶⁸ Irvine, J. (2021) Deer Count Report. Mid West Association Deer Management Group. NatureScot.

⁶⁹ It should be noted that the NatureScot helicopter count of the MW DMG area in 2021 has mistakenly shown the area counted on Ardverikie to be 16,590 ha, giving an overall deer density of 10 deer per km². However, Ardverikie Estate have clarified the hill area counted in 2021 is 12,990 ha, which includes any accessible woodland areas. This corrected figure gives an overall deer density at Ardverikie of 13.2 deer per km².

⁷⁰ Corrected from the 7.9 deer per km² quoted within the MW DMG Deer Management Plan, which was based on an incorrect figure used in the NatureScot 2021 helicopter count.

⁷¹ Mid-West Association Deer Management Group: Deer Management Plan. Available at: <https://midwestassociationdmg.deer-management.co.uk/deer-management-plan/> [Accessed in November 2023]

(2023 – 2028)⁷² aims to maintain the 2021 total population within the eastern sub area of the MW DMG area as a whole (the eastern sub area includes Ardverikie Estate, along with Ben Alder, Corroul, Dunan and Cruach estates).

- 8.6.62 Game records and information provided by Ardverikie estate confirms that red deer is the main species present on the estate, but roe deer *Capreolus capreolus* and sika deer *Cervus nippon*⁷³ are also present within woodland areas, where these species are controlled. An average of 283 deer per year were culled between 2019 and 2022 across the entire estate, with 19% in plantation woodland habitat (sika, roe and red deer for woodland management) and 81% on open hill habitat (red deer). Game records and NatureScot 2021 deer density mapping⁶⁸ indicate that deer distribution is relatively scattered across the Site and wider estate, but with higher densities in the eastern part of the estate, and lower densities in the west. Within the Site itself, deer were recorded primarily on open ground in the Coire Pitridh area, and within open areas and woodland at the northern end of Loch Earba during the 2021 helicopter count⁶⁸.
- 8.6.63 A deer assessment is provided in paragraphs 8.8.62 - 8.8.64 and 8.8.98 - 8.8.100, which includes an assessment of the potential impacts on deer welfare, habitats, neighbouring and other interests (e.g. access and recreation, road safety, etc.), in accordance with NatureScot guidance⁷⁴. Information on deer control and management is also contained within **Appendix 8.6**.

Other Mammals

- 8.6.64 One record of mountain hare was recorded in the desk study. However, due to the mobility of this species and the extensive areas of suitable habitat in the surrounding landscape it is considered unlikely to be significantly affected and detailed assessment of effects on this species have been scoped out.

Evaluation of Faunal Receptors

- 8.6.65 An evaluation of the non-avian terrestrial faunal receptors, which are either known to be present or considered likely to be present within the Survey Area, is provided in **Table 8.9**.

Table 8.9 Evaluation of Faunal Receptors

Receptor	Legal / Conservation Status	Reason for Evaluation	Evaluation
Invertebrates	SBL (some species), LBAP (some species)	The Survey Area is unlikely to support protected terrestrial invertebrate species, but has suitability for several local priority species, within open heath, bog and marshy grassland habitat, along with more limited areas of semi-natural woodland and scattered mature trees. Given the presence of extensive similar habitats within the wider area, the Survey Area is assessed as having up to local ecological value for invertebrates.	Local

⁷² <https://midwestassociationdmg.deer-management.co.uk/deer-management-plan/> [Accessed in January 2024]

⁷³ It is reported in the MW DMG Working Plan that the sika deer are all likely to be hybrids with red deer to one degree or another

⁷⁴ SNH (2018) *SNH general pre-application/ scoping advice to developers of onshore wind farms*. Available at: <http://www.snh.gov.uk/docs/A1150291.pdf> [Accessed in November 2023]

Receptor	Legal / Conservation Status	Reason for Evaluation	Evaluation
Reptiles: common lizard, adder, slow-worm	WCA Sch5 (in respect of Section 9(1) and 9(5) only), SBL	Much of the Survey Area contains suitable habitat for common lizard. The suitable habitats present are generally widespread and relatively common in the wider area. Common lizard is described as being widespread throughout Scotland⁷⁵ (with the exception of the Central Lowlands and the Northern Isles). Therefore, as common lizard is widespread in the area, and given the size of the Survey Area, and the abundance of suitable habitat in the surrounding area, the Survey Area is not assessed to be of a higher than local value for common lizard. It is also possible that adder occur within the Survey Area, due to the presence of suitable habitat such as heath and woodland. Adder is described as being widespread across the Scottish mainland⁷⁶. Given the widespread nature of this species, and the abundance of suitable habitat in the surrounding area, adder is not assessed to be of higher than local value, should it be present. Similarly it is also possible that slow-worm occur within the Survey Area, given the presence of suitable woodland edge habitat. Slow worm is described as quite common across Scotland⁷⁷. Given its status, and the availability of abundant connected suitable habitat in the wider area, slow worm is not assessed to be of higher than local value, should it be present.	Local
Otter	HR Sch2, WCA Sch5, SBL	Otter is widespread locally and nationally, with the Scottish population estimated to be 8,000⁷⁸. Baseline survey confirms that otter use Loch Earba at the northern / north-eastern end of the Survey Area for hunting, but that the River Spean and Loch Leamhain in the southern, south-eastern and south-western parts of the Survey Area are not important or regularly used by this species. Baseline surveys indicate that holts are not present within the Survey Area, and that otter are likely to be using holts to the north of the Survey Area, where there is highly suitable habitat and cover for otter	Local

⁷⁵ NatureScot (2016) Information on common lizard [online]. Available at: <https://www.nature.scot/plants-animals-and-fungi/amphibians-and-reptiles/common-lizard> [Accessed in November 2022]

⁷⁶ NatureScot (2016) Information on adder [online]. Available at: <https://scottishwildlifetrust.org.uk/species/adder/> [Accessed in November 2022]

⁷⁷ NatureScot (2022) Information on slow worm [online]. Available at: <https://www.nature.scot/plants-animals-and-fungi/amphibians-and-reptiles/slow-worm> [Accessed in November 2022]

⁷⁸ NatureScot (2022) Information on otter [online]. Available at: <https://www.nature.scot/plants-animals-and-fungi/mammals/land-mammals/otter#:~:text=Today%2C%20the%20species%20is%20flourishing,lochs%2C%20rivers%20or%20the%20sea.> [Accessed in November 2022]

Receptor	Legal / Conservation Status	Reason for Evaluation	Evaluation
		within the woodland, Allt Labrach corridor, and Loch Laggan beyond. Given the widespread status and abundance of suitable connected habitat within the surrounding landscape, otter is assessed as being of local value.	
Water vole	WCA Sch5, SBL, LBAP	Water vole has a wide distribution in Scotland but has experienced decline nationally, with American mink <i>Neovison vison</i> predation being a key factor⁷⁹. Due to the status of this species, and its scattered distribution within several small watercourses scattered across the Survey Area, water vole is assessed as being of local value.	Local
Red squirrel	WCA Sch5, SBL, LBAP	There are an estimated 160,000 red squirrels in Britain, with c. 75% of them living in Scotland's woodlands, parks and gardens⁸⁰. Given the limited extent of suitable habitat within the Survey Area, and limited number of field signs recorded (including no dreys) and given the more extensive areas of suitable habitat within the adjoining landscape (such as woodland to the north of the Site and along Loch Laggan), the Survey Area is assessed to be of less than local value for red squirrel.	Less than local
Pine marten	WCA Sch5, SBL, LBAP	The Scottish population of pine marten is increasing after historic persecution, and its distribution has expanded across the Highland region⁸¹, however it is still described as a rare species with Scotland's population estimated at 3,700 adults⁸². Given the limited extent of suitable habitat within the Survey Area, and low levels of activity recorded (including no dens), when considered within the context of the local setting, where more extensive areas of suitable habitat occurs (such as woodland to the north of the Site and along Loch Laggan), the Survey Area is assessed to be of less than local value for pine marten.	Less than local

⁷⁹ <https://www.mammal.org.uk/species-hub/full-species-hub/discover-mammals/species-water-vole/> [Accessed in November 2023]

⁸⁰ NatureScot (2022) Information on red squirrel [online]. Available at: <https://www.nature.scot/plants-animals-and-fungi/mammals/land-mammals/red-squirrel> [Accessed in November 2022]

⁸¹ Harris, S. and Yalden, D.W. (2008). *Mammals of the British Isles: Handbook* (4th Edition). The Mammal Society, Southampton.

⁸² NatureScot (2022) Information on pine marten [online]. Available at: <https://www.nature.scot/plants-animals-and-fungi/mammals/land-mammals/pine-marten#:~:text=Scotland%27s%20population%20is%20estimated%20at,Borders%20and%20Dumfries%20and%20Galloway.> [Accessed in November 2022]

Receptor	Legal / Conservation Status	Reason for Evaluation	Evaluation
Bats	HR Sch2, WCA Sch5, SBL, LBAP	The Survey Area was found to support a small non-breeding common pipistrelle tree roost. Common pipistrelle, soprano pipistrelle, brown long-eared bat and <i>Myotis</i> sp. (most likely Daubenton's and Natterer's bat) were recorded foraging or commuting within the Survey Area, particularly along the Loch Earba shoreline and River Spean corridor. Common pipistrelle is a common and widespread species, with an estimated UK population of 2,430,000⁸³. Soprano pipistrelle is also common and widespread in Scotland, with a stable Scottish population estimated at 512,000 – 2,180,000⁸⁴, with pipistrelle species accounting for an estimated 85% of the Scottish bat population⁸⁵. Brown long-eared has a stable estimated Scottish population of 12,800 – 543,000⁸⁶, Daubenton's bat of 6,220 – 1,020,000⁸⁷, and Natterer's bat of 1,490 – 260,000⁸⁸. All five species listed above are SBL and LBAP species. Although the roosting resource is reasonably limited, due to the species assemblage and moderate to high levels of bat activity recorded, the Survey Area is assessed as being of up to local importance for bats.	Local
Deer	WCA Sch9 (sika deer)	Red deer, roe deer and sika deer occur within the Site and wider estate. These species are not of conservation concern ,and are assessed as being of less than local value. However, deer have been included in the assessment (addressed within paragraphs 8.8.62 - 8.8.64 and	Less than local

⁸³ Battersby, J. (ed) & Tracking Mammals Partnership (2005) UK Mammals Species Status and Population Trends. First Report by the Tracking Mammals Partnership. JNCC/Tracking Mammals Partnership, Peterborough.

⁸⁴ European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018. Supporting documentation for the conservation status assessment for the species: S5009 – Soprano pipistrelle (*Pipistrellus pygmaeus*). Scotland. Available at: <https://jncc.gov.uk/jncc-assets/Art17/S5009-SC-Habitats-Directive-Art17-2019.pdf> [Accessed in November 2023]

⁸⁵ SNH (2011) The status of Scottish Bats. Available at: <http://www.snh.gov.uk/docs/B953637.pdf> [Accessed in November 2023]

⁸⁶ European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018. Supporting documentation for the conservation status assessment for the species: S1326 – Brown long-eared bat (*Plecotus auritus*). Scotland. Available at: <https://jncc.gov.uk/jncc-assets/Art17/S1326-SC-Habitats-Directive-Art17-2019.pdf> [Accessed in November 2023]

⁸⁷ European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018. Supporting documentation for the conservation status assessment for the species: S1314 – Daubenton's bat (*Myotis daubentonii*). Scotland. Available at: <https://jncc.gov.uk/jncc-assets/Art17/S1314-SC-Habitats-Directive-Art17-2019.pdf> [Accessed in November 2023]

⁸⁸ European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) Fourth Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2013 to December 2018. Supporting documentation for the conservation status assessment for the species: S1322 – Natterer's bat (*Myotis nattereri*). Scotland. Available at: <https://jncc.gov.uk/jncc-assets/Art17/S1322-SC-Habitats-Directive-Art17-2019.pdf> [Accessed in November 2023]

Receptor	Legal / Conservation Status	Reason for Evaluation	Evaluation
		8.8.98 - 8.8.100) to accord with NatureScot guidance with respect to wild deer.	

*Table Key: Status

HR Sch2 = Included on Schedule 2 of the Conservation (Natural Habitats &c) Regulations 1994 (as amended in Scotland)

WCA Sch5 = Listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended in Scotland)

WCA Sch9 = Listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended in Scotland)

PBA = Protection of Badgers Act (1992)

SBL = listed on Scottish Biodiversity List (SBL)

LBAP = Highland Biodiversity Action Plan Local Priority Species

Baseline Information of OBEMP Areas

- 8.6.66 Areas across the wider Ardverikie Estate, which are proposed for habitat restoration, creation and management action as part of the OBEMP, are illustrated in **Figure 8.7** (see **Appendix 8.6** for detailed OBEMP proposals).
- 8.6.67 Information on the baseline survey of potential bog restoration areas across the Ardverikie Estate is provided in **Appendix 8.6**. In summary, the total area identified as having suitability for direct bog restoration is c. 1,031 ha. This includes 978 ha that has been surveyed on the ground, and an additional 54 ha identified from aerial mapping. Of the areas ground-truthed, this is made up of Phase 1 habitat types blanket bog (12.3 ha), wet modified bog (527.2 ha), dry modified bog (432.8 ha), raised bog (1.6 ha), basic flush (1.6 ha), wet dwarf shrub heath (3.2 ha) and marsh / marshy grassland (0.2 ha), which are assessed as being in a fairly poor⁸⁹, degraded condition, primarily due to the presence of erosion features such as hags, ditches and gullies, along with moderate herbivore impacts in some instances.
- 8.6.68 An overview of broad habitats has been obtained for the proposed deer enclosure / woodland restoration and deer control areas across the wider Ardverikie Estate, based on review of aerial photography and desk-based data sources. In summary, the areas are estimated to comprise:
- Deer enclosure / woodland restoration area (1,496 ha in total, 1,111 ha of which comprises retained terrestrial semi-natural habitat): 17 ha blanket bog and peatlands; 864 ha heathland; 102 ha coarse grassland; 42 ha broad-leaved woodland; 81 ha coniferous plantation and 5 ha open canopy young plantation or woodland recently felled. The remaining 385 ha relates to water (the existing Loch Earba), along with areas that will form the infrastructure footprint and inundation zone.
 - Deer control area, outwith the deer enclosure (11,390 ha): 2,328 ha blanket bog and peatlands; 6,490 ha heathland; 1,936 ha montane vegetation; 301 ha cliffs; 191 ha broadleaved, coniferous and mixed woodland; 6 ha open canopy young woodland or woodland recently felled; 120 ha water; and 18 ha coarse and smooth grassland.

Future Baseline

- 8.6.69 As part of the assessment of ecological effects, it is important to assess the likely environmental conditions that would exist in the absence of the Proposed

⁸⁹ Condition Assessment used the condition assessment sheet for wetland, from Natural England Joint Publication JP039 Biodiversity Metric 4.0. Retrieved from <https://publications.naturalengland.org.uk/publication/6049804846366720> [Accessed in September 2023].

Development. This is known as the 'do nothing' future scenario. Establishing a 'do nothing' scenario requires identifying the process of change (e.g. natural processes or future land management) that may influence the character of the Site and its surrounds, in turn allowing differentiation from those changes that may occur as a result of the Proposed Development.

- 8.6.70 In the absence of the Proposed Development, no significant changes to the ecological baseline are expected. There are no planned changes to land management practices known.
- 8.6.71 In the absence of the Proposed Development, species could change their distribution and use of the Site. It is possible that badger could colonise the Site in the future. It is also possible (although currently considered very unlikely) that Scottish wildcat could colonise the Site. Species already known to occur on the Site could change their distribution or resting / breeding locations, for example water vole could change their distribution and dig new burrows, or otter, red squirrel or pine marten could establish new resting sites. To allow for possible changes in the distribution of protected species pre-construction surveys for protected mammal species (otter, pine marten, red squirrel, badger, bats, water vole and Scottish wildcat) would be undertaken to ensure legislative compliance during construction, as detailed in paragraph 8.7.12.

8.7 Mitigation by Design

- 8.7.1 The Proposed Development has been subject to a design evolution in response to the constraints identified as part of the baseline studies, intended to reduce environmental effects (see **Chapter 2: Consideration of Alternatives and Design Evolution** for further details). With respect to non-avian terrestrial ecology the following changes have been incorporated to avoid or minimise negative effects:

Avoid / Minimise Effects on Sensitive Habitats

- Borrow pits have been located within proposed inundation zones or within an existing borrow pit, to avoid additional land-take;
- Existing estate tracks would be used (and upgraded) where possible, in preference to creating new tracks, in order to reduce land-take and minimise additional drainage effects of wetland habitats. This includes use of a c. 1.5 km length of existing track at the Site entrance through a large area of blanket bog;
- Construction compounds have been sited within the proposed inundation zones where possible, to reduce land-take. Some construction compound areas are required beyond the inundation zones, due to the requirement for inundation before the end of the construction period. However, these have been minimised as far as possible, and have been sited to avoid blanket bog habitat and deep peat;
- The main construction compound has been re-sited away from blanket bog habitat on flat ground by the Site entrance, and on to non-bog habitats (primarily acid grassland) near the proposed Shuas dam;
- Construction tracks have been sited within the proposed inundation zones where feasible, to minimise additional land-take;
- Access tracks have been micro-sited to avoid sensitive flush habitats and other high value habitats including montane willow scrub, where technically feasible;
- The infrastructure footprint and working corridor has been minimised as far as is practically possible, to minimise land-take.

- The layout of the access tracks was designed to minimise the requirement for watercourse crossings where possible. A minimum buffer of 10 m has been applied to all watercourses, with the exception of the proposed watercourse crossings, and where practical any proposed construction activities or infrastructure has been located outside of this buffer (excluding the inundation area) (see **Chapter 12: Geology, Soils and Water**).

Avoid / Minimise Effects on Protected and Other Notable Faunal Species

- Access tracks have been micro-sited to avoid water vole burrows where technically feasible;
- The proposed access track watercourse crossing to the west of the Shuas dam would be micro-sited to avoid the water vole burrow (and appropriate buffer as advised by the Ecological Clerk of Works (ECoW)) on this minor watercourse, if the water vole burrow is still present at the time of construction, as informed by pre-construction surveys (see paragraph 8.7.12) and overseen by the ECoW;
- New watercourse or ditch crossings would be designed in a way to facilitate the movement of otter (and water vole) along the corridors through bankside reinstatement and reduced development footprints. This includes allowing for the safe passage of otters (and water vole) under rather than over the roads, by retaining the sections of natural bank, or providing a ledge above the water level for movement;
- The proposed bridge crossing on the River Spean would be designed sensitively for bats, by: maintaining a free flight of 2 m above water level to allow free movement and foraging from *Myotis* sp. bats; and minimising tree loss in this area;
- Intake / outlet and tailrace structures at the upper and lower lochs, and compensation flow outlets, would be screened (comprising a 12.5 mm mesh aperture), such that otter (and fish) will be protected from becoming entrapped or injured / killed, or accessing the turbines, in accordance with NatureScot guidance⁹⁰ (further information regarding screening is contained in **Chapter 11: Aquatic Ecology**).

Water Management

- A compensation flow discharge to Allt Loch a' Bhealaich Leamhain (which drains from Loch Leamhain) which mimics the natural outflow from the existing (baseline) catchment would be made, to maintain the hydrological regime of the Allt Loch a' Bhealaich Leamhain and downstream habitats (including the Allt Cam and Loch Pattack). This outflow would be maintained during construction and operation. The rate of discharge will be agreed with SEPA as part of a CAR application and would be informed by a site-specific flow monitoring record (further information is contained within **Chapter 6: Hydrology and Water Management**).
- To facilitate construction of the Leamhain dam and associated infrastructure it will be necessary to lower the water level of the existing Loch Leamhain via discharge to the Allt Loch a' Bhealaich Leamhain, during construction.. This will be undertaken in accordance with a CAR authorisation agreed with and regulated by SEPA. The CAR application and authorisation will contain a method statement, flow rate and volume controls, and water quality standards. The rate and volume of discharge to the Allt Loch a' Bhealaich Leamhain will

⁹⁰ SNH (2015) Hydroelectric schemes and the natural heritage. Available at: <https://www.nature.scot/sites/default/files/2018-05/A1521095%20-%20Hydroelectric%20schemes%20and%20the%20natural%20heritage%20-%20Dec%202015.pdf> [Accessed in November 2023]

be no greater than currently occurs, and thus within the capacity of the Allt Loch a' Bhealaich Leamhain channel downstream of the Site. It is expected that this would be stipulated within the CAR authorisation. This will ensure the Allt Loch a' Bhealaich Leamhain and downstream watercourses / waterbodies remain stable, and that their geomorphology and habitats dependent on / adjacent to the watercourses / waterbody are not impaired. The CAR application would be made as part of the detailed design stage of the project.

- A compensation flow discharge (Q95 flows) would be made to the Allt Labhrach, Allt Coire Pitridh, Allt Coire a' Chlachair and associated tributaries, details of which would be agreed with SEPA as part of a CAR application (further information is contained within **Chapter 6: Hydrology and Water Management**).

Embedded Measures: Outline Biodiversity Enhancement and Management Plan (OBEMP)

- 8.7.2 To compensate for the significant residual effects upon important ecological features, and to provide significant enhancement, a Biodiversity Enhancement and Management Plan (BEMP) would be produced. An Outline BEMP is provided in **Appendix 8.6: Outline BEMP**, and an overview figure provided as **Figure 8.7**. These describe extensive habitat restoration, creation and management measures across the Site and the majority of the wider Ardverikie Estate, comprising a total area of c. 12,501 ha.
- 8.7.3 The OBEMP has been developed in consultation with NatureScot and THC. Information on the rationale for the development of the OBEMP proposals, which has gone through several draft iterations in response to consultee feedback, is provided in **Appendix 8.6**. The final measures presented within the OBEMP are considered to: represent the highest certainty of outcome; represent the greatest biodiversity benefit with the greatest extent and diversity of habitat enhancement, including montane areas; take into account consultee feedback to date; retain Arverikie Estate's heritage as a sporting estate whilst delivering habitat enhancement over the majority of the estate; and be supported by Ardverikie Estate, the developer, and its specialist ecology advisers.
- 8.7.4 A summary of the compensation and enhancement measures proposed within the OBEMP is provided below:
- The habitats and species (features) that are the targets of the OBEMP, which will benefit from the management prescriptions, have been determined through consideration of the relative importance of ecological features present at the Site, the extent to which they may be affected by the Proposed Development, their potential to benefit from restoration or management, local biodiversity priorities of the Highland Biodiversity Action Plan⁹¹, and national priorities. They comprise: blanket bog / degraded bog; native woodland (conifer, mixed, broadleaf and riparian); montane willow scrub; upland and montane habitat assemblage (wet and dry heath, blanket bog, woodland, montane heath, montane willow scrub, montane flush and spring communities, species-rich ledge communities, grassland (acid / calcareous / marshy)); watercourse and aquatic / riparian zones, fish, aquatic invertebrates; invasive species; bat species; red squirrel; pine marten; reptiles; and black-throated diver *Gavia arctica*;

⁹¹ Highland Nature Biodiversity Action Plan 2021 – 2026. Retrieved from <https://www.highlandenvironmentforum.info/wp-content/uploads/2022/01/Highland-Nature-Biodiversity-Action-Plan-2021-2026-compressed.pdf> [Accessed in January 2024]

- Information on the rationale for the extent and location of habitat restoration and management proposals is contained in **Appendix 8.6**, and summarised in **Table 8.11**.
- The goals and objectives of the OBEMP are summarised as follows:
 - o **Goal 1. Bog restoration:** Objective 1.1. Undertake bog restoration to directly restore 625 ha of degraded / modified bog;
 - o **Goal 2. Woodland restoration:** Objective 2.1. Restore and create native woodland to enhance biodiversity connectivity, via a 1,496 ha deer enclosure and targeted planting. Areas targeted within the deer enclosure are:
 - o Restoration of c. 168 ha ancient woodlands / Long-establish woodlands of plantation origin (LEPO);
 - o c. 100 ha native woodland regeneration;
 - o c. 260 ha native woodland planting; and
 - o c. 68 ha upland and riparian native planting, for landscaping and biodiversity benefit.
 - o **Goal 3. Restoration of montane willow scrub and other montane habitat:** Objective 3.1. Restore montane willow scrub and other montane habitat, via a 1,496 ha deer enclosure, and targeted planting. Approximately 200 ha is targeted within the deer enclosure.
 - o **Goal 4. Enhancement of heathland and other upland habitats:** Objective 4.1. Reduce deer numbers by 39% (8 deer per km²) outwith the deer enclosure, across a c. 11,390 ha deer control area to provide benefits to upland habitats including heathland and facilitate bog restoration. An estimated 6,490 ha of this area comprises heathland. A further c. 328 ha of open upland habitats would also benefit from grazing exclusion within the deer enclosure area.
 - o **Goal 5. Watercourse and aquatic / riparian enhancement:** Objective 5.1. Enhance the c. 2.2km long Allt Labhrach by re-wetting; Objective 5.2. Create c. 20.9 ha of riparian woodland; Objective 5.3. Enhance spawning habitat on Moy Burn; Objective 5.4. Install large woody structures in littoral zones; Objective 5.5. Install artificial floating spawning nests within Loch Leamhain and Loch Earba.
 - o **Goal 6. Remove invasive species:** Objective 6.1. Removal of all identified Rhododendron.
 - o **Goal 7. Control bracken:** Objective 7.1. Control bracken within a 10.6 ha area.
 - o **Goal 8. Reinstate habitats disturbed during construction:** Objective 8.1. Reinstate c. 91 ha of habitats temporarily disturbed during construction within the working corridor.
 - o **Goal 9. Translocate sensitive plant species:** Objective 9.1. Translocate sensitive plant species during construction at 9 locations (downy willow, field gentian, petty whin and hawkweed sp.).
 - o **Goal 10. Enhance nesting / roosting habitat for mammal species:** Objective 10.1. Erect 50 bat boxes, 50 red squirrel boxes and 30 pine marten boxes.

- o **Goal 11. Enhance reptile habitat:** Objective 11.1. Create 1 reptile hibernacula and log piles.
- o **Goal 12. Enhance habitat for divers:** Objective 12.1. Provide nesting platforms for divers on appropriate lochans (subject to monitoring).
- Prior to the commencement of construction, translocation of the following important plants, which lie within the proposed working corridor or infrastructure / inundation footprint, would be undertaken (Objective 9.1): downy willow (three locations identified in baseline surveys); field gentian (one location); petty whin (one location); and hawkweed sp. (three locations within upland species-rich ledge habitat). Translocation details would be provided in the detailed BEMP, and are outlined in the OBEMP. An update survey would be undertaken in the flowering season prior to construction, to gather up-to-date survey information on the location of these species within the working corridor/infrastructure/inundation areas, and the locations of individual plants would be marked. The plants would be translocated to suitable retained habitat areas, and their locations recorded and marked, to allow for monitoring of success. Donor sites would be selected for translocation, that contain the same habitat type and conditions. Baseline habitat surveys confirm that such habitats exist for the plant species targeted, within retained habitat areas within the wider Site boundary. The translocation would follow the Scottish Code for Conservation Translocation⁹² and best practice guidance⁹³. Successful translocation of downy willow has been reported in published literature, e.g. Pogorzelec *et al.* (2020)⁹⁴. Although limited published literature exists on translocation results for the other species targeted, it is expected that the presence of suitable donor habitat within close proximity to the areas that the individual plant specimens would be translocated from, maximises the likelihood of success. The success of the translocation would be monitored as part of the BEMP monitoring programme.
- Monitoring would be undertaken to measure the success of the restoration and management measures, to measure the achievement of the goals and objectives of the OBEMP, and to inform adaptive management and remedial action as necessary.

Good Practice Measures

Good Practice Mitigation Measures

- 8.7.5 Full details of construction mitigation measures would be provided in a Construction Environmental Management Document (CEMD). A draft outline CEMD is included as **Appendix 2.3**, a Peat Management Plan (PMP) as **Appendix 12.2: PMP**, and a draft Pollution Prevention Plan (PPP) as **Appendix 2.1**.
- 8.7.6 Good practice measures in relation to pollution risk, sediment management and watercourse crossings to be adopted during the construction and operation phases are set out in **Chapter 6: Hydrology and Water Management** and

⁹² National Species Reintroduction Forum (2014) *The Scottish Code for Conservation Translocations*. Scottish Natural Heritage.

⁹³ National Species Reintroduction Forum (2014) *Best Practice Guidelines for Conservation Translocations in Scotland Version 1.1*. Scottish Natural Heritage.

⁹⁴ Pogorzelec, M., Parzymies, M., Banach-Albinska, B., Serafin, A. and Szczurowska, A. (2020) Experimental reintroduction of the boreal species *Salix lapponu* L. to refuges at the southern limit of its range – short-term results. *Boreal Environment Research* 25: 161 – 169.

Chapter 12: Geology, Soils and Water. During the construction phase, good practice techniques with respect to peatland environments, as contained within SNH (2019)⁹⁵, would be implemented. Good construction practice and methodologies to prevent peat instability within areas that contain peat deposits would be implemented as detailed in **Chapter 12: Geology, Soils and Water** and **Appendix 12.1: PLHRA**. Further details on peat and water management during construction are provided in **Chapter 6: Hydrology and Water management**, **Chapter 12: Geology, Soils and Water** and are outlined in **Appendix 2.3: Outline CEMD** and **Appendix 2.1: draft PPP**.

- 8.7.7 Good practice measures to protect retained habitats outside of the inundation zone during the construction phase would be implemented, including the erection of temporary protective fencing demarcating the working corridor and all trees to be retained, to be overseen and policed by an Ecological Clerk of Works (ECoW) (see paragraphs 8.7.13 - 8.7.14). Appropriate buffer zones would be implemented when erecting barriers to avoid inadvertent damage from heavy machinery / plant manoeuvring. This would incorporate Root Protection Areas (RPA) for retained trees (to avoid damage to the root plates of retained trees near the working corridor), as detailed in a Tree Protection Plan (a draft outline TPT is provided in **Appendix 9.2**). Vehicular access would not be permitted outside of the working corridor. Within the working corridor outside of permanent infrastructure areas, vehicular access would be restricted across unprotected ground outwith the working corridor, using only load-spreading, wide-tracked plant, deploying bog-mats or trackway as appropriate and avoiding streams, mires and flushes where possible. Sensitive habitats within the working corridor, such as flushes, springs, montane willow scrub would be demarcated by the ECoW, and these areas avoided where feasible.
- 8.7.8 Good practice mitigation to protect habitats from dust deposition would be contained within the CEMD.
- 8.7.9 Mitigation measures for Groundwater Dependent Habitats are detailed in **Appendix 12.4** and **Chapter 12: Geology, Soils and Water**. Measures, such as permeable access tracks and regular cross track drains, have been proposed to safeguard existing water flow paths and maintain existing water quality. These measures would be included in the final CEMD. Micro-siting (for example of tracks) would also be undertaken under direction of the ECoW to safeguard valuable habitats, such as flushes, where possible. The ECoW would supervise construction works, and would have the authority or approve drainage measures, and ensure their efficacy. It is considered therefore that the majority of the water dependent habitats identified by the NVC mapping can be sustained. This would be confirmed, in accordance with good practice, by the ECoW at the time of the construction who would ensure existing surface water flow paths and water flushes are maintained where possible (see **Chapter 12: Geology, Soils and Water**).
- 8.7.10 Good practice techniques for vegetation and habitat reinstatement would be adopted and implemented on areas subject to disturbance during construction (outside of the inundation zone) as soon as is practicable. This would include excavated materials being stored according to good practice taking care to separate turves, topsoils, soils and peat layers. Reinstatement would ensure that turves are replaced on the surface. Construction tracks would be reinstated to 4 m with passing places following construction, with the exception of the main track from the A86 to the powerhouse. All construction equipment and other temporary

⁹⁵ SNH (2019) Good Practice during Wind Farm Construction, 4th Edition. Available at: <https://www.nature.scot/guidance-good-practice-during-wind-farm-construction> [Accessed in November 2023]

infrastructure would be removed from Site and the temporary storage areas would be reinstated.

- 8.7.11 Mitigation to protect fish is detailed in **Chapter 11: Aquatic Ecology**, and would include measures such as implementation of a Surface Water Quality Monitoring Programme; noise and vibration controls which would be detailed within a Construction Noise and Vibration Management Plan; sensitive timing of instream works; fish rescues and relocations; relocation of juvenile Arctic Charr from the Allt Coire Pitridh to the Moy Burn via electrofishing; using appropriate culvert designs; implementing sensitive construction lighting; implementing a 'soft start' approach to any piling operations; spawning habitat improvement to retained habitat; provision of an aqueduct channel with substrate and channel design suitable for spawning, to maintain spawning access between Loch Earba, the Allt Choire Pitridh and the Allt a' Choire Chlachair; creation of terraced pools to maintain marginal loch spawning habitat, macrophyte and macroinvertebrate habitat; and creation of artificial spawning nests for Arctic charr *Salvelinus alpinus* within Loch Leamhain and Loch Earba.

Pre-Construction Surveys

- 8.7.12 Due to the time that will have elapsed since the last surveys and construction, coupled with the possibility that protected mammal species activity could have changed in the intervening period, a pre-construction survey for otter, water vole, badger, red squirrel, pine marten and Scottish wildcat will be undertaken. This would cover all suitable habitat within 250m of infrastructure and working corridors. The results of the pre-construction surveys will inform the need for further mitigation (if required) in respect of working practices, or consultation with NatureScot, if required.

Ecological Clerk of Works

- 8.7.13 A suitably qualified ECoW or ECoW team would be employed for the duration of the construction and reinstatement periods, to ensure ecological interests are safeguarded. The role of the ECoW would include (but not be limited to) the following tasks:
- Give toolbox talks to all staff on-site, e.g. an ecological induction, so staff are aware of the ecological sensitivities on the Site and the legal implications of not complying with agreed working practices;
 - Agree and monitor measures designed to minimise damage to retained habitats, including marking out Root Protection Areas and sensitive habitats where appropriate;
 - Demarcate retained water vole burrows and 20m buffers (under the discretion of the ECoW) to protect them from construction activities;
 - Undertake pre-construction surveys and advise on ecological issues where required;
 - Oversee implementation of a Biosecurity Management Plan, to minimise risk of inadvertent spread of invasive non-native species; and
 - Pre-construction inspections of areas which require species-specific mitigation and supervision of relevant mitigation measures, including supervision during habitat clearance for reptiles, as detailed within Species Protection Plans (SPPs).
- 8.7.14 The ECoW would also undertake additional roles such as assisting with hydrological measures and / or checking for nesting birds (see **Chapter 10: Ornithology** and **Chapter 12: Geology, Soils and Water**).

Lighting

- 8.7.15 Temporary construction lighting would be restricted to the minimum required for safety reasons, which would be required for any external construction activities during hours of darkness and low natural light. This lighting would be designed to minimise illumination, glare or light spillage to nearby receptors. Construction lighting details would be provided in the final CEMD.
- 8.7.16 Operational lighting would also be restricted to the minimum required for operational and security purposes. Once operational, external lighting would only be provided at key areas, such as the lower control works but would only be used during essential operational and maintenance activities, for example if a switching operation was necessary in the external switchyard. The powerhouse surface building would be designed with automatic blinds on all glazed windows and doors, with these closed between dusk and dawn. Lighting would be directed away from the most sensitive habitats including woodland and waterbodies, wherever possible, to minimise light spill to adjacent habitats. Lighting would avoid specifications with a high UV component. Operational lighting details would be agreed with the Planning Authority prior to construction.
- 8.7.17 Any lighting required in areas of likely bat activity, including at the River Spean crossing, would be in line with current guidance⁹⁶.

Invasive Non-Native Species

- 8.7.18 Rhododendron was the only invasive non-native plant species recorded on the Site during baseline surveys, and Rhododendron control would be undertaken (see **Appendix 8.6**). As distribution of such species can change, on a precautionary principle a pre-construction survey for invasive non-native plant species would be undertaken. A Biosecurity Management Plan would be produced, which would be informed by the results of the pre-construction survey, and would be adhered to for the duration of construction, to prevent the spread of invasive non-native species.

Protected Species

- 8.7.19 Species Protection Plans (SPPs) would be developed and adhered to during construction, to protect faunal groups. As part of the SPPs, the contractor would keep a log of incidental sightings and road kills, which would be reported to the ECoW to advise on appropriate action, as required. SPPs would form part of the final CEMD and any protected species licence applications. Further details are provided in the following sections.

Reptiles

- 8.7.20 In order to comply with the *Wildlife and Countryside Act 1981* (as amended in Scotland), mitigation would be employed to reduce the chances of inadvertently killing or injuring individual reptiles during construction works. Given the low numbers of reptiles likely to be present, the large areas of suitable habitat that would remain unaffected by the works and given also the large spatial scale of the works, fencing and translocation are not considered appropriate. Proposed mitigation, therefore, would involve vegetation management where appropriate and the identification / removal of potential refugia and hibernacula if present.

⁹⁶ Institution of Lighting Professionals (2023) Bats and Artificial Lighting at Night. Guidance Note GN08/23

- 8.7.21 Where appropriate and safe to do so, potentially suitable habitats for reptiles located within construction working areas would be cut, under the supervision of the ECoW, prior to construction works commencing in that area, in order to encourage reptiles to leave the area. Where required, suitable habitat within working areas would also be searched by the ECoW prior to construction commencing and any potentially suitable refuges would be removed. Additionally, best efforts would be made to remove suitable hibernacula from the inundation zone prior to inundation, where features can be moved. These works would take place during the active season for reptiles (typically April to October, although this is dependent upon the nature of weather conditions in any one year).

Otter

- 8.7.22 Due to the presence of two otter couches within the proposed inundation zone, a licence would be obtained from NatureScot prior to the commencement of works within 30 m of the existing identified otter couches, along with any new otter resting places identified during the pre-construction survey. The licence application would include up to date survey information and an otter protection plan, detailing measures to protect and reduce disturbance to otter.
- 8.7.23 During construction, site speed limits of 15 mph would reduce the likelihood of accidental injury / killing of otter or other mammal species by construction traffic. A site speed limit of 15 mph would also be in place during operation.
- 8.7.24 All potentially dangerous substances or materials within construction compounds or used during maintenance activities during operation, would be carefully stored to prevent them causing any harm to otters or other mammal species which may enter the compounds at night.
- 8.7.25 During construction, all excavations greater than 1 m depth would either be covered at night or designed to include a ramp to allow otters and other animals a means of escape should they fall in.
- 8.7.26 These measures would also protect other fauna at the Site including pine marten, red squirrel and water vole.

Water vole

- 8.7.27 Due to the presence of a small water vole colony on the watercourse connecting the two lochs making up Loch Earba (where seven active burrows were recorded in 2023, see **Appendix 8.4** and Confidential Figure 8.5), a licence would be obtained from NatureScot to undertake a water vole trapping and translocation process, to protect water vole from the unavoidable flooding of the burrows in this location.
- 8.7.28 NatureScot advise that trapping and translocation, rather than displacement, is the better option to use when clearing an area of ground which has water voles, based on recent research findings⁹⁷.
- 8.7.29 Water vole colonies can change their distribution frequently, particularly in upland environments, and therefore the licence application and mitigation works would be informed by up-to-date survey information (see paragraph 8.7.12). The licence application would also be accompanied by a comprehensive Species Protection

⁹⁷ NatureScot standing advice on water voles and licensing, available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/licensing/species-licensing-z-guide/water-voles-and-licensing> [Accessed in November 2023]

Plan which would detail measures to protect water vole and minimise disturbance during construction. The trapping and translocation would be undertaken prior to inundation works, at a suitable time of year. Trapped water voles would be translocated to a suitable receptor site as close as possible to the original water vole colony location, but outwith the working corridor. The receptor site must support suitable habitat and have a carrying capacity to be able to sustain the relocated colony. Extensive areas of retained suitable habitat are present within the small watercourses between the River Spean and Loch Earba, and therefore the receptor site is anticipated to be within this area. However, the precise location of the receptor site would be informed by up-to-date surveys, and would depend on the precise distribution of water voles at that time.

Bats

- 8.7.30 All trees that require felling or pruning / lopping, or are at risk of damage, would be subject to an update assessment for bat roosting potential. The trees that have already been identified as having moderate or high bat roosting potential (trees with PRFs) or a confirmed roost (see **Appendix 8.5**), and any additional trees that have developed new moderate or high potential PRFs would be subject to detailed bat roost surveys prior to felling, to gather up to date survey information and to identify and characterise any roosts in trees to be felled / at risk of damage. Bat survey work would follow the methodologies within the current recently published guidelines⁹⁸ (or any new published guidelines in place at the time of survey). Important bat roosts (maternity or hibernation roosts) are not likely to be present based on current survey data.
- 8.7.31 A licence would be obtained for the loss of the small common pipistrelle day roost identified during baseline surveys (along with any additional roosts if identified during pre-construction surveys), and suitable mitigation provided, in consultation with NatureScot if required. Once a licence is in place, all trees with confirmed roosts that require felling / pruning / lopping would be exhaustively inspected by the bat licensed ecologist. If any features cannot be exhaustively checked they would be fitted with standard one-way exclusion devices for five consecutive nights, in weather conditions suitable for bats to be active. Once the bat licensed ecologist confirms that bats are absent, the tree would be carefully section felled under supervision by the licensed ecologist. To provide alternative roosting habitat, one bat box would be provided per PRF to be lost (whether bat roosts have been confirmed within them or otherwise), such that there would be no loss in bat roosting habitat. Bat boxes would be erected prior to felling of trees with PRFs, and if any bats are identified during the above works, they would be carefully moved to a bat box by the licenced ecologist. Where possible, for trees with PRFs being lost, suitable sections of the tree would be considered for translocation. Where trunks or major limbs support fissures, rot holes or other features these can be carefully removed (under supervision of both an ecologist and arborist) and relocated to new locations which will remain unaffected, such as secured in an upright position to the trunk of a large existing tree. Full details of the bat mitigation would be provided in the licence application to NatureScot. Trees that contain PRFs but where no roosting bats have been confirmed, would also be subject to sensitive section felling under the direct supervision of a bat licenced ecologist, as a precaution.

⁹⁸ Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.

8.8 Potential Significant Effects

- 8.8.1 This section considers the potential impacts and associated effect significance of the construction, and operation of the Proposed Development based on the typical activities described in Chapter 3: Description of Development.

Construction Effects

- 8.8.2 Potential effects, assuming that the embedded and good practice mitigation measures outlined in paragraphs 8.7.1 - 8.7.31 are implemented, are addressed for each receptor in turn. Effects have been assessed only for important ecological receptors (i.e. those with a value of Local level or above, potential GWDTEs, legally protected species and deer). These comprise:
- Ben Alder and Aonach Beag SSSI⁹⁹;
 - AWI habitat;
 - Broad-leaved, coniferous and mixed semi-natural woodland; scattered scrub; semi-improved and unimproved acid grassland; unimproved calcareous grassland; marsh / marshy grassland; upland species-rich ledges; dry dwarf shrub heath; wet dwarf shrub heath; montane heath / dwarf herb; blanket bog; wet and dry modified bog; flush and spring; swamp; marginal / inundation vegetation and running water;
 - Rhododendron¹⁰⁰;
 - Common juniper; aspen; downy willow; field gentian; hawkweed; lesser butterfly orchid; small white orchid; petty whin; dwarf birch; dwarf cornel; and
 - Invertebrates; reptiles; otter; water vole; pine marten; red squirrel and deer.

Designated Sites

Ben Alder and Aonach Beag SSSI

- 8.8.3 This section includes an assessment of potential construction effects upon non-avian terrestrial ecology designated features of Ben Alder and Aonach Beag SSSI.
- 8.8.4 Ben Alder and Aonach Beag SSSI is located 0.2 km south-east of the Site boundary, and 1.0 km away from proposed construction activities, at its closest part. The SSSI would therefore not be directly affected by habitat loss. The SSSI also lies a sufficient distance from the Proposed Development that it has been screened out during scoping from potential air quality impacts relating to dust and road traffic emissions, in accordance with the relevant Institute of Air Quality Management (IAQM) guidance^{101,102} screening criteria.
- 8.8.5 The SSSI is hydrologically linked to the Proposed Development, via the Loch Leamhain outflow (the Allt Loch a' Bhealaich Leamhain), which flows into Loch Pattack via the Allt Cam. Loch Pattack is located c. 4.8 km downstream of the proposed dam construction works on the Allt Loch a' Bhealaich Leamhain. Due to

⁹⁹ Ben Alder and Aonach Beag SAC is assessed separately in the Shadow HRA report.

¹⁰⁰ This species is not ecologically valuable, but is included due to its invasive non-native species status (listed on Schedule 9 of the *Wildlife and Countryside Act 1981 (as amended in Scotland)*)

¹⁰¹ Guidance on the Assessment of Dust from Demolition and Construction (Institute of Air Quality Management (IAQM) (IAQM, 2016)

¹⁰² A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (IAQM, 2020)

this hydrological connection, the following pathways for potential effects during construction have been identified:

- Hydrological impacts to downstream habitats due to a change in the flow regime of the Allt Loch a' Bhealaich Leamhain;
- Inadvertent pollution via the hydrological connection to the Allt Cam and Loch Pattack;
- Inadvertent introduction of invasive non-native species via construction activities or water transfer, via the hydrological connection to the Allt Cam and Loch Pattack;
- Catastrophic failure of Leamhain Dam causing a significant water surge;
- Temperature changes through water transfer; and
- Displacement of deer.

8.8.6 These potential impacts are discussed and assessed in further detail below.

Hydrological impacts to downstream habitats due to a change in the flow regime

8.8.7 In the absence of mitigation, the reduction or change in the flow regime of the Allt Loch a' Bhealaich Leamhain, as a result of damming of this watercourse to create the upper reservoir, has the potential to adversely affect marginal habitats and other wet habitats adjacent to Loch Pattack and the Allt Cam, within the SSSI. However, as detailed in paragraph 8.7.1 and **Chapter 6: Hydrology and Water Management**, the natural flow regime of the Allt Loch a' Bhealaich Leamhain would be maintained, both during construction and operation, via a compensation flow release, and control of the rate and volume of discharge during partial de-watering of Loch Leamhain during construction which would not exceed what currently occurs. Therefore, there would be no effect upon the hydrological regime of the downstream watercourses and waterbodies, including the Allt Cam, Loch Pattack, and adjacent habitats. With this in place, **no significant effects** upon the downstream habitats and plant communities within the SSSI are predicted as a result of changes to the flow regime.

Inadvertent pollution via the hydrological connection to Loch Pattack

8.8.8 In the absence of mitigation, construction of the proposed Leamhain dam has the potential to inadvertently cause adverse changes to water quality to the Allt Loch a' Bhealaich Leamhain, from inadvertent pollution events (via chemical / fuel spills and / or concrete washout contamination), or from an increased sediment load (via dust, run-off and erosion during construction, or destabilisation of the drawdown zone and a consequent erosion of marginal substrate, and increased silt mobilization at the inlet / outlet pump during generating / pumping periods). However, as summarised in paragraph 8.7.1 and detailed in **Chapter 6: Hydrology and Water Management, Chapter 12: Geology, Soils and Water, Chapter 11: Aquatic Ecology**, and the outline CEMD (including an outline Pollution Prevention Plan), stringent pollution and sediment management control would be in place, which would be implemented via the CEMD. With this in place, the risk of adversely affecting the water quality is considered low. As such, effects from changes in water quality are assessed to be negligible and **not significant**.

Inadvertent introduction of invasive non-native species via construction activities or water transfer.

8.8.9 One invasive non-native plant species listed on Schedule 9 of the *Wildlife and Countryside Act 1981 (as amended in Scotland)*, Rhododendron, was identified within construction areas during baseline terrestrial habitat surveys. In an unmitigated scenario, construction activities have the potential to introduce

invasive non-native plant species into Loch Leamhain, and therefore into the SSSI (via the hydrological link), via contaminated soil tracked in from machinery or brought in from footwear, or via importing of construction materials, for works within the vicinity of Loch Leamhain and the Allt Loch a' Bhealaich Leamhain. This could also occur for construction works that risk introducing invasive non-native species into Loch Earba, including the presence of existing invasive non-native species within the associated proposed inundation zone, which is the case for *Rhododendron*. This could risk spreading the species to the SSSI via the Allt Leamhain and Loch Pattack, once the Loch Earba inundation area is filled, and the scheme becomes operational. Non-native invasive plants can out-compete native flora, and therefore if such species were to spread into the aquatic habitat and / or beyond the margins of the aquatic habitat into surrounding terrestrial habitat, it could adversely affect the habitats and associated plant species within the SSSI. However, with the implementation of a Biosecurity Management Plan and pre-construction surveys, as detailed in paragraph 8.7.18, the risk of introduction of invasive non-native plants species into habitats within the SSSI as a result of construction activities is low, and therefore **no significant effects** are predicted.

- 8.8.10 Water transfer between Loch Earba and Loch Leamhain during operation, could result in the transfer of any invasive non-native aquatic species that are present in Loch Earba, into Loch Leamhain, and therefore potentially into the Allt Cam and Loch Pattack downstream. This has the potential to negatively affect aquatic life within the Allt Cam and Loch Pattack, as well as adjacent habitat. However, aquatic baseline surveys (as detailed in **Chapter 11: Aquatic Ecology**) did not identify any invasive non-native aquatic species in Loch Earba or Loch Leamhain, or in any of the watercourses surveyed. No records of invasive aquatic species were identified from the desk study. As such, based on current data, there is no risk of spreading invasive non-native aquatic species from Loch Earba to Loch Leamhain and downstream habitats within the SSSI, via water transfer. Therefore, **no significant effect** is predicted.

Catastrophic failure of Leamhain Dam causing a significant water surge

- 8.8.11 Catastrophic failure of the Leamhain dam during construction or operation would be likely to result in a significant surge of water (the volume would be dependent on the generation cycle) from Loch Leamhain, affecting the Allt Loch a' Bhealaich Leamhain, Allt Cam and Loch Pattack. Such water movement would be likely to wash away sediments, fish, macroinvertebrates and macrophytes in the Allt Loch a' Bhealaich Leamhain and Allt Cam, resulting in (expected) total loss of species present (as detailed in **Chapter 11: Aquatic Ecology**). Loch Pattack, within the SSSI, would be likely to be affected by a significant water surge that may displace fish resulting in injury and / or mortality with an extreme deterioration in water quality. This has the potential to cause adverse effects upon terrestrial habitats surrounding Loch Pattack or the Allt Cam, via flooding / erosion or pollution. However, catastrophic failure of the Leamhain dam would be extremely unlikely due to the fact that embedded within the design is the legal requirement that the dam would be designed, constructed and operated in accordance the Reservoirs (Scotland) Act 2011, which has stringent, high-quality design and operating requirements. As such, it is considered extremely unlikely that a catastrophic failure of the dam would occur. Therefore, **no significant effect** is predicted.

Temperature change through water transfer

- 8.8.12 If water transfer between the upper and lower lochs during operation were to result in significant changes in water temperature within Loch Leamhain, and therefore also within the downstream habitats including Loch Pattack, there would be the potential for an adverse effect upon aquatic life, and an increased risk of algal

blooms developing, which could impact upon fish and their habitats (as detailed in **Chapter 11: Aquatic Ecology**). When high volumes of water are discharged into a standing waterbody during stratification, especially when the frequency of pumping / discharge cycles is high, this can alter the stability of the water column, especially when water enters at higher temperature and velocity that can mobilise nutrients from existing bed sediments. These conditions increase water turbulence, promoting the mobilisation of nutrients and making them more available for phytoplankton, thus increasing the potential for an algal bloom to occur.

- 8.8.13 However, as detailed within **Chapter 11: Aquatic Ecology**, baseline water quality monitoring recorded minimal variation in surface water temperatures between Loch Earba and Loch Leamhain. It is concluded that no significant effects upon aquatic life would occur as a result of temperature changes from water transfer, due to the minimal variation, localised nature, and limited extent and duration of water temperature changes. **Chapter 12: Geology, Soils and Water** also concludes that the risk of algal blooms occurring is low, because the temperature of water discharged between Loch Leamhain and Loch Earba is not expected to be significantly different. Furthermore, the volume of water discharging from the Allt Loch a' Bhealaich Leamhain into Loch Pattack would make up a small proportion of the large waterbody of Loch Pattack, such that a minor temperature variation of the water discharged into Loch Pattack would quickly dissipate into the waterbody, such that detectable changes in water temperature are not expected. Therefore, no increased risk of algal bloom or adverse effects to aquatic life as a result of temperature changes through water transfer is predicted.

Displacement of deer

- 8.8.14 The Proposed Development has the potential to cause localised displacement of deer during construction activities. However, construction activities would not displace deer to an extent that deer would cause damage to habitats within the SSSI. This is due to the fact that large undisturbed areas which provide suitable habitat for cover and grazing / browsing, within the Site and surrounding area, which do not form part of the working corridor, would still be available for deer to use during construction, as well as during operation. This includes open or wooded areas surrounding the working corridor. The fact that deer species are primarily crepuscular (i.e. most active at dawn and dusk), and therefore likely to be most active outside of the core construction hours (with the exception of the localised tunnel works), further reduces the extent to which wild deer are likely to be significantly displaced from the Site onto neighbouring land (further information relating to deer is provided in paragraphs 8.8.62 - 8.8.64 and 8.8.98 - 8.8.100).
- 8.8.15 Deer control to exclude deer from a 1,496 ha area and reduce deer densities across the Site and the majority of the wider Ardverikie Estate (to 8 deer per km² across c. 11,390 ha, a reduction of 39%) would be undertaken, delivered via the BEMP. However, even in the absence of this reduction of deer densities, the Proposed Development is not expected to result in an increase in deer numbers on the SSSI, for the reasons given above. As such, **no significant effect** is predicted.

Ancient Woodland Inventory Habitat

- 8.8.16 The 5.35 ha strip mapped on the AWI on the shores of Loch Earba would be lost to the inundation zone. However, this area was found to comprise primarily grassy and heathy vegetation, with sparse scattered trees, which are remnants of ancient

woodland, in poor condition. THC's forestry officer has advised¹⁰³ (see **Table 8.1**) that although the area recorded in the AWI includes remnants of ancient woodland, it is in poor condition judging by the baseline survey information supplied, and that given the poor condition it would not be reasonable to try to safeguard it. More extensive areas of AWI habitat in the northern end of the Site and off-Site surrounding Loch Laggan would be retained. Although the extent of loss of habitat mapped on the AWI is small-scale, with only poor condition remnant habitat being lost, with an abundance of retained habitat in the surrounding landscape, given the presence of mature trees the loss is assessed as **significant at a local level**.

Vegetation

Habitats

8.8.17 Impacts on habitats are categorised as follows:

- Direct habitat loss from permanent infrastructure - this includes habitats present within the footprint of the Proposed Development, including the inundation area, and also includes areas which would be subject to cut and fill, grading and pipe laying
- Temporary habitat loss from working corridor and indirect loss – this includes areas within the working corridor (including construction laydown areas) that will be disturbed / damaged during construction, and reinstated following construction where feasible (see below). Indirect loss has also been calculated for bog habitats which lie within 30 m of infrastructure, to allow for drying effects and vegetation changes due to construction works. The 30 m buffer accords with NatureScot guidance¹⁰⁴, and is considered precautionary. This buffer has been reduced to 3m for widening of existing tracks (i.e. the width of track widening), on the basis that additional drying effects would not occur where tracks have already been constructed. Additional drying effect buffers have also not been applied where floating tracks would be used, on the basis that drying effects are not predicted in this circumstance. For other wet habitats (i.e. marsh / marshy grassland, wet heath, flush and spring habitat) a 10 m indirect drying effect buffer has been applied from infrastructure¹⁰⁵.

8.8.18 For the purposes of the assessment a precautionary approach has been taken which assumes that direct habitat loss from permanent infrastructure, temporary loss of bog habitats from the working corridor, and indirect loss of bog and other wet habitats all represent a permanent, irreversible negative effect, although in practice some areas indirectly affected may be able to be restored, e.g. during reinstatement following construction.

¹⁰³ THC's forestry officer highlighted that NatureScot's Guide to understanding the Scottish Ancient Woodland Inventory (AWI) states that 'In Scotland, Ancient Woodland is defined as land that is currently wooded and has been continually wooded, at least since 1750.' This relates to Ancient semi-natural woodland (ASMO1750) or category 1a in the Inventory. The area on site that is listed in the Inventory is ASNO1860 so did not exist in 1750 and would not be considered under NPF4 policy 6 b)i which notes that 'Development proposals will not be supported where they will result in... Any loss of ancient woodlands, ancient and veteran trees, or adverse impact on their ecological condition.' THC's forestry officer confirmed that given the poor condition of the area recorded in the AWI it would not be reasonable to try to safeguard it.

¹⁰⁴ NatureScot (2023) Advising on Peatland, Carbon-rich Soils and Priority Peatland Habitats in Development Management. [online] Available at <https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management> [Accessed in August 2023]. This guidance has since been revised (November 2023).

¹⁰⁵ This figure is in line with similar assessments for other projects, and although arbitrary, is considered precautionary based on experience at other sites.

- 8.8.19 **Table 8.10** details the estimated direct and indirect / temporary land take for habitats with local or greater value, and potential GWDTE communities. An assessment of impacts to each habitat / community is also detailed in **Table 8.10**.

Table 8.10 Summary of Habitat Loss by Phase 1 / NVC Community Type (for Habitats of Local or Greater Value)

Phase 1 Name	NVC Community Name	Habitat Loss from Permanent Infrastructure	Infrastructure causing Direct Habitat Loss	Temporary Habitat Loss from Working Corridor / Indirect Loss (ha)	Total Loss (ha)	Assessment
A1.1.1: Woodland: Broadleaved - semi-natural	W4b*, W4c*, W7a*, W9b, W11b, W11c, W11d, W17b, W17c, W17d (inc. in mosaic with H18a, M25a*, M15b*, M15c*, CG11a*, CG11b*, CG10b*, H21a, conifer plantation)	0.49	Inundation, bridge crossing, access track	1.32	1.81	This habitat is of local value, and loss relates mainly to small, scattered areas at the northern end of Loch Earba. Loss represents c. 6.5% of the total broadleaved woodland resource in the Survey Area. The loss is assessed as being significant at a local level .
A1.2.1: Woodland: Coniferous - semi-natural	W18 Molinia, W18b, W18d (in mosaic with W17b, W4c*, M15a*, M25a*)	2.88	Inundation, dam, access track	2.59	5.48	This habitat is of local value, and loss relates mainly to small, scattered areas at the northern end of Loch Earba. Loss represents c. 9.9% of the total coniferous semi-natural woodland in the Survey Area. The loss is assessed as being significant at a local level .
A1.3.1: Woodland: Mixed - semi-natural	W17 Molinia / W18 Molinia	0.32	Inundation	-	0.32	This small copse on the shore of Loch Earba would be lost to the inundation zone. Although it only comprises a small area, it is mapped within the AWI strip and the loss is therefore assessed as being significant at a local level .

Phase 1 Name	NVC Community Name	Habitat Loss from Permanent Infrastructure	Infrastructure causing Direct Habitat Loss	Temporary Habitat Loss from Working Corridor / Indirect Loss (ha)	Total Loss (ha)	Assessment
A2.2: Scrub - scattered	W20*	Too small to map (2 x locations: TNs 17 & 85)	Inundation	Too small to map (1 x location: TN 87)	Too small to map (3 x locations: TNs 17, 85 & 87)	Three patches of this nationally important habitat would be lost to the inundation zone and access track (out of a total of six main patches recorded within the Survey Area ¹⁰⁶ , representing c. 50% of this resource). More extensive areas of this habitat type were observed off-Site within the wider estate during peat restoration feasibility surveys (see Appendix 8.6). Although the loss is small, given the reasonable scarcity of this habitat type and its status, the loss is assessed as being significant at a national level .
B1.2: Acid grassland: Semi-improved	U4b	-	-	0.05	0.05	This habitat is common locally and of no more than local value. The very small-scale temporary loss, which would be reinstated following construction, is considered negligible and not significant .
B1.1: Acid grassland - unimproved	U4a, U4b (inc. in mosaic with U4d, U4e, M25b*,	14.72	Inundation, dam, access track	4.80	19.52	The loss is mainly associated with patches around the margins of Loch Earba, which would be lost to the inundation zone. The loss represents c. 65.5% of the unimproved acid grassland within

¹⁰⁶ The habitat survey report (**Appendix 8.3**) notes that additional to the six W20 habitat areas target noted, there were also numerous other smaller locations that were too small to map, on inaccessible cliffs and ledges high above the north and south sides of Loch Leamhain.

Phase 1 Name	NVC Community Name	Habitat Loss from Permanent Infrastructure	Infrastructure causing Direct Habitat Loss	Temporary Habitat Loss from Working Corridor / Indirect Loss (ha)	Total Loss (ha)	Assessment
	CG10a*, H18a, scattered birch)					the Survey Area, and although this habitat type is widespread in the area, given the size of the loss, and the size of the resource in the Survey Area, it is assessed as being significant at a local level .
B3.1: Calcareous grassland: Unimproved (inc. calcareous grassland / exposed rock mosaic)	CG10a*, CG10b* (inc. in mosaic with U4a, U4d, M25b*, H10a, dry rocky riverbed)	0.65	Inundation, access track, aqueduct	0.45	1.10	The loss relates to small areas, often in mosaic with other habitat types, primarily within the dry rocky riverbed between the two lochs making Loch Earba. Although the loss is small-scale, given the reasonably restricted cover of this habitat, the loss is assessed as being significant at a local level .
	CG11a*, CG11b*	(included as small part of mosaics under other habitat types) (making up to 3.64 ha)	Inundation, dam, access track, footpath, surge shafts, dam	(included as small part of mosaics under other habitat types) (making up to 0.54 ha)	(included as small part of mosaics under other habitat types) (making up to 4.18 ha)	The loss relates to minor parts of other habitat mosaics, primarily with heath on slopes and higher ground, particularly surrounding Loch Leamhain. Although the loss is reasonably small-scale, given the restricted and scattered distribution within the Survey Area and its status, the loss is assessed as being significant at a County level .

Phase 1 Name	NVC Community Name	Habitat Loss from Permanent Infrastructure	Infrastructure causing Direct Habitat Loss	Temporary Habitat Loss from Working Corridor / Indirect Loss (ha)	Total Loss (ha)	Assessment
B5: Marsh / marshy grassland	M25a* base-rich (inc. in mosaic with M25a*, M15b*, H10a, H10d base-rich, CG11b*)	14.77	Inundation, access track, footpath	4.06	18.83	An area of this habitat type would be lost on the south-western margin of the southern of the two lochs making up Loch Earba, within the inundation zone. The loss is assessed as being significant at a County level .
B5: Marsh / marshy grassland	M25* species-poor, M25a*, M25b* (inc. in mosaic with M15b*, M15d*, W18, U4a, U4b, U20b, M6b*, H18a, M17c)	65.67	Inundation, dam, access tracks, adit	16.82	82.49	This habitat type is species-poor, predominantly pure stands of purple moor-grass, and is assessed as being of less than local importance. However, it has been included in the assessment due to its potential GWDTE status. However, the more detailed site-specific assessments have concluded that this habitat is not groundwater dependent. Therefore, given its status, and less than local ecological value, the loss is assessed as not significant .
C2: Upland species-rich ledges	U17b*	Too small to map (2 x locations: TN 93, 94)	Inundation	-	Too small to map (2 x locations: TN 93, 94)	Two small patches of this County important habitat would be lost to the inundation zone at Loch Leamhain (out of a total of six small patches recorded within the Survey Area, representing 33% of this resource). Although the loss is small, given the scarcity of this habitat type and its status, the loss is assessed as being significant at a County level .

Phase 1 Name	NVC Community Name	Habitat Loss from Permanent Infrastructure	Infrastructure causing Direct Habitat Loss	Temporary Habitat Loss from Working Corridor / Indirect Loss (ha)	Total Loss (ha)	Assessment
D1.1: Dry dwarf shrub heath: Acid (inc. dry dwarf shrub heath / exposed rock mosaic)	H10a, H10b, H18a, H18b, H20d, H21a (inc. in mosaic with rocks / boulders, H14b, CG11a*, CG11b*, U13a, M19c, H22b)	0.95	Inundation, access track, dam, gate gallery	0.22	1.17	This habitat is common in the local landscape, and the loss represents 3% of dry acid heath recorded in the Survey Area. Given the small scale of the loss in the local setting, it is assessed as not significant .
D1.2: Dry dwarf shrub heath - basic	H10d base-rich	Included as small part of mosaic under marsh/marshy grassland (M25a base-rich) (making up to 0.02 ha)	Inundation, access track, footpath	Included as small part of mosaic under marsh/marshy grassland (M25a base-rich) (making up to 0.06 ha)	Included as small part of mosaic under marsh/marshy grassland (M25a base-rich) (making up to 0.07 ha)	Given the very small-scale loss, the majority of which is temporary and would be reinstated following construction, the loss is considered not significant .
D1.1 / B3.1 Dry dwarf shrub heath / calcareous grassland mosaic	H10a / H14b / H18a / H21a / H22a / CG11a / CG11b* / (inc. in mosaic with U6* base-rich, U20b, M25a*, M15b*, M15c*, U13a, U4a)	8.01	Inundation, dam, access track	1.08	9.10	The loss is mainly associated with the inundation area at Loch Leamhain, and comprises 14.8% of the habitat type recorded in the Survey Area. The loss is assessed as significant at the local level .
D1.1 / B1.1 Dry dwarf shrub heath / acid grassland mosaic	H18a / H22a / U4d (inc. in mosaic with M15b*)	2.34	Inundation	-	2.34	The loss is mainly associated with the inundation area at Loch Leamhain, and comprises 5.7% of the habitat type recorded in the Survey Area. Given the small scale of the loss and the abundance of this habitat in the wider

Phase 1 Name	NVC Community Name	Habitat Loss from Permanent Infrastructure	Infrastructure causing Direct Habitat Loss	Temporary Habitat Loss from Working Corridor / Indirect Loss (ha)	Total Loss (ha)	Assessment
						area, the loss is assessed as not significant .
D2: Wet dwarf shrub heath (inc. in mosaic with exposed rock)	M15a*, M15b*, M15c*, M15d*, M15 *montane (inc. in mosaic with M31*, H10a, H10b, H14b, H18a, M19c, M25a*, M25b*, U4d, CG11a*, CG11b*, M6b*, U6d*, U4a, U13a, H22b, M17a, M17c, W23a, rock)	124.67	Inundation, dam, access track, borrow pit, powerhouse, adit, surge shaft, peninsulas	54.98	179.65	This is one of the most abundant habitat types recorded within the Survey Area. Loss is associated with the inundation zones, dams and other infrastructure, and represents 28.3% of the resource in the Survey Area. Although this habitat type is widespread within the Site and wider landscape, given the size of the loss it is assessed as being significant at the local level .
D4: Montane heath/dwarf herb	U13a, U13b (inc. in mosaic with M15* montane, H18a, H22a, M15b*, CG11b*)	1.20	Inundation, access track	0.07	1.27	Loss would occur primarily at the Loch Leamhain inundation zone, and represents 19.2% of habitat recorded in the Survey Area. Although the loss is small-scale, given the status and the more restricted distribution, the loss is assessed as being significant at the County level .

Phase 1 Name	NVC Community Name	Habitat Loss from Permanent Infrastructure	Infrastructure causing Direct Habitat Loss	Temporary Habitat Loss from Working Corridor / Indirect Loss (ha)	Total Loss (ha)	Assessment
E1.6.1: Bog: Blanket bog (non-montane)	M17a, M17c, M18a, M19c (inc. in mosaic with M15b*, M25a*, M17b, Phragmites, M3, H10b, H22b)	8.74	Inundation, dam, access track, aqueduct, footpath	6.78	15.52	The loss primarily comprises of smaller patches of blanket bog around the margins of Loch Earba, which would be lost to the inundation area and dam footprints. Although these areas are small and patchy, they are relatively intact and mainly comprise the wetter M18a and M17a dominant sub-communities. The more extensive area of blanket bog in the north-western part of the Site would have very minimal project impacts, due to the use of an existing track (which will be upgraded, rather than a new track constructed) such that additional land-take and drainage effects would be limited. M3 bog pools are not anticipated to be affected within this area, as they do not occur within close proximity to the existing track. Given the status of the habitat and considering the areas in which project impacts would occur, the loss is assessed as being significant at the County level.
E1.6.1: Bog: Blanket bog (montane)	M19c (inc. in mosaic with M15b*, H10b, H22b, M20)	40.74	Inundation, dam, access track, valve house	2.39	43.13	The loss of montane bog is associated with the inundation area and dam construction at Loch Leamhain. This area has some scattered and patchy erosion features, and does not have restoration potential. Peat depth in this

Phase 1 Name	NVC Community Name	Habitat Loss from Permanent Infrastructure	Infrastructure causing Direct Habitat Loss	Temporary Habitat Loss from Working Corridor / Indirect Loss (ha)	Total Loss (ha)	Assessment
						area is patchy, with a lack of extensive deep peat recorded. Loss of blanket bog as a whole (both above and below 600 m) represents 39.5 % of the habitat recorded across the Survey Area. Given the status of the habitat and size of area to be affected, the loss is assessed as being significant at a County to national level.
E1.7: Bog: Wet modified bog (non-montane)	M17b, M2b, M3 (inc. in mosaic with M17a, M15b*)	0.03	Footpath, aqueduct	0.59	0.62	The loss is associated with degraded bog to the south-west of Loch Earba. This area has a small component of M3 and M2b bog pool communities, which are associated with degraded or artificial features. The loss is small-scale, representing 4.9% of the habitat type within the Survey Area. However, given its status the loss is assessed as being significant at the County level.
E1.8: Bog: Dry modified bog (montane)	M19c (inc. in mosaic with M15b*, M20)	9.50	Inundation, dam, access track	5.21	14.71	The loss is associated with degraded bog to the south-east of Loch Leamhain, and represents 32.5% of the habitat recorded in the Survey Area. Given the status of the habitat and size of area to be affected, the loss is assessed as being significant at a County to national level.

Phase 1 Name	NVC Community Name	Habitat Loss from Permanent Infrastructure	Infrastructure causing Direct Habitat Loss	Temporary Habitat Loss from Working Corridor / Indirect Loss (ha)	Total Loss (ha)	Assessment
E4: Bare peat	n.a.	0.12	Footpath, aqueduct	0.05	0.17	The loss is associated with actively eroding areas of bog habitat, and although limited in extent and lacking in vegetation or significant biodiversity value in its current state, due to the restoration potential the loss is assessed as significant at a local level .
E2.1: Flush and spring: Acid/neutral flush	M6b* (in mosaic with U6d*)	0.91	Inundation, dam, access track	0.11	1.02	Loss is associated with the Loch Leamhain area. Although the loss is small-scale and the habitat is relatively species-poor, given that the loss represents 75.5% of the habitat recorded in the Survey Area, the loss is assessed as being significant at the local level .
E2.2: Flush and spring: Basic flush	M11a*	Too small to map (5 x locations: TN 109, 110, 114, 115, 117)	Inundation	-	Too small to map (5 x locations: TN 109, 110, 114, 115, 117)	Loss is associated with the Loch Leamhain area. Although the loss is small-scale, and represents c. 23% of the habitat within the Survey Area, given the species-rich nature and the limited distribution, the loss is assessed as being significant at a County level .
E2.3: Flush and spring – bryophyte-dominated spring	M31*	-	-	0.01	0.01	The loss is very small in extent, and located within the working corridor only, which would be protected during construction where possible, and reinstated following construction. Given this, the effects are assessed as not significant .

Phase 1 Name	NVC Community Name	Habitat Loss from Permanent Infrastructure	Infrastructure causing Direct Habitat Loss	Temporary Habitat Loss from Working Corridor / Indirect Loss (ha)	Total Loss (ha)	Assessment
	M37*	Too small to map (1 x location: TN 131)	-	Too small to map (2 x locations: TNs 80 & 130)	Too small to map (3 x locations: TNs 131, 80 & 130)	Although the loss is very small-scale, and areas within the temporary working corridor would be protected during construction where possible, and reinstated following construction, given the scarcity of the habitat and its conservation value, the loss is assessed as significant at a County level .
F1 Swamp	S9a	Too small to map (2 x locations: TNs 82 & 133)	Inundation	-	Too small to map (2 x locations: TNs 82 & 133)	Due to the species-poor nature and very limited extent of habitat loss, it is assessed as being negligible and not significant .
F2.1 Marginal/inundation - marginal	S10a	Too small to map (1 x location: TN 83)	Access track	-	Too small to map (1 x locations: TNs 83)	
G2 Running water	n.a.	2.69 km	Inundation, dam	-	2.69 km	Direct loss and alteration of watercourses relates to loss underneath dam infrastructure, and alteration within inundation zones where rapid filling and emptying would alter the hydrological regime. Loss would occur on a short section of the Alt Labhrach at the proposed location of the Shios dam, the Alt a' Bhealaich Leamhain at the Leamhain dam, and the Alt Coire Pitridh and Alt Coire a' Chlachair at the Shuas dam. Sections of watercourse within the inundation zones would be periodically inundated

Phase 1 Name	NVC Community Name	Habitat Loss from Permanent Infrastructure	Infrastructure causing Direct Habitat Loss	Temporary Habitat Loss from Working Corridor / Indirect Loss (ha)	Total Loss (ha)	Assessment
						such as the lower section of the Allt a' Mhaigh (Moy Burn) and a section of watercourse joining the two lochs that make up Loch Earba. The loss / alteration of watercourse makes up c. 29.6% of the total watercourse length recorded on the Site. Although there is abundant retained watercourse habitat within the Survey Area, as well as in the surrounding landscape, given the extent of loss it is considered to be significant at a local level .

Communities marked with a '*' are potential GWDTE communities

GWDTE Communities

- 8.8.20 **Table 8.10** shows the habitat loss (direct and indirect / temporary) for all potential GWDTE communities. The communities marked with an asterisk have conferred upon them a potential to have a high or moderate groundwater dependency, based on SEPA guidance¹⁰⁷. Further assessment is also contained in **Appendix 8.3**. For a more detailed assessment of the groundwater dependency of these habitats, refer to **Chapter 12: Geology, Soils and Water** and **Technical Appendix 12.4: Groundwater Dependent Terrestrial Ecosystems (GWDTEs) Assessment**.
- 8.8.21 No permanent dewatering or groundwater management is required as part of the Proposed Development and therefore no permanent change to groundwater levels and flow direction would occur. Any existing groundwater contribution to habitats would therefore continue.
- 8.8.22 The potential GWDTE are typically located over large areas or in/adjacent to watercourse corridors. The distribution is not consistent with habitats sustained by groundwater but rather habitats predominantly sustained by a high average annual rainfall, surface water runoff and surface water ponding. It is concluded therefore that buffers to potential high and moderate GWDTE specified in SEPA guidance need not apply in these instances, but safeguards would be implemented during construction to maintain existing surface water flow paths to these habitats (see paragraph 8.7.9 and **Appendix 12.4**).
- 8.8.23 The exception to this is NVC communities: W20; M31; CG11; M10; M11; M32; M37; U15; U17; W9b and a small sedge mire (located at discrete Target Note locations); and a polygon of M25 (base-rich) on the slopes of Binnein Shuas, to the north of Loch Earba. The assessment assumes that, as a worst case, these habitats are sustained by groundwater.
- 8.8.24 Of these, the following adverse effects are predicted (as described in **Table 8.10**):
- W20 – permanent loss to the inundation zone of two small patches (TNs 17 and 85), and temporary loss of one patch to the access track construction corridor (TN 87), assessed as **significant at a national level**.
 - U17 – permanent loss to the inundation zone of two small patches (TNs 93 and 94), assessed as **significant at a County level**.
 - M11 – permanent loss to the inundation zone of five locations (TNs 109, 110, 114, 115 and 117), assessed as **significant at a County level**.
 - M37 – permanent loss of one location (TN 131) and temporary impacts to two locations (TNs 80 & 130, within the working corridor), assessed as **significant at a County level**.
 - M31 – temporary impacts to 0.01 ha (within the working corridor, which would be protected where possible), assessed as **not significant**.
- 8.8.25 The remaining groundwater sustained habitats would not be adversely affected, due to being located beyond the infrastructure footprint and working corridor and being located at higher elevations than the proposed infrastructure, and thus the

¹⁰⁷ SEPA (2014) Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Land Use Planning System SEPA Guidance Note 31 (LUPS – GN31). Version 3 Issued 11th September 2017

water catchments do not extend to or are not truncated by the Proposed Development¹⁰⁸.

Invasive non-native plant species

- 8.8.26 One plant species listed on Schedule 9 of the *Wildlife and Countryside Act 1981* was recorded within the Survey Area, namely *Rhododendron*. With the implementation of a pre-construction invasive non-native species survey, control and adherence to a Biosecurity Management Plan, as detailed in paragraph 8.7.18, risk of spread of this species (and any other Schedule 9 plant species) is considered low, and no contravention of wildlife legislation is predicted.

Notable native plant species

- 8.8.27 Of the notable plant species recorded within the Survey Area, as detailed in **Table 8.8**, once embedded mitigation has been applied (to avoid species where possible) there would be some loss of the following:
- Petty whin: loss at one location within the working corridor (out of a total of two records within the Survey Area). Loss is assessed as **significant at a local level**.
 - Downy willow: loss at one location within the Loch Leamhain inundation area, and a further three locations in association with W20 habitat within the Loch Leamhain area (see **Table 8.10**) (out of a total of 12 records within the Survey Area, six of which are in association with W20 habitat). Loss is assessed as **significant at a national level**.
 - Field gentian: loss from construction at one location (the only record within the Survey Area). Loss is assessed as **significant at a County level**.
 - Hawkweed sp¹⁰⁹: found in association with U17 upland species-rich ledges, of which three (of six) areas would be lost. Loss is assessed as **significant at a County level**.

Fauna

Invertebrates

- 8.8.28 Construction would result in the direct permanent loss of 293.1 ha of open moorland habitat (heath, grassland and bog habitat including diverse swards with acid and base-rich influences, and montane habitat) and 7.61 ha of semi-natural woodland habitat (broad-leaved, coniferous and mixed), as well as scattered mature trees including within a 5.35 ha area of remnant ancient woodland, potentially of local value for invertebrates. Indirect / temporary loss of habitat has not been considered here, as it is anticipated that areas subject to drying or other temporary damage would still be used by a range of invertebrates.
- 8.8.29 The habitat loss constitutes large areas, however there is an abundance of similar connected habitats within unaffected areas of the Site and within the wider local area beyond the Site boundary. Moorland and montane habitats continues to the north, east, south and west of the Site such as within Ben Alder and Aonach Beag SAC / SSSI to the south-east and Creag Meagaidh SAC / SSSI / NNR to the north-west. Extensive woodland extends beyond the Site to the north around Loch

¹⁰⁸ In upland setting or where soils are shallow / bedrock is near surface groundwater flow paths are typically similar to or the same as surface water catchments (e.g. topography is a good surrogate for contributing catchment area).

¹⁰⁹ Hawkweeds have not been identified to micro-species level, although many micro-species are Red List Threatened and Nationally Rare.

Laggan and Kinloch Laggan, as well as to the west and south-west of the Site within extensive plantation areas.

- 8.8.30 It is concluded that the permanent loss of 300.7 ha of invertebrate habitat would result in an adverse effect, which is **significant at the local level**.
- 8.8.31 Construction also has the potential to cause disturbance or changes in behaviour of invertebrates, and changes to predator-prey dynamics, from the use of artificial lighting. Night-flying insects such as moths can be attracted to artificial light, and artificial light can disrupt feeding, breeding and movement of invertebrates¹¹⁰. Artificial light at night close to freshwater can concentrate fluxes of emergent aquatic insects which are more easily intercepted by terrestrial predators¹¹¹. However, the majority of the construction works will be undertaken during daylight hours, with night-time work at the tunnel portal areas only, along with some temporary construction lighting at the start and end of the day during winter (when most light-sensitive invertebrate species are unlikely to be active) across the Site more widely. Given that the areas subject to construction lighting are limited spatially and temporally (including restricting lit areas to that which is operationally required, and directing light away from the most sensitive habitats where possible, as a measure of good practice), and given that the construction lighting is temporary in nature, with extensive unlit areas across the Site and wider area, the potential effect of artificial lighting during construction upon invertebrates is considered to be **not significant**.

Reptiles

- 8.8.32 The Site is expected to support common lizard (with an incidental sighting confirmed) and has some potential to support adder and slow-worm, given the suitable habitat present. Construction would result in the direct loss of 293.1 ha of open moorland / montane habitat potentially suitable for these species (which represents approximately 22.8% of suitable habitat within the Survey Area), the majority of which would be lost as a result of inundation. Although this constitutes a relatively large area, there is an abundance of suitable habitat both within the Site and within the local area, including around the proposed inundation zones. Therefore, no reptile habitat fragmentation impacts are predicted to occur. Given the abundance of suitable habitat in the local area, the individuals displaced from the immediate inundation zone and working corridor would likely be able to disperse into the surrounding suitable habitats. However, it is possible that the surrounding habitats are already at their carrying capacity for reptiles, and therefore the loss of habitat is likely to result in a reduction of the reptile population size at the Site level.
- 8.8.33 Indirect / temporary loss of habitat has not been considered here, as it is anticipated that areas subject to drying or other temporary damage would still be used by reptiles for activities such as basking and potentially foraging (following habitat reinstatement).
- 8.8.34 Good practice mitigation measures aimed at reptiles (see paragraphs 8.7.20 - 8.7.21), would be implemented during the construction phase, to reduce the risk of

¹¹⁰ Bruce-White, C. & Shardlow, M. (2011) *A Review of the Impact of Artificial Light on Invertebrates*. Buglife – The Invertebrate Conservation Trust

¹¹¹ Parkinson, E., Lawson, J., & Tiegs, S. D. (2020) Artificial light at night at the terrestrial-aquatic interface: Effects on predators and fluxes of insect prey. *PLoS One*. 15(10): e0240138

inadvertent injury or killing individuals. On the basis that the proposed measures are implemented no contravention of the relevant legislation is likely.

- 8.8.35 It is concluded that the permanent loss of 293.1 ha of reptile habitat would result in an adverse effect, which is **significant at the local level**.

Otter

- 8.8.36 Construction would result in the loss of two otter couches along the shores of the northern loch of Loch Earba, which would experience regular flooding within the inundation zone (see Confidential Figure 8.5). No holts would be affected.
- 8.8.37 In the absence of mitigation, construction works would result in contravention of wildlife legislation, via the destruction of otter resting sites. However, NatureScot would be consulted and a development licence would be obtained prior to construction, informed by pre-construction surveys as detailed in paragraph 8.7.12, to ensure legislative compliance.
- 8.8.38 Otters that live in freshwater habitats occupy very large home ranges, approximately 32 km for males and 20 km for females¹¹². Home ranges may contain up to 30 resting sites¹¹³. There is a large abundance of undisturbed sheltered connected habitat suitable for otter resting places (including lie-ups and holts), most notably to the north and north-east of the Site in woodland, and along the wooded shores of Allt Labhrach and Loch Laggan to the north and north-west, as well as the wooded River Spean corridor to the west and south-west. Couches cannot be artificially created given their above-ground nature. However, it is concluded that there is sufficient availability of connected and undisturbed habitat in the surrounding areas to provide suitable alternative opportunities for shelter.
- 8.8.39 Given that otter is widespread both locally and nationally, given their large home range sizes and use of a large number of resting sites, and the fact that there is an abundance of good quality habitat suitable for shelter within the immediately surrounding landscape, the loss of two couches is assessed as constituting a **non-significant** effect. With good practice mitigation, pre-construction surveys and licencing in place, no contravention of relevant wildlife legislation is anticipated.
- 8.8.40 Construction activities have the potential to cause temporary disturbance to otters that use the waterbodies, watercourses and adjacent habitat for foraging, commuting and resting. Potential sources of disturbance relate to human and vehicular presence, construction noise and vibration including blasting, and temporary construction lighting. Otters have large home ranges and are able to adapt to a certain level of human disturbance¹¹⁴. No further resting sites were identified within the Survey Area (beyond the two couches that would be lost to the inundation zone), and field evidence indicates that otters that hunt within the Site are returning to holts beyond the Site to the north. Any off-Site holts to the north would be well beyond 200 m from construction activities (200 m is the exclusion zone that NatureScot advise around breeding holts, with 30 m advised for non-breeding resting places), and therefore would not be disturbed.

¹¹² <https://www.nature.scot/plants-animals-and-fungi/mammals/land-mammals/otter#:~:text=Otters%20that%20live%20in%20freshwater,includin%20man%2Dmade%20ones> [Accessed in November 2023]

¹¹³ Environment Agency (1999) Otters and River Habitat Management. Environment Agency, Bristol.

¹¹⁴ Chanin, P. (2003) *Monitoring the Otter Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough

- 8.8.41 Otters occupying freshwater areas are primarily nocturnal¹¹⁴. The majority of the construction works would be undertaken during daylight hours. Night-time working and the use of temporary construction lighting is proposed for the tunnel portals, however these are located in areas where no otter field signs were recorded, and are therefore areas unlikely to be important or regularly used by otter. There is also a requirement for some temporary construction lighting at the start and end of the day during winter. Some localised disturbance due to night-time human / machinery presence and construction lighting is therefore predicted, which could temporarily displace commuting and hunting otter from the immediate area of the construction works, primarily at the Shios dam construction area. These areas are limited in extent (including restricting the lit area to that which is operationally required, and directing light away from the most sensitive habitats where possible, as a measure of good practice as detailed in paragraphs 8.7.15 - 8.7.17). Construction activity and lighting is also temporary in nature, with extensive unlit and undisturbed areas across the Site and wider area. When considering this in the context of the large home ranges of otter, the potential effect of human disturbance and artificial lighting during construction upon otter is considered to be **non-significant**.
- 8.8.42 The death or injury of an otter during construction could affect the conservation status of this species locally and could represent an offence under relevant legislation. However, otter activity recorded during baseline surveys was most heavily concentrated at the northern end of the Site on Loch Earba and the Allt Labhrach. The nearest public road is the A86 at the western end of the Site at the proposed Site entrance. Given that the majority of the construction works where otter evidence has been recorded is well away from public roads, no significant increased risk of traffic collisions on a public road is expected. The River Spean at the Site entrance does have suitability for otter, although no field evidence was recorded here. As detailed in paragraph 8.7.1, the bridge crossing at the Site entrance would be of a design that would allow safe passage of otter below the bridge along the banks of the River Spean, such that it is expected that otter would not be displaced onto the A86 public road. Within the Site itself, traffic collision risk would be managed via a 15 mph speed limit. With the implementation of the speed limit, and other good practice measures outlined in paragraphs 8.7.22 - 8.7.26, the risk of killing or injuring otter from traffic collisions or becoming trapped in excavations is considered **non-significant**, and no contravention of the relevant legislation is likely.
- 8.8.43 The construction of the Shios dam at the northern end of Loch Earba is not anticipated to cause significant fragmentation effects to otter, as there would be no obstruction of movement either side of the dam, and therefore it is expected that otter travelling between off-Site habitat to the north and Loch Earba would travel either side of the dam. Similarly, construction of the Shuas and Leamhain dams are not expected to cause significant fragmentation effects, as they also have no obstruction to movement either side of the dams, and otter activity has not been recorded in these areas. As such, **no significant effects** upon fragmentation of otter habitat is anticipated.
- 8.8.44 In freshwater, otters feed mainly on fish such as trout, salmon and eels; on spawning frogs and toads in spring; and occasionally on mammals and birds¹¹². Baseline surveys indicate that otter use Loch Earba to hunt / forage, and that the north-eastern end of the Site is the most regularly used by otter, with otter recorded moving between the Site and off-Site land to the north at night-time (where otter was recorded every 5 to 12 nights during the monitoring period). No otter field evidence was recorded in the Loch Leamhain area. Loch Earba has existing barriers to migratory fish. As detailed in **Chapter 11: Aquatic Ecology**, aquatic surveys confirmed the presence of brown trout *Salmo trutta*, Eurasian

minnow *Phoxinus phoxinus* and Arctic charr within the Site. **Chapter 11: Aquatic Ecology** concludes that once mitigation has been applied, there would be no significant adverse residual effects for brown trout or Eurasian minnow. A significant adverse residual effect of loss of access to watercourse spawning substrate has been identified for Arctic charr within Loch Leamhain, although this effect is anticipated to be short-term, whilst fish adapt to the artificial spawning areas that would be provided as mitigation. Given that baseline surveys indicate that Loch Leamhain is not a favoured hunting / foraging area for otter, and given that Arctic charr inhabit deep water and make up a small proportion of the total fish resource within the Site (with only four individuals recorded during aquatic surveys), it is concluded that the adverse residual effect upon Arctic charr would not have an adverse effect upon otter. There would also be a permanent reduction in the quality of available amphibian habitat within the inundation areas, due to the fluctuating water levels. However, given the extensive areas of suitable amphibian habitat that would be unaffected within the surrounding landscape, including further lochs, lochans, smaller ponds and watercourses, the potential effects upon amphibian prey are considered minimal. Overall, given the negligible importance of Arctic charr within Loch Leamhain to otter, the lack of significant residual effects upon other fish species, and the abundance of hunting / foraging resource within the local area, including Loch Laggan to the north, **no significant effect** is predicted upon otter as a result of prey availability.

Water vole

- 8.8.45 Construction would result in frequent flooding of the watercourse between the two lochs making up Loch Earba, due to its location within the proposed inundation zone. This would displace the small water vole colony recorded within this location (where seven active burrows were recorded in 2023, see **Appendix 8.4** and **Confidential Figure 8.5**), as the frequent change in water levels are expected to make the existing burrows inhospitable. In the absence of mitigation, the construction works have the potential to damage or destroy burrows, and disturb or injure / kill water vole within the burrows due to flooding within the inundation zone. However, as detailed in paragraphs 8.7.27 - 8.7.29, prior to inundation the small water vole colony would be trapped and relocated under licence to nearby suitable habitat that is outside of the working corridor, in consultation with NatureScot. The translocation would be informed by pre-construction survey, and a Species Protection Plan (SPP) would be in place to protect water vole during construction.

- 8.8.46 The remainder of the water vole burrows and field signs recorded would be retained and protected during construction. Specifically, the water vole colony on the Allt Coire a Chlachair, to the south-west of the proposed Shuas dam, would be protected via water management measures (which would maintain a hands-off flow), pollution prevention measures, and protective fencing. Although two water vole burrows have been recorded within the working corridor, these are located beyond infrastructure footprints, and would be retained and protected through demarcation as overseen by the ECoW. A single water vole burrow is located in very close proximity to a proposed access track minor watercourse crossing to the west of the Shuas dam, however the watercourse crossing would be micro-sited to avoid the water vole burrow, if found to be present at the time of construction, as confirmed by pre-construction surveys. The two active burrows recorded on a small tributary of the Allt Loch a'Bhealaich Leamhain lie beyond the working corridor and would also be protected through demarcation by the ECoW.

- 8.8.47 As such, overall the majority of water vole burrows and colonies recorded within the Survey Area would be retained and protected, and suitable habitat retained. Sufficient suitable retained habitat is present in areas outside of the working

corridor to sustain the translocated small water vole colony. Therefore, **no significant effect** is anticipated upon the water vole population across the Survey Area, once mitigation has been applied.

Red squirrel

- 8.8.48 The death or injury of a red squirrel during construction could affect the conservation status of this species locally and could represent an offence under relevant legislation. However, following implementation of the good practice measures outlined in paragraphs 8.7.12 - 8.7.26, death or injury to red squirrel during construction is not considered likely.
- 8.8.49 No red squirrel dreys have been identified within the Survey Area, and minimal field signs were identified. Red squirrels could construct new dreys prior to construction, and therefore pre-construction surveys are proposed of all suitable habitat within 50 m of construction areas. If red squirrel dreys are recorded close to working areas, mitigation measures would be employed to avoid significant disturbance. Licences would be obtained and consultation with NatureScot undertaken if required (i.e. if a drey is found within close proximity of a working area).
- 8.8.50 Construction would result in the loss of 7.66 ha of red squirrel habitat, which constitutes 6.9% of woodland habitat within the Survey Area. The average home range of red squirrel in coniferous woodland is between 9 – 30 ha and overlap between the home ranges of different individuals can be small¹¹⁵. Therefore, construction would result in the loss of less than one red squirrel home range.
- 8.8.51 Construction activities have the potential to disturb foraging red squirrel beyond the working corridor, via the presence of staff, vehicles and machinery. However, disturbance effects are anticipated to be minimal, due to the fact that the majority of suitable habitat is set back from the working corridor. The abundant red squirrel habitat to be retained within the Site and abundant connected habitat beyond the Site boundary means that any red squirrels displaced from the construction area would have suitable habitat to disperse into, and significant fragmentation impacts would be avoided. Overall, due to the small-scale of habitat loss, the lack of dreys being affected, and the abundance of extensive suitable habitat within the surrounding landscape, the loss of red squirrel habitat and disturbance during construction is assessed as constituting a **non-significant effect**.

Pine marten

- 8.8.52 The death or injury of a pine marten during construction could affect the conservation status of this species locally and could represent an offence under relevant legislation. However, following implementation of the good practice measures outlined in paragraphs 8.7.12 - 8.7.26, death or injury to pine martens during construction is not likely.
- 8.8.53 No pine marten dens were identified within the Survey Area and therefore no pine marten dens would be lost or disturbed during construction.
- 8.8.54 Pine marten can be sensitive to disturbance, for example NatureScot consider typical construction activities within 100 m of a breeding den to constitute

¹¹⁵ Harris, S. and Yalden, D.W. (2008) *Mammals of the British Isles: Handbook (4th Edition)*. The Mammal Society, Southampton

disturbance¹¹⁶. However, the species is mainly nocturnal, and therefore given that no nearby dens have been identified, they would be expected to be absent from the working corridors and surrounds during the day whilst the majority of construction activities occur. Pine marten may forage and commute within / close to the working corridors during the night. There may therefore be localised disturbance to commuting / foraging pine marten in the vicinity of the construction areas where night-time activities are taking place, caused by human and machinery presence, noise and temporary construction lighting. Given that night-time working is limited in extent spatially and temporally and based on the distribution of pine marten scats during the field survey, any disturbance to foraging and commuting pine marten as a result of construction activities is considered to be **not significant**.

- 8.8.55 It is possible that new pine marten dens may become established before construction. As detailed in paragraph 8.7.12, pre-construction surveys are proposed and if pine marten presence is recorded close to working areas, mitigation measures would be employed to avoid significant disturbance. Licences would be obtained and consultation with NatureScot undertaken, if required (i.e. if a new den is found within close proximity of a working area).
- 8.8.56 Construction would result in the loss of 7.66 ha of pine marten habitat (woodland), which represents 6.9% of the habitat resource within the Survey Area, although there is an abundance of suitable connected habitat within the local area. Pine marten population density can vary from 0.12 – 0.82 adults per km²,¹¹⁷ therefore based on the upper limit of quoted population density, well under one territory of one individual would be lost. It is not considered likely that total displacement would occur given the retained surrounding habitat and the relatively low density of pine marten evidence recorded during the field survey.
- 8.8.57 Given the small area of habitat affected, the absence of dens affected, the low levels of activity recorded, and the abundance of suitable habitat in the surrounding areas, the loss of pine marten habitat is assessed as **non-significant**.

Bats

- 8.8.58 One small non-breeding common pipistrelle tree roost and a further ten trees with Potential Roosting Features (PRFs), would be lost, due to their location within Loch Earba inundation zone. In the absence of mitigation, tree felling operations have the potential to cause injury or mortality to roosting bats, and the unlicensed loss of a bat roost would constitute an offence under wildlife legislation.
- 8.8.59 As detailed in paragraph 8.7.30 - 8.7.31, pre-construction surveys would be undertaken to provide up-to-date roosting survey data, and licences would be obtained for the loss of the confirmed tree roost (and any further roosts identified in pre-construction surveys), and suitable mitigation provided, such that no contravention of wildlife legislation is predicted. With the implementation of mitigation, including the provision of alternative roosting habitat, the loss of the single bat roost and tree roosting resource is assessed as constituting a **non-significant effect**.

¹¹⁶ Online: [https://www.nature.scot/doc/standing-advice-planning-consultations-pine-martens#:~:text=For%20dens%20where%20pine%20martens,\(March%2DJune%20inclusive\)](https://www.nature.scot/doc/standing-advice-planning-consultations-pine-martens#:~:text=For%20dens%20where%20pine%20martens,(March%2DJune%20inclusive)) [Accessed in November 2023]

¹¹⁷ Scottish Wildlife Trust (undated) *Scottish Wildlife Trust Position Statement: Pine marten (Martes martes)* [online] Available at: https://scottishwildlifetrust.org.uk/wpcontent/uploads/2016/09/002_293_pinemarten_positionstatement_1389006309.pdf [Accessed in November 2023]

- 8.8.60 A total of 7.66 ha of woodland foraging resource would be lost, with moderate to high bat activity recorded within construction footprint areas at the Shios dam and shores of Loch Earba, along with the River Spean Site entrance area, by bat species that are relatively common and widespread in Scotland. The remainder of the habitat loss relates to open upland habitat of more limited foraging value to bats, although the wetter habitats are likely to be utilised extensively during calm conditions when invertebrate prey is abundant. The open moorland habitats being lost would be replaced by regularly inundated habitat which is likely to provide a similar foraging resource to the open upland habitat lost. Overall, given the relatively small extent of loss of areas of highest foraging quality, the habitat loss is assessed as being **non-significant**.
- 8.8.61 Construction works would mainly take place during daylight hours during the season when bats are active (April to October) with night-time works within this period limited to the tunnel portal areas. Light disturbance to foraging / commuting bats during construction would therefore occur in the immediate vicinity of these night-time working construction areas (on the shore of Loch Earba and Loch Leamhain). With the good practice lighting restrictions in place (see paragraphs 8.7.15 - 8.7.17), given the small scale and temporary nature of the light disturbance impact areas, effects of light disturbance during construction upon foraging / commuting bats are considered to be **not significant**.

Deer

- 8.8.62 Red deer is the most abundant deer species present within the Site and wider estate, with roe deer and sika deer also present within woodland areas. Current average deer densities across the Ardverrick estate are 13.2 per km².
- 8.8.63 Construction activities have the potential to impact the local wild deer population through displacement during construction. However, it is considered unlikely that construction activities would displace wild deer to an extent that deer could cause damage on neighbouring land, that deer welfare would be adversely affected, or that other significant impacts would be caused such as increased road traffic collisions. This is due to the fact that large undisturbed areas which provide suitable habitat for cover and grazing / browsing, within the Site and surrounding area, which do not form part of the working corridor, would still be available for deer to use during construction. This includes open or wooded areas. The fact that the deer species are primarily crepuscular (i.e. most active at dawn and dusk), and therefore likely to be most active outside of the core construction hours (with the exception of the localised tunnel works), further reduces the extent to which wild deer are likely to be significantly displaced from the Site onto neighbouring land.
- 8.8.64 Deer welfare is unlikely to be significantly affected by construction activities, as the Site and surrounding areas will continue to offer places for food and shelter. Good practice measures put in place for fauna during construction, specifically safe storage of materials and covering of excavations / providing a means of escape (paragraphs 8.7.23 - 8.7.26) would also protect deer from harm during construction. It is also considered unlikely that construction activities would cause increased road traffic collisions. This is because the majority of the construction works are distant from public roads, and there is abundant undisturbed habitat for deer to continue to use around construction areas, well away from the A86 public road, such that deer are not expected to be displaced westwards onto the A86 public road. There would be an increased presence of construction vehicles on the Site, however a site speed limit of 15 mph would be implemented, which would minimise the likelihood of deer traffic collisions within the Site. The impacts of proposed deer management as part of the OBEMP is discussed separately in paragraph 8.8.80.

Habitat Compensation and Enhancement: Effects of BEMP Measures

Habitats

- 8.8.65 This section considers the effects and associated effect significance of the habitat compensation and enhancement measures which would be committed to via delivery of the BEMP (as outlined in **Appendix 8.6** and summarised in paragraphs 8.7.2 - 8.7.4), and which form an integral part of the scheme.
- 8.8.66 This assessment has been completed on the basis that compensation does not remove a significant negative effect but may offset it, such that the compensation can represent a significant positive effect (definitions of mitigation, compensation and enhancement are provided in paragraph 8.5.28).
- 8.8.67 The OBEMP proposals (**Appendix 8.6**) incorporate a bespoke approach, where like-for-like compensation has not been provided for all habitat types (for example there is a heavier emphasis on native woodland restoration), but for which the overall package is considered to provide significant positive effects, which will offset the significant negative effects using a holistic approach, and provide significant enhancement.
- 8.8.68 With the implementation of the measures detailed in the OBEMP, the remaining adverse effects upon habitats, which are assessed as being significant, are (those in **bold** are assessed as being sustained by groundwater):
- Loss of 5.35 ha of locally important habitat mapped on the AWI, comprising remnant of ancient woodland habitat in poor condition;
 - Loss of 316.43 ha of habitat assessed as being of local importance or greater, as follows:
 - Loss of 7.61 ha of locally important semi-natural woodland (comprising 1.81 ha broad-leaved, 5.48 ha conifer, and 0.32 ha mixed woodland);
 - Loss of three small patches of nationally significant **mountain willow scrub**;
 - Loss of 19.52 ha of locally important unimproved acid grassland;
 - Loss of 1.10 ha of locally important unimproved calcareous grassland and up to 4.18 ha of County-level important unimproved calcareous grassland;
 - Loss of 18.83 ha of County-level important marshy grassland;
 - Loss of three patches of County-level important **upland species-rich ledges**;
 - Loss of 9.10 ha of locally important dry dwarf shrub heath / calcareous grassland mosaic;
 - Loss of 179.65 ha of locally important wet dwarf shrub heath;
 - Loss of 1.27 ha of County-level important montane heath / dwarf herb;
 - Loss of 58.65 ha of County to national level important blanket bog (of which 43.13 ha comprises montane bog, and 15.52 ha comprises non-montane bog);
 - Loss of 0.62 ha of County-level important wet modified bog (non-montane);
 - Loss of 14.71 ha of County to national level important dry modified bog (montane);
 - Loss of 0.17 ha of locally important bare peat;
 - Loss of 1.02 ha of locally important acid / neutral flush;
 - Loss of five County-level important **basic flushes**;
 - Loss of three County-level important **bryophyte-dominated springs**; and
 - Loss / modification of 2.69 km of locally important watercourses.

- 8.8.69 With the implementation of the measures set out within the OBEMP, a number of beneficial effects upon important habitats are predicted in the long-term. The above listed significant adverse residual effects upon habitats would be off-set by the significant positive effects of the measures within the OBEMP.
- 8.8.70 **Table 8.11** summarises the losses and gains for important habitats, and provides a summary of the justification of the extent of compensation and enhancement areas proposed (see **Appendix 8.6** for further details).
- .

Table 8.11 Summary of Losses and Gains of Important Terrestrial Habitats where Significant Effects have been Predicted

Feature	Loss or Change	Creation / Restoration / Management	Compensation and Enhancement Conclusion
Bog habitats	Direct and indirect loss of 74.15 ha (including blanket bog, wet modified bog, dry modified bog and bare peat), of which 57.84 ha is montane (above 600 m) and 16.31 ha is non-montane (below 600 m).	Restoration of 625 ha of bog habitat (via reprofiling, damming, bare area coverage and deer control). It is estimated that a minimum of 250 ha of montane bog would be included in the overall bog restoration package.	The proposals provide a ratio of 1:8.4 of bog habitat lost/affected: directly restored. Some additional areas would also benefit indirectly from the restoration proposed, via improved habitat connectivity and being within the same hydrological unit. This is lower than the 1:10 compensation ratio recommended in NatureScot's guidance²², although it is understood that this guidance is likely to be revised in the near future²³. NatureScot's guidance advises that applications proposing less than 1:10 restoration should provide justification, which is as follows. The area of montane bog being affected by the scheme (around the margins of Loch Leamhain) comprises habitat on areas that lack very deep peat, much of which contains some erosion features of variable extent, and has a minor component of montane heath habitat within the mosaic. This area is not considered to have restoration potential due to the shallower nature of the peat, topography and nature of vegetation in this area. Non-montane bog areas that would be affected by the scheme also tend to lack extensive areas of very deep peat, and vary in terms of the degree of erosion features. These factors contribute to a smaller baseline carbon store, in comparison to the larger relative carbon store of bog habitats on extensive very deep peat, where erosion features are absent. Although the complete success of all restoration areas can never be guaranteed in any bog restoration scheme, the bog restoration areas proposed within the OBEMP incorporate areas that are deemed to have good deliverability and a high chance of restoration success, based upon survey data, recognised techniques, and the experience of the peatland restoration specialists (ADL, see Appendix 8.6.1 of Appendix 8.6). The project proposes to divert resources away from additional bog restoration within the remaining potential restoration areas identified by ADL, and into measures with a much greater chance of success, specifically the proposed extensive woodland and other habitat restoration within the c. 1,496 ha deer enclosure, which would deliver a greater biodiversity benefit, and therefore more substantial enhancement, overall. These above factors are all considered relevant when considering bog compensation requirements. Overall, it is considered that the bog restoration proposals would provide adequate compensation for the loss of / impact to bog habitat as a whole.

Feature	Loss or Change	Creation / Restoration / Management	Compensation and Enhancement Conclusion
Native woodland	Loss of 7.66 ha of woodland overall (including native conifer, mixed and broadleaf woodland, and coniferous plantation). Loss of 5.35 ha of habitat mapped on the AWI, which includes remnants of ancient woodland, in poor condition.	Restoration and creation of c. 596 ha of native woodland (excluding montane willow scrub, which is discussed separately below).	A compensation ratio of at least 1:1 in terms of woodland lost to woodland created is required to comply with the Scottish Government's Control of Woodland Removal Policy (CoWRP). The proposals equate to a ratio of 1:78 of woodland lost to woodland restored / created. An earlier overview draft of the emerging OBEMP proposals, which was shared with NatureScot and THC for comment to guide development of the proposals, contained c. 68 ha of native woodland creation. THC's forestry officer confirmed that this would be accepted as sufficient compensatory woodland planting for the loss of woodland under NPF4 Policy 6bii. As such, the additional expanded woodland scheme in these final proposals is considered to provide a very significant enhancement, beyond minimum compensation requirements. The native woodland scheme is also considered to provide compensation for the loss of other non-woodland habitats. In addition to compensating for the small-scale loss of woodland habitat, woodland creation would increase connectivity of native upland woodland habitat in the area, increase habitat for woodland birds and mammals, and provide services such as erosion control in the upland habitats. Riparian woodland in riparian zones can provide habitat for fish, aquatic invertebrates and otter, and increase aquatic invertebrate population density and species diversity, provide shaded areas for fish and reduce bank erosion.
Upland heathland	Permanent direct loss of 124.7 ha of wet dwarf shrub heath and 8.0 ha of dry dwarf shrub heath; and temporary / indirect loss of 56.1 ha of wet dwarf shrub heath and dry dwarf shrub heath.	Re-instatement of c. 56 ha (within temporary working corridor); restoration of c. 328 ha of open habitats via the exclusion of grazing ¹¹⁸ ; enhancement of an estimated 6,490 ha of heathland via a 39%	These measures equate to an estimate of heathland areas to be restored or positively managed that is approximately 36 times the size of heathland habitat to be affected by the scheme ¹²⁰ . This is considered to provide compensation, as well as a significant enhancement.

¹¹⁸ The majority of which is estimated to comprise heathland, based on a combination of Phase 1 / NVC survey undertaken by Tracks Ecology, Land Cover Scotland LCS88 data, and review of aerial imagery

¹²⁰ An area of heathland restoration that is larger than the area of heathland that is lost is required to provide adequate compensation.

Feature	Loss or Change	Creation / Restoration / Management	Compensation and Enhancement Conclusion
		reduction in deer density ¹¹⁹ .	
Montane willow scrub and other sensitive montane habitats	Loss of up to three small patches of montane willow scrub; 1.27 ha of montane heath / dwarf herb; up to three small patches of upland species-rich ledges; and 1.02 ha of flush and spring habitats.	Restoration of c. 200 ha of montane habitat within proposed deer exclosure area	Within these areas proposed for restoration on the mountain tops of Binnein Shuas, Binnein Shios, and Creag a Chuir, totalling c. 200 ha, montane willow scrub restoration is targeted, however the range of other existing montane habitats within these areas would also benefit from the removal of grazing. These areas have not been subject to detailed habitat survey, which would be undertaken as part of the development and implementation of the detailed BEMP post-consent. However, it is expected that a range of the more restricted and sensitive montane habitats would be present within these areas, and the proposed management would therefore provide compensation for loss of these montane habitat types. In the case of mountain willow scrub, the proposals would also provide an enhancement, given the scale over which such restoration is proposed.
Grasslands	Loss of 19.52 ha of acid, 5.28 ha of calcareous, and 18.82 ha of marsh / marshy grassland	Re-instatement of c. 9.85 ha (within temporary working corridor); exclusion or reduction of grazing across an estimated c. 120 ha of grassland habitat ¹²¹ .	These measures equate to an estimate of grassland areas to be restored or positively managed that is approximately 2.8 times the size of grassland habitats to be affected by the scheme ¹²² . This, along with restoration of other habitat types (such as significant native woodland restoration), is considered to provide sufficient compensation, and enhancement.
Watercourses	Loss / modification of c. 2.69 km	Re-wetting of c. 2.2 km of watercourse (Allt Labhrach); instalment of large woody structures in littoral zone; improvement of fish spawning habitat quality and accessibility on	The re-wetting of the Allt Labhrach (which currently receives no hands-off flow due to existing hydro development) would provide some compensation for the loss or alteration of c. 2.69 km of watercourses. Although this is a SEPA requirement, it is still considered to represent additionality, as it would not occur but for the Proposed Development.

¹¹⁹ Estimated based on Land Cover Scotland LCS88 data. It is estimated that these heathland habitats across the wider estate are dominated by wet dwarf shrub heath, based on an extrapolation of Site knowledge.

¹²¹ Estimated based on Land Cover Scotland LCS88 data, although it is likely that more extensive grasslands would benefit within the deer control area, if montane vegetation is also included in this estimate.

¹²² An area of heathland restoration that is larger than the area of heathland that is lost is required to provide adequate compensation.

Feature	Loss or Change	Creation / Restoration / Management	Compensation and Enhancement Conclusion
		c. 0.7 km stretch of the Moy Burn; riparian planting (20.9 ha); provision of marginal loch spawning habitat and artificial floating spawning nests.	The other measures proposed would provide some mitigation and compensation for the effects to watercourses, and other aquatic effects (see Chapter 11: Aquatic Ecology and Appendix 8.6).

- 8.8.71 In total, the Proposed Development would result in the permanent loss of 310.2 ha of habitat, and indirect / temporary effects upon 103.8 ha of habitat. As described in **Table 8.10**, 231.1 ha of direct loss and 84.8 ha of temporary / indirect effects comprises habitats of local value or greater. Loss of habitats assessed as having less than local ecological importance (i.e. not considered to be important ecological features) relates to: coniferous plantation woodland, marsh / marshy grassland (species-poor forms of NVC community M25), unimproved acid grassland (U4d, U4e, U6d), bracken (U20a, U20c), scrub (W23), basic scree and other exposure, and existing tracks (totalling 98.1 ha).
- 8.8.72 Overall, the area of habitat that is being restored / created / positively managed (12,501 ha) is approximately 30 times the size of all terrestrial habitats being directly lost or temporarily / indirectly affected by the scheme (414.0 ha). These measures would provide holistic compensation for the loss of, and impact to, habitats as a whole, as well as a significant biodiversity enhancement. This conclusion is based on the overall scale over which habitat restoration and management measures are proposed, as well as the diversity and high value of habitat types being restored and positively managed.

Species

- 8.8.73 With the implementation of translocation of downy willow; field gentian; hawkweed sp.; and petty whin during construction, this would mitigate against their losses. As such, no residual significant effect is anticipated upon these plant species.
- 8.8.74 The commitment to remove *Rhododendron* would provide the benefit of enhancing existing habitats, by removing an invasive non-native species listed on Schedule 9 of the *Wildlife and Countryside Act 1981 (as amended in Scotland)*, and controlling the risk of spread of this species.
- 8.8.75 There are anticipated to be locally significant adverse residual effects of habitat loss upon invertebrates and reptiles, specifically:
- Loss of 300.7 ha of locally important invertebrate habitat; and
 - Loss of 293.1 ha of locally important reptile habitat.
- 8.8.76 Provision of alternative habitat features (hibernacula and log piles) would provide some compensatory habitat for invertebrates and reptiles in the short-term, whilst restored, created and managed habitats mature. In the long-term, the extensive restoration and enhancement of a range of open upland habitats, in particular heathland and peatland, as well as the woodland and montane willow scrub restoration and creation proposed, to be delivered via the BEMP, would provide suitable alternative habitat for these species groups once the planting matures and restoration / management measures improve habitat condition, which would offset the residual significant effect, and provide a significant enhancement.
- 8.8.77 Although no significant effects upon pine marten, red squirrel and bats is predicted, the Proposed Development would result in small-scale (non-significant) habitat loss for these species / species groups.
- 8.8.78 For bats, the provision of 11 boxes would provide roosting habitat compensation for the loss of one confirmed common pipistrelle tree roost and ten trees with Potential Roosting Features, and the remaining 39 boxes would provide a roosting enhancement. The extensive woodland restoration and creation proposals, and restoration / enhancement of open upland habitats, would provide habitat compensation and enhancement for foraging and commuting bats within the Site

- and local area, and would improve habitat connectivity between foraging habitats, such as between the Site and woodland / water habitat at Loch Laggan.
- 8.8.79 For red squirrel, one nest box would provide compensatory habitat (for the small-scale loss of woodland habitat, equivalent to less than one home range¹¹⁵), whilst replacement woodland creation matures. The remaining 49 boxes comprise an enhancement for red squirrel. For pine marten, one box provides compensatory habitat (for the small-scale loss of woodland habitat, equivalent to less than one territory¹¹⁶), whilst the replacement woodland creation matures. The remaining 29 boxes comprise an enhancement. The proposed c. 596 ha of native woodland restoration, regeneration and creation proposed, would provide compensation and a significant enhancement for these species, and would improve habitat connectivity.
- 8.8.80 Proposed changes to deer management as part of the BEMP involves the exclusion of deer from a c. 1,496 ha area (encompassing Loch Earba, Binnein Shuas, Binnein Shios and Creag a Chuir), and the reduction of densities to 8 per km² (a 39% reduction) across a c. 11,390 ha area, encompassing the majority of the Ardverikie Estate. Whilst the enclosure would remove deer from a section of the available open hill and woodland habitat on the estate, there would still be extensive unenclosed wooded, as well as open hill habitat in the area to provide cover and forage for the remaining deer. The displacement of deer from the enclosure would not result in increased herbivore pressure on the surrounding habitats within the estate or neighbouring estates, or within Ben Alder and Aonach Beag SSSI / SAC, as it would be undertaken in tandem with the reduction cull in the unenclosed areas. The deer exclusions and reductions would benefit a range of habitats within these deer control areas.

Operational Effects

- 8.8.81 Operational effects (assuming the embedded measures and stated good practice mitigation measures are implemented), are addressed for relevant receptors below.

Ben Alder and Aonach Beag SSSI

- 8.8.82 During the operational phase, no significant effects upon Ben Alder and Aonach Beag SSSI are predicted. Infrastructure would already be in place and no habitat loss would be required. Staff vehicles for manning of the powerhouse and routine operational and maintenance purposes would be present on the Site, on existing access tracks and in the powerhouse area. An average of two visits per week would be required at Loch Leamhain during operation. The powerhouse would be manned 24 hours a day. Routine maintenance checks would be undertaken on the powerhouse, intake and tailrace screens daily, and on the dams weekly. Periodic inspection of the underground structures would also be undertaken, along with non-routine maintenance tasks as required.
- 8.8.83 The potential for incidents and spillages affecting water quality in Loch Leamhain or Allt a' Bhealaich Leamhain, and therefore hydrologically connected habitats downstream within Ben Alder and Aonach Beag SSSI, is considered to be very low. In addition to this, good practice measures would be implemented further reducing the risk of an incident occurring (see Section 8.7). As detailed in paragraph 8.7.1, a compensation flow release on the Allt a' Bhealaich Leamhain would be maintained throughout the operational phase, to mimic the natural flow regime, such that the hydrological regime of the Allt a' Bhealaich Leamhain would not be affected. As such, **no significant impacts** are predicted upon habitats within the SSSI, during the operational phase.

Ancient Woodland Inventory Habitat

- 8.8.84 During the operational phase, no significant effects on AWI habitat are predicted. Infrastructure would already be in place, and no further habitat loss beyond that already identified under the construction phase assessment would occur. Staff vehicles for manning of the powerhouse and routine operational and maintenance purposes would be present on the Site, on existing access tracks and in the powerhouse area, however infrastructure areas are set back from retained AWI habitat. The potential for incidents and spillages affecting retained AWI habitats is considered to be very low. In addition to this, good practice measures would be implemented further reducing the risk of an incident occurring. Therefore, there would be a negligible effect on retained AWI habitat during operation, which is **not significant**.

Vegetation

- 8.8.85 During the operational phase, no significant effects on retained habitats and plants are predicted. Infrastructure would be in place. As stated above, staff vehicles for manning of the powerhouse and routine operational and maintenance purposes would be present on the Site, on existing access tracks and in the powerhouse area. The potential for incidents and spillages affecting sensitive habitats is considered to be very low. In addition to this, good practice measures would be implemented further reducing the risk of an incident occurring. Therefore, there would be a negligible effect on retained habitats during operation, which is **not significant**.

Fauna

Invertebrates

- 8.8.86 No further loss of invertebrate habitat is required in the operational phase. Operational lighting would only be used during essential operational and maintenance activities, and internal and external lighting would largely be restricted to the powerhouse / lower control works location. Given the low level of the lighting and its limited extent spatially and temporally, a **non significant effect** is predicted upon invertebrates during operation.

Reptiles

- 8.8.87 During operation, only minimal operational and maintenance traffic would be present on the Site and this would be restricted to driving along on-Site access tracks and the powerhouse only, with an applied speed limit. As a result of this, the risk of killing or injuring reptiles is considered low, and no further loss or damage of reptiles habitat is predicted to occur during the operational phase. **No significant effect** is therefore predicted upon reptiles during operation.

Otter

- 8.8.88 During the operational phase, no significant effects on retained habitats are predicted, beyond those already identified within the construction phase assessment. Infrastructure would already be in place and no further habitat loss would be required.
- 8.8.89 Staff vehicles for manning of the powerhouse and routine operational and maintenance purposes would be present on the Site, on existing access tracks and in the powerhouse area, which would be subject to an applied speed limit. No hazardous chemicals would be regularly stored on the Site, other than where safely stored within the Site compound, during the operational phase, and

activities involving excavations would have ceased. During major maintenance events, temporary storage of hazardous chemicals could occur on the Site, but would be subject to implementation of standard pollution prevention control measures.

- 8.8.90 Based on the above, and assuming good practice measures are implemented, the risk of killing or injury to otter from traffic collisions or maintenance operations, and the risk of water pollution events occurring, is considered very low, and **not significant**.
- 8.8.91 During operation, human presence would be low level and localised in extent, and would mostly occur during daylight hours when otters are less active. Operational lighting would be localised and low level, with external lighting restricted to use during essential operational and maintenance activities only, and internal lighting required at the powerhouse only with controls in place to avoid external light spill onto surrounding sensitive habitats. Given the small-scale and localised nature of potential human presence and lighting disturbance impacts, and considering the large home ranges of otter, with abundant undisturbed good quality connected habitat in the surrounding areas, such as Loch Laggan and surrounds, disturbance effects to otter during operation are considered **not significant**.
- 8.8.92 **Chapter 11: Aquatic Ecology** concludes that once mitigation has applied, a temporary significant adverse residual effect would occur for Arctic charr (within Loch Leamhain only), and all other residual effects upon fish would be minor and non-significant during the operational phase. As discussed in paragraph 8.8.44, overall, the potential reduced prey abundance is expected to be minor in the context of prey availability in the local area, and **no significant effects** upon otter as a result of prey availability is predicted during the operational phase.

Water vole

- 8.8.93 During the operational phase, no significant effects on retained habitats are predicted, beyond those already identified within the construction phase assessment. Infrastructure would already be in place and no further habitat loss would be required.
- 8.8.94 As detailed above for otter, assuming good practice measures are implemented, the risk of killing or injury to water vole from maintenance operations, and the risk of water pollution events occurring is considered very low, and **not significant**. Similarly, disturbance effects to water vole during operation are considered **not significant**.

Red squirrel

- 8.8.95 Human activity associated with operation and maintenance of the Proposed Development would be limited to the permanent infrastructure areas and a low volume of vehicles would be present on the Site, which would be restricted to the access tracks and subject to speed limits. In addition, no further tree felling / loss of squirrel habitat is anticipated post-construction. The potential for red squirrel to be affected during operation is, therefore, considered to be low and **no significant effect** is predicted.

Pine marten

- 8.8.96 Human activity associated with operation and maintenance would be limited to the permanent infrastructure areas and a low volume of vehicles would be present on the Site, which would be restricted to the access tracks and subject to speed limits

as in place during construction. In addition, no further tree felling / loss of pine marten habitat is anticipated post-construction. The potential for pine marten to be affected during operation is, therefore, considered to be low and **no significant effect** is predicted.

Bats

- 8.8.97 No further tree loss is required, and no effects on bat roosts or bat roosting habitat are predicted during the operational phase. Lighting is likely to cause only a very localised low level lighting disturbance impact for foraging and commuting bats at the powerhouse location, and lighting elsewhere would only be temporary and low level, during maintenance activities. Potential effects upon bats during operation are therefore assessed as **not significant**.

Deer

- 8.8.98 Potential impacts in relation to deer during the operational phase relate to possible grazing impacts upon retained habitats, and collision risk with site traffic / maintenance vehicles.
- 8.8.99 As detailed in paragraphs 8.8.62 - 8.8.64, adverse grazing impacts upon the retained vegetation, is likely to be minimal.
- 8.8.100 Only minimal maintenance traffic would be present during the operational phase, which would be subject to the 15 mph site speed limit, such that increased traffic collision risk is considered minimal. Significant displacement, and therefore any impacts on neighbouring habitats and roads, is not likely during the operational phase due to minimal disturbance. Impacts upon deer during the operational phase are therefore assessed as being **not significant**. Impacts upon deer as a result of deer management proposed in the OBEMP is discussed in paragraph 8.8.80.

Cumulative Effects

- 8.8.101 Assessment of cumulative effects has been limited to ecological features of local value or above for which there is a potential effect for the Proposed Development alone and a clear route to potential cumulative effects including:
- Developments within or adjacent to the same designated area (Ben Alder and Aonach Beag SSSI); and
 - Developments affecting the same habitats and mobile species within 5 km.
- 8.8.102 Five other developments were identified within the cumulative effects search parameters, which have been assessed for their potential to lead to cumulative effects upon important terrestrial ecological receptors with the Proposed Development. The results of the cumulative assessment are presented in **Table 8.12**.

Table 8.12 Cumulative Effects Assessment

Name	Details of Development	Status	Distance and Direction from Site	Cumulative effects
Ghuilbinn Hydro Scheme	Run-of-river hydro scheme (up to 2MW)	Operational	c. 1.5 m to west	No significant cumulative effects predicted. The operational run-of-river hydro scheme abstracts water from the Abhainn Ghuilbinn and Allt Cam. No significant effects upon ecological receptors were predicted with mitigation in place. Some of the same habitats have been affected on a very small scale (such as wet heath), however potential cumulative effects are negligible and not significant, given the separation distance from the Site and the abundance of similar habitat types, and the fact that construction is already complete. The Ghuilbinn Hydro Scheme is not hydrologically connected to Ben Alder and Aonach Beag SSSI, and is situated a sufficient distance from the SSSI such that no cumulative effects upon the SSSI are predicted.
Pattack Hydro Scheme	Hydroelectric scheme (up to 9 MW)	Operational	c. 2.3 km to east	No significant cumulative effects predicted. Construction is complete. Water vole and otter were present, but measures adopted to mitigate against significant residual effects. Some of the same habitats were affected (including wet modified bog, wet heath, acid grassland and riverine habitat), however the losses were small-scale. As such, potential cumulative effects are negligible and not significant, given the separation distance from the Site and local abundance of similar habitat types. The Pattack Hydro Scheme is located on the River Pattack c. 3.5 km downstream of Ben Alder and Aonach Beag SSSI. As such, there are no potential pathways for cumulative effects upon the SSSI designated habitats.
Loch Pattack Weir	Variable weir	Operational	c. 3.6 km to east	No significant cumulative effects predicted. The operational variable weir and bridge replacement on the River Pattack, located c. 1.5 km downstream of Loch Pattack, and associated track upgrade on the southern edge of Loch Pattack, increases the storage capacity for the operational Pattack Hydro Scheme. The Environmental Appraisal¹²³ details that the weir maintains the water level of Loch Pattack above its low water levels for longer periods, such that the degree / length of time to which marginal areas (including blanket bog and wet heath habitat) are subject to flooding increase, however existing flood levels are not exceeded. The weir and associated works are located downstream of the Proposed Development, beyond the Site boundary.

¹²³ Ash Design + Assessment (2021) Loch Pattack Weir Project. Environmental Appraisal.

Name	Details of Development	Status	Distance and Direction from Site	Cumulative effects
				Loch Pattack lies within Ben Alder and Aonach Beag SSSI. Construction is complete, and as such there would be no potential for cumulative effects in relation to disturbance / displacement, inadvertent pollution, or ongoing elevated risk of introducing invasive non-native species into the SSSI, as a result of overlapping construction activities. Some habitats around the margins of Loch Pattack, within the SSSI, were affected, however the effects were very small-scale. An Appropriate Assessment of Ben Alder and Aonach Beag SAC (which has the same boundary as the SSSI) was undertaken by NatureScot in June 2021, which concluded the impacts (some negative, a few positive) of the development, especially with the recommended mitigation implemented, would be minor at most and not significant. In the absence of mitigation (i.e. with no compensation flow to the Allt Leamhain), operation of the variable weir could reduce the risk and magnitude of potential drying effects of SSSI habitats at the margins of Loch Pattack, or exacerbate potential flooding effects of these habitats, although this would be minor. However in practice, additional habitat (i.e. habitat beyond the existing flood level) would not be expected to be impacted as a result of cumulative effects, as the variable weir is adjustable and allows un-impeded flood waters to pass downstream. Furthermore, given that a compensation flow would be provided on the Allt Leamhain, which mimics the natural flow regime, there is no potential for significant cumulative effects upon Ben Alder and Aonach Beag SSSI.
Ardverikie Hydro Scheme	1MW hydroelectric scheme	Operational	Partially within Site	No significant cumulative effects predicted. Construction is complete, and no potential significant cumulative effects upon important terrestrial ecological features have been identified. The Ardverikie Hydro Scheme is located on Loch Earba, which is not hydrologically connected to Ben Alder and Aonach Beag SSSI. As such, there are no potential pathways for cumulative effects upon the SSSI designated habitats.

8.9 Additional Mitigation, Compensation and Enhancement

Mitigation, Compensation and Enhancement During Construction

- 8.9.1 Embedded mitigation and good practice measures are detailed in Section 8.7, as well as in **Chapter 6: Hydrology and Water Management**, **Chapter 10: Ornithology**, **Chapter 11: Aquatic Ecology** and **Chapter 12: Geology, Soils and Water**, and as outlined in **Appendix 2.3: Outline CEMD**.
- 8.9.2 To compensate for the significant residual effects upon important ecological features, and to provide significant enhancement, a BEMP would be produced. An Outline BEMP is provided in Appendix **8.6: Outline BEMP**, and a summary of the measures proposed is provided in Section 8.7. An assessment of the effects of measures within the OBEMP is provided in paragraphs 8.8.65 - 8.8.72 and **Table 8.11**.

Mitigation, Compensation and Enhancement During Operation

- 8.9.3 No specific mitigation measures, additional to the embedded mitigation and good practice measures detailed in Section 8.7, are required for the operational phase. However, compensation and enhancement measures provided as part of the BEMP would remain in place during the operational phase and monitoring of the measures provided as part of the BEMP would also continue during the operational phase (see above and also **Appendix 8.6**).

8.10 Residual Effects

Construction Residual Effects

- 8.10.1 The residual effects are presented in **Table 8.13** (**Table 8.13** also includes a summary of the potential effects and proposed mitigation, compensation and enhancement measures). The construction residual effects, once the OBEMP compensation and enhancement measures have been applied, are also detailed in paragraphs 8.8.65 - 8.8.72, under the 'Habitat Compensation and Enhancement: Effects of BEMP Measures' assessment.

Operational Residual Effects

- 8.10.2 With good practice mitigation measures in place, no significant residual effects are predicted upon any important ecological receptors during the operational phase.

Cumulative Residual Effects

- 8.10.3 No significant cumulative residual effects are predicted, both during the construction and operational stages.

8.11 Conclusion

- 8.11.1 **Table 8.13** provides a summary of effects on important ecological receptors, proposed mitigation, compensation and enhancement measures and residual effects.
- 8.11.2 Following the avoidance and minimisation of impacts on important receptors during the project design where possible (as detailed in Section 8.7.1), and with the implementation of the proposed good practice measures and additional

- mitigation, effects would be minimised as far as possible, in accordance with the mitigation hierarchy.
- 8.11.3 The Proposed Development would result in significant residual negative effects for the loss of blanket bog and modified bog (including montane bog), montane willow scrub, AWI and semi-natural woodland habitat, and a range of grassland, heath, montane, flush and spring habitats including small areas of groundwater sustained habitats, and watercourses. A significant residual negative effect is also predicted for the loss of invertebrate and reptile habitat. Habitat loss is assessed as significant at the national level for montane willow scrub, significant at the County to national level for montane bog, and significant at the local to County level for the remainder of the habitats listed.
- 8.11.4 However, these effects would be compensated for by a significant positive effect through the bog restoration, woodland restoration / creation, montane willow scrub and other montane habitat restoration, heathland enhancement, aquatic enhancement, and other habitat creation and management measures proposed, to be delivered via the BEMP.
- 8.11.5 With the implementation of continued good practice measures and the implementation of the BEMP, no significant negative effects are predicted during the operation phase.
- 8.11.6 Additional to the compensation proposed, the woodland restoration / creation, montane willow scrub and other montane habitat restoration, heathland enhancement and positive management of a range of other upland habitats via deer control, as well as the provision of bat, red squirrel and pine marten boxes, would provide a significant enhancement, which would be delivered via the BEMP. These biodiversity restoration and enhancement measures would strengthen habitat connectivity within the Ardverikie Estate, particularly the extensive woodland restoration proposals across Binnein Shuas, Binnein Shios and Creag a Chuir, which would connect up with and extend the existing valuable woodlands along the Loch Laggan shoreline.
- 8.11.7 Overall, it is considered that with the implementation of the BEMP (as set out in the OBEMP), biodiversity within the Site and wider OBEMP areas would be in a demonstrably better state than without intervention.

Table 8.13 Summary of Effects on Important Ecological Receptors

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
Construction				
Ben Alder and Aonach Beag SSSI: water quality impacts, a change in flow regime or introduction of invasive species into Loch Pattack via the Allt a' Bhealaich Leamhain, with potential to affect adjacent habitats within the SSSI; catastrophic failure of Leamhain Dam; temperature changes through water transfer; and displacement of deer.	Stringent pollution and sediment management measures; implementation of BMP; installation of an outfall and construction methods to maintain the natural flow regime of the Allt a' Bhealaich Leamhain.	Not significant.	-	Not significant.
Loss of 5.35 ha of AWI habitat (remnant of ancient woodland in poor condition).	-	Significant at local level.	Restoration / creation of c. 596 ha of native woodland, through deer management and targeted planting.	Significant negative effect at local level, but offset through significant positive effect from woodland restoration / creation and management, providing a significant enhancement.
Loss of 7.61 ha of locally important semi-natural woodland (1.81 ha broad-leaved, 5.48 ha conifer, and 0.32 ha mixed woodland).	Erection of protective fencing around retained habitat.	Significant at a local level.		Significant negative effect at local level, but offset through significant positive effects from woodland restoration / creation and management, providing a significant enhancement.

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
Loss of three patches of montane willow scrub (GWDTE), and associated downy willow.	Track micro-siting where possible; erection of protective fencing around retained habitat under ECoW supervision; GWDTE mitigation measures.	Significant at a national level.	Translocation of downy willow within construction footprint during construction. Restoration of c. 200 ha of montane willow scrub and other montane habitats, via deer enclosure and targeted planting.	Not significant, mitigated for by translocation. Significant positive effect from montane willow scrub restoration, providing a significant enhancement.
Permanent loss of 14.72 ha and temporary loss of 4.80 ha of unimproved acid grassland.	Erection of protective fencing around retained habitat; reinstatement of habitats subject to temporary loss within the working corridor.	Significant at a local level.	–Exclusion or reduction of deer grazing across an estimated c. 120 ha of grassland habitat, and restoration of other habitat types as part of the BEMP.	Significant negative effect at a local level, but offset through significant positive effect of grassland enhancement and other habitat restoration measures, providing a significant enhancement.
Permanent loss of 0.65 ha and temporary loss of 0.45 ha of locally important unimproved calcareous grassland.		Significant at a local level.		Significant negative effect at a local level, but offset through significant positive effect of grassland enhancement and other habitat restoration measures, providing a significant enhancement.
Permanent loss of up to 3.64 ha and temporary loss of up to 0.54 ha of County important unimproved calcareous grassland.		Significant at a County level.		Significant negative effect at a County level, but offset through significant positive effect of grassland enhancement and other habitat restoration measures, providing a significant enhancement.

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
Permanent loss of 14.77 ha and temporary / indirect loss of 4.06 ha of County-level important marshy grassland.	Hydrological mitigation measures; erection of protective fencing around retained habitat; reinstatement of habitats subject to temporary loss within the working corridor.	Significant at a County level.		Significant negative effect at a County level, but offset through significant positive effect of grassland enhancement and other habitat restoration measures, providing a significant enhancement.
Loss of three patches of upland species-rich ledges (GWDTE).	Erection of protective fencing around retained habitat; GWDTE mitigation measures.	Significant at a County level.	Restoration of c. 200 ha of montane habitats, via deer enclosure and targeted planting.	Significant negative effect at a County level, but offset through compensatory montane habitat restoration.
Permanent loss of 8.01 ha and temporary loss of 1.08 ha of dry dwarf shrub heath / calcareous grassland mosaic.	Erection of protective fencing around retained habitat; reinstatement of habitats subject to temporary loss within the working corridor.	Significant at a local level.	Restoration of c. 328 ha of open habitats via the exclusion of grazing ¹¹⁹ ; enhancement of an estimated 6,490 ha of heathland via a 39% reduction in deer density ¹²⁰ .	Significant negative effect at a local level, but offset through significant positive effect of heathland restoration and management, providing a significant enhancement.
Permanent loss of 124.67 ha and temporary / indirect loss of 54.98 ha of wet dwarf shrub heath.	Hydrological mitigation measures; erection of protective fencing around retained habitat; reinstatement of habitats subject to temporary loss within the working corridor.	Significant at a local level.		Significant negative effect at a local level, but offset through significant positive effect of heathland restoration and management, providing a significant enhancement.
Permanent loss of 1.20 ha and temporary loss of 0.07 ha of montane heath / dwarf herb.	Erection of protective fencing around retained habitat; reinstatement of habitats subject to temporary loss within the working corridor.	Significant at a County level.	Restoration of c. 200 ha of montane habitats, via deer enclosure and targeted planting.	Significant negative effect at a County level, but offset through compensatory montane habitat restoration.

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
Permanent loss (direct and indirect) of 58.65 ha of blanket bog (of which 43.13 ha comprises montane bog, and 15.52 ha comprises non-montane bog).	Hydrological mitigation measures; erection of protective fencing around retained habitat; use of 'floated' access where possible; reinstatement of habitats within the working corridor.	Significant at a County to national level.	Restoration of 625 ha of bog habitat.	Significant negative effect at a County to national level, but offset through compensatory bog restoration.
Permanent loss (direct and indirect) of 0.62 ha of wet modified bog (non-montane).				
Permanent loss (direct and indirect) of 14.71 ha of dry modified bog (montane).				
Permanent loss (direct and indirect) of 0.17 ha of bare peat.		Significant at a local level.		Significant negative effect at a local level, but offset through compensatory bog restoration.
Permanent loss of 0.91 ha and temporary loss of 0.11 ha of acid / neutral flush.	Pollution prevention and hydrological mitigation measures to minimise effects on retained habitats; erection of protective fencing; reinstatement of habitats within the working corridor.	Significant at a local level.	Restoration of c. 200 ha of montane habitats, via deer enclosure and targeted planting.	Significant negative effect at a local level, but offset through compensatory montane habitat restoration.
Permanent loss of three basic flushes (GWDTE).	Pollution prevention and hydrological mitigation measures to minimise effects on retained habitats; erection of protective fencing; GWDTE mitigation measures.	Significant at a County level.	Restoration of c. 200 ha of montane habitats, via deer enclosure and targeted planting.	Significant negative effect at a County level, but offset through compensatory montane habitat restoration.
Permanent loss of one and temporary loss of two bryophyte-dominated flushes (GWDTE)	Pollution prevention and hydrological mitigation measures to minimise effects on retained habitats; erection of protective fencing; GWDTE mitigation measures.	Significant at a County level.		Significant negative effect at a County level, but offset through compensatory montane habitat restoration.

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
Loss / modification of 2.69 km of watercourses.	Water flow management, pollution prevention and hydrological mitigation measures, fish mitigation measures.	Significant at a local level.	Re-wetting of Allt Labhrach; instalment of large woody structures in littoral zone; improvement of fish spawning habitat quality and accessibility on c. 0.7 km stretch of the Moy Burn; riparian planting (20.9 ha); provision of marginal loch spawning habitat and artificial floating spawning nests.	Significant negative effect at a local level, but offset through compensatory watercourse and riparian enhancement measures.
Small-scale loss of semi-improved acid grassland, dry heath, acid grassland and dry heath mosaic, bryophyte-dominated spring, swamp and marginal / inundation habitats.	Pollution prevention and hydrological mitigation measures to minimise effects on retained habitats; erection of protective fencing; reinstatement of habitats within the working corridor.	Not significant.	-	Not significant.
Inadvertent spread of invasive non-native plant species.	Pre-construction species survey, Rhododendron control, and implementation of BMP.	Not significant.	-	Not significant.
Small-scale loss of field gentian and hawkweed sp.	Track micro-siting where possible; erection of protective fencing around retained habitat under ECoW supervision.	Significant at County level.	–Translocation of affected plants during construction	Not significant.
Small-scale loss of petty whin.		Significant at local level.		Not significant.
Loss of 300.7 ha of locally important invertebrate habitat.	Erection of protective fencing around retained habitat; reinstatement of habitats within the working corridor.	Significant at a local level.	Creation of log piles; restoration of 625 ha of bog habitat; restoration / creation of c. 796 ha of native woodland and montane willow scrub; reduced deer densities over c. 11,390 ha.	Significant negative effect at a local level, but offset through significant positive effect of habitat restoration, creation and management, providing a significant enhancement.

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
Loss of 293.1 ha of habitat suitable for reptiles.	Erection of protective fencing around retained habitat; reinstatement of habitats within the working corridor.	Significant at a local level.	Creation of log piles and ten hibernacula; restoration of 625 ha of bog habitat; creation of c. 796 ha of native woodland and montane willow scrub; reduced deer densities over c. 11,390 ha.	Significant negative effect at a local level, but offset through significant positive effect of habitat restoration, creation and management, providing a significant enhancement.
Inadvertent disturbance, injury and / or death of reptiles.	Habitat manipulation to make habitat unsuitable (overseen by ECoW); site speed limit.	Not significant.	-	Not significant.
Loss of two otter couches	Obtain licence in consultation with NatureScot; pre-construction surveys; provide otter protection plan.	Not significant.	-	Not significant.
Fragmentation to otter habitat from dam construction.	-	Not significant.	-	Not significant.
Impacts to otter prey	Suite of fish mitigation measures (refer to Chapter 11: Aquatic ecology)	Not significant	-	Not significant.
Displacement of small water vole colony.	Pre-construction survey; adherence to SPP; translocate water vole colony subject to inundation under licence from NatureScot to nearby retained suitable habitat; demarcation of retained water vole burrows and watercourses (overseen by ECoW); track micro-siting where possible; water management and pollution prevention measures.	Not significant.	-	Not significant.
Inadvertent disturbance, injury and / or death of otter, pine marten and red squirrel.	Site speed limit; covering / ramping of excavations; suitable storage of materials.	Not significant.	None.	Not significant.

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
Disturbance of fauna utilising retained habitat via human presence, construction noise, vibration and temporary construction lighting.	Restrict lighting to minimum required; direct lighting away from sensitive habitats; avoid lighting specifications with a high UV component.	Not significant.	-	Not significant.
Loss of 7.66 ha of woodland habitat suitable for pine marten, red squirrel and foraging / commuting bats.	Reinstatement of habitats within the working corridor.	Not significant.	Erect 30 pine marten boxes; erect 50 red squirrel boxes; restoration / creation of c. 596 ha of native woodland.	No significant negative effect, with boxes and habitat works providing a significant enhancement.
Loss of one confirmed small common pipistrelle day roost, and ten trees with PRFs for bats.	Further tree roost surveys (including all trees to be affected); obtain licence from NatureScot (for the confirmed roost and any subsequent identified roosts if required); erect 11 bat boxes (i.e. one per tree with PRF or confirmed roost lost); undertake tree inspection / exclusion and supervised sensitive section felling under licence.	Not significant.	Erect a further 39 boxes for enhancement.	Not significant, with the additional roosting provision providing an enhancement.
Operation				
Damage to habitats, and disturbance / injury / killing of invertebrates, reptiles and protected mammals.	Environmental measures implemented during operational maintenance similar to construction period; pollution prevention measures; site speed limit; suitable storage of chemicals; sensitive low-level lighting directed away from sensitive habitats.	Not significant.	-	Not significant.

