

Chapter 10: Terrestrial Ecology - Contents

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10. Terrestrial Ecology

10.1 Executive Summary

- 10.1.1 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.
- 10.1.2 Existing information relating to protected and notable species and habitats, and designated nature conservation sites is provided. Baseline surveys were undertaken in summer 2021 – summer 2023. Surveys undertaken included vegetation and tree tagging surveys, and surveys for lichens, bryophytes, and a range of protected mammals. All surveys were undertaken in accordance with relevant good practice guidelines.
- 10.1.3 Part of the Development Area lies within Ness Woods Special Area of Conservation (SAC) / Easter Ness Forest Site of Special Scientific Interest (SSSI). A detailed assessment of effects on the SAC is also provided in a separate Shadow Habitats Regulations Appraisal (HRA) report. Once embedded and good practice mitigation measures have been applied, a significant residual adverse effect has been identified upon the western acidic oak woodland, and mixed woodland on base-rich soils associated with rocky slopes qualifying features, with respect to habitat loss and fragmentation, and resilience and viability of old growth lichens. A Compensation Package, details of which are provided in a separate Derogation Report, has been developed in consultation with NatureScot, to ensure coherence of the national site network. This includes management to restore woodland within and adjacent to Ness Woods SAC (within a total management area of c. 243 ha), which would extend woodland extent and promote conditions for old growth lichen and bryophyte establishment.
- 10.1.4 Urquhart Bay SAC / SSSI lies on the shore of Loch Ness. An eco-hydrological assessment has concluded that changes in Loch Ness water level fluctuations as a result of the operation of the Proposed Development, operating alongside other existing and consented pumped storage schemes, would not adversely affect the integrity of Urquhart Bay SAC / SSSI. No further potential for significant effects upon any other designated sites (selected for non-avian terrestrial ecology features) has been identified.
- 10.1.5 Outwith Ness Woods SAC, with the application of embedded and best practice mitigation to minimise impacts where possible and adhere to relevant legislation, significant adverse residual effects of habitat loss have been identified during construction for: blanket bog (at the regional level); wet modified bog, dwarf shrub heath, native broad-leaved woodland (outwith Ness Woods SAC) and long-established woodland of plantation origin (at the local level). However, these effects would be compensated for by a significant positive effect through implementation of a Habitat Management Plan (HMP), which includes extensive bog restoration, heathland restoration and management, and native woodland creation proposals.
- 10.1.6 Significant adverse residual effects in the short-term have been identified at the local level upon invertebrates, reptiles, pine marten, red squirrel and bats due to habitat loss during construction. However, no residual significant effects are predicted upon these faunal groups in the medium to long-term, once new planting matures and habitat condition improves, via delivery of the Ness Woods SAC Compensation Package, and HMP, which also includes numerous species-specific habitat features. A significant adverse effect is predicted upon the nationally important rocky shore and surrounding moorland lichen communities of Loch Kemp, which would be lost due to

inundation. Lichen translocation would partially offset the effects upon the rocky shore lichens, although a residual significant effect is predicted (at a national level). There is a greater likelihood that lichen translocation and heathland restoration and management would offset the loss of moorland lichens.

- 10.1.7 Additional to the compensation proposed, heathland management, native woodland creation and the provision of bat and red squirrel boxes would provide a significant enhancement.
- 10.1.8 With the implementation of continued good practice measures and the implementation of the proposed Ness Woods SAC Compensation Package and HMP, no significant negative effects are predicted during the operational phase.
- 10.1.9 No potentially significant cumulative effects were identified.

10.2 Introduction

- 10.2.1 This Chapter considers the potential effects, including cumulative effects, of the Proposed Development on Terrestrial Ecology during construction and operation. This Chapter considers habitats and non-avian terrestrial animal species. Potential effects on birds are considered separately in **Chapter 11: Ornithology**, and aquatic receptors are addressed separately in **Chapter 12: Aquatic Ecology** and **Chapter 13: Fish**. This Chapter includes an assessment of effects on woodland habitats (and associated species) but effects on commercial forestry are addressed separately in **Chapter 19: Forestry**.
- 10.2.2 This Chapter is supported by **Volume 4, Appendix 10.1: Terrestrial Ecology Report** (due to the risk of persecution the locations of protected species resting/breeding places are confined to **Volume 2, Confidential Figure 10.10** and **Volume 4, Confidential Figure 3 of Appendix 10.1**); **Volume 4, Appendix 10.2: Bryophyte Survey Report**; **Volume 4, Appendix 10.3: Lichen Survey Report**, **Volume 4, Appendix 10.4: Freshwater Lichen Survey Report**, **Volume 4, Appendix 10.5: Ness Woods SAC Tree Tagging Information and Sample Root Protection Area Information**; **Volume 4, Appendix 10.6: Eco-hydrological assessment of the impacts of the Loch Kemp Storage Scheme on Urquhart Bay Wood SAC**; **Volume 4, Appendix 10.7: Outline Habitat Management Plan (non-SAC)**; and **Volume 4, Confidential Appendix 10.8: Otter Survey Report (GI Works)**. This Chapter is also supported by **Volume 2, Figures 10.1 – 10.10**. This Chapter should be read in conjunction with the separate **Shadow Habitats Regulations Appraisal (HRA) Report**.
- 10.2.3 As described in **Chapter 3: Description of 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 is assessed.
- 10.2.4 This assessment has been carried out by SLR Consulting Associate Ecologist Hazel Douglas MCIEEM MBiolSci. Hazel has over nine years' experience within ecological consultancy, and specialises in Ecological Impact Assessment. A table presenting relevant qualifications and experience of key staff involved in the preparation of this Chapter is included in **Appendix 4.1: EIA Team**, contained within **Volume 4** of this EIA Report. This assessment has been technically reviewed by Duncan Watson MCIEEM CEnv, Technical Director with SLR Consulting. Duncan is an Ecologist with over 25 years' professional experience, and was a member of the technical review group responsible for revising and updating the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK (published in 2018 and recently updated).

10.3 Scope of Assessment

Study Area

- 10.3.1 The study area encompasses the area over which desk-based and field survey 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. The study area used for habitats is shown on **Volume 2, Figures 10.3 – 10.4**, and **Volume 4, Figures 1 - 1b** in **Appendix 10.1: Terrestrial Ecology Report**, and covers a minimum 250 m buffer from proposed infrastructure. The

relevant study areas for faunal species are summarised in **paragraphs 10.5.16 - 10.5.20** and described in more detail within **Volume 4, Appendix 10.1: Terrestrial Ecology Report**. For ease of reference the study areas included all suitable habitat within a minimum 100 m buffer of proposed infrastructure for protected mammal species, extended to at least 200 m for otter (*Lutra lutra*), Scottish wildcat (*Felis silvestris*) and water vole (*Arvicola amphibius*). The study area for the desk study is a 10 km radius from the Site boundary for international statutory designated sites (extended beyond 10km to include additional international and national statutory designated sites located on the shores of Loch Ness), and a 2 km radius for protected and notable species records, national or local statutory designated sites, and non-statutory designated sites.

Consultation Responses

- 10.3.2 To inform the scope of the assessment for the Proposed Development, consultation was undertaken with statutory and non-statutory bodies. **Table 10.1: Consultation Responses** summarises the scoping and other consultation responses relevant to the Terrestrial Ecology Assessment and provides information on where and/or how points raised have been addressed in this assessment.
- 10.3.3 Full details on the consultation responses and scoping opinion can be reviewed in **Chapter 5: Scoping and Consultation**, and associated appendices.

Table 10.1: Consultation Responses

Consultee	Consultation Type	Date	Issue Raised	Response/Action Taken
NatureScot	Pre-Application Advice (included in scoping response)	25 th November 2021	<p>Details of the track through Ness Woods Special Area of Conservation (SAC) / Easter Ness Forest Site of Special Scientific Interest (SSSI) were requested including length, full working width, including running width, drainage and any works required to stabilise it, materials to be used, where materials would be brought in from and where stored. Fragmentation effects, impacts on the Allt a' Chinn Mhonaich, and impacts the materials brought in might have on the plant communities must be considered. A bryophyte survey was requested of the Allt a' Chinn Mhonaich, and Allt an t-Sluichd, and residual flow information requested for the Allt an t'Sluichd.</p> <p>Details of the footprint of the powerhouse and infrastructure, and any above ground works for the tunnel works, and the area to be inundated within the SAC, were requested.</p> <p>A comprehensive survey of all protected species was requested, including otter, bats, water vole, red squirrel and pine marten.</p>	<p>Track details are provided in Chapter 3: Description of Development. Infrastructure footprints, working corridors and associated habitat loss are illustrated in Volume 2, Figures 10.3 – 10.5 and detailed in Table 10.6: Summary of Habitat Loss within Ness Woods SAC and Table 10.12: Summary of Habitat Loss by Phase 1 / NVC Community Type (for Habitats of Local or Greater Value, Outwith Ness Woods SAC).</p> <p>Residual flow information for the Allt an t-Sluichd is provided in Chapter 7: Water Management, and an assessment of potential effects of the track, powerhouse infrastructure and dam construction / inundation within the SAC is provided in paragraphs 10.8.3 - 10.8.69.</p> <p>A bryophyte survey, along with terrestrial and aquatic lichen surveys, have been completed (see Volume 4, Appendices 10.2 – 10.4).</p> <p>Protected species survey details are provided in Volume 4, Appendix 10.1: Terrestrial Ecology Report, and all surveys are summarised in Sections 10.5 and 10.6.</p>
Royal Society for the Protection of Birds (RSPB)	Scoping	25 th February 2022	Ness Woods SAC: RSPB requested habitat loss details and information on alternatives, information on deer movement and a new / updated deer management plan. RSPB requested detailed tree and understorey work to inform whether replanting can provide adequate mitigation.	Habitat loss details are provided in Volume 2, Figures 10.3 – 10.8, Table 10.6: Summary of Habitat Loss within Ness Woods SAC and Table 10.12: Summary of Habitat Loss by Phase 1 / NVC

Consultee	Consultation Type	Date	Issue Raised	Response/Action Taken
			<p>RSPB raised a concern about the loss of native and ancient woodland outside the SAC, and requested detailed maps and calculations on native and ancient woodland habitat loss. The avoidance of Ancient Woodland loss was requested.</p> <p>A habitat management plan was requested to increase native woodland, improve SAC condition and deliver net biodiversity gain.</p> <p>Peatland: Mitigation for loss of blanket bog could include measures to restore areas of blanket bog elsewhere on the estate.</p>	<p>Community Type (for Habitats of Local or Greater Value, Outwith Ness Woods SAC). Information on the assessment of alternatives is provided in Chapter 2: Design Evolution and Alternatives. The HRA process includes a Stage 3 Assessment of Alternative Solutions with respect to European Sites, located within the Loch Kemp Storage Derogation Report.</p> <p>Information relating to deer management is contained in paragraphs 10.8.113 – 10.8.117, 10.8.154 - 10.8.156, Volume 4, Appendix 10.7: Outline Habitat Management Plan (non-SAC), and the Derogation Report.</p> <p>Detailed tree survey work is provided in Volume 4, Appendix 10.5 and Volume 2, Figure 10.6: Ness Woods SAC individual tree species with proposed infrastructure overlain, and associated bryophyte and lichen surveys found in Volume 4, Appendices 10.2 – 10.4.</p> <p>Woodland is mapped in Volume 2, Figures 10.2 – 10.5, and loss detailed in Table 10.6: Summary of Habitat Loss within Ness Woods SAC and Table 10.12: Summary of Habitat Loss by Phase 1 / NVC Community Type (for Habitats of Local or Greater Value, Outwith Ness Woods SAC) (commercial forestry is addressed separately in Chapter 19: Forestry). Some native and ancient woodland loss</p>

Consultee	Consultation Type	Date	Issue Raised	Response/Action Taken
				<p>is unavoidable (see assessment of alternatives in Chapter 2: Design Evolution and Alternatives, and the Derogation Report), but embedded mitigation has been incorporated into the scheme to reduce woodland loss as far as possible, as detailed in Section 10.7.</p> <p>Compensation and habitat management proposals relating to Ness Woods SAC are contained within the Compensation Package in the Derogation Report. An outline HMP relating to non-SAC habitats is provided in Volume 4, Appendix 10.7: Outline Habitat Management Plan (non-SAC), which includes woodland creation, heathland restoration and management, peatland restoration, and other measures to benefit aquatic habitats and a range of faunal groups.</p>
Scottish Environment Protection Agency (SEPA)	Scoping	1 st March 2022	<p>SEPA requested a significant buffer between the access track and the Allt a' Chinn Mhonaich to avoid pollution potential, and the restoration of existing track that cannot be used.</p> <p>The area of peatland disturbed should be confirmed (including due to maximum inundation and the effects of inundation due to erosion of surrounding peat), and peat management detailed. Floating track should be used to reduce the volume of excavated peat.</p> <p>SEPA requested plans for peatland restoration works as mitigation for peat habitat loss, including for example, restoration of any redundant tracks or</p>	<p>Pollution prevention details for the Allt a' Chinn Mhonaich (and other watercourses / waterbodies) are provided in Chapter 7: Water Management, Chapter 14: Geology, Soils and Water, and outlined in Volume 4, Appendix 3.3: Outline CEMP.</p> <p>Existing track that would not be used would be restored, as detailed in Section 10.7.</p> <p>Peat loss and peat management is addressed in Chapter 14: Geology, Soils and Water, including</p>

Consultee	Consultation Type	Date	Issue Raised	Response/Action Taken
			historic peat cuttings. SEPA encouraged going beyond the minimum restoration area to allow for restoration uncertainty and to provide gain.	the use of floating track where appropriate. Loss of peatland habitats (including blanket bog) is detailed in Table 10.12: Summary of Habitat Loss by Phase 1 / NVC Community Type (for Habitats of Local or Greater Value, Outwith Ness Woods SAC) . Details of proposed peatland restoration are provided in Volume 4, Appendix 10.7: Outline HMP (non-SAC) .
NatureScot	Scoping	4 th March 2022	<p>NatureScot recommend the Environmental Impact Assessment (EIA) records the process of looking at potential alternatives to the current design and location.</p> <p>NatureScot requested the following information additional to that detailed in the scoping report: 1. Maps of the locations of all built structures and land take, showing areas subject to direct, indirect (including spread of material beyond the planned area of use), temporary and permanent impacts, using a worst-case scenario. 2. Maps of Annex 1 habitats and National Vegetation Classification (NVC) communities for 100m beyond the construction footprint. 3. Calculations of areas of habitat loss for each scheme element including permanent, temporary, direct or indirect loss, using a worst-case scenario. 4. Calculations of areas of habitat that will cease to function due to fragmentation, including the strips between hairpin bends in the Ness Woods access track, and along the shoreline by the powerhouse.</p> <p>Detailed bryophyte and lichen surveys were requested for all areas highlighted by the bryophyte walkover report, especially the watercourses and powerhouse site, lower works and access track.</p> <p>NatureScot recommended considering the impacts of Artificial Light at Night (ALAN), especially on invertebrates, birds and mammals.</p> <p>Finalised detailed Construction Method Plans (CMPs) were requested.</p>	<p>Information on the assessment of alternatives is provided in Chapter 2: Design Evolution and Alternatives. The HRA process also includes a Stage 3 Assessment of Alternative Solutions with respect to European Sites, located in the Derogation Report.</p> <p>Maps showing habitat loss and impacts are provided in Volume 2, Figures 10.3 – 10.9. Habitat loss calculations are provided in Table 10.6: Summary of Habitat Loss within Ness Woods SAC and Table 10.12: Summary of Habitat Loss by Phase 1 / NVC Community Type (for Habitats of Local or Greater Value, Outwith Ness Woods SAC).</p> <p>Detailed bryophyte, terrestrial lichen and aquatic lichen surveys are reported in Volume 4, Appendices 10.2 – 10.4.</p> <p>An assessment of the potential effects of ALAN has been provided for terrestrial ecology features</p>

Consultee	Consultation Type	Date	Issue Raised	Response/Action Taken
			A schedule of mitigation and restoration was requested.	<p>in paragraphs 10.8.63 - 10.8.66, 10.8.88, 10.8.112, 10.8.141, and 10.8.153.</p> <p>Details of Construction Method Plans are provided in Chapter 3: Description of Development, and an Outline CEMP is provided in Volume 4, Appendix 3.3: Outline CEMP.</p> <p>Details of proposed mitigation are provided in Sections 10.7 and 10.9, and Chapter 21: Schedule of Mitigation. Restoration is detailed in the Outline HMP (non SAC) (Volume 4, Appendix 10.7).</p>
The Highland Council (THC)	Scoping	11 th March 2022	<p>THC requested full protected species and habitats surveys and evaluation. Habitat enhancement and mitigation measures should be detailed, particularly in respect to blanket bog, and details provided on whether the development could assist or impede delivery of elements of relevant Biodiversity Action Plans.</p> <p>If wild deer are present or will use the site an assessment of the potential impact on deer will be required. This should address deer welfare, habitats and other interests.</p> <p>A HRA was requested, with sufficient information to allow Scottish Ministers to come to a view on the impact on the integrity of the designated site.</p>	<p>A suite of protected species and habitat surveys have been undertaken in 2021 - 2023, as reported in Volume 4, Appendices 10.1 – 10.5 and 10.8, and summarised in Sections 10.5 and 10.6. Proposed mitigation, compensation and enhancement measures are detailed in Sections 10.7 and 10.9. Habitat creation and restoration measures are outlined in Volume 4, Appendix 10.7 Outline HMP (non-SAC) and the Derogation Report.</p> <p>The Highland Biodiversity Action Plan¹ is referred to throughout the Chapter where relevant.</p>

¹ Highland Nature Partners (2021) *Highland Nature: Biodiversity Action Plan 2021 – 2026* [online] Available at: <https://www.highlandenvironmentforum.info/biodiversity/action-plan/> [Accessed in November 2022]

Consultee	Consultation Type	Date	Issue Raised	Response/Action Taken
				A wild deer assessment is provided in paragraphs 10.8.113 – 10.8.117 Error! Reference source not found. and 10.8.154 - 10.8.156, with deer management addressed in Appendix 10.7, and the Derogation Report. A Shadow HRA Report has been completed and is provided separately.
THC	Pre-application advice	8 th June – 11 th August 2022	<p>Impact on trees: THC raised concerns that the indicative proposals do not accord with policies 51, 52 or 57 of the Highland-wide Local Development Plan or the Scottish Government’s policy on the Control of Woodland Removal.</p> <p>THC recommended reviewing and amending the design of the layout of the western end of the development to ensure there is no loss of Ancient Woodland.</p> <p>THC requested a tree survey to BS 5837:2012, Tree Constraints Plan, Arboricultural Impact Assessment, Tree Protection Plan, and Arboricultural Method Statement if required.</p> <p>THC requested a Tree Planting and Maintenance Plan, and if necessary, off-site Compensatory Planting and Maintenance Plan.</p> <p>ASH provided a response letter (dated 10th August 2022), which set out the proposed approach to assessing forestry and woodland, and THC agreed to the approach set out in this letter (by email dated 11th August 2022).</p>	<p>Some ancient woodland loss is unavoidable (see assessment of alternatives in Chapter 2: Design Evolution and Alternatives), but embedded mitigation has been incorporated into the scheme to reduce ancient semi-natural woodland loss within Ness Woods SAC as far as possible, as detailed in Section 10.7.</p> <p>Commercial forestry is assessed in Chapter 19: Forestry, and non-commercial woodland is assessed in this Chapter.</p> <p>Compensatory woodland creation and management for Ness Woods SAC would be undertaken as detailed in the Compensatory Measures Package specific to Ness Woods SAC, in the Derogation Report.</p> <p>Wider compensatory woodland creation, to accord with the Scottish Governments’ Policy on Control of Woodland Removal, is detailed in Chapter 19: Forestry, and includes a Woodland Management Plan and Compensatory Planting and Maintenance Plan.</p>

Consultee	Consultation Type	Date	Issue Raised	Response/Action Taken
				Habitat restoration and management details outside of the SAC are also detailed in Appendix 10.7 .
THC / SEPA	Pre-application advice	8 th June 2022	<p>Impact on peat: further peat probing was requested by SEPA (concentrating on areas of >1m peat), and a justification requested for why areas of deep peat cannot be avoided, and where unavoidable to demonstrate how impacts have been minimised.</p> <p>SEPA suggested that the Peat Management Plan clearly identifies the volumes of peat which may require to be put to other uses and identifies what they are, but that any proposals for peatland restoration are contained within a Habitat Management Plan. The Habitat Management Plan should provide proposals for peatland and habitat restoration.</p> <p>There has been some further consultation with SEPA regarding peat management; further details are provided in Chapter 14: Geology, Soils and Water.</p>	<p>Peat probing information is provided in Chapter 14: Geology, Soils and Water. A Peat Management Plan containing the specified details is contained in Volume 4, Appendix 14.1: Peat Management Plan.</p> <p>An outline HMP is provided in Volume 4, Appendix 10.7: Outline HMP and includes details of proposed peatland and habitat restoration.</p>
THC / NatureScot	Pre-application advice	8 th June 2022	<p>Designated sites advice from NatureScot: NatureScot advised that the proposal may be unable to meet most or even all of the conservation objectives for Ness Woods SAC, and therefore has potential to adversely affect site integrity. If so, ECU would need to consider whether the tests in Regulations 49 and 53 of the Habitats Regulations can be met.</p> <p>Following a site visit on 27th April 2022 NatureScot provided the following additional advice/requests: A full bryophyte and lichen survey of the Allt an t-Sluichd (downstream of dam 1) was requested, and a detailed assessment of flow included. Likely effects should be assessed by a suitably experienced bryologist in light of the bryophyte and lichen surveys.</p>	<p>A Shadow HRA Report, containing information to inform an Appropriate Assessment, has been completed, and a compensatory package developed for Ness Woods SAC, as detailed within the Derogation Report.</p> <p>Bryophyte, terrestrial lichen and aquatic lichen survey reports are provided as Volume 4, Appendices 10.2 – 10.4 respectively, and assessment of effects is provided within Section 10.8 and the relevant Appendices.</p>

Consultee	Consultation Type	Date	Issue Raised	Response/Action Taken
			<p>NatureScot advised that the removal of old hazel (<i>Corylus avellana</i>) stands along the access track and powerhouse area cannot be mitigated due to the age of the trees and the likely importance of the age of the lichen and bryophyte communities they support.</p> <p>Any assessment should be clear how much of the habitat will be affected from the access track construction to the powerhouse, and NatureScot advised that an assessment using the worst case scenario is expected.</p>	<p>Detailed assessments of the lichen and bryophyte interest of the hazel groves are provided in Volume 4, Appendices 10.2 – 10.4.</p> <p>Habitat loss calculations are provided in Table 10.6: Summary of Habitat Loss within Ness Woods SAC and Table 10.12: Summary of Habitat Loss by Phase 1 / NVC Community Type (for Habitats of Local or Greater Value, Outwith Ness Woods SAC), and drawings of the construction areas and habitats lost are provided in Volume 2, Figures 10.3 – 10.6.</p>
THC	Pre-application advice and additional consultation	8 th June 2022, 15 th -20 th November 2022	<p>In their pre-application advice, THC requested biodiversity enhancement including an outline Biodiversity Net Gain (BNG) Proposal, outlining how the proposal will affect the biodiversity of the area and how the project will contribute towards biodiversity enhancement in the area, which in due course may be included within any habitat management plan.</p> <p>Further clarification was sought on the approach to BNG, and it was agreed with THC that a biodiversity metric calculation would not be included, but that enhancement would be quantified and detailed in the EIA report, by evaluating the importance of the habitats and species present, and quantifying the loss, including quantifying the area of the habitat types to be directly lost, and any indirect impacts. Proposed habitat creation and restoration would then be quantified within the EIA (and any subsequent HMPs), including the areas of habitats to be created and restored, and an evaluation of their value. The losses and gains would then be compared against one another such that what constitutes enhancement is clearly demonstrated.</p>	<p>An evaluation of habitats and species is provided in Section 10.6, habitat loss is detailed in Table 10.6: Summary of Habitat Loss within Ness Woods SAC and Table 10.12: Summary of Habitat Loss by Phase 1 / NVC Community Type (for Habitats of Local or Greater Value, Outwith Ness Woods SAC), and habitat creation and enhancement is detailed in Section 10.9, Table 10.14: Summary of Losses and Gains of Important Terrestrial Habitats where Significant Effects have been Predicted and Table 10.15: Summary of Effects on Important Ecological Receptors. Proposed habitat creation and enhancement is also detailed in Volume 4, Appendix 10.7, and the Derogation Report.</p>
THC	Additional consultation	10 th August 2022	<p>As detailed in Chapter 5: Scoping and Consultation, it was agreed in an additional consultation letter dated 10th August 2022 that commercial forestry would be assessed in the forestry chapter, and the non-commercial woodland</p>	<p>This Chapter includes an assessment of effects on woodland habitats (and associated species) but</p>

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			in the terrestrial ecology chapter, split into that within and outwith Ness Woods SAC.	effects on commercial forestry are addressed separately in Chapter 19: Forestry .
Energy Consents Unit (ECU)	Scoping	21 st October 2022	<p>ECU stated that they expect that all matters raised in scoping consultation responses (as summarised above) to be addressed.</p> <p>ECU stated that it will be necessary for Ministers to understand through detailed survey work the value and sensitivity of bryophytes and protected mammals in Ness Woods SAC, and the extent of woodland habitat that would be lost as a result of the Proposed Development.</p> <p>In considering whether the Proposed Development will have an adverse effect on the integrity of the Ness Woods SAC, Scottish Ministers shall have regard to the manner in which the Development is proposed to be carried out, and any conditions or restrictions which they propose to be imposed on any permission. The Applicant should set out any development which is integral to the project and for which planning permission may be sought as part of the application, which set out to avoid, minimise or remove negative effects on the SAC or which may contribute positively to the conservation objectives of the SAC.</p> <p>In relation to Ness Woods SAC, ECU also highlighted the importance of including detailed information on alternative solutions, and requested the inclusion of any necessary compensatory measures to ensure the coherence of the UK site network.</p> <p>Ministers confirmed that they do not require the underground grid connection to be included in the cumulative assessment, as this would be addressed under a separate application.</p>	<p>See above for locations where specific matters raised by consultees have been addressed.</p> <p>Details of bryophyte and protected species survey work is contained in Volume 4, Appendices 10.1 – 10.2, and an evaluation of their value and sensitivities provided in Sections 10.6 and 10.8. Habitat loss calculations are provided in Table 10.6: Summary of Habitat Loss within Ness Woods SAC and Table 10.12: Summary of Habitat Loss by Phase 1 / NVC Community Type (for Habitats of Local or Greater Value, Outwith Ness Woods SAC).</p> <p>Embedded mitigation is provided in Section 10.7, and an assessment of effects upon Ness Woods SAC is contained in paragraphs 10.8.3 - 10.8.70 and 10.8.118 – 10.8.125, as well as within a separate Shadow HRA Report.</p> <p>Information on the assessment of alternatives is provided in Chapter 2: Design Evolution and Alternatives. The HRA process includes a Stage 3 Assessment of Alternative Solutions with respect to European Sites, located within the Derogation Report.</p> <p>Details on compensatory measures are contained in a Compensatory Measures Package specific to</p>

Consultee	Consultation Type	Date	Issue Raised	Response/Action Taken
				Ness Woods SAC, and in Volume 4, Appendix 10.7.
NatureScot	Additional consultation	13 th April – 2 nd May 2023	<p>An early draft of the sections of the separate Shadow HRA Report report specifically relating to Ness Woods SAC was shared with NatureScot for comment, and feedback relating to evaluating the impacts on qualifying woodland habitats was given from Debbie Greene, Jeanette Hall and Corrina Mertens of NatureScot, in a meeting held on the 13th April 2023, and follow-up informal notes provided by email on 17th April 2023.</p> <p>As further summarised in the 13th April meeting minutes (updated by NatureScot in an email dated 2nd May), the main comments specific to the Ness Woods SAC draft Shadow HRA are summarised as:</p> <ul style="list-style-type: none"> •Provide further detail on bryophytes and their value as typical species of the qualifying habitats; •Provide further detail of fragmentation effects between the lower section of proposed access track and Loch ness shoreline within Ness Woods SAC; •Provide clarification on how the natural flow regime of the Allt an t'Sluichd would be maintained, and provide an assessment of impact on the bryophytes / lichens in the Allt an t-Sluichd gorge; •Provide further detail of whether the proposed access track through Ness Woods SAC would affect hydrological flows, resulting in any effects upon sensitive habitat such as flush vegetation; •Ensure land-take calculations associated with the access track on the slopes are deliverable; and •It was agreed that lichen translocation within the SAC could not be counted as mitigation or compensation, due to the likelihood of success not being sufficiently high enough. 	<p>The separate Shadow HRA Report has been updated to address the comments raised by NatureScot.</p> <p>This EIA Report also addresses the comments raised by NatureScot, in the Ness Woods SAC assessment in Section 10.8.</p>
NatureScot	Additional consultation	20 th June 2023	A draft report presenting the findings of an eco-hydrological assessment of the Proposed Development on Urquhart Bay Wood SAC was shared with NatureScot for comment. Feedback and questions relating to draft report was given by Angus Tree, Corrina Mertens and Debbie Greene of NatureScot, in a	The eco-hydrological assessment (Volume 4, Appendix 10.6: Eco-hydrological assessment of the impacts of the Loch Kemp Pumped Storage Scheme on Urquhart Bay Wood SAC) has been

Consultee	Consultation Type	Date	Issue Raised	Response/Action Taken
			<p>meeting held on 20th June 2023. Their key points (as summarised in meeting minutes provided by NatureScot) are summarised as:</p> <p>Use an appropriately long data series of water levels in Loch Ness for analysis;</p> <p>Explain loch level abstraction control of Pumped Hydro Schemes and the Ness Canal, regulated under CAR;</p> <p>Explain how loch levels relate to the Foyers stop pumping level;</p> <p>Explain how modelling includes Ness Canal abstraction;</p> <p>Explain how modelling considers climate change;</p> <p>Provide evidence that Pumped Hydro Schemes are likely to increase water level fluctuations at a diurnal level rather than substantially longer durations;</p> <p>Justify selecting variations from the mean loch level as the basis for the reasonable worst case scenario, or if more appropriate changing it, e.g. to the minimum loch level in relation to the effects of maximum abstraction, and the maximum loch level in relation to the effects of maximum discharge; and</p> <p>Provide a cross-section across the Loch at Urquhart Bay Wood SAC, showing the minimum, mean and maximum water levels, and the Foyers 'stop pumping level'.</p>	<p>updated to incorporate NatureScot's requests. This EIA report also addresses the comments raised by NatureScot, in the Urquhart Bay Wood SAC assessment in Section 10.8.</p>
NatureScot	Additional Consultation	15 th August 2023	<p>An updated report presenting the findings of an eco-hydrological assessment of the Proposed Development on Urquhart Bay Wood SAC was shared with NatureScot for comment following the meeting on 20th June 2023. NatureScot confirmed that their advisors agree with the conclusion in the updated eco-hydrological assessment, that there will be no adverse effect on site integrity on Urquhart Bay Woods SAC from Loch Kemp Storage.</p>	<p>The eco-hydrological assessment of the Proposed Development on Urquhart Bay Wood SAC is provided in Volume 4, Appendix 10.6: Eco-hydrological assessment of the impacts of the Loch Kemp Pumped Storage Scheme on Urquhart Bay Wood SAC.</p>
NatureScot	Additional Consultation	27 th September 2023	<p>A second draft of the sections of the Shadow HRA Report specific to Ness Woods SAC was provided to NatureScot for further comment on 16th August 2023. NatureScot provided further comments by email on 27th September 2023, which are summarised as follows:</p> <p>Conservation Objective 2a (woodland qualifying features): NatureScot advise that the impact of fragmentation is likely to be underestimated. NatureScot comment that further areas of woodland (additional to the areas between the</p>	<p>The separate Shadow HRA Report has been updated to address the comments raised by NatureScot.</p> <p>This EIA Report also addresses the comments raised by NatureScot, in the Ness Woods SAC assessment in Section 10.8. The updates have been undertaken without further consultation</p>

Consultee	Consultation Type	Date	Issue Raised	Response/Action Taken
			<p>two tightest hairpin bends, which have already been identified in this draft) will become isolated along the access track corridor, which is more sinuous than the existing track. They state that as a general rule edge effects can extend 30m into the surrounding woodland, and so an area of less than 60m across contains no woodland interior habitat. There may be scope for discussion over the applicability of this figure to the woodland on this site, but it indicates the likely scale of the issue.</p> <p>Conservation Objective 2c (woodland qualifying features): NatureScot advise that the assessment of loss of viability seems likely to underestimate the potential impact of fragmentation (edge effects), and that there is likely to be a further loss of viability of typical species as a result of micro-climate edge effects, in relation to the lichens within the second lowest hairpin bend of the proposed access track, where the canopy is less open. NatureScot recommend a discussion between Andy Acton (the project lichenologist) and NatureScot's Woodland and Lichen/Bryophyte Advisors to confirm the likely susceptibility of the specific lichens in this hairpin to microclimate edge effects and the distance over which they may be affected.</p> <p>Conservation Objective 2c (otter qualifying feature): NatureScot query how the fish mitigation measures would mitigate impacts on availability of food for otter, and that they would have a likely significant effect on the River Moriston SAC, for which they should be assessed against conservation objectives of River Moriston SAC in an HRA before being included as mitigation. They advise that it may not be possible to conclude no adverse effects on site integrity, and are seeking further internal advice on the likely magnitude of impacts on prey availability and whether they think there is in fact a need for mitigation.</p>	with NatureScot, due to submission timing constraints, but have been undertaken with consultation with Andy Acton (project lichenologist). A more precautionary assessment of fragmentation and edge effects has been provided. Fish mitigation has been updated and is included in the Shadow HRA assessment for River Moriston SAC.
NatureScot	Additional informal consultation	-	Additional informal consultation has also been undertaken between the Developer and NatureScot, throughout the EIA and HRA process.	Refer to Chapter 5: Scoping and Consultation

Issues Scoped Out of Assessment

- 10.3.4 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 (see **paragraph 10.5.22, Table 10.4: Evaluation of the Phase 1 Habitats and NVC Communities Present within the Survey Area** and **Table 10.5: Evaluation of Faunal Receptors**), is not a Groundwater Dependent Terrestrial Ecosystem (GWDTE) or is not subject to legal protection.
- 10.3.5 Habitats that have been scoped out of detailed assessment are:
- bracken (U20 NVC community) (outwith Ness Woods SAC), which is assessed as having less than local value
 - coniferous woodland and scattered conifer trees (plantation and recently felled plantation), which are assessed as having less than local value (commercial plantation woodland is addressed separately in **Chapter 19: Forestry**)
 - buildings and gardens (game bird rearing pens), which are assessed as having less than local value and are located beyond the working corridor
 - bare ground (existing access tracks), which is assessed as having less than local value
- 10.3.6 Based on the desk study and consideration of the extent and nature of the Proposed Development, effects on the following species or species groups have been scoped out of assessment. For more information on each species / group, refer to **Table 10.5: Evaluation of Faunal Receptors**.
- invertebrate, amphibian and reptile surveys have been scoped out, and instead a habitat-based assessment has been undertaken to inform the assessment of potential impacts and the need for mitigation measures where relevant
 - brown hare (*Lepus europaeus*) records have been provided for the 2 km search area, 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
 - hedgehog (*Erinaceus europaeus*) records have been provided for the 2 km search area, however due to the suboptimal habitat for this species across much of the Site, and the occurrence of more suitable habitat within the surrounding landscape, it is considered unlikely to be significantly affected and detailed assessment of effects on this species have been scoped out

10.4 Legislation, Policy and Guidance

Legislative Context

- 10.4.1 The following legislation has been considered in the assessment:
- the Wildlife and Countryside Act 1981
 - the Wildlife and Natural Environment (Scotland) Act 2011
 - the Nature Conservation (Scotland) Act 2004
 - the Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitats Regulations)

- the Protection of Badgers Act 1992 (as amended by the Nature Conservation (Scotland) Act 2004)
- Statutory instrument 1143/2014 on invasive alien species (the Invasive Species Regulations)

Policy Context

10.4.2 The following policy has been considered in the assessment:

- National Planning Framework 4²
- the Highland Wide Local Development Plan 2012³: Policies 51 (Trees and Development); 52 (Principle of Development in Woodland); 55 (Peat and Soils); 57 (Natural, Built and Cultural Heritage); 58 (Protected Species); 59 (Other Important Species) and 60 (Other Important Habitats)
- Inner Moray Firth Proposed Local Development Plan 2, 2022⁴: Policy 2 (Nature Protection, Preservation and Enhancement)
- Inner Moray Firth Local Development Plan 2015⁵
- Highland's Statutorily Protected Species Supplementary Guidance⁶
- Trees, Woodlands and Development Supplementary Guidance (2013)⁷

Technical Guidance

10.4.3 The following technical guidance has been considered in the assessment (other relevant documents are also referenced elsewhere throughout this Chapter, as appropriate):

- *Highland Biodiversity Action Plan (BAP)*¹ (which supersedes the older Highland district local BAPs) lists local priority habitats and species. Local priority habitats of most relevance to the Site include: upland and moorland; peatland and wetland; and woodland and forest. Local priority species of most relevance to the Site include: red squirrel (*Sciurus vulgaris*), pine marten (*Martes martes*) and all six locally occurring bat species. A range of invertebrate, plant and fungi species are also listed.

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

³ The Highland Council (2012) *Highland Wide Local Development Plan April 2012* [online] Available at: <https://www.highland.gov.uk/download/downloads/id/1505/highland-wide-local-development-plan.pdf> [Accessed in November 2022]

⁴ The Highland Council (2022) *Inner Moray Firth Proposed Local Development Plan 2* [online] Available at: <https://www.highland.gov.uk/info/178/local-and-statutory-development-plans/202/inner-moray-firth-local-development-plan> [Accessed in November 2022]

⁵ The Highland Council (2015) *Inner Moray Firth Local Development Plan* [online] Available at: <https://www.highland.gov.uk/downloads/file/15008/adopted-inner-moray-firth-local-development-plan> [Accessed in November 2022]

⁶ 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 November 2022]

⁷ The Highland Council (2013) *Trees, Woodlands and Development Supplementary Guidance* [online] Available at: <https://www.highland.gov.uk/downloads/file/354/trees-woodlands-and-development-supplementary-guidance> [Accessed in November 2022]

- the Scottish Biodiversity List (SBL)⁸
- Guidelines for Ecological Impact Assessment (EclA) in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine⁹
- Planning for development: What to consider and include in deer assessments and management at development sites. Version 2¹⁰
- Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (GWDTEs)¹¹
- Circular 1/2017: Environmental Impact Assessment Regulations¹²
- Advising on peatland, carbon-rich soils and priority peatland habitats in development management¹³. Much of the assessment was carried out prior to the publication of this new guidance from NatureScot, which was only published at the end of June 2023. Whilst the project has sought to meet the new requirements as much as possible in the limited time since the new guidance was published, it has not been possible to meet the stipulated requirements for restoration in full. It is also understood that this guidance is likely to be revised in the near future¹⁴.

10.5 Methodology

Desk Study

10.5.1 Desk study data have been gathered to identify nature conservation designations, and existing records of protected and notable habitats and species potentially relevant to the assessment, using the following data sources and search areas:

- International statutory nature conservation designations within 10 km of the Site (extended to include all international and national statutory designated sites beyond 10 km that are located

⁸ NatureScot (2020) *Scottish Government Scottish Biodiversity List* [online] Available at: <https://www.nature.scot/doc/scottish-biodiversity-list> [Accessed in November 2022]

⁹ Chartered Institute of Ecology and Environmental Management (CIEEM) (2022) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Version 1.2 – Updated April 2022. CIEEM, Winchester

¹⁰ Scottish Natural Heritage (2016) *Planning for development: What to consider and include in deer assessments and management at development sites. Version 2*. [online] Available at: <https://www.nature.scot/doc/guidance-planning-and-development-what-consider-and-include-deer-assessment-and-management> [Accessed in November 2022]

¹¹ 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

¹² Scottish Government (2017) *Circular 1/2017: Environmental Impact Assessment Regulations* [online] Available at: <https://www.gov.scot/collections/planning-circulars/> [Accessed in November 2022]

¹³ NatureScot (2023) *Advising on peatland, carbon-rich soils and priority peatland habitats in development management*, Available at: <https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management> [Accessed in August 2023]

¹⁴ 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 is not fit for purpose and must be revised.

on the shores of Loch Ness), and national and local statutory nature conservation designations within 2 km of the Site, from NatureScot Site Link webpage¹⁵

- Highland Biological Recording Group (HBRG) was commissioned in November 2022 to provide data relating to non-statutory sites and records of protected and notable species within the Site and a 2 km radius of it¹⁶. Non-statutory site information provided included Scottish Wildlife Trust (SWT) reserves, RSPB Reserves, National Trust for Scotland (NTS) Reserves, THC Local Nature Reserves (LNRs) and THC Sites of Local Nature Conservation Interest (SLNCIs)
- Large-scale 1:10,000 Ordnance Survey (OS) maps, in conjunction with colour 1:25,000 OS maps, were used to determine the presence of ponds and other features of nature conservation interest
- *The Habitat Map of Scotland (HabMoS)*¹⁷ was consulted for local habitat and land use information, including the following datasets of relevance to the Proposed Development:
 - Native Woodland Survey Scotland (NWSS) 2006-2013
 - National Forest Inventory (NFI) 2015
 - Ordnance Survey (OS) delineation of Inland Surface Waters 2017
- Ancient Woodland Inventory (AWI) Scotland¹⁸
- The Joint Nature Conservation Committee (JNCC) website and NatureScot standing waters database¹⁹ were accessed for habitat definitions
- The Highland Council Planning Portal was searched for relevant reports submitted as part of the applications for other nearby developments. The following reports were also reviewed for relevant ecological information:
 - Red John Pumped Storage Scheme: EIA Volume 2, Chapter 6: Terrestrial Ecology (and associated appendices)²⁰
 - Revised Coire Glas Pumped Storage Scheme: EIA Chapter 10: Terrestrial Ecology (and associated appendices)²¹
 - Dell Wind Farm: Environmental Statement Chapter 7: Non-Avian Ecology²²

¹⁵ <https://sitelink.nature.scot/home> [Accessed in November 2022]

¹⁶ The Site boundary has increased slightly since the desk study was commissioned from HBRG, however no infrastructure is proposed outside of the earlier slightly smaller Site boundary (which predominantly mimics the current 'Development Area Boundary', with the exception of a very small extension north-east at the proposed location of Dam 3). No development is proposed outside of the 'Development Area Boundary.' As such, no additional desk study information beyond the original 2 km buffer is considered necessary for informing this EIA Report Chapter.

¹⁷ <https://www.environment.gov.scot/our-environment/habitats-and-species/habitat-map-of-scotland/> [Accessed in November 2022]

¹⁸ <https://cagmap.snh.gov.uk/natural-spaces/dataset.jsp?code=AWI> [Accessed in November 2022]

¹⁹ [https://gateway.snh.gov.uk/pls/apex_cagdb2/f?p=111:1000:::~](https://gateway.snh.gov.uk/pls/apex_cagdb2/f?p=111:1000:::) [Accessed in November 2022]

²⁰ AECOM (2018) *Red John Pumped Storage Hydro Scheme, Volume 2, Chapter 6: Terrestrial Ecology*. For ILI (Highlands PSH) Ltd.

²¹ SSE Renewables (2018) *Revised Coire Glas Pumped Storage Scheme*, Chapter 10: Terrestrial Ecology

²² Jacobs (2013) *Dell Wind Farm Environmental Statement*, Chapter 7: Non-Avian Ecology. Coriolis Energy

Field Survey

- 10.5.2 A Phase 1 Habitat Survey, National Vegetation Classification (NVC) survey, bryophyte walkover survey and protected species surveys were undertaken in summer 2021. Further survey work was undertaken in summer 2022, comprising detailed bryophyte, terrestrial and freshwater lichen surveys, and winter 2022 – spring 2023 comprising further freshwater lichen survey. Detailed tree tagging work was also undertaken in summer 2022 and spring 2023 within the areas of the Proposed Development within Ness Woods SAC. The broad scope of the survey work was agreed with consultees as part of the scoping process. The methodology for the survey work is briefly outlined below, for the full methodologies please refer to **Volume 4, Appendices 10.1 – 10.4**. Some additional Phase 1, NVC and protected mammals survey work was undertaken in summer 2023, to ensure coverage of 250 m buffers from updated scheme infrastructure. The additional summer 2023 survey work is not detailed in the appendices, and is instead reported within this EIA Chapter, and **Volume 2, Figures 10.3 – 10.4 and 10.10**.

Extended Phase 1 Habitat Survey

- 10.5.3 An Extended Phase 1 Habitat Survey was undertaken in June and August 2021 by Blairbeg Consulting (see **Volume 4, Appendix 10.1: Terrestrial Ecology Report**), which covered land within a minimum 250 m buffer from proposed infrastructure (with the exception of an area east of the B862, an area south of Whitebridge Plantation, and an area north-east of proposed infrastructure near Dell Lodge, beyond the working corridor, which were surveyed in June 2023, to ensure coverage of appropriate buffers from updated scheme infrastructure, as discussed further in **paragraph 10.5.38**). The survey was based on the standard methodology²³. Plant species were identified and habitat types assigned and mapped in the field. Target notes were also collected to provide an overview of the habitat types present, features of interest and to place the areas affected by the Proposed Development in the context of the wider Site (see **Appendix 3 of Volume 4, Appendix 10.1: Terrestrial Ecology Report**).

NVC Survey

- 10.5.4 A NVC survey was undertaken in June and August 2021 by Blairbeg Consulting (see **Volume 4, Appendix 10.1: Terrestrial Ecology Report**), with additional areas surveyed in June 2023 to ensure coverage of appropriate buffers from updated scheme infrastructure, covering the same area as the Phase 1 Survey (coniferous plantation and associated scattered trees, standing water and watercourses were excluded from the NVC survey, as these habitats do not have NVC classifications). The vegetation was described and mapped following methods described in the National Vegetation Classification Users' Handbook²⁴.

Bryophyte Survey

- 10.5.5 An initial walkover survey was carried out on 21st September 2021, and a detailed bryophyte survey was undertaken on 6th April and 3rd June 2022, by bryologist Nick G. Hodgetts (see **Volume 4, Appendix 10.2 – Bryophyte Survey Report**). The survey area comprised the area of Ness Woods SAC which falls within the Development Area Boundary, including the full length of three watercourses: the unnamed burn draining from Lochan a' Choin Uire, the Allt an t-Sluichd, and the Allt a' Chinn Mhonaich; and the proposed inundation area around Loch Kemp.

²³ JNCC (2010) *Handbook for Phase 1 Habitat Survey. A technique for environmental audit*. Revised re-print. JNCC, Peterborough.

²⁴ Rodwell, J. S. (2006) *NVC Users' Handbook*, 68 pages, ISBN 978 1 86107 574 1

10.5.6 Bryophyte lists were made on standard Biological Records Centre RP35 cards, with further notes made, and photographs taken, where appropriate. Specimens were collected where necessary for microscopic examination. The frequencies of species were recorded, and oceanic, or 'Atlantic' species, according to the definitions of Hill *et al.* (2007)²⁵, and 'Western British' species, as defined by Ratcliffe (1968)²⁶, were highlighted. The Site was also given a score according to the *Guidelines for the selection of biological SSSIs*²⁷.

Lichen Surveys

10.5.7 A detailed terrestrial lichen survey was carried out over 14.25 days, in April and May 2022, by lichenologist Andy Acton (see **Volume 4, Appendix 10.3: Lichen Survey Report**). The survey area covered the full Development Area Boundary, with survey effort being concentrated on those microhabitats likely to support well-developed lichen communities and well-developed lichen communities and / or notable species. Much of the survey time was spent within Ness Woods SAC, and additional recording was also undertaken at birchwoods around Loch Kemp and saxicolous lichens from siliceous rock outcrops above Loch Kemp. The survey was also extended to cover parts of Ness Woods SAC outwith the Development Area Boundary within the wider Dell Estate (see **Figure 1 in Volume 4, Appendix 10.3: Lichen Survey Report**).

10.5.8 Species lists were compiled and target notes recorded for features / species of particular interest such as Nationally Scarce / Rare, Red-listed or otherwise notable species. Samples of species which were not readily identifiable in the field were collected for subsequent identification in the laboratory. The woodland habitats for lichens were assessed using the Boreal Woodland Index, Sub-oceanic Woodland Index and the 'Pinhead' Index of Sanderson *et al.* (2018), *JNCC Guidelines for the Selection of Biological SSSIs*²⁸, which were used to assess whether the lichen communities meet the threshold for SSSI quality.

10.5.9 A freshwater lichen survey was undertaken on 11th-14th July 2022 by lichenologist John R. Douglass (see **Volume 4, Appendix 10.4: Freshwater Lichen Survey Report**). The survey area covered the full length of the three watercourses within Ness Woods SAC: the unnamed burn draining from Lochan a' Choin Uire; the Allt an t-Sluichd; and the Allt a' Chinn Mhonaich. The rocky shore of Loch Kemp was surveyed on 4th and 5th December 2022. Surrounding lochs in the wider area were also surveyed on 27th February – 1st March 2023, comprising Lochan a Choin Uire, Lochan Nan Nighean, Lochan Scristan, Loch Paiteag, and the peninsula in the northern section of Loch Knockie. These additional surveys were undertaken to inform an assessment of the importance of the lichen species in the local context.

10.5.10 The survey areas were subject to a rapid walkover survey, along with a number of 'spot checks.' A full species list and abundance information was compiled using a British Lichen Society (BLS) spreadsheet, and Geographical Positioning System (GPS) locations and photographs were taken of

²⁵ Hill, M.O., Preston, C.D., Bosanquet, S.D.S. & Roy, D.B. (2007) BRYOATT. *Attributes of British and Irish mosses, liverworts and hornworts*. Abbots Ripton, NERC Centre for Ecology and Hydrology & Countryside Council for Wales.

²⁶ Ratcliffe, D.A. 1968. *An ecological account of Atlantic bryophytes in the British Isles*. *New Phytologist* 67: 365–439

²⁷ Bosanquet, S., Genney, D. & Cox, J. 2018. *Guidelines for the selection of biological SSSIs. Part 2: detailed guidelines for habitats and species groups. Chapter 12. Bryophytes*. Peterborough, Joint Nature Conservation Committee.

²⁸ Sanderson, N.A., Wilkins, T.C., Bosanquet, S.D.S and Genney, .R. (2018) *Guidelines for the Selection of Biological SSSIs Part 2: Detailed Guidelines for Habitats and Species Groups. Chapter 13 Lichens and associated microfungi*. Joint Nature Conservation Committee, Peterborough.

species of conservation importance. Specimens which could not be identified in the field were collected for microscopic analysis.

- 10.5.11 The Acid Watercourses Quality Index (AQUI) was used to assess the lichen assemblages on the three watercourses, and the Rocky Lake Shore Threatened Near Threatened and Notable Index (TNTN) was used to assess Loch Kemp and surrounding lochs / lochans²⁸, which assess whether the lichen communities meet the threshold for SSSI quality.
- 10.5.12 An assessment of the lichen assemblage in the heathland area around Loch Kemp was also undertaken on 4th-5th December 2022, and surrounding areas of heathland by surrounding lochs / lochans on 27th February – 1st March 2023, using the Heathland, Moorland and Coastal Heath Index (HMCHI)²⁸.

GWDTE

- 10.5.13 Following the NVC survey, potential GWDTEs were identified in terms of their high, moderate or low potential groundwater dependence, based on SEPA guidance²⁹. A more detailed assessment of the likely groundwater dependence of these communities was then undertaken as part of the hydrology assessment (**Chapter 14: Geology, Soils and Water**).

Tree Tagging and Root Protection Area Measurements

- 10.5.14 The locations and species of individual trees were recorded in summer 2022 and spring 2023 for all trees within and in close proximity to the working corridor within Ness Woods SAC (see **Volume 4, Appendix 10.5: Ness Woods SAC Tree Tagging Information, and Sample Root Protection Area Information**). The purpose of this survey work was to inform infrastructure micro-siting, and to collect detailed information of all trees that would be affected within Ness Woods SAC to inform the impact assessment and proposed compensatory measures package.
- 10.5.15 In addition, the stem diameter of a sample of 30 trees along the proposed access track within Ness Woods SAC was measured, in order to calculate representative Root Protection Areas, to inform the Ness Woods SAC impact assessment (see **Volume 4, Appendix 10.5: Ness Woods SAC Tree Tagging Information, and Sample Root Protection Area Information**).

Protected Species Surveys

Bats

- 10.5.16 All trees within a minimum of 100 m of proposed infrastructure were subject to a ground-level assessment to identify features suitable for roosting bats (Potential Roosting Features (PRF)), in June and August 2021 (with the exception of an area east of the B862, an area south of Whitebridge Plantation, and an area north-east of proposed infrastructure near Dell Lodge at Torr Cluanie Plantation, beyond the working corridor, which were surveyed in June 2023, as discussed further in **paragraph 10.5.38**), following guidelines in place at the time of survey³⁰ (see **Volume 4, Appendix 10.1: Terrestrial Ecology Report**). PRFs were described and their locations recorded, and trees were assessed for their potential to support roosting bats (negligible, low, moderate or high), using

²⁹ 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

³⁰ Collins, J. (2016) *Bat Surveys for Professional Ecologists. Good Practice Guidelines. Third edition*. Bat Conservation Trust, London

criteria contained within the guidelines³⁰. Any field evidence of bats (such as droppings or bats themselves) was also recorded.

Other Protected Mammals

- 10.5.17 Surveys for protected species of terrestrial mammals were undertaken in June and August 2021 (see **Volume 4, Appendix 10.1: Terrestrial Ecology Report**). The surveys covered otter, Scottish wildcat, badger (*Meles meles*), water vole, red squirrel and pine marten.
- 10.5.18 Surveys followed standard methodologies in place at the time of survey^{31,32,33,34,35,36}. 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.
- 10.5.19 The survey area encompassed all suitable habitat for the target species within a minimum 100 m buffer of proposed infrastructure, for badger, red squirrel and pine marten. The survey area was extended to a minimum 200 m buffer from proposed infrastructure for otter, Scottish wildcat and water vole. Additional areas were surveyed east of the B862, south of Whitebridge Plantation, and north-east of proposed infrastructure near Dell Lodge, beyond the working corridor, in June 2023, to ensure survey coverage of the appropriate buffers, as discussed further in **paragraph 10.5.38**, in line with relevant guidance. The June 2023 results are detailed within this EIA Chapter and **Volume 2, Confidential Figure 10.10**.
- 10.5.20 Watercourses within the survey area were subject to two inspections for water vole and otter, the first in June and the second in August 2021. All other habitats were surveyed once. An additional otter survey was undertaken in May – June 2023, as a pre-works update survey to inform proposed Ground Investigation (GI) works (**Volume 4, Confidential Appendix 10.8 – Otter Survey Report (GI Works)**). The update survey encompassed land within 250 m of the proposed GI works, which included the proposed powerhouse area and Dam 1 area within Ness Woods SAC, as well as areas surrounding Loch Kemp.

Assessment Methodology

- 10.5.21 The CIEEM *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2022)⁹ (henceforth referred to as the CIEEM guidelines) form the basis of the impact assessment presented in this Chapter. The CIEEM guidelines have been endorsed by NatureScot.

³¹ Bang, P. and Dahlstrøm, P. (2001) *Animal Tracks and Signs*. Oxford University Press

³² Sargent, G. and Morris, P. (2003) *How to find and identify mammals*. The Mammal Society, London

³³ Davis, A. R. & Gray, D. (2010) *The distribution of Scottish wildcats (Felis silvestris) in Scotland (2006-2008)*. Scottish Natural Heritage Commissioned Report No. 360

³⁴ Scottish Natural Heritage (2011) *Scottish Wild Cat Naturally* Scottish Series. SNH Battleby. <http://www.snh.org.uk/pdfs/publications/naturallyscottish/wildcats.pdf>

³⁵ Neal, E. and Cheesman, C. (2006) *Badgers*. Poyser Natural History, Cambridge, UK

³⁶ 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

Sensitivity of Receptor

- 10.5.22 In accordance with the CIEEM guidelines only ecological receptors (habitats, species, ecosystems and their functions/ processes), which are considered to be important and potentially affected by the Proposed Development should be subject to detailed assessment. It is not necessary to carry out detailed assessment of receptors that are sufficiently widespread, unthreatened and resilient to impacts from the Proposed Development and will remain viable and sustainable.
- 10.5.23 Ecological receptors should be considered within a defined geographical context. For this assessment the following geographic frame of reference has been used:
- international
 - national (i.e. Scotland)
 - regional (i.e. Highland)
 - local (i.e. within *circa* (c.) 10 km) and
 - less than local
- 10.5.24 For designated sites, importance should reflect the geographical context of the designation. For example, a SSSI would normally be considered nationally important.
- 10.5.25 In accordance with CIEEM guidelines 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 Highland BAP.
- 10.5.26 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 Annexes II, IV and V of the Habitats Directive), species considered to be of principal importance for biodiversity in Scotland as listed on the SBL, and priority species listed on the Highland BAP¹.

Impact Assessment

- 10.5.27 The impact assessment process involves the following steps:
- identifying and characterising impacts
 - incorporating measures to avoid and mitigate (reduce) 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
- 10.5.28 When describing impacts, reference has been made to the following characteristics, as appropriate:
- adverse or beneficial
 - extent
 - magnitude

- duration
- timing
- frequency and
- reversibility

10.5.29 Both direct and indirect impacts are considered: direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat 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 receptor, e.g. the creation of access tracks which cause hydrological changes, which, in the absence of mitigation, could lead to the drying out of adjacent peatland habitats.

10.5.30 For the purposes of this assessment, in accordance with CIEEM guidelines, a 'significant effect' is defined as an effect that either supports or undermines biodiversity conservation objectives for 'important ecological receptors' 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). Effects can be considered significant at a wide range of scales from international to local. For example, a significant effect on a SSSI is likely to be of national significance whilst a significant effect on a regionally important population of a species is likely to be of regional significance.

10.5.31 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

10.5.32 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 and these terms are defined here 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
- 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

10.5.33 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.

- 10.5.34 Cumulative effects upon Ness Woods SAC have been assessed by considering other developments within Ness Woods SAC, and other developments adjacent to Ness Woods SAC that could potentially affect it. The assessment includes operational projects; projects under construction; consented projects which are not yet under construction and projects for which planning or scoping applications have been submitted.
- 10.5.35 Beyond Ness Woods SAC, 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 and driveways).
- 10.5.36 Cumulative assessments for fish and aquatic receptors are provided separately within **Chapter 12: Aquatic Ecology** and **Chapter 13: Fish**. However, this Chapter also assesses cumulative effects of proposed, consented and operational pumped storage hydro schemes at Loch Ness, specifically the potential for hydrological changes to affect designated sites with alluvial habitats on the Loch Ness shoreline (i.e. Urquhart Bay Wood SAC).

Assumptions and Limitations

- 10.5.37 A summary of survey limitations is provided here, with limitations described in more detail in **Volume 4, Appendices 10.1 – 10.5 and 10.8**.
- 10.5.38 Two areas beyond the Development Area Boundary but within 250 m of proposed infrastructure, were not surveyed during the 2021 baseline habitat and protected species surveys reported in **Volume 4, Appendix 10.1**. This relates specifically to land to the south of Whitebridge Plantation, land to the east of the B862 on the far side of the proposed Site access, and land to the north-east of proposed infrastructure near Dell Lodge. However, these areas were subject to a phase 1, NVC, and protected mammals survey on 14th-15th and 27th June 2023, with the results mapped in **Volume 2, Figures 10.3 – 10.4 and 10.10**, and reported within this EIA Chapter. An area of livestock grazing fields to the south of Whitebridge Plantation, beyond the Development Area Boundary, could not be directly accessed during this survey, and was therefore inspected from field boundaries only. This area comprises open grazed field habitat, which is unlikely to support protected species, is not likely to support GWDTE and is unlikely to be of high nature conservation value. The only proposed infrastructure adjacent to this area is an existing forest track which would be upgraded / widened, and is therefore unlikely to impact any protected / important ecological receptors in this area. An area of Whitebridge Plantation in the north-east corner of the Development Area Boundary was not surveyed, as this lies further than 250m from proposed infrastructure, and is therefore not considered to be a limitation.
- 10.5.39 For the protected mammals survey work, areas of dense, impenetrable conifer plantation were not possible to access in all cases. Effort in these circumstances was focussed around the perimeter of such areas.
- 10.5.40 Trees were assessed for their bat roosting potential from ground-level only. More detailed assessment from aerial surveys was not possible due to the height or unstable nature of many of the trees. However, no trees were assessed as having high bat roosting potential, and all PRFs identified were restricted to small features, limited in number, and considered unable to support a roost of high conservation status or one that is likely to be suitable for maternity or hibernation roosting purposes. Nocturnal emergence / re-entry roost surveys have not been undertaken. It is considered that the value of nocturnal surveys of trees at this stage is limited due to the large scale of the survey area being studied at the baseline survey stage, difficulty of nocturnal access, and low

efficacy of identifying tree roosts due to factors such as frequent roost switching behaviour, late emergence times and obscured views of PRFs (particularly in wooded conditions). A recent study found the encounter rate for a single visit to a roost feature during the maternity period can be as low 5% for species which switch roosts often³⁷. Bat Conservation Trust (BCT) state it is arguable that all trees with bat roosting potential should be considered part of a resource that will be used at one time or another by tree roosting bats in order to determine the extent of impacts³⁸. Given the available data and difficulty in identifying tree roosts, the impact assessment upon roosting bats and associated mitigation has been provided for a worst-case scenario, which assumes that all trees identified as having PRFs which are to be felled support roosting bats. Further bat roost detection surveys are proposed to be undertaken before construction to fulfil licensing requirements, with appropriate mitigation and licensing put in place as necessary (see **paragraph 10.7.16**).

- 10.5.41 Bat foraging / commuting surveys have not been completed, and bat activity transect surveys are deemed unsafe for large parts of the Site due to the steep and uneven ground. The impact assessment for foraging / commuting bats is based on desk study information and a habitat-based appraisal. Much of the habitat of higher value to bats shall be retained.
- 10.5.42 For the bryophyte and lichen survey work, most of the lengths of the watercourses surveyed were accessible, with a few limited exceptions. Some very steep areas of crags and rocky terrain could not be directly accessed for survey. The terrestrial lichen survey was deemed to be fairly comprehensively surveyed for hazel stands, and it is estimated that more than 95% of the hazels seen within the Ness Woods SAC within Dell Estate were examined for lichens (see **Figure 6** in **Volume 4, Appendix 10.3: Lichen Survey Report** for hazel areas that could not be accessed).
- 10.5.43 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 Site 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 Site would materially alter the conclusions of the baseline survey work. Pre-construction surveys for protected mammal species are proposed in **paragraphs 10.7.13 - 10.7.16**, 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.

10.6 Baseline Conditions

Existing Baseline

Desk Study

Statutory Designated Sites

³⁷ BTHK (2018) *Bat roosts in Trees – A Guide to Identification and Assessment for Tree-Care and Ecology Professionals*. Exeter. Pelagic Publishing

³⁸ Bat Conservation Trust presentation available online at: <https://cdn.bats.org.uk/uploads/images/Bat-Survey-Guidelines-Jan-Collins.pdf?v=1625596203> [Accessed in January 2023]

10.6.1 The locations of sites designated for nature conservation interest within 10 km are shown in **Volume 4, Figure 10.1: Locations of designated sites.**

10.6.2 Details of the international nature conservation designations within 10 km of the Site, additional international and national nature conservation designations on the shore of Loch Ness beyond 10 km, and other nature conservation designations within 2 km of the Site, relating to terrestrial ecology, are provided in **Table 10.2: Statutory Designated Sites in Proximity to the Proposed Development.** Table 10.2 excludes sites designated solely for ornithological or aquatic ecology reasons, including the River Moriston SAC, which are addressed separately in **Chapters 11 – 13.**

Table 10.2: Statutory Designated Sites in Proximity to the Proposed Development

Site Name & Location	Reasons for Designation	Description
Ness Woods SAC (within Site)	<ul style="list-style-type: none"> Primary reason for selection: Tilio-Acerion forests of slopes, screes and ravines (common name: mixed woodland on base-rich soils associated with rocky slopes) Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles (common name: western acidic oak woodland) Otter 	<p>Ness Woods SAC is composed of three areas of woodland running alongside and to the south of Loch Ness (the largest central section of which falls partially within the Site). It contains a mixture of woodland habitats and these, together with several watercourses that run through the site, provide suitable habitat for otters.</p> <p>Ness Woods SAC supports 25 ha of mixed woodland on base-rich soils associated with rocky slopes (the primary reason for selection); and 538 ha of western acidic oak woodland.</p> <p>This complex of sites includes one of the best and most extensive examples of a ravine woodland in Scotland at Glen Tarff (outwith the Site boundary); further examples occur along the north-facing shores of Loch Ness (partially within the Site boundary). The canopy is a mixture of alder (<i>Alnus glutinosa</i>), ash (<i>Fraxinus excelsior</i>) and wych elm (<i>Ulmus glabra</i>) with a locally abundant hazel shrub layer. The ground flora is rich in ferns, mosses and herbaceous plants, and the woods have a luxuriant epiphytic flora of lichens, liverworts and mosses with Atlantic affinities.</p> <p>The western acidic oak woodland is much more extensive, and within the Site mostly comprises a birch-dominated canopy, including open and bracken-dominated areas, impacted by high levels of grazing. A key feature of this habitat type of European importance is the rich Atlantic bryophyte communities.</p> <p>Both qualifying woodland features are in an unfavourable condition (no change) (last updated in 2008). The Conservation Advice Package³⁹ identifies grazing pressure (from deer and feral goats), poorly developed under-storey and canopy cover, and limited woodland regeneration to be the cause of both woodland qualifying features being in unfavourable condition.</p>

³⁹ NatureScot (2020) *Ness Woods Special Area of Conservation (SAC) Conservation Advice Package.*

Site Name & Location	Reasons for Designation	Description
		<p>Otter is in an unfavourable condition (declining) (last updated in 2011), although the Conservation Advice Package identifies that the level of confidence in the survey results are low due to difficult survey conditions and no access to one of the areas where otter signs were previously found.</p>
<p>Easter Ness Forest SSSI (within Site)</p>	<ul style="list-style-type: none"> Upland oak woodland Upland mixed ash woodlands 	<p>Easter Ness Forest SSSI forms part of Ness Woods SAC, and the citation gives the following description:</p> <p>“This large area of broadleaved woodland covers an 11 km stretch of steep, north-west facing slopes along the south side of Loch Ness.</p> <p>The varied geology and resultant soil conditions have led to the development of different woodland types. Birchwood covers the largest area, found mainly on the granite and old red sandstone soils in the northern part of the site. The acid soil has a characteristic ground flora of blaeberry (<i>Vaccinium myrtillus</i>) and wavy hair-grass (<i>Deschampsia flexuosa</i>) with bell heather (<i>Erica cinerea</i>) and cow-wheat (<i>Melampyrum pratense</i>). Some of the smaller birchwoods on Moine rocks display a richer herb layer with abundant bracken.</p> <p>Whilst oak (<i>Quercus</i> sp.) occurs occasionally in these birchwoods, there are areas overlying Moine schists where it becomes the dominant tree. Where these rocks are more lime-rich, ash becomes the most common species with an associated flora of false-brome (<i>Brachypodium sylvaticum</i>), dog’s mercury (<i>Mercurialis perennis</i>), bugle (<i>Ajuga reptans</i>) and common valerian (<i>Valeriana officinalis</i>).</p> <p>These Moine schists show areas of both lime rich and acid soils occurring in the same place. Here, on thin rocky soil, an unusual woodland with a mix of Scots pine (<i>Pinus sylvestris</i>), ash, aspen (<i>Populus tremuloides</i>) and oak has developed. The vegetation underneath reflects this variation in conditions with juniper (<i>Juniperus communis</i>), holly (<i>Ilex aquifolium</i>) and wood sage (<i>Teucrium scorodonia</i>), alongside dog’s mercury, woodruff (<i>Galium odoratum</i>) and wild strawberry (<i>Fragaria vesca</i>).”</p>
<p>Urquhart Bay Wood SAC (13.0 km northeast of Site)</p>	<ul style="list-style-type: none"> Primary reason for selection (priority feature): Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) (common name: Alder woodland on floodplains) 	<p>Urquhart Bay Wood SAC is located on the opposite shore of Loch Ness from the Site. It has developed on an alluvial delta at the confluence of the Rivers Enrick and Coiltie as they flow into Loch Ness.</p> <p>It comprises predominantly broad-leaved deciduous woodland (94%) along with inland water bodies (4%) and bogs, marshes, water fringed vegetation and fens (2%). There are extensive stands of alluvial forests on the wetter ground associated with the river channels, with transitions on gradually rising land to stands of lowland broad-leaved woodland containing ash, alder, wild cherry (<i>Prunus avium</i>), rowan (<i>Sorbus aucuparia</i>), wych elm, white willow (<i>Salix alba</i>) and bird cherry (<i>Prunus padus</i>).</p>

Site Name & Location	Reasons for Designation	Description
		<p>There are also characteristic transitions to swamp and open freshwater.</p> <p>Ground flora within the woodland contains frequent dog's mercury (<i>Mercurialis perennis</i>) and great wood-rush (<i>Luzula sylvatica</i>), with creeping buttercup (<i>Ranunculus repens</i>) prevalent in damper areas. Vegetation close to the shoreline contains abundant reed canary grass (<i>Phalaris arundinacea</i>), with tufted hair grass (<i>Deschampsia cespitosa</i>) and soft rush (<i>Juncus effusus</i>) also present in damp areas.</p> <p>The Conservation Advice Package⁴⁰ lists the woodland qualifying interest as in unfavourable condition (no change) (last assessed in 2010), with over grazing and invasive non-native species preventing the site from being in favourable condition. It also states that any changes in local and catchment hydrology could also have significant effects on the site.</p>
<p>Urquhart Bay Wood SSSI (13.0 km northeast of Site)</p>	<ul style="list-style-type: none"> Wet woodland 	<p>Urquhart Bay Wood SSSI shares the same boundary as Urquhart Bay Wood SAC, and the citation gives the following description: "Urquhart Bay Wood SSSI is located on the eastern edge of the village of Drumnadrochit on the west shore of Loch Ness. The site consists of swamp alderwood formed on a delta at the confluence of the Rivers Enrick and Coiltie as they flow into Loch Ness. Few such intact floodplain woodlands remain in the UK.</p> <p>Alder dominates the wetter ground, with transitions on gradually rising land to stands of ash, wild cherry, rowan, wych elm, white willow and bird cherry. Shrubs include hazel and blackthorn (<i>Prunus spinosa</i>). The ground flora is typical of northern wet mixed broadleaved woodlands and there are characteristic transitions to swamp and open fresh water. Frequent inundation by floods, changes in channel and accumulations of woody debris are key parts of the interest."</p>

Non-Statutory Designations

10.6.3 There are no non-statutory designated sites for nature conservation within 2 km of the Site.

Ancient Woodland Inventory

10.6.4 Woodland mapped on the AWI, along with woodland mapped on the NWSS database is shown in **Volume 2, Figure 10.2: Locations of designated sites**. The majority of the woodland within Ness Woods SAC is mapped on the AWI as 'ancient (of semi-natural origin)'; some of these areas are also

⁴⁰ NatureScot (2020) *Urquhart bat Wood Special Area of Conservation (SAC) Conservation Advice Package*

mapped on the AWI as 'other (on Roy map)⁴¹'. Part of Whitebridge Plantation in the eastern part of the Site is also mapped on the AWI as 'long-established (of plantation origin).'

Existing Records of Protected and Notable Species

10.6.5 **Table 10.3: Existing records of protected and notable species** provides a summary of the results of the protected and notable species search (excluding aquatic and avian species) undertaken by HBRG (within a 2 km radius of the Development Area Boundary).

Table 10.3: Existing records of protected and notable species⁴²

Species	Status	Notes
Herpetofauna		
Common lizard (<i>Zootoca vivipara</i>)	WCA Sch5 (in respect of Section 9(1) and 9(5) only), SBL	Single record from Whitebridge immediately east of the Development Area Boundary in 2010.
Mammal		
Pipistrelle bat species (<i>Pipistrellus</i> sp.)	HR Sch2, WCA Sch5, SBL, LBAP	Single field record (non-roost) from a bat detector in 2007, within a 2km radius of the Development Area Boundary to the north-east.
Brown long-eared bat (<i>Plecotus auritus</i>)	HR Sch2, WCA Sch5, SBL, LBAP	One dead bat recorded in 1987 at Whitebridge immediately east of the Development Area Boundary.
Badger	PBA	Five records dating between 2004 and 2011, four of which are specified as road casualties north of Invermoriston (on the far side of Loch Ness from the Development Area Boundary). The remaining record is from Whitebridge, immediately east of the Development Area Boundary (the record type is not specified).
Otter	HR Sch2, WCA Sch5, SBL	One record of spraints, a slide, a couch and feeding remains at Lochan Scristan (c. 1km north of the Development Area Boundary) in 2002, and one record of a spraint at Kilin Junction on the Allt Breineag (immediately east of the Development Area Boundary) in 2006.
Pine marten	WCA Sch5, SBL, LBAP	One scat recorded in Kilin Junction (immediately east of the Development Area Boundary) in 2006, and south of Alltsaigh in 2014 (on the far side of Loch Ness from the Development Area Boundary).
Red squirrel	WCA Sch5, SBL, LBAP	Two records from Whitebridge (immediately east of the Development Area Boundary) in 1999 and 2000.
Brown hare	SBL	Three records to the east and north-east of the Development Area Boundary.
Hedgehog	SBL, LBAP	Two records from Whitebridge and Invermoriston.
Roe deer (<i>Capreolus capreolus</i>)	-	One record returned within 2 km.
Sika deer (<i>Cervus nippon</i>)	WCA Sch9	Four records returned within 2 km.

⁴¹ Defined as woodland present on Roy maps (dating from c. 1750) but shown as unwooded on the 1st edition OS maps (dating from c. 1860). Such sites have, at most, had only a short break in continuity of woodland cover and may still retain features of Ancient Woodland.

⁴² Including species listed on Schedules 5 or 9 of the Wildlife and Countryside Act 1981 (as amended in Scotland), Schedule 2 of the Habitats Regulations (as amended in Scotland), covered by the Protection of Badgers Act (1992), listed on the SBL, and Highland BAP priority species.

**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

Vegetation Baseline

Evaluation of Floral Receptors

- 10.6.6 Phase 1 habitats and NVC communities within the survey area are shown in **Table 10.4: Evaluation of the Phase 1 Habitats and NVC Communities Present within the Survey Area** with more detailed habitat descriptions and target notes for 2021 survey work provided in **Volume 4, Appendix 10.1: Terrestrial Ecology Report**. The mapped results, with proposed infrastructure locations overlain, are shown on **Volume 2, Figures 10.3 and 10.4** (refer to **Figures 1 and 1b** in **Volume 4, Appendix 10.1: Terrestrial Ecology Report** for habitat maps of 2021 survey areas without proposed infrastructure locations overlain).
- 10.6.7 **Table 10.4: Evaluation of the Phase 1 Habitats and NVC Communities Present within the Survey Area** also summarises the conservation status for each habitat / community and evaluates the importance of each habitat / community within the survey area. Where habitat mosaics exist, the habitat is included under the dominant habitat / community type. Where mosaics include habitats of differing conservation value, they have been included under the assessment for the highest conservation value habitat within that mosaic (for example acid grassland with scattered bracken is assessed as local value under the acid grassland evaluation).
- 10.6.8 No invasive non-native plant species listed on Schedule 9 of the *Wildlife and Countryside Act 1981 (as amended in Scotland)* were recorded within the survey area.
- 10.6.9 Bluebell (*Hyacinthoides non-scripta*) is the only higher plant species recorded in the survey area which is listed on Schedule 8 of the *Wildlife and Countryside Act 1981 (as amended in Scotland)*. Juniper (*Juniperus communis*) and aspen (*Populus tremula*) are the only local priority higher plant species recorded (juniper is also listed on the SBL). Bryophytes and lichens are discussed separately in **paragraphs 10.6.10 - 10.6.34**.

Table 10.4: Evaluation of the Phase 1 Habitats and NVC Communities Present within the Survey Area

Phase 1 Habitat Type	NVC Community Name	Conservation Status*	Likely Groundwater Dependency ⁴³	Reason for Evaluation	Evaluation
A1.1.1 Broad-leaved semi-natural woodland (52.85 ha)	W9 Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis woodland (3.42 ha)	Annex 1 (Tilio-Acerion forests of slopes, screes and ravines) SBL (Upland mixed ashwoods); LBAP	Low	<p>This is a priority Annex 1 habitat type, and is the primary reason for selection of Ness Woods SAC. Ness Woods SAC supports 25 ha of this habitat type in total (including areas beyond the Site boundary).</p> <p>Within the survey area itself, this habitat type occurs in a strip along the lower slope close to Loch Ness shoreline, and in mosaic along the unnamed watercourse draining from Lochan a' Choin Uire and surrounding lower slopes. It also occurs off-site along the Allt an t-Sluichd watercourse, downstream of proposed Dam 1. Along the Loch Ness shoreline the canopy is dominated by downy birch (<i>Betula pubescens</i>) with additional hazel, ash, alder and goat willow (<i>Salix caprea</i>). Ground flora species including oak fern (<i>Gymnocarpoium droyopteris</i>), globeflower (<i>Trollius europaea</i>), scaly male fern (<i>Dryopteris dilatata</i>), wood anemone (<i>Anemone nemorosa</i>), wood sorrel (<i>Oxalis acetosella</i>), wood sage, chickweed wintergreen (<i>Trientalis europaea</i>), marsh hawk's-beard (<i>Crepis paludosa</i>) and yellow pimpernel (<i>Lysimachia nemorum</i>) at low cover.</p> <p>This habitat type supports internationally important assemblages of lichens and bryophytes. The Ness Woods Conservation Package³⁹ assesses the habitat as being in Unfavourable Condition, primarily due to grazing.</p> <p>Although it is in unfavourable condition, given its status as a qualifying interest of Ness Woods SAC, Annex 1 priority habitat, the importance of the bryophyte and lichen communities, its status as ancient woodland (and therefore irreplaceable habitat), and limited local and regional distribution, it is assessed as being of international value.</p>	International value

⁴³ Assessed based on: 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*

Phase 1 Habitat Type	NVC Community Name	Conservation Status*	Likely Groundwater Dependency ⁴³	Reason for Evaluation	Evaluation
	W11a <i>Quercus petraea</i> - <i>Betula pubescens</i> - <i>Oxalis acetosella</i> woodland community (10.22 ha)	Annex 1 (Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in Britain and Ireland); SBL (Upland oakwood); LBAP	Low	This is an Annex 1 habitat of local and national priority. Within Ness Woods SAC, this habitat type is a qualifying interest and is the main habitat type within Ness Woods SAC. Ness Woods SAC supports 538 ha of this habitat type in total (including beyond the Site boundary). Within Ness Woods SAC, woodland is dominated by downy birch with significant stands of old-growth hazel; some additional ash, rowan and goat willow occurs on the lower slopes. The ground flora is most diverse towards the Loch Ness shore with wood sorrel, dog violet, primrose (<i>Primula vulgaris</i>), tufted hair-grass (<i>Deschampsia cespitosa</i>), false brome (<i>Brachypodium sylvaticum</i>) and yellow pimpernel. Further uphill away from Loch Ness shoreline, the ground flora becomes dominated by bracken with a few small areas of grassy understorey, representing W11a. On steeper ground and rockier outcrops within Ness Woods SAC the ground flora is generally species-poor, and with a heathier component of heather (<i>Calluna vulgaris</i>) and the mosses <i>Hylocomium splendens</i> , <i>Rhytidiadelphus loreous</i> , <i>Dicranum majus</i> and <i>Pleurozium schreberi</i> , beneath bracken and on ledges. The canopy is almost entirely dominated by downy birch, with occasional holly (<i>Ilex aquifolium</i>), rowan and hazel present in gullies and on crags; reflecting W17. Younger, or regenerating, trees are rare to absent. The Ness Woods SAC Conservation Package ³⁹ assesses the habitat as being in Unfavourable Condition, primarily due to grazing. Although it is in unfavourable condition, given its status as a qualifying interest of Ness Woods SAC, Annex 1 priority habitat, the importance of the bryophyte and lichen communities, its status as ancient woodland (and therefore irreplaceable habitat), and ecological connectivity with further off-site woodland along Loch Ness, the woodland habitat within Ness Woods SAC is assessed as being of international value. Outwith Ness Woods SAC, there are also small fragments of broadleaved woodland, mostly scattered along the western shore of Loch Kemp, south of Lochan a' Chinn Mhonaich, and patches within or adjacent to Whitebridge plantation, reflecting W17. Downy birch tends to be the dominant canopy species, with some scattered regenerating conifers present in areas near Whitebridge Plantation.	International value (within Ness Woods SAC) Local value (outwith Ness Woods SAC)
	W17 <i>Quercus petraea</i> - <i>Betula pubescens</i> - <i>Dicranum majus</i> woodland (2.04 ha)				
	W17b <i>Quercus petraea</i> - <i>Betula pubescens</i> - <i>Dicranum majus</i> woodland typical sub-community (37.17 ha)				
A3 Scattered trees (6.65 ha)	W17 <i>Quercus petraea</i> - <i>Betula pubescens</i> - <i>Dicranum majus</i> woodland (6.65 ha)				

Phase 1 Habitat Type	NVC Community Name	Conservation Status*	Likely Groundwater Dependency ⁴³	Reason for Evaluation	Evaluation
				These woodland areas are not assessed as having international value as they fall outside of the SAC, and are not classified as ancient woodland. They are reasonably fragmented in nature, and have less notable ground flora assemblages. This birch woodland type is common across Scotland, however given the presence of some mature trees, and given their priority status the broadleaved woodland areas outside the SAC are assessed as having local value.	
A2.2 Scrub - scattered (0.02 ha)	W1x <i>Salix cinerea-Galium palustre</i> woodland, <i>Salix aurita</i> upland variant (0.02 ha)	SBL (Wet woodland); LBAP	Moderate	There are very small restricted stands of eared willow in wetter flushed ground at the fringes of Whitebridge Plantation, which are derived from W1 woodland. Given their very limited extent within the survey area and scattered nature, but accounting for their status as a local priority habitat and listed on the Scottish Biodiversity List, they are assessed as having local value.	Local value
A2.1 Scrub – dense / continuous (2.14 ha)	W23 <i>Ulex europaeus</i> – <i>Rubus fruticosus</i> agg scrub	-	Low	There are several small areas of gorse (<i>Ulex europaeus</i>) dominated scrub located to the north-east and south-east of the survey area, beyond the Development Area Boundary. Due to the fact that this habitat does not represent priority habitat and that the areas are relatively small, it is assessed as having less than local value.	Less than local value
B1.1 Acid grassland – unimproved / semi-improved (22.49 ha)	U4 <i>Festuca ovina-Agrostis capillaris-Galium saxatile</i> grassland (including in mosaic with U20, W23 and W17) (22.02 ha)	LBAP	Low	Acid grassland habitat is patchy in extent, and also occasionally occurs in mosaic with wet and dry heath. The majority of the acid grassland occurs in the southern and western parts of the survey area, typically derived from management of stands of bracken (cutting/swiping), to create open grass areas for sporting purposes. The sward is typically species-poor, with common bent (<i>Agrostis capillaris</i>), sweet vernal-grass (<i>Anthroxanthum odoratum</i>), mat grass (<i>Nardus stricta</i>), Yorkshire fog (<i>Holcus lanatus</i>), heath rush (<i>Juncus squarrosus</i>), tormentil (<i>Potentilla erecta</i>), heath bedstraw (<i>Galium saxatile</i>) and dog violet (<i>Viola riviniana</i>); bracken can also be scattered throughout. An area of semi-improved acid grassland also occurs in the enclosed field systems around Easter Drummond, which are grazed by sheep. The acid grassland communities are listed on the SBL and/or are local priority habitats, however given the small and fragmented nature of these habitats, their heavily managed nature and species-poor character, they are considered to be of no more than local value.	Local value
	U4a <i>Festuca ovina-Agrostis capillaris-Galium saxatile</i> grassland, Typical sub-community (in mosaic with H10a and M15b)				
	U5 <i>Nardus stricta-Galium saxatile</i> grassland (in mosaic with U4) (0.47 ha)	SBL (<i>Nardus stricta-Galium saxatile</i> grassland); LBAP			

Phase 1 Habitat Type	NVC Community Name	Conservation Status*	Likely Groundwater Dependency ⁴³	Reason for Evaluation	Evaluation
B2.2 Neutral grassland – semi-improved / improved (22.80 ha)	MG6 <i>Cynosurus cristatus-Lolium perenne</i> ley (including in mosaic with MG10)	-	Low	Neutral grassland habitat is limited to a semi-improved sward, with some improved sward areas, in fields surrounding Dell Lodge in the north-eastern part of the survey area. It shows signs of historic improvement which reflects the MG6 community, and in some wetter areas with occasional stands of soft rush the grasslands represent MG6 / MG10 transitional communities. Due to the fact that this habitat does not represent priority habitat, is characteristic of some agricultural improvement, and is reasonably limited in extent within the survey area, it is assessed as having less than local value.	Less than local value
	MG10 <i>Holcus lanatus-Juncus effusus</i> rush-pasture (in mosaic with MG6 and MG9)		Low-Moderate		
B5 Marshy grassland (2.17 ha)	MG9 <i>Holcus lanatus – Deschampsia cespitosa</i> grassland (2.17 ha)	-	Moderate	MG9 marshy grassland is primarily in mosaic with MG10 grassland, and occurs in the north-eastern part of the survey area near man-made fishing ponds, beyond the Development Area Boundary. Due to the fact that this habitat does not represent priority habitat, is species-poor, and is limited in extent within the survey area, it is assessed as having less than local value.	Less than local value
C1/C3 Tall herb and fern communities (96.87 ha)	U20 <i>Pteridium aquilinum-Galium saxatile</i> community (96.87 ha)	-	Low	Bracken stands (NVC communities U20 and U20b) are extensive across the survey area. The majority of the bracken stands contain a mixture of heath and grassland species including heather, sweet vernal grass, wood sorrel, dog violet, tormentil and heath bedstraw. Bracken is a common and widespread habitat in the UK, is not a priority habitat, has low species diversity, and low intrinsic nature conservation value. It is therefore assessed as having less than local value (excluding within Ness Woods SAC). Where bracken stands lie within Ness Woods SAC, in mosaic with and adjacent to the Annex 1 habitat <i>Old sessile oak woods with Ilex and Blechnum</i> with the same soil types, they have been assessed and evaluated as part of the qualifying interest for Ness Woods SAC, due to the possibility that a suitable seed bank for the woodland habitat has persisted.	Less than local value
	U20a <i>Pteridium aquilinum-Galium saxatile</i> community, <i>Anthoxanthum odoratum</i> sub-community (transitional with W25)				
D1 Dry dwarf shrub heath (incl. in	H10 <i>Calluna vulgaris-Erica cinerea</i> heath (incl. H10/U20 mosaic) (23.92 ha)	Annex 1 (European dry heaths); SBL	Low	Dry heath communities are widespread in the open areas between Whitebridge Plantation and woodland areas along Loch Ness, on shallower soils frequently broken up by outcrops of rock on knolls and ridges. Dry dwarf shrub heath with	Local value

Phase 1 Habitat Type	NVC Community Name	Conservation Status*	Likely Groundwater Dependency ⁴³	Reason for Evaluation	Evaluation
mosaic with acid grassland and scattered bracken (118.26 ha)	H10a <i>Calluna vulgaris-Erica cinerea</i> heath, Typical sub-community (94.34 ha)	(Upland heathland); LBAP		bracken also dominates the areas of well drained soils north and west of Loch Lurin. Most areas comprise the H10a sub-community, with co-dominant heather and bell heather (<i>Erica cinerea</i>) with cross-leaved heath (<i>Erica tetralix</i>), deergrass (<i>Trichophorum germanicum</i> agg.), tormentil, blaeberry (<i>Vaccinium myrtillus</i>) and purple moor-grass (<i>Molinia caerulea</i>) scattered throughout. Some smaller areas on rocky knolls comprise the H16 community (in mosaic with H10a), where bearberry (<i>Arctostaphylos uva-ursi</i>) and increased cowberry (<i>Vaccinium vitis-idaea</i>) occurs. The dry heath areas are generally managed through a programme of muirburn, and as such much of the sward is species-poor. Heathland is ubiquitous in northern Scotland; there is an estimated 1.7 to 2.5 million ha of upland heathland in Scotland (SNH n. d.), and heathland also appears to be widespread locally (based on local knowledge and aerial imagery). Although this is an Annex 1 habitat type, is on the SBL, and is a local priority habitat, given the species-poor condition of the dry heath on the Site, and small proportion of the Scottish heathland resource it represents, it is assessed as being of local value only.	
	H16 <i>Calluna vulgaris-Arctostaphylos uva-ursi</i> heath (in mosaic with H10a)				
D2 Wet dwarf shrub heath (29.35 ha)	M15 <i>Trichophorum germanicum-Erica tetralix</i> wet heath (incl. M15/U20, M15/U4) (8.54 ha)	Annex 1 (Northern Atlantic wet heaths with <i>Erica tetralix</i>); SBL (Upland heathland); LBAP	Moderate	Wet heath is reasonably widespread with a scattered distribution, occupying areas of shallower peat soils and where there is damper substrate. Wet heath communities present are all the sub-communities of M15. In many areas where there is slow movement of water through the surface, particularly around minor watercourses, wet heath communities are typified by abundant bog asphodel (<i>Narthecium ossifragum</i>), carnation sedge (<i>Carex panicea</i>), star sedge (<i>Carex echinata</i>) and heath rush amongst community constants deergrass and cross-leaved heath. Heathland is ubiquitous in northern Scotland; there is an estimated 1.7 to 2.5 million ha of upland heathland in Scotland (SNH n. d.), and heathland also appears	Local value
	M15a <i>Trichophorum germanicum-Erica tetralix</i> wet heath, <i>Carex panicea</i> sub-community (incl. M15a/b mosaic) (13.43 ha)		Moderate (sometimes High)		
	M15b <i>Trichophorum germanicum-Erica tetralix</i> wet heath, Typical sub-community (7.38 ha)		Moderate		

Phase 1 Habitat Type	NVC Community Name	Conservation Status*	Likely Groundwater Dependency ⁴³	Reason for Evaluation	Evaluation
				to be widespread locally (based on local knowledge and aerial imagery). There is an estimated 462,000 ha of wet dwarf shrub heath in the UK ⁴⁴ . Although this is an Annex 1 habitat type, is on the SBL, and is a local priority habitat, given its widespread nature locally and regionally, and the small proportion of the Scottish heathland resource it represents, it is assessed as being of local value only.	
E1.6.1 Blanket bog (18.85 ha)	M1 <i>Sphagnum denticulatum</i> bog pool community (in mosaic with M25a)	Annex 1 (Blanket bog); SBL (Blanket bog); LBAP	Low (i.e. Peatland)	There is an estimated 2.2 million ha of blanket bog in the UK ⁴⁵ , and 1.8 million ha in Scotland, representing an estimated 23% of the Scottish land area ⁴⁶ . Blanket bog is a rare habitat globally, and Scotland holds a significant proportion of the world resource ⁴⁶ . On a more regional scale, blanket bog is widespread in Highland, and Highland has internationally significant peatlands ¹ . Blanket bog (M17 and M17a) occurs in several pockets within the survey area, in depressions and flats with deep peat soils surrounding Loch Kemp (particularly to the north-west and east), and close to the smaller waterbodies Lochan a' Choin Uire, Loch Cluanie and Lochan a' Chinn Mhonaich, and in gullies on higher ground to the north. These areas are generally rich in <i>Sphagna</i> (and therefore actively peat forming), and occasional bog pools (M1-3) are present. Areas of intact blanket bog are typically dominated by hare's-tail cottongrass (<i>Eriophorum vaginatum</i>) and bog myrtle (<i>Myrica gale</i>) with deergrass, cross-leaved heath and heather present. Although this habitat type is widespread regionally, and although the pockets within the survey area are reasonably scattered and restricted in extent, given the Annex 1, national and local priority status of this habitat, and its importance as a carbon sink, it is assessed as being of regional importance.	Regional value
	M2 <i>Sphagnum cuspidatum</i> / <i>fallax</i> bog pool community (M2/3 in mosaic with M17a)				
	M3 <i>Eriophorum angustifolium</i> bog pool community (M2/3 in mosaic with M17a)				
	M17 <i>Trichophorum germanicum</i> - <i>Eriophorum vaginatum</i> blanket mire (12.83 ha)				
	M17a <i>Trichophorum germanicum</i> - <i>Eriophorum vaginatum</i> blanket mire, <i>Drosera rotundifolia</i> - <i>Sphagnum</i> species sub-community (6.02 ha)				

⁴⁴ JNCC (2011) UK Biodiversity Action Plan Priority Habitats. Available at: http://archive.jncc.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2011.pdf [Accessed November 2022]

⁴⁵ BARS (2012) *Biodiversity Action Reporting System* [Previously available on Line] Available at: www.ukbap-reporting.org.uk [Accessed November 2022]

⁴⁶ 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 Type	NVC Community Name	Conservation Status*	Likely Groundwater Dependency ⁴³	Reason for Evaluation	Evaluation
E1.7 Wet modified bog (19.9 ha)	M17 <i>Trichophorum germanicum-Eriophorum vaginatum</i> blanket mire (incl. M17-20, M15-17 in mosaic) (15.54 ha)	Annex 1 (Blanket bog); SBL (Blanket bog); LBAP	Low (i.e. Peatland)	<p>Areas around the fringes of Whitebridge plantation or near access tracks where localised drying of peat substrates has occurred, and along minor watercourses where there is some movement of water, tend to be dominated by purple moor-grass, hare's-tail cottongrass or rush species. These correspond to wet modified bog habitats and tend to be transitional from M17-M20, M25 and M6 mires. In many of these areas there are regenerating exotic conifers and scattered downy birch and eared willow. M20 tends to be dominated by tussocks of hare's-tail cottongrass and leggy heather, whilst M25 areas are almost entirely dominated by purple moor-grass.</p> <p>There is an estimated 2.2 million ha of blanket bog in the UK⁴⁷, and 1.8 million ha in Scotland, representing an estimated 23% of the Scottish land area⁴⁸. Blanket bog is a rare habitat globally, and Scotland holds a significant proportion of the world resource⁴⁶. On a more regional scale, blanket bog is widespread in Highland, and Highland has internationally significant peatlands¹.</p> <p>This habitat type has been assessed as having Local value, which reflects its status as Annex 1 and priority habitat, but also reflects that it is a modified form in unfavourable condition, and less likely to be actively peat forming to the same extent as the intact unmodified blanket bog areas.</p>	Local value
	M20 <i>Eriophorum vaginatum</i> raised and blanket mire (2.27 ha)				
	M25a <i>Molinia caerulea-Potentilla erecta</i> mire, <i>Erica tetralix</i> sub-community (inc. M15-25 in mosaic) (2.09 ha)		Moderate / Low (i.e. Peatland)		
E2 Flushes (in transitional mosaic with wet modified bog and blanket bog)	M6c <i>Carex echinata-Sphagnum fallax / denticulatum</i> mire, <i>Juncus effusus</i> sub-community (M6c and M6c/d in mosaic with M25a, M17, M17-20)	SBL (Upland flushes, fens and swamps); LBAP	High	<p>True acid flush habitats are rare within the survey area and typically stands of soft rush or sharp-flowered rush (<i>Juncus acutiflorus</i>) that are typical of M6c and M6d sub-communities are transitional components of wider flushed wet heath or wet modified bog habitat mosaics.</p> <p>M6 is common and widespread in the uplands of the UK²⁴; although this habitat is a SBL and local priority habitat, given that it is widespread across northern Scotland</p>	Local value

⁴⁷ BARS (2012) *Biodiversity Action Reporting System* [Previously available on Line] Available at: www.ukbap-reporting.org.uk [Accessed November 2022]

⁴⁸ 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 Type	NVC Community Name	Conservation Status*	Likely Groundwater Dependency ⁴³	Reason for Evaluation	Evaluation
	M6d <i>Carex echinata-Sphagnum fallax / denticulatum</i> mire, <i>Juncus acutiflorus</i> sub-community (M6c/d in mosaic with M25a, M17, M17-20)			and does not occur over large areas within the survey area, it is assessed as having no more than local value.	
Swamp, marginal and inundation (2.65 ha)	S4 <i>Phragmites australis</i> fen (0.56 ha)	SBL (Upland flushes, fens and swamps); LBAP	Occasionally High	These habitats are present at the fringes of lochs and lochans. They typically comprise S9 and S10, S4 and A8 communities, but also in smaller lochans with shallow peat banks, patches of common cottongrass (<i>Eriophorum angustifolium</i>), slender sedge (<i>Carex lasiocarpa</i>) and bogbean (<i>Menyanthes trifoliata</i>) are present. These habitats are listed on the SBL and are local priority habitats; given their limited extent within the survey area and lack of rarity within a regional/national setting, they are assessed as having local value.	Local value
	S9 <i>Carex rostrata</i> swamp (incl. S9/10/A8 mosaic) (1.5 ha)				
	S10 <i>Equisetum fluviatile</i> swamp (0.55 ha)		Low		
	A8 <i>Nuphar lutea</i> community (0.04 ha)				
A1.2.2 Coniferous woodland – plantation (170.58 ha)	-	-	N/A	The conifer plantation at Whitebridge is largely dominated by Sitka spruce (<i>Picea sitchensis</i>), hybrid larch (<i>Larix x marschlinsii</i>) and Scot's pine (<i>Pinus sylvestris</i>), and is assessed as having less than local value. Native pinewood plantation areas are located on the slopes of Torr Paiteag, and western slopes of Tom Rathail. Long-established woodland of plantation origin is mapped on the eastern edge of the plantation, and is assessed as being of Local importance. The plantation areas are assessed separately within Chapter 19: Forestry , in terms of commercial forestry, including details of compensatory tree planting to accord with the Scottish Government's Control of Woodland Removal Policy.	Local (long-established woodland of plantation origin) Less than local (remainder of conifer plantation)
A1.4.2 Coniferous woodland – recently-felled	-	-	N/A	An extensive area of recently felled plantation occurs along the northern slopes of Torr Paiteag, to the southeast of Loch Kemp. This area is assessed as having less than local value.	Less than local

Phase 1 Habitat Type	NVC Community Name	Conservation Status*	Likely Groundwater Dependency ⁴³	Reason for Evaluation	Evaluation
plantation (25.99 ha)				The plantation areas are assessed separately within Chapter 19: Forestry , in terms of commercial forestry, including details of compensatory tree planting to accord with the Scottish Government's Control of Woodland Removal Policy.	
A1.3.2 Mixed woodland – plantation (5.62 ha)	-	-	N/A	Mixed woodland plantation occurs beyond the Site boundary to the east of the B682 road, and is assessed as being of less than local value.	Less than local
A1.3.1 Mixed woodland – semi-natural (0.18 ha)	-	-	N/A	A small compartment of mixed woodland lies beyond the Site boundary to the east of the B682 road, adjacent to plantation woodland. Although the area is small, given its semi-natural status it is assessed as being of local value.	Local value
A3.1 -3 Scattered trees – coniferous/mixed (0.44 ha)	-	-	N/A	Most scattered tree areas are described under the W17 broad-leaved woodland section above, however there are also some very small areas with coniferous or mixed scattered trees amongst / on the margins of the Whitebridge plantation. These mostly comprise regenerating conifers Sitka spruce and larch (<i>Larix decidua</i>) and are assessed as having less than local value.	Less than local value
G1 Standing water (57.66 ha)	-	LBAP	N/A	Loch Kemp, along with smaller waterbodies Lochan a' Choin Uire, Lochan a' Chinn Mhonaich, Loch Cluanie, Loch Paiteag and Loch Lurin lie within the survey area. Loch Ness also lies on the north-west Site boundary. Man-made fishing ponds lie west of Dell Estate Lodge. The standing water habitat within the survey area provides habitat for a range of species, however there is an abundance of similar habitats within the local area, and they are therefore assessed as being of no more than local value.	Local value
G2 Running water (in mosaic with M25a, M17-20)	-	SBL (Headwaters); LBAP	N/A	The survey area contains several minor watercourses which all ultimately outflow into Loch Ness. There are several minor inflows into Loch Kemp, and one outflow, the Allt an t-Sluichd. Outflows from Lochan a' Choin Uire and Allt a' Chinn Mhonaich also flow through Ness Woods SAC into Loch Ness.	Local value

Phase 1 Habitat Type	NVC Community Name	Conservation Status*	Likely Groundwater Dependency ⁴³	Reason for Evaluation	Evaluation
				There is an abundance of such watercourses in the wider area. Given their status as local priority and listed on the SBL, they are assessed as having local ecological value.	
J3.6 Buildings and gardens (including in mosaic with U4) (2.03 ha)	-	-	N/A	Huts / pens for sporting purposes, Dell Lodge and other scattered properties, located beyond the Development Area Boundary and beyond the working corridor, with negligible ecological value.	Less than local value
J1.1 Cultivated / disturbed land – arable (0.09 ha)	-	-	N/A	Small area of arable land, beyond the Development Area Boundary, with negligible ecological value.	Less than local value
J4 Bare ground (access tracks) / bare rock (13.60 ha)	-	-	N/A	Existing gravel access tracks with negligible ecological value, and some scattered small outcrops of bare rock within heath and bracken areas.	Less than local value

*Table Key: Conservation Status

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)

Red text = Qualifying interest of Ness Woods SAC

SBL = listed on Scottish Biodiversity List (SBL)

LBAP = Highland Biodiversity Action Plan Local Priority Habitat

Bryophytes

- 10.6.10 A summary and evaluation of the bryophyte communities present on the Site is provided here; further details are provided in **Volume 4, Appendix 10.2: Bryophyte Survey Report**.
- 10.6.11 The bryophyte interest of most of the Site is fairly poor, as the ground is rather uniform, consisting of acidic dry heath or open birch woodland, and much of it is intensively managed for game birds. Specifically, in the dry open bracken and heath areas outwith Ness Woods SAC, in occasional rock outcrops, there is very limited bryophyte interest, and only common species are present. Similarly, there is little interest in the proposed inundation zone around Loch Kemp, with some low-lying wetter areas which support mainly common calcifuge species. The felled area of conifer plantation in the proposed inundation zone is of no interest for bryophytes. However, beyond these areas, specifically sheltered areas within Ness Woods SAC, and the burns on the south-western slopes of Loch Ness within Ness Woods SAC, there is more bryological interest.
- 10.6.12 Within the proposed powerhouse and related infrastructure area, there is mostly little bryophyte interest, although some ash trees in this area support a richer flora (Target Note 5 in **Volume 2, Figure 10.9: Bryophytes with proposed infrastructure overlain** including *Frullania dilatata* and *Orthotrichum striatum*, but no rare species were recorded. Within the area of the proposed Loch Ness shore-side works (including powerhouse and tailrace construction) , the boulders have a variety of common and widespread species, and the trees by the loch shore have abundant epiphytes (Target Note 3 in **Figure 10.9**). There are some mildly base-rich outcrops with mosses such as *Amphidium mougeotii*, *Anoetangium aestivum* and *Hylocomiadelphus (Rhytidiadelphus) triquetrus*. The steep rock faces above the loch shore here support a wide variety of bryophytes, including many basicolous species and extensive stands of the oceanic *Plagiochila spinulosa*. Further up the slope at the margin of the powerhouse construction area, there are north-west facing scree slopes dominated by bryophytes, with rocks supporting a variety of species, including the liverworts *Bazzania trilobata*, *Plagiochila punctata*, *P. spinulosa* and *Scapania gracilis*, and the moss *Hylocomiastrum umbratum* (Target Note 4 in **Volume 2, Figure 10.9: Bryophytes with proposed infrastructure overlain**).
- 10.6.13 The area of Ness Woods SAC through which the access track is proposed is mostly of little interest for bryophytes, however there are a number of stands of old hazels with some bryophyte interest, supporting a rich bryophyte flora dominated by the common epiphytes *Isothecium myosuroides*, *I. alopecuroides*, *Frullania tamarisci*, *Homalothecium sericeum*, *Hypnum* spp. and *Ulota* spp (Target Note 2 in **Volume 2, Figure 10.9: Bryophytes with proposed infrastructure overlain**). Although there are no rarities, more interesting species include *Antitrichia curtipendula*, *Neckera complanata*, *N. pumila*, and *Orthotrichum striatum*.
- 10.6.14 The top part of the Allt an t-Sluichd, in the vicinity of proposed Dam 1, is of little bryological interest. Further downstream, beyond the working corridor, the bryophyte assemblage becomes much richer, including luxuriant cushions of mosses and liverworts on boulders, banks and tree bases. Although there are no Nationally Rare or Nationally Scarce species present, the oceanic flora is reasonably rich considering the Site is close to the eastern extreme of the distribution of many of these plants.
- 10.6.15 The unnamed burn draining from Lochan a' Choin Uire (located within Ness Woods SAC but beyond the proposed working corridor) (Target Note 8 in **Volume 2, Figure 10.9: Bryophytes with proposed infrastructure overlain**) is moderately rich in species, including some oceanic species and basicolous species. An old ash tree supporting characteristic flora and area of scree rich with *Bazzania trilobata* and *Dicranum fuscescens* etc. were also recorded in this area (Target Notes 9 and 10 respectively, **Volume 2, Figure 10.9: Bryophytes with proposed infrastructure overlain**), beyond the working corridor. No Nationally Scarce or Nationally Rare species were recorded on this watercourse.

- 10.6.16 The Allt a' Chinn Mhonaich, located close to the proposed access track within the SAC, has a bryophyte flora similar to the unnamed burn draining from Lochan a' Choin Uire, but with *Dichodontium pellucidum*, *Scapania undulata* and *Thamnobryum alopecurum* more evident (Target Note 1, **Volume 2, Figure 10.9: Bryophytes with proposed infrastructure overlain**).
- 10.6.17 In total, 161 bryophyte taxa were recorded on the Site (see **Table 1** in **Volume 4, Appendix 10.2: Bryophyte Survey Report** for a full list). No Nationally Rare or Nationally Scarce species were seen⁴⁹, although the Site supports significant stands of some oceanic species, near the eastern edge of their range in Scotland, including abundant *Plagiochila spinulosa* and frequent *P. punctata*.
- 10.6.18 The methodology within Averis *et al.* (2012)⁵⁰ was used to assess the bryological importance of the three watercourses surveyed; this methodology was developed to assess the bryological importance or potential importance of ravines, using 29 'target species' of nationally uncommon humidity-demanding bryophytes to classify sites to one of five levels of bryological importance. Eight or nine oceanic or hyperoceanic (=Atlantic) species were recorded on each watercourse surveyed, however only one 'target species' per watercourse was recorded, placing them in 'Category C', meaning the watercourses are of 'low to medium bryological importance and hydroelectric development is unlikely to have a significant national / international impact on humidity-demanding oceanic bryophyte assemblages'.^{50'}
- 10.6.19 Using the guidelines for the selection of SSSIs⁵¹, the Site as a whole scores 8 on the basis of oceanic species present, not reaching the 12 point 'threshold' suggested for consideration for notification.
- 10.6.20 Given the results of the above assessments, but taking account of the fact that the bryophyte flora includes oceanic species at the eastern edge of their range, the bryophyte assemblage within Ness Woods SAC is assessed as being of **regional value**. Across the remainder of the Site, the bryophyte assemblage is assessed as being of **less than local** value.
- Lichens*
- 10.6.21 A summary and evaluation of the lichen communities present on the Site is provided here; further details are provided in **Volume 4, Appendices 10.3: Lichen Survey Report** and **10.4: Freshwater Lichen Survey Report**.
- Terrestrial Lichens*
- 10.6.22 Lichen species recorded have been assessed for their value (very high, high, medium or low), taking into consideration their rarity on the Site, whether they are at the edge of their range, and based on their status as UK Red-Listed⁵², Nationally Scarce or Rare⁵³, listed on the SBL, UK Biodiversity Action Plan (UKBAP) species⁵⁴, listed on Schedule 8 of the *Wildlife and Countryside Act 1981 (as amended*

⁴⁹ Pescott, O. (2016) *Revised lists of nationally rare and scarce bryophytes for Britain*. Field Bryology 115: 22-30

⁵⁰ Averis, A.B.G., Genney, D.R., Hodgetts, N.G., Rothero, G.P. & Bainbridge, I.P. (2012) Bryological assessment for hydroelectric schemes in the west Highlands – 2nd edition. Scottish Natural Heritage Commissioned Report No. 449b. (available online at [https://www.nature.scot/sites/default/files/2017-07/Publication%202012%20-%20SNH%20Commissioned%20Report%20449b%20-%20Bryological%20assessment%20for%20hydroelectric%20schemes%20in%20the%20West%20Highlands%20\(2nd%20edition\).pdf](https://www.nature.scot/sites/default/files/2017-07/Publication%202012%20-%20SNH%20Commissioned%20Report%20449b%20-%20Bryological%20assessment%20for%20hydroelectric%20schemes%20in%20the%20West%20Highlands%20(2nd%20edition).pdf))

⁵¹ Bosanquet, S., Genney, D. & Cox, J. (2018) *Guidelines for the selection of biological SSSIs. Part 2: detailed guidelines for habitats and species groups*. Chapter 12. Bryophytes. Peterborough, Joint Nature Conservation Committee.

⁵² A taxon that has been evaluated against IUCN criteria and qualifies as threatened (Critically Endangered, Endangered or Near Threatened)

⁵³ Woods, R.G. & Coppins, B.J. (2012) *A Conservation Evaluation of British Lichens and Lichenicolous Fungi. Species Status 13*. Joint Nature Conservation Committee, Peterborough. (Available online at: http://jncc.defra.gov.uk/pdf/Lichens_Web.pdf)

⁵⁴ <https://jncc.gov.uk/our-work/uk-bap-priority-species/> [Accessed in January 2023]

- in Scotland*), or International Responsibility species⁵⁵. **Volume 2, Figure 10.8: Lichens with proposed infrastructure locations overlain** shows the distribution of species assessed as of medium, high and very high value at the Site-based scale (also see **Figures 4 - 25 in Volume 4, Appendix 10.3: Lichen Survey Report** for a further breakdown of the distribution of lichens per species). More than 250 taxa were recorded including 83 notable species. Fourteen of the species known from the Site (either recorded during the Site survey or desk study records exist) are UK Red-Listed.
- 10.6.23 The Site supports a large number of lichen taxa that are rare / threatened in a UK and / or European context. Most of these taxa are strongly associated with veteran hazel but several were recorded on other veteran trees / shrub species including birch, rowan, ash, aspen, oak and alder.
- 10.6.24 The old growth *Lobarion pulmonariae* (*Lobarion*) community of more base-rich bark was present and locally very well-developed on veteran hazel, ash, rowan and an ancient stand of layering cherry. The *Lobarion* community included hyperoceanic elements more typical of the lichen-rich woods in western Scotland. The high quality of the *Lobarion* is reflected in the presence of fertile specimens of several species that are often not fertile in suboptimal habitats and several lichenicolous fungi.
- 10.6.25 The *Graphidion scriptae* (*Graphidion*) community was recorded on smooth bark. The acid bark community was very well developed on old / veteran birch with many old growth species.
- 10.6.26 The woodland habitats for lichens have been assessed using the Boreal Woodland Index (BWI), the Sub-oceanic Woodland Index (SWI) and the 'Pinhead' Index of Sanderson *et al.* (2018)⁵⁶. The Site easily exceeds the threshold for SSSI quality based on its BWI score, with 31 BWI species recorded, exceeding the 15 BWI species threshold. Three Upland Rainforest Index⁵⁶ species were also recorded, indicating the importance of the boreal woods. Thirty-two SWI species were recorded, which exceeds the SSSI quality threshold of 20 species. The Site falls just below the 10 species SSSI threshold for the 'Pinhead' Index, with nine species recorded. To put the Site into context of more western woods in the Scottish temperate rainforest zone, the Site supports 23 species on the Lowland Rainforest Index⁵⁶ (the threshold for SSSI status is 25).
- 10.6.27 The Site therefore meets SSSI quality for lichens of birchwoods and hazel stands, based on multiple criteria. The Site is particularly important because it supports old woodland species that are scarce and threatened in this region of Scotland especially oceanic / hyperoceanic species at the edge of their range, and the best hazel stands support viable populations of a number of them, including *Pachyphiale fagicola*, *Arthonia sampaiana*, *Nevesia sampaiana* and *Parmeliella testacea*; the outstanding populations of the latter two species also meet the requirements to qualify the Site for SSSI status.
- 10.6.28 Overall, the birchwoods and old growth hazels (and associated trees / shrubs of other species) support old growth lichen communities meeting SSSI quality, and are evaluated as of **national value**. The lichen assemblage specifically on the old-growth hazel habitat is assessed as being of **international value**.

Saxicolous Freshwater Lichens

⁵⁵ Species for which the UK has a responsibility for as it supports a significant proportion of the European and/or global populations⁴⁷; and are considered to be of international significance. Many members of the *Lobarion pulmonariae* lichen community are International Responsibility species.

⁵⁶ Sanderson, N.A., Wilkins, T.C., Bosanquet, S.D.S and Genney, R. (2018) *Guidelines for the Selection of Biological SSSIs Part 2: Detailed Guidelines for Habitats and Species Groups. Chapter 13 Lichens and associated microfungi*. Joint Nature Conservation Committee, Peterborough.

- 10.6.29 All three watercourses surveyed meet or exceed the threshold score for being considered for SSSI designation, using the AQUI. The highest scoring watercourse is Allt a' Chinn Mhonaich with an AQUI score of 15 (the threshold for SSSI quality is 11); this watercourse supports four Near Threatened, two Data Deficient and two Nationally Rare species. Allt an t-Sluichd has an AQUI score of 11, and supports one Vulnerable, one Schedule 8 (*Wildlife and Countryside Act 1981 (as amended in Scotland)*), two Data Deficient and three Nationally Rare species^{57,58}. The Schedule 8 species comprises *Fuscopannaria ignobilis*, recorded on an ash tree on an island within the watercourse, downstream of Proposed Dam 1 and beyond the working corridor. The unnamed watercourse draining from Lochan a Choin Uire also scores 11 on the AQUI, and supports one Data Deficient species (see **Tables 2-7** and **Maps 1-2** in **Volume 4, Appendix 10.4: Freshwater Lichen Survey Report** for a list of species recorded and their locations). These species assemblages are assessed as being of high or very high conservation value at the study-Site based scale, and are found within the Amphibious, Splash Zone and Terrestrial Zones⁵⁹.
- 10.6.30 The lichen communities on all three watercourses surveyed are evaluated as of **national value**, given that they meet SSSI quality criteria.
- 10.6.31 *Stereocaulon glareosum* (Nationally Rare) and *Micarea ternaria* (Near Threatened, Nationally Rare, SBL) were also recorded at two track locations (Target Notes 1089 and 1090, **Map 1, Volume 4, Appendix 10.4: Freshwater Lichen Survey Report**).
- 10.6.32 The lichen assemblage on the rocky shore of Loch Kemp also exceeds the criteria for SSSI quality with a Rocky Lake Shore TNTN score of 11, exceeding the threshold of six. Eleven lichen species assessed as being of high or very high conservation value at the Site-based scale were recorded here, including two Near Threatened (*Placynthium pannariellum* and *Porina interjungens*), and three Nationally Scarce species (*Aspicilia aquatica*, *Phaeophyscia sciastra* and *Polychidium muscicola*). Of these, *Polychidium muscicola* and *Porina interjungens* were not recorded anywhere else in the survey area, including the surrounding lochs and lochans surveyed. With the exception of a surveyed section of Loch Knockie, the surrounding lochs and lochans surveyed did not exceed the criteria for SSSI quality using the Rocky Lake Shore TNTN Index.
- 10.6.33 The lichen assemblage on the rocky shores of Loch Kemp is assessed as being of **national value**.
- 10.6.34 The heathland in the proposed inundation zone around Loch Kemp was subject to a rapid assessment, and scored 32 using the HMCHI, surpassing the threshold of 20 for potential SSSI designation. None of the other surrounding heathland areas (surrounding nearby streams, lochs and lochans) assessed scored above the threshold for potential SSSI designation using the HMCHI. The heathland within the Site supports the Near Threatened SBL species *Cladonia uncialis* subsp. *uncialis* (Nationally Scarce) together with the Nationally Rare Data Deficient *Cladonia borealis*, and the Nationally Scarce *Cladonia carneola*, *C. coccifera* (Data Deficient), *C. merochlorophaea*, *C. zopfii*, *Micarea viridileprosa* and *Thelocarpon epibolum*. Many of these species are in decline across large areas of the UK and Europe due to changes in land management and developments. All of the HMCHI species found in the heathland surrounding Loch Kemp were also found at other locations outside

⁵⁷ IUCN Red List. Available at: <https://www.iucnredlist.org/>

⁵⁸ Woods, R.G. & Coppins, B.J. (2012) *A Conservation Evaluation of British Lichens and Lichenicolous fungi*. Species Status 13. Joint Nature Conservation Committee, Peterborough.

⁵⁹ Watercourse Zones: Aquatic zone: lichens which are able to grow submerged for a period of one year or more in their whole distribution area; Amphibious zone: species which can tolerate long periods of exposure to air and inundation and for species which are permanently submerged only in parts of their distribution range; Splash Zone: These lichens are only occasionally inundated during high flows and spate events. They have the capacity to survive in a habitat which experiences strong flow forces during spate events. These species may also require high humidity levels and frequent to occasional splashing.

of the development footprint and working corridor. The lichen assemblage of the heathland surrounding Loch Kemp, within the proposed inundation zone, is also assessed as being of **national value**.

Faunal Baseline

- 10.6.35 A summary of the protected or otherwise notable fauna recorded within the relevant survey areas during various ecological surveys and / or which are considered likely to be present, based on desk study, is provided below. Further details of the 2021 survey work are provided in **Volume 4, Appendix 10.1: Terrestrial Ecology Report**, and further details of the 2023 otter survey work are provided in **Volume 4, Confidential Appendix 10.8 – Otter Survey Report (GI Works)**.

Invertebrates

- 10.6.36 This invertebrate assessment is based on desk study data and a qualitative habitat assessment.
- 10.6.37 The desk study did not identify any records of protected or notable invertebrate species within 2 km of the Development Area Boundary. The Development 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 12: Aquatic Ecology**, including a freshwater sponge species found in Allt a' Chinn Mhonaich and Loch Kemp during the freshwater lichen survey, tentatively identified as *Spongilla lacustris*.
- 10.6.38 The conifer plantation habitat comprising the eastern and southern sections of the Development Area is species-poor and ubiquitous in the local landscape, with limited deadwood and habitat heterogeneity, and therefore is of limited value to invertebrates, and is unlikely to support rare or local priority species.
- 10.6.39 The open habitat in the centre of the Development Area, including within the proposed inundation zone, is likely to support a number of moorland, heath and bog specialists. The habitat mosaics with a combination of dry rocky heath habitat interspersed with wetter flushed areas and bog habitats in these central open areas offer a wider variety of habitat niches for a range of invertebrate species, in comparison to the conifer plantation habitat. 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 Scotland⁶⁰. However, the degraded condition of the heath habitat from management (which has removed structural diversity), and the widespread nature of these habitat types within the local landscape limits their importance for invertebrates beyond the local geographical scale. The widespread stands of bracken across the Development Area have limited value for invertebrates.
- 10.6.40 The ancient broad-leaved woodland and woodland edge habitats within Ness Woods SAC / Easter Ness Forest SSSI represent the highest quality habitat for invertebrates within the Development Area Boundary, although their value for invertebrates is somewhat restricted by the dense bracken cover and scarcity of tree regeneration from over-browsing. The woodland is likely to support saproxylic and fungivorous specialists due to the presence of old-growth trees (mainly birch and hazel), standing and fallen deadwood. Local priority species for which the woodland and glade / edge habitats provide suitable conditions for comprise lemon slug (*Malacolimax tenellus*) (an ancient woodland species with a scattered distribution)⁶¹, lichen running spider (*Philodromus*

⁶⁰ <https://scotland-species.nbnatlas.org/species/NHMSYS0000875572> [Accessed in January 2023]

⁶¹ <https://www.woodlandtrust.org.uk/trees-woods-and-wildlife/animals/slugs-and-snails/lemon-slug/> [Accessed in January 2023]

margaritatus) (a species of limited distribution which lives on tree trunk lichens)⁶² and pearl-bordered fritillary (*Boloria euphrosyne*) (a widespread but declining butterfly species of woodland clearings and edges)⁶³.

Amphibians

- 10.6.41 The desk study did not identify any great crested newt (*Triturus cristatus*) or other amphibian records within 2 km of the Development Area Boundary. Highland is beyond the core range of great crested newt⁶⁴, and records are absent or scarce from much of Highland, however there are known scattered populations at Inverness, and great crested newt was confirmed close to the Red John Pumped Storage site near Dores²⁰. However, this is over 20 km from the Development Area Boundary. The Development Area itself is considered suboptimal for this species, with the standing water habitat limited to medium and large upland lochs and lochans of low suitability for this species, or fishing ponds. Therefore overall, great crested newt is considered unlikely to occur within the Development Area Boundary.
- 10.6.42 It is likely that the Development Area Boundary supports other common amphibian species. 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 Development Area Boundary is important or critical to any locally occurring amphibian populations, and the Development Area is assessed as being of less than local importance for amphibians. Amphibians are therefore scoped out from further assessment.

Reptiles

- 10.6.43 One record of common lizard was identified in the desk study, at Whitebridge immediately east of the Development Area Boundary. The Development Area supports large areas of habitat suitable for common lizard, specifically the open bog, heath, grassland and woodland edge habitats. Common lizard is therefore assumed to be present in all suitable habitat within the Development Area Boundary.
- 10.6.44 It is also possible that the Development 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.

Water vole

- 10.6.45 No records of water vole were identified in the desk study. All waterbodies and watercourses within 200 m of the Development Area Boundary were surveyed for this species. However, no water vole field evidence was recorded during any of the surveys.
- 10.6.46 Water vole is therefore considered to be absent from the Development Area and is scoped out from further assessment.

Otter

⁶² [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 January 2023]

⁶³ <https://butterfly-conservation.org/butterflies/pearl-bordered-fritillary> [Accessed in January 2023]

⁶⁴ Oldham, R.S., Keeble, J., Swan, M.J.S., and Jeffcote, M. (2000) *Evaluating the Suitability of Habitat for the Great Crested Newt (Triturus cristatus)*. Herpetological Journal 10: 143-155

- 10.6.47 The desk study identified two otter records in the wider area; a couch and associated field signs at Lochan Scristan c. 1 km from the Development Area Boundary, and a couch on the Allt Breineag (which flows into the River Foyers) immediately east of the Development Area Boundary.
- 10.6.48 The field surveys confirmed the presence of otter within the Development Area Boundary (see **Confidential Figure 3 in Volume 4, Appendix 10.1: Terrestrial Ecology Report, Confidential Figure 1 in Volume 4, Confidential Appendix 10.8 – Otter Survey Report (GI Works), and Volume 2, Confidential Figure 10.10: Protected Species field signs with proposed infrastructure locations overlain** for the locations of field signs). A total of four lay-ups were identified during the 2021 initial survey work, with a further four lay-ups and two potential holt (non-breeding) identified during the Spring 2023 otter update survey for the GI works. Six lay-ups are located close to Loch Ness shore within Ness Woods SAC. One further lay-up was recorded along the Allt an t-Sluichd in close proximity to the proposed location of Dam 1, and one further potential lay-up was recorded south of Loch Kemp close to the Allt Leachd Gowerie watercourse, which is likely to be ephemeral due to being prone to flooding. Lay-ups were located under tree roots, fallen trees, or on / between rocks, most with flattened vegetation. Whilst evidence of feeding remains or fresh / old spraint was present at the lay-ups identified in 2021, no fresh otter evidence was recorded at these locations in 2023, and only one of the newly identified lay-ups had spraint in 2023, indicating territorial marking (located on the Loch Ness shoreline). A potential holt located close to the Loch Ness shoreline comprises a well-sheltered gap between boulders which extends for approximately 0.5 m underground, and may provide seasonal use as a holt, but is not considered sufficiently extensive enough to be suitable for breeding. A potential holt was also identified to the east of Loch Kemp and Loch Cluanie on the margin of Torr Cluanie plantation, under an exposed root system of a tree stump, with a well-sheltered internal space which may provide temporary shelter for commuting otter, but which is considered unsuitable for a breeding site. One further holt was recorded incidentally during a site visit in September 2023, on the Loch Ness shoreline to the south-west of the proposed Development Area. This holt comprises a large cavity between boulders, with an additional higher exit point above the high water line, and contained some old bedding material within, along with several fresh spraints. This holt is considered suitable for breeding, although breeding has not been confirmed. Given the location of the holt, over 200 m from proposed works, and therefore beyond a potential disturbance distance, additional survey work has not been undertaken to determine whether it is in use as a natal holt. For the purposes of assessment, it is assumed that this holt could be used for breeding. Three spraints were recorded within Ness Woods SAC close to the Loch Ness shoreline, and one spraint was recorded on the north-western shoreline of Loch Kemp.
- 10.6.49 The distribution of field evidence recorded during the surveys indicates that the most important habitat for otter within the Development Area Boundary is within the broadleaved woodland cover of Ness Woods SAC, particularly close to the Loch Ness shoreline. The surveys confirm that otters are also using Loch Kemp, and the connecting watercourses the Allt an t-Sluichd, and Allt Leacht Gowrie. No otter field evidence was recorded within Whitebridge Plantation, nor within the more open heath and bog areas away from waterbodies and watercourses.
- Pine Marten*
- 10.6.50 The desk study identified two pine marten scat records, one of which was immediately east of the Development Area Boundary at Whitebridge. Pine marten was confirmed to be present within the Development Area Boundary during field surveys. No dens were identified, however a total of nine pine marten scats were recorded (see **Confidential Figure 3 in Volume 4, Appendix 10.1: Terrestrial Ecology Report, and Volume 2, Confidential Figure 10.10: Protected Species field signs with proposed infrastructure locations overlain** for the locations of field signs). All of the scats were recorded within conifer plantation habitat, mostly within Whitebridge Plantation in the eastern parts of the Development Area Boundary, as well as one scat within a smaller plantation area at Torr

Cluanie in the north-eastern corner of the Development Area. The exception to this is one scat recorded immediately north of Loch Kemp near the Allt an t-Sluichd watercourse, on the margin of Ness Woods SAC, recorded during the otter update survey for the GI works in 2023.

- 10.6.51 No pine marten field evidence was recorded in any further areas of broadleaved woodland within the Development Area Boundary, or on the sloping shores of Loch Ness within Ness Woods SAC.

Red Squirrel

- 10.6.52 Two red squirrel records were returned from the desk study, located around Whitebridge immediately east of the Development Area Boundary. Survey work confirmed red squirrel to be present within the Development Area Boundary, both within conifer plantation habitat, and broadleaved woodland habitat within Ness Woods SAC. Red squirrel activity in the woodland along the Loch Ness shore was high in 2021, with frequent feeding signs recorded and associated with hazel trees in the area (a total of 35 feeding signs were recorded in this area). Sightings were made on the existing access track within Ness Woods SAC, and within Torr Cluanie Plantation, located to the north of Whitebridge Plantation. Feeding signs were also recorded within Whitebridge Plantation (on pine cones) however the density of feeding signs recorded was much lower (a total of three). In 2023, a red squirrel drey was identified within a Scot's pine within Torr Cluanie Plantation, and a red squirrel was observed foraging in this area; four feeding signs were also recorded in Torr Cluanie Plantation in 2023. See Confidential **Figure 3** in **Volume 4, Appendix 10.1: Terrestrial Ecology Report**, and **Volume 2, Confidential Figure 10.10: Protected Species field signs with proposed infrastructure locations overlain**, for the locations of field signs.

Badger

- 10.6.53 The desk study identified four records of badger dead on the road around Invermoriston (on the far side of Loch Ness from the Development Area), and one record at Whitebridge immediately east of the Development Area Boundary.
- 10.6.54 During the survey, one active main sett (with ten entrance holes) was identified within Ness Woods SAC, north of Allt a Chin Mhonaich (see Confidential **Figure 3** in **Volume 4, Appendix 10.1: Terrestrial Ecology Report**, and **Volume 2, Confidential Figure 10.10: Protected Species field signs with proposed infrastructure locations overlain**, for field sign locations). A further four disused setts were identified in the vicinity within Ness Woods SAC. Two fresh latrines were also recorded, also within Ness Woods SAC, on the slopes above Loch Ness shore and the upper reaches of the Allt an t-Sluichd.
- 10.6.55 No field evidence was recorded on the open bog, acid grassland and heath areas of the Development Area, and these habitats are suboptimal for badger. Similarly, no field evidence was recorded within Whitebridge Plantation, although the plantation habitat does provide suitable sett-building and foraging habitat for badger.

Bats

- 10.6.56 A total of 18 trees were found to have PRFs for bats (see Confidential **Figure 3** in **Volume 4, Appendix 10.1: Terrestrial Ecology Report**, and **Volume 2, Confidential Figure 10.10: Protected Species field signs with proposed infrastructure locations overlain**, for locations), specifically cavities, standing deadwood, peeling bark and woodpecker holes. All of the 18 trees were assessed as having moderate bat roosting potential, as PRFs were restricted to small features, limited in number within individual trees, and considered unable to support a roost of high conservation status or one that is likely to be suitable for maternity or hibernation purposes. The majority of the trees with PRFs are located within Ness Woods SAC, above Loch Ness shore and along the Allt an t-Sluichd, with several

also located within smaller areas of broad-leaved woodland in the southwestern part of the survey area near Lochan a' Chinn Mhonaich.

- 10.6.57 One tree roost was confirmed within a cavity in the main trunk of a large birch, where bat droppings were recorded, located close to the proposed Dam 1 location, north of Loch Kemp on the Allt an t-Sluichd.
- 10.6.58 Suitable commuting and foraging habitat for bats is widespread across the Development Area. The broadleaved woodland, woodland edge, and copses and open woodland are frequent within Ness Woods SAC, all of which provide highly suitable foraging opportunities. Similarly, open habitat along woodland edges around Whitebridge plantation provides suitable foraging habitat with scattered broadleaved trees, heath and grassland vegetation and small watercourses. The open standing water within the Development Area Boundary, including Loch Kemp, also provides potentially productive foraging habitat.

Wildcat

- 10.6.59 The broadleaved woodland and conifer plantation provides suitable habitat for this species within the Development Area Boundary. However, no field evidence of Scottish wildcat was recorded in any part of the survey area during the field survey. Although some areas of the Development Area are unlikely to be frequently disturbed, particularly the inaccessible steep areas along Loch Ness shore, some areas of the Development Area are likely to experience disturbance levels which would make them less suitable for wildcat, such as the eastern part of the Development Area close to the village of Whitebridge, and areas around the Dell Estate Lodge and associated tracks due to sporting activities.
- 10.6.60 Desk study information suggests that this species may also be absent from the wider area. No records were returned from HBRG within 2 km of the Development Area Boundary. No field evidence was found during surveys undertaken in 2018 at the Red John Pumped Storage Scheme site near Dores²⁰, nor in surveys undertaken in 2017 for the Coire Glas Pumped Storage Scheme²¹ at Loch Lochy c. 30 km south of the Development Area Boundary. A NatureScot study⁶⁵ looking at the presence of this species in nearby Stratherrick recorded a single hybrid but no other evidence of wildcat, either through genetic analysis of scats or by live capture.
- 10.6.61 Given the lack of field evidence recorded during the surveys, and the lack of records in the wider area, wildcat is concluded to be very unlikely to occur within the Development Area Boundary, and is scoped out from further assessment.

Deer

- 10.6.62 Records of sika deer and roe deer were provided from the desk study. Deer browsing is widespread within the Development Area Boundary and red deer (*Cervus elaphus*) have also been observed within the Development Area Boundary. The Dell Estate gamekeeper has reported (pers. comm.) that sika deer is the most abundant species present, with red deer and roe deer also present. The gamekeeper reports that the deer spend a lot of time on the slopes towards Loch Ness, within Ness Woods SAC, where they give birth, where there is more shelter and cover from bracken and other vegetation. There is no existing fixed deer management plan in place for the part of Dell Estate that forms the Development Area Boundary, however approximately 200+ deer are culled on the entire Dell Estate annually. A deer assessment is provided in **paragraphs 10.8.113 -10.8.117**, which includes an assessment of the potential impacts on deer welfare, habitats, neighbouring and other

⁶⁵ Littlewood, N.A., Campbell, R.D., Dinnie, L., Gilbert, L., Hooper, R., Iason, G., Irvine, J., Kilshaw, K., Kitchener, A., Lackova, P., Newey, S., Ogden, R. and Ross, A. (2014). *Survey and scoping of wildcat priority areas*. Scottish Natural Heritage Commissioned Report No. 768

interests (e.g. access and recreation, road safety, etc.), in accordance with NatureScot guidance⁶⁶, and to address a scoping request by THC. Information on deer control and management is also contained within **Volume 4, Appendix 10.7: Outline Habitat Management Plan (non-SAC)** and the Compensatory Measures Package for Dell Estate, included within the Derogation Report.

Other mammals

- 10.6.63 Brown hare records were provided for the wider area. The Development Area has some suitability for this species. However, due to the mobility of this species, and abundance of suitable habitat within the surrounding landscape, detailed assessment of effects on this species have been scoped out.
- 10.6.64 Similarly, records of hedgehog were provided for the 2 km search area, and although there is some suitable habitat for this species within the Development Area Boundary, much is considered suboptimal due to its upland nature with a mixture of thin rocky soils and wet peatland. More suitable habitat for this species is present in the wider area. This species is therefore scoped out from further assessment.
- 10.6.65 Feral goats are known to be present within Ness Woods SAC, which do not have nature conservation value, but contribute to over-grazing within Ness Woods SAC. Feral goats are therefore considered under habitat management measures, alongside deer (see **Volume 4, Appendix 10.7: Outline Habitat Management Plan (non-SAC)** and the Compensatory Measures Package for Dell Estate, include within the Derogation Report).

Evaluation of Faunal Receptors

- 10.6.66 An evaluation of the non-avian faunal receptors, which are either known to be present or considered likely to be present within the survey area, is provided in Table 10.5: Evaluation of Faunal Receptors.

Table 10.5: Evaluation of Faunal Receptors

Receptor	Legal / Conservation Status	Reason for Evaluation	Evaluation
Invertebrates	SBL (some species), LBAP (some species)	The Development Area does not have potential to support protected terrestrial invertebrate species, but has suitability for several local priority species. Given the variation in habitat quality and condition for invertebrates, and considering the presence of extensive similar habitats within the wider area, the Development Area is assessed as having up to local ecological value for invertebrates.	Local value
Reptiles: common lizard, adder, slow-worm	WCA Sch5 (in respect of Section 9(1) and 9(5) only), SBL	Much of the Development 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 Scotland ⁶⁷ (with the exception	Local value

⁶⁶ 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 2022]

⁶⁷ 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]

Receptor	Legal / Conservation Status	Reason for Evaluation	Evaluation
		<p>of the Central Lowlands and the Northern Isles). Therefore, as common lizard is widespread in the area, and given the size of the Development Area, and the abundance of suitable habitat in the surrounding area, the Development Area is not assessed to be of a higher than local value for common lizard, should it be present. It is also possible that adder occur within the Development Area, due to the presence of suitable habitat such as heath and woodland. Adder is described as being widespread across the Scottish mainland⁶⁸. 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.</p> <p>Similarly it is also possible that slow-worm occur within the Development Area Boundary, given the presence of suitable woodland edge habitat. Slow worm is described as quite common across Scotland⁶⁹. 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.</p>	
Otter	HR Sch2, WCA Sch5, SBL	<p>Otter is widespread locally and nationally, with the Scottish population estimated to be 8,000⁷⁰. This species is confirmed within the Ness Woods SAC part of the Development Area, as well as Loch Kemp and the connecting watercourses . Ness Woods SAC provides cover for otter, and Loch Ness provides optimal hunting habitat. Although Loch Kemp and the smaller surrounding Lochans provide suitable hunting habitat, the relatively lower levels of field evidence in these areas suggests that these are not important hunting areas compared to Loch Ness.</p> <p>Although otter is widespread with abundant suitable connected habitat in the wider area, given its status as a qualifying interest of Ness Woods SAC, it is automatically assessed as being of international value.</p>	International value
Pine marten	WCA Sch5, SBL, LBAP	<p>The Scottish population of pine marten is increasing after historic persecution, and its distribution has expanded across the Highland region⁷¹, however it is still</p>	Local value

⁶⁸ NatureScot (2016) Information on adder [online] Available at: <https://scottishwildlifetrust.org.uk/species/adder/> [Accessed in November 2022]

⁶⁹ 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]

⁷⁰ 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]

⁷¹ Harris, S. and Yalden, D.W. (2008). *Mammals of the British Isles: Handbook* (4th Edition). The Mammal Society, Southampton.

Receptor	Legal / Conservation Status	Reason for Evaluation	Evaluation
		described as a rare species with Scotland's population estimated at 3,700 adults ⁷² . Pine marten has been confirmed within the plantation habitats in the eastern part of the Development Area Boundary, and the northern margin of Loch Kemp, although no dens have been identified. There are also large, connected areas of suitable habitat for this species in the surrounding landscape. Given its status, and accounting for the availability of abundant habitat in the wider area, the Site is not assessed to be of higher than local value for this species.	
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 gardens ⁷³ . The Development Area contains abundant good quality habitat for this species, with the broad-leaved woodland of Ness Woods SAC providing the highest quality foraging resource, but with red squirrel also confirmed within the plantation woodlands, with a single drey identified within Torr Cluanie Plantation. Suitable connected habitat is also widespread in the local area. Based on the wider available habitat and status of this species, the Development Area is assessed as having local value for red squirrel.	Local value
Badger	PBA	A common but legally protected species with a widespread distribution in mainland Scotland ⁷⁴ . Although the Development Area has abundant habitat for this species, and a main sett has been confirmed, given its common status and the abundance of suitable habitat in the surrounding area, the Development Area is not assessed to be of higher than local value for this species.	Local value
Bats	HR Sch2, WCA Sch5, SBL, LBAP	Based on a desk-based study, preliminary roost assessment, and habitat-based assessment, the Development Area is assessed as having local value for bats. This evaluation takes into account: the fact that there are some roosting opportunities but that these are reasonably limited and are unlikely to be suitable for maternity or hibernation roosts (being confined to the native woodland areas, and absent from the conifer plantations and open moorland habitat); the fact that there are some high quality foraging areas (particularly	Local value

⁷² 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]

⁷³ 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]

⁷⁴ NatureScot (2022) Information on badger [online]. Available at: NatureScot (2022) Information on badger [online]. Available at: <https://www.nature.scot/plants-animals-and-fungi/mammals/land-mammals/badger> [Accessed in November 2022]

Receptor	Legal / Conservation Status	Reason for Evaluation	Evaluation
		the native woodland and standing water habitats) but that much of the open areas and the conifer plantations are of lower foraging quality; but also acknowledges the presence of abundant and connected suitable habitat in the surrounding landscape (both in terms of likely roosting opportunities in native woodland and buildings, and foraging opportunities across woodland and waterbodies).	
Deer	WCA Sch9 (sika deer)	Multiple deer species are reported to occur on / within close proximity to the Development Area, namely red deer, roe deer and sika deer. 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 10.8.113 – 10.8.117 and 10.8.154 - 10.8.156) to accord with NatureScot guidance ⁶⁶ with respect to wild deer, and to address a scoping request by THC.	Less than local

*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

Future Baseline

- 10.6.67 In the absence of the Proposed Development, the central parts of the Development Area are likely to remain as open moorland (with blanket bog, heath and bracken habitats), primarily used for game shooting, with the exception of several tree planting / natural regeneration areas which are being created in 2023 as Advanced Works to the Proposed Development (see **Section 3.6 of Chapter 3: Description of Development** for further details), which would develop into native broadleaved woodland over time. This native woodland creation is being undertaken as part of the development, as advanced works.
- 10.6.68 The coniferous plantation areas in the eastern parts of the Development Area would likely continue to be felled and replanted on rotation once reaching maturity, as part of normal commercial forestry operations.
- 10.6.69 In the absence of the Proposed Development or any intervention, the native woodland comprising Ness Woods SAC would likely continue to degrade in condition, due to continued high levels of browsing by deer and feral goat, preventing the regeneration of tree species. In the long-term, as existing mature trees die with old age and are not replaced by natural regeneration, the woodland habitat could continue to thin out with bracken dominance increasing. However, improvements in its condition could occur if appropriate management is instigated, although there are currently no firm proposals to carry out such management.
- 10.6.70 In the absence of the Proposed Development, species could change their distribution and use of the Development Area. It is possible that water vole could colonise the Development Area in the future, and it is possible (although currently considered very unlikely) that Scottish wildcat could colonise the Development Area. Species already known to occur on the Site could change their distribution

or resting / breeding locations, for example badger could dig new setts or otter could establish new natal holts. 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 **paragraphs 10.7.14 - 10.7.18**.

10.7 Mitigations by Design / Embedded Mitigation

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

- The predicted direct loss of qualifying interest habitat within Ness Woods SAC / Easter Ness Forest SSSI has been reduced as far as is considered technically feasible. The predicted loss of habitat (via direct land take from infrastructure and the working corridor has been reduced from an initial estimate of 12-13 ha, down to (up to) 5.52 ha, with the assessment based on the worst case. The relevant design iterations are summarised below (further details on the consideration of alternatives with respect to Ness Woods SAC is provided in **Chapter 2: Design Evolution and Alternatives**, and the **Derogation Report**):
- the width of the proposed access track through the SAC / SSSI has been reduced from 8 m to 6 m (widened to 7 m on bends). This includes a track running with of 4 m and widening to 5 m on bends (with passing places) with a 1 m drainage trench and 1 m safety barrier on opposing sides.
- multiple access track route options have been considered to try to reduce land-take within the woodland qualifying interest habitat, as well as to reduce the level of impact on bryophyte and lichen communities of conservation value, and minimise tree loss as far as possible. Feasible route options are constrained by the steep topography of the land in this area, and the requirement for a maximum 10% gradient limit⁷⁵. The proposed route largely follows an existing track and partially passes through non-qualifying interest habitat (primarily acid grassland) in the upper stretch, however it deviates from the existing track and passes through woodland qualifying interest habitat in the middle and lower stretch, with several tight hairpin bends, which is deemed unavoidable in the design due to the gradient. Whilst effort has been made to avoid the trees and areas with the highest lichen and bryophyte interest where possible, this has not always been feasible due to the gradient constraints. The access track has also been microsited to ensure it is at least 10 m away from the top of the banks of the Allt a'Chinn Mhonaich watercourse for the entirety of the route, following advice from SEPA as a pollution prevention measure. No storage of material would be permitted in this buffer area.
- the powerhouse location has been sited on a flat area close to Loch Ness shore, which is dominated by bracken, and whilst this area is still classified as part of the woodland qualifying interest habitat, construction in this area will reduce tree loss compared to more densely wooded areas

⁷⁵ There is a short section of SAC track at 12% gradient, permissible only by having 6% relief either side. All other lengths of the proposed track do not exceed 10% gradient.

- the land-take of the powerhouse and associated infrastructure (powerhouse, substation and tunnel adit) has been designed to be as compact as possible to reduce the land-take in this area, and to reduce the loss of the more restricted 'Tilio-Acerion forests of slopes, screes and ravines' qualifying interest woodland habitat, where possible
- earlier causeway or pontoon designs were considered on the margin of Loch Ness for construction laydown, however these have been removed from the design, as it has been concluded that sufficient construction laydown can be accommodated within the proposed powerhouse platform area, without any additional land-take required. This reduces the length of loch shore habitat being disturbed
- the infrastructure footprint, and working corridor (i.e. land used for construction) has been reduced as far as is practically feasible
- no construction compounds, laydown areas, or welfare compounds are proposed within Ness Woods SAC outside of the powerhouse platform area
- the grid connection would be routed through the cable tunnel and over Dam 1 within Ness Woods SAC, to avoid additional SAC land-take
- an option previously being considered of a conveyer belt through the SAC / SSSI to transport some construction materials (rather than a 6 m access track) has been removed from the scheme. This is because a 4 m operational access track would still have been required, and therefore a conveyer belt would not have reduced overall land-take within Ness Woods SAC
- the design of Dam 1 has been altered, to use a concrete design rather than a rock fill design, which reduces the land-take of the dam within the SAC / SSSI by approximately 50%
- restoration of the sections of the existing track through Ness Woods SAC that cannot be used will be undertaken
- for tourists visiting the powerhouse by boat during operation, visitors would be prevented from accessing adjacent areas of habitat within Ness Woods SAC. The jetty would have a walled path on the lower level that would take visitors directly to the visitor entrance, with no other areas available for visitors to access (see **Volume 2, Figure 3.5: Indicative Layout of Lower Reservoir Works - During Operation**)
- the natural flow regime of the Allt an t-Sluichd watercourse which drains from Loch Kemp shall be maintained through construction and operation, to maintain the hydrological regime, to protect sensitive species and habitats downstream of Dam 1, including lichens and bryophytes. Dam 1 would feature a compensation release at the foot of the dam. The pipe running through the dam for this environmental release would be positioned below the minimum water level in the upper reservoir to ensure availability of water. The release would be controlled by a valve on the pipe which would allow adjustment of the compensation flow rate by the plant's control system. A flow gauge has been in place to measure the water flow in the Allt an t-Sluichd between January 2022 and February 2023, recording over one year of data. Flow data has also been obtained from SEPA from permanent flow gauging stations in nearby river catchments. By comparing 2022-2023 flow data in the Allt an t-Sluichd with the permanent gauging stations, a long duration characteristic for the Allt an t-Sluichd can be established using several decades' worth of data⁷⁶. The compensation flow through Dam 1 would be at a rate to be agreed with SEPA and NatureScot such as to mimic the natural flow of the Allt an t-Sluichd prior to scheme

⁷⁶ MNV Consulting (2023) Loch Kemp outflow river monitoring station. Flow monitoring: Final report.

construction, as part of the CAR licence application. During construction of Dam 1, the natural flow in the Allt an t-Sluichd would be maintained through a phased construction approach. One side of the dam would be constructed behind a cofferdam while the watercourse flows around the cofferdam. The first phase of dam construction would include a drain pipe at the base of the dam. Watercourse flow would be maintained through the drain while the second phase of the dam is constructed. Once the dam is completed natural flow in the watercourse shall be maintained by the dedicated compensation flow pipe as described above

- intake / outlet and tailrace structures at Loch Ness and Loch Kemp, and the outflow at Dam 1, shall be screened (comprising a 12.5 mm mesh aperture), such that otter will be protected from becoming entrapped or injured / killed, or accessing the turbines, in accordance with NatureScot guidance⁷⁷ (further information regarding screening is contained in **Chapter 13: Fish**)
- it has not been possible to completely avoid blanket bog and wet modified bog habitats. However, the areas within the Development Area Boundary used for infrastructure in areas of deep peat and blanket bog have been minimised where possible, including some changes and micro-siting of dam locations, and access tracks. Working corridor / laydown areas have been amended and reduced to avoid areas of blanket bog and wet modified bog habitats where possible. Construction laydown areas have been designed to prioritise locations of lower value habitat such as bracken and conifer plantation. Floating roads are proposed where appropriate to minimise impacts to the underlying hydrology
- the re-use of existing tracks has been maximised and new track length has been minimised as far as practical to minimise land take
- the track upgrade works shall be micro-sited at grid reference locations NH 45512 16108 and NH 46311 16560 (Target Notes 1089 and 1090, **Map 1, Volume 4, Appendix 10.4: Freshwater Lichen Survey Report**), to avoid lichen species of conservation concern *Stereocaulon glareosum* and *Micarea ternaria*. The populations of important lichen species shall be demarcated prior to construction, and track widening shall be undertaken at the far side of the track from the lichens, such that the lichens can remain *in-situ*
- As detailed in **Chapter 14: Geology, Soils and Water**, the access track proposed through Ness Woods SAC shall be of a permeable construction that will allow infiltration of rainwater and lateral movement of surface water flows. The access track shall have frequent cross drains to maintain existing surface water flow paths. The precise locations of the cross drains would be determined by the Ecological Clerk of Works. The access track would be constructed with rock and aggregate won on site and therefore would have the same geochemical properties as the existing rock.
- The following embedded mitigation has been incorporated to minimise air quality impacts (see **Chapter 18: Air Quality** for further details): a single designated track route for on-site transportation through Ness Woods SAC / Easter Ness Forest SSSI; hard paved surfaces at the powerhouse building and associated processing plant and site access extending to 15 m on-site; wheel-wash located at transition of paved to unpaved road surface; on-site tracks would be constructed from unbound stone with regular maintenance and grading; and no off-site

⁷⁷ 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 January 2023]

transfers are required as it is anticipated that excavated material would be utilised on-site for construction, principally the rockfill dams.

Good Practice Measures

Good Practice Mitigation Measures

- 10.7.2 Full details of construction mitigation measures would be provided in a CEMP. An outline CEMP is included as **Volume 4, Appendix 3.3: Outline CEMP**.
- 10.7.3 Good practice measures in relation to pollution risk and sediment management to be adopted during the construction and operation phases are set out in **Chapter 7: Water Management** and **Chapter 14: Geology, Soils and Water**. During the construction phase, good practice techniques with respect to peatland environments, as contained within SNH (2019)⁷⁸, would be implemented. Further details on peat and water management during construction are provided in **Chapter 7: Water management, Chapter 14: Geology, Soils and Water** and are outlined in **Volume 4, Appendix 3.3: Outline CEMP**.
- 10.7.4 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, to be overseen and policed by an Ecological Clerk of Works (ECoW) (see **paragraphs 10.7.19 - 10.7.20**). 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.
- 10.7.5 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.
- 10.7.6 Mitigation to protect fish is detailed in **Chapter 13: Fish**, and would include measures such as soft start approach to piling operations, noise reduction measures and acoustic barriers, fish rescue and relocation, appropriate culvert design, intake / outlet screens and water velocity control, use of fish deterrents at the intake / outlet, CCTV monitoring at the outlet, introducing dug channels for fish passage, and implementing a Fish Monitoring Plan (FMP).
- 10.7.7 Good practice mitigation to protect habitats from dust deposition and air quality impacts are detailed in **Chapter 18: Air Quality**. Measures would also be contained within the CEMP, and a Dust Management Plan. In summary, relevant measures include:
- good practice dust control measures across the whole Site, including: locating dust generating activities away from high and medium sensitive receptors (where possible); provision for water supply for dampening; provision of wheel wash and paved parking; provide training on dust mitigation; monitoring of dust deposition; maintaining good communication; management of on- and off-site vehicle movements including inspections, spill control, speed limits and

⁷⁸ 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 August 2019]

cleaning; soil and overburden handling; using hydraulic excavators and fitting dust extraction systems; appropriate use of processing plant; dampening of materials in dry weather; and management of stockpiles

- additional dust control measures specific to Ness Woods SAC / Easter Ness Forest SSSI, including: plan dust generating activities within 100 m of the SAC / SSSI during favourable weather conditions only; locate the central processing area in the upper reservoir area at least 200 m from the SAC / SSSI; application of water suppression in dry conditions and a speed limit of 15 mph for vehicle movements through the SAC / SSSI; cover and dampen short-term stockpiles within 100 m of the SAC / SSSI; for long-term stockpiles within 200 m of the SAC / SSSI where seeding is not possible, use netting screens / side walls / semi permeable fences / misting sprays; management measures for conveyers used within 100 m of the SAC / SSSI; crushing and screening to take place in a fully enclosed structure if within 200 m of the SAC / SSSI or a sheltered area as far away from the SAC / SSSI as possible and fitted with water spray suppression bars; avoid stripping and overburden handling operations within 200 m of the SAC / SSSI during dry and windy conditions; and implement monitoring of dust deposition within the SAC / SSSI including baseline survey
- good practice mitigation to minimise non road mobile machinery emissions, including: preparing and maintaining the Site; locate machinery and dust causing activities away from sensitive receptors; ensure use of low emission category vehicles where possible; avoid idling vehicles; avoid diesel or petrol powered generators and equipment where possible; produce a construction logistics plan; and impose and signpost a 15 mph speed limit

Bryophytes and lichens

- 10.7.8 To minimise damage to bryophyte interest, care would be taken during construction to minimise the disturbance to the rocks close to the Loch Ness shoreline in the proposed powerhouse area, the boulder scree above the proposed powerhouse, and the low northwest-facing rocks above the beach in the proposed powerhouse area, as far as possible. Disturbance to sheltered rotten logs and rock outcrops would also be avoided or minimised wherever possible.
- 10.7.9 If possible, concrete used in the installation of Dam 1 would be pre-weathered to reduce the risk of alkaline shock on the aquatic ecosystem downstream from Dam 1. Any waters which leach out of the concrete when it is placed shall be intercepted before reaching the aquatic ecosystem, details of which will be included in the CEMP.
- 10.7.10 An ECoW (see **paragraphs 10.7.19 - 10.7.20**) would supervise all works in the vicinity of veteran hazels and birch trees. Appropriate barriers would be used to define working corridors and all trees to be retained. Appropriate buffer zones would be implemented when erecting barriers to avoid inadvertent damage from heavy machinery/plant manoeuvring. This shall incorporate Root Protection Areas (RPA) for retained trees (to avoid damage to the root plates of retained trees near the working corridor), and would also incorporate collapsed / leaning and / or 'phoenix'⁷⁹ trees (as the lichen interest is often best developed on leaning stems). Cutting leaning stems on hazels to be retained shall be avoided where possible, and where unavoidable a lichenologist would be consulted.

⁷⁹ A 'phoenix' tree is a tree that is lying more or less parallel with the ground as a result of rooting or stem failure, with new growth having developed in this new orientation.

Lighting

- 10.7.11 Temporary construction lighting would be restricted to the minimum required. Construction lighting details would be provided in the final CEMP. Operational lighting would also be restricted to the minimum required for operational and security purposes. With the exception of the powerhouse building, external lighting, including at the dams and upper reservoir inlet / outlet structure, would only be used during essential operational and maintenance activities. This would be subject to detailed design and in agreement with the Planning Authority. Any external lighting required at the Powerhouse Building would be designed to be discrete and minimise light pollution. Internal lighting would be required in the Powerhouse Building, predominantly during working hours, unless essential operational and maintenance activities were required outwith these hours.
- 10.7.12 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.

Invasive Non-Native Species, Pre-Construction Surveys, and Protected Species Licencing*Invasive non-native species*

- 10.7.13 No invasive non-native plant species listed on Schedule 9 of the *Wildlife and Countryside Act 1981 (as amended in Scotland)* were recorded on the Site during baseline surveys. However, as distribution of such species can change, on a precautionary principle a pre-construction survey for invasive non-native plant species shall 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 Mammals

- 10.7.14 Due to the time that will have elapsed since the last surveys and the possibility that otter, pine marten, red squirrel or badger activity could have changed in the intervening period, and / or in the unlikely event that water vole or Scottish wildcat could have colonised the Site, a pre-construction survey for these species would be undertaken prior to tree felling and construction taking place. This would cover all watercourses and other suitable habitat within 250 m of proposed infrastructure and working corridors. This would include pre-felling checks for red squirrel dreys. The results of the pre-construction surveys would inform the need for further mitigation (if required) in respect of working practices, and requirements for any licences to be obtained, in consultation with NatureScot (if required).
- 10.7.15 Due to the presence of four otter lay-ups, and two potential (non-breeding) holts within the working corridor, along with one otter lay-up outside of the working corridor but within a 30 m buffer, a licence would be obtained from NatureScot prior to the commencement of works within 30 m of the existing identified otter resting places, 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 (see **paragraphs 10.7.23 - 10.7.26** for otter protection measures). For the two potential (non-breeding) holts which would be lost, two artificial holts would be created within retained undisturbed habitat, which would be agreed with NatureScot under licence.
- 10.7.16 Due to the presence of a red squirrel drey within the working corridor, a licence would be obtained from NatureScot prior to the commencement of works within 50 m of the identified drey, along with any new dreys identified during the pre-construction survey. If a red squirrel drey is being used as a

breeding site, it will not be destroyed and no works will be completed within 50 m until the ECoW has confirmed that dependent young are not present. The breeding period, when young may be present in red squirrel dreys, is February to September inclusive. On completion of breeding, the drey would be destroyed in a controlled manner (under licence) to ensure no injury or killing of animals. A compensatory artificial drey would be installed under the supervision of the ECoW with agreement from NatureScot. The licence application would include up to date survey information and a red squirrel protection plan, detailing measures to protect and reduce disturbance to red squirrel.

- 10.7.17 With respect to bats, 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 bat roosting potential (trees with PRFs) and any additional trees that have developed new PRFs shall 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 guidelines⁸⁰ (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.
- 10.7.18 Licences would be obtained, 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 licenced 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 licenced ecologist confirms that bats are absent, the tree would be carefully section felled under supervision by the licenced 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 (as detailed within **Section 10.9**). 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. 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.

Ecological Clerk of Works

- 10.7.19 A suitably qualified ECoW or ECoW team would be employed for the duration of the construction and reinstatement periods, to ensure natural heritage 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
 - undertake pre-construction surveys and advise on ecological issues where required

⁸⁰ Collins, J. (ed.) (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition)*. The Bat Conservation Trust, London

- pre-construction inspections of areas which require species-specific mitigation and supervision of relevant mitigation measures, including erecting appropriate exclusion zones around protected species resting places
-
- oversee implementation of a Biosecurity Management Plan
-
- supervise sensitive works within Ness Woods SAC, particularly where working in close proximity to sensitive bryophyte and lichen areas, including veteran hazels and birch trees
- mark out lichen species *Stereocaulon glareosum* and *Micarea ternaria* on the track for protection, to facilitate track micro-siting

10.7.20 The ECoW would also undertake additional roles such as assisting with water quality monitoring and / or checking for nesting birds (see **Chapter 11: Ornithology** and **Chapter 14: Geology, Soils and Water**).

Reptiles

10.7.21 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.

10.7.22 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).

Protected Mammals

10.7.23 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.

10.7.24 An exclusion zone of a minimum of 30 m would be implemented for the retained otter lay-ups, and a minimum of 200 m for the retained holt which has suitability to be used as a natal holt (see **paragraphs 10.8.59 - 10.8.60**); a 30 m exclusion zone would be implemented for the retained active badger sett (see **paragraphs 10.8.104 - 10.8.107**), demarcated by the ECoW, to ensure legislative compliance.

- 10.7.25 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.
- 10.7.26 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.

10.8 Potential Significant Effects

- 10.8.1 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

- 10.8.2 Potential effects, assuming that the good practice mitigation measures outlined in **paragraphs 10.7.2 - 10.7.26** 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, legally protected species and deer (as requested by consultees)). These comprise:

- Ness Woods SAC and Easter Ness Forest SSSI
- Urquhart Bay Wood SAC and SSSI
- broad-leaved semi-natural woodland, scattered scrub, unimproved acid grassland, dry dwarf shrub heath, wet dwarf shrub heath, blanket bog, wet modified bog, flushes, open water, watercourses, and swamp, marginal and inundation vegetation
- bryophytes and lichens
- invertebrates, reptiles, otter, pine marten, red squirrel, badger, bats and deer

Ness Woods SAC

- 10.8.3 This section includes an assessment of potential construction effects upon Ness Woods SAC. Potential ecological effects are detailed, and assessed for each qualifying interest of Ness Woods SAC. A detailed assessment against the conservation objectives for each qualifying feature is also provided in a separate **Shadow HRA Report**.
- 10.8.4 The Proposed Development has the potential to cause the following ecological impacts during construction:
- direct habitat loss as a result of permanent infrastructure (specifically the access track and powerhouse with associated infrastructure) and working corridors
 - indirect impacts as a result of habitat fragmentation, including changes to micro-climatic conditions affecting plant communities including bryophytes and lichens, and longer-term impacts on resilience / viability of lichen populations
 - damage or degradation to surrounding retained habitats due to:
 - damage to tree roots
 - air quality impacts from dust deposition

- air quality impacts from emissions generated from road traffic and non-road mobile machinery
- water quality impacts or a change in flow regimes of watercourses flowing through Ness Woods SAC, specifically the Allt an t-Sluichd downstream of Dam 1
- spread of access track materials
- inadvertent introduction of invasive non-native species
- disruption of groundwater or surface water flows along the proposed access track
- loss of otter resting sites and otter habitat
- disturbance of otter via human presence, construction noise and vibration including blasting, and temporary construction lighting
- injury or killing of otter from traffic collisions or becoming trapped in excavations
- fragmentation of otter habitat from dam construction
- impacts to otter prey and aquatic habitat

10.8.5 These potential impacts are discussed and assessed in further detail below, in relation to each qualifying interest. For species or habitats that are not qualifying interests, separate assessments are provided in the relevant habitats and species sections of this chapter.

Habitat loss and fragmentation

10.8.6 The areas of habitat loss are provided in **Table 10.6: Summary of Habitat Loss within Ness Woods SAC** and illustrated in **Volume 2 , Figures 10.3 – 10.5**, and the specific number of trees to be lost (per species, where possible), or potentially damaged, is provided in **Table 10.7: Individual tree loss, and trees at risk of root damage, within Ness Woods SAC** and illustrated in **Volume 2, Figure 10.6: Ness Woods SAC individual tree species with proposed infrastructure overlain**.

Table 10.6: Summary of Habitat Loss within Ness Woods SAC⁸¹

Habitat Type	Habitat Loss from Permanent Infrastructure (ha)			Habitat Loss from Working Corridor (including 70% of 3 m buffer along access track) ⁸² (ha)	Total Loss (ha) ⁸³	Loss as % of total qualifying interest habitat in SAC
	Access Track Running Width	Inundation Area and Dam	Powerhouse Infrastructure			
Qualifying Interest Habitat						
Tilio-Acerion forests of slopes, screes and ravines	0.04	-	0.28	0.23 – 0.27	0.56 – 0.60	2.22 – 2.38%
Old sessile oak woods with Ilex and Blechnum in the British Isles	0.71	0.44	1.84	1.87 – 1.97	4.86 – 4.96	0.90 – 0.92%
TOTAL (Qualifying Habitat)	0.75	0.44	2.12	2.10 – 2.20	5.42 – 5.52	N/A
Non-Qualifying Interest Habitat						
Acid Grassland (U4)	-	-	-	0.01 – 0.02	0.01 – 0.02	N / A
Bare Ground (Existing access track)	0.09	-	-	0.08 – 0.12	0.17 – 0.21	N / A
Dry dwarf shrub heath	-	-	-	0.01 – 0.02	0.01 – 0.02	N / A
TOTAL (all habitats)	0.84	0.44	2.12	2.29	5.68	N/A

⁸¹ The mapped boundary of Ness Woods SAC overlaps with a slither of the open water of Loch Ness, due to a mapping discrepancy of the precise location of Loch Ness shoreline. The SAC boundary follows the shoreline from Ordnance Survey (OS) mapping, whereas the habitat loss calculations follow more detailed and accurate mapping of the shoreline undertaken by project engineers.

⁸² Loss per habitat type has been presented as a range (representing the maximum and minimum per habitat type), due to uncertainty in which areas of the 3 m working corridor buffer along the access track would be lost.

⁸³ Some of the figures in the total loss column differ from the sum of the previous four columns by 0.01 ha; this is due to the figures presented being rounded to two decimal places.

Table 10.7: Individual tree loss, and trees at risk of root damage, within Ness Woods SAC

Tree Species	Number of trees to be lost (loss from permanent infrastructure and working corridor)	Number of trees (per species) within 4 m of working corridor, at risk of root damage	Number of trees at risk of root damage, assuming 70% of trees within 4 m access track buffer are affected
Birch	711	94	
Hazel	90	20	
Alder	20	7	
Ash	5	3	
Oak	1	3	
Rowan	13	3	
Standing deadwood	4	0	
Unidentified / Cherry	6	2	
TOTAL	850	132	

10.8.7 The habitat loss assessment has been undertaken using the following assumptions and parameters, with the rationale provided where appropriate:

- The habitat loss calculations include all areas to be lost from direct infrastructure land-take (i.e. access track running width, inundation area, dam and powerhouse infrastructure), as well as the construction working corridor (with some exceptions, as detailed further below). These areas have been included in the permanent habitat loss calculations, on the basis that they represent irreplaceable ancient woodland habitat.
- The running surface of the access track through the SAC is predominantly 6 m (4 m plus 1 m either side for a drainage channel / safety barrier), widened to 7 m on bends. However, due to the cut and fill requirements of the track continually changing with the slope gradient, track routing and bend radius, the working corridor is not a consistent distance from the centreline of the access track. The access track footprint includes indicative cut and fill requirements informed by topographical data available during the basis of design. An additional 3 m working corridor buffer has been applied as a precautionary measure. At hairpin bends on a steep slope, the fill requirement for structural stability is clearly visible extending on the downhill edge of the access track. Whilst these areas are still incorporated within the working corridor buffer area, should poor conditions be discovered during ground investigations and the detailed design, the fill areas on corners are most likely to increase in size, thus, permanently occupying areas within the working corridor that would otherwise be reinstated post construction. Meanwhile, straighter sections of the access track, or areas on gentler slope gradients, would be unlikely to require cut and fill beyond that already considered within the working corridor. As such, it is not anticipated that the built footprint of the access track post construction would occupy 100% of the 3 m working corridor buffer area. Based on this, on a precautionary basis, it has been assumed that up to 70% of the 3m buffer would be permanently lost from the SAC, although it is envisaged that the build percentage would be lower than this. This area is included in the habitat loss calculations. Due to the uncertainty over which sections of the access track 3 m working corridor buffer would be utilised, habitat loss has been presented as a range for each habitat type, representing the maximum and minimum that could be lost for each habitat type, and the assessment is based on a worst-case scenario for loss of qualifying interest woodland habitat.
- The habitat loss figures include a 0.12 ha area of land to the north-east of the powerhouse, on the Loch Ness shoreline, which may be required for siting of the tailrace structure. This micro-siting flexibility for the tailrace structure is required, due to the uncertainty in geological

conditions. Although land-take may not be required in this area, it has been included in the habitat loss calculations on a precautionary basis.

- Although much of the ‘*Tilio-Acerion* forests of slopes, screes and ravines’ in mosaic is located along the unnamed watercourse draining from Lochan a Choin Uire (which is beyond the working corridor), on a precautionary basis the habitat loss calculation assumes that the two woodland types are distributed evenly within the habitat polygons that contain mosaics of the two woodland types (see **Volume 2, Figure 10.5: Ness Woods SAC Qualifying Interest Habitat Loss Areas with proposed infrastructure locations overlain**), to ensure that the potential loss of the more restricted ‘*Tilio-Acerion* forests of slopes, screes and ravines’ priority habitat type is not underestimated.
- On a similarly precautionary basis, the habitat loss calculation for ‘Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles’ includes bracken stands within the SAC with the same soil type as this habitat type, due to the possibility that a suitable seed bank has persisted and could be restored.

10.8.8 Construction would result in the direct loss of up to 0.60 ha of ‘*Tilio-Acerion* forests of slopes, screes and ravines’ qualifying interest habitat, comprising a small area on the shores of Loch Ness at the northern edge of the powerhouse site, and small pockets in mosaic with ‘old sessile oak woods with *Ilex* and *Blechnum* in the British Isles’ in the powerhouse and access track locations. This habitat loss represents up to 2.38% of the total habitat type within Ness Woods SAC.

10.8.9 Construction would result in the direct loss of up to 4.96 ha of ‘Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles’ qualifying interest habitat, comprising the majority of the habitat at the powerhouse and associated infrastructure location, the proposed access track, and the location of Dam 1 and adjacent inundation area. This habitat loss represents up to 0.92% of the total habitat type within Ness Woods SAC.

10.8.10 Construction would result in the direct loss of a range of individual bryophytes and lichens and associated microfungi, primarily via the felling of trees (specifically veteran trees (including birch and rowan) and veteran hazels), and to a lesser extent the removal / disturbance of rocks, within the construction areas for the powerhouse and associated infrastructure, the access track and Dam 1. These bryophyte and lichen communities form an important component of the qualifying interest woodland habitats, and therefore impacts upon them are assessed as part of this impact assessment of habitat loss of the qualifying interest woodland habitats.

10.8.11 Specifically with respect to the direct loss of bryophytes, construction of the access track would result in the direct loss of part of an old-growth hazel stand with a rich epiphytic bryophyte flora, dominated by the common epiphytes *Isothecium myosuroides*, *Isothecium alopecuroides*, *Frullania tamarisci*, *Homalothecium sericeum*, *Hypnum* spp. and *Ulotia* spp. More interesting species recorded in this area included *Antitrichia curtispindula*, *Neckera complanata*, *Neckera pumila*, *Orthotrichum striatum* and *Ulotia intermedia* (Target Note 2, **Volume 2, Figure 10.9: Bryophytes with proposed infrastructure overlain**), all of which are of Least Concern⁸⁴, with the exception of *Ulotia intermedia* which is Not Evaluated (which is new to East Inverness-shire, as it is a recently-described segregate of the *Ulotia crispera* complex⁸⁵, rather than being a rare species). Two ash trees (southern edge of Target Note 5, **Volume 2, Figure 10.9: Bryophytes with proposed infrastructure overlain**) to the

⁸⁴ Hodgetts, N., et al. (2019) *A miniature world in decline: European Red List of Mosses, Liverworts and Hornworts*. Brussels, Belgium: IUCN. Available at: <https://portals.iucn.org/library/sites/library/files/documents/RL-4-027-En.pdf> [Accessed in July 2023]

⁸⁵ Blockeel, T.L. 2017. The *Ulotia crispera* group in Britain and Ireland, with notes on other species of the genus. *Field Bryology* 117: 8-19.

north of the powerhouse would also be lost, which support common species such as *Frullania dilatata* and *Orthotrichum striatum*. Direct loss of a rich bryophyte flora would also occur on rocks on the loch shore where the powerhouse platform and tailrace structures are to be constructed (Target Note 3, Volume 2, Figure 10.9: Bryophytes with proposed infrastructure overlain), on a low rock face (Target Note 3, Volume 2, Figure 10.9: Bryophytes with proposed infrastructure overlain) in the powerhouse construction area, and on the lower section of a scree slope in the powerhouse construction area (Target Note 4, Volume 2, Figure 10.9: Bryophytes with proposed infrastructure overlain). *Fontinalis antipyretica*, *Hygrohypnum luridum*, *Racomitrium aciculare*, *Sciuro-hypnum plumosum*, *Thamnobryum alopecurum*, *Grimmia hartmanii*, *Nogopterium (Pterogonium) gracile*, *Lejeunea cavifolia*, *Dicranum scoparium*, *Frullania tamarisci*, *Amphidium mougeotii*, *Anoetangium aestivum*, *Hylocomiadelphus (Rhytidiadelphus) triquetrus*, *Bazzania trilobata*, *Plagiochila punctata*, *Plagiochila spinulosa*, *Bartramia pomiformis*, *Blepharostoma trichophyllum*, *Neckera crispa*, *Tortella tortuosa*, *Scapania gracilis*, and *Hylocomiastrum umbratum* were recorded in these areas. None of these bryophytes within the infrastructure footprint or working corridor are rare, however they comprise typical species of the qualifying woodland habitats.

- 10.8.12 Direct loss of lichens, and associated lichenicolous fungi is mostly associated with the proposed access track and powerhouse infrastructure area. Specifically, those of very high⁸⁶ value where some loss would occur comprise *Arthonia sampaiana* (NR, UK Red Listed NT⁸⁷) (four of nine locations lost (on hazel)), *Bactrospora homalotropa* (NS, Sc, IR, Lowland Rainforest Indicator (LRI) species⁸⁸) (one of seven lost (on hazel)), *Fuscopannaria mediterranea* (LC, NS, L, SWI) (one of two lost (on hazel)), *Leptogium burgessii* (Sc, IR) (four of 26 lost (on hazel)), *Pectenium plumbeum* (LC, L, IR) (two of six lost (on hazel and rowan)) and *Phlyctis agelaea* (NT, NS, Sc) (one of five lost (on hazel)), all of which are old growth species.
- 10.8.13 High value species *Nevesia sampaiana* (UK Red Listed NT, NS, L, Sc, IR, BWI, LRI) (16 of 183 lost) and *Parmeliella testacea* (NT, NS, L, Sc, IR, LRI) (32 of 169 lost) would also experience some direct loss, primarily on hazel; these two species are widespread across the Site, but given that the proposed access track passes through a core population in an old growth hazel stand, the resilience of these species could be reduced. High value old growth species *Crutarndina petractoides* (Sc, IR) (three of 49 lost) and *Pannaria rubiginosa* (LC, Sc, L, IR, BWI) (five of 48 lost) would also experience some direct loss, on hazel. A single patch (out of ten) of high value *Bunodophoron melanocarpum* (LC) would also be lost to the inundation zone, although this lies outside of Ness Woods SAC. A veteran hazel supporting *Scutula circumspecta* (VU, NS, Sc) and *Pachyphiale fagicola* (NT, NR) lies immediately beyond the working corridor and RPA, and therefore would be retained, although particular care will be required during construction to ensure protection (see **paragraph 10.7.10**).

⁸⁶ The value of lichens are assessed at the Site-based scale within the baseline terrestrial lichen report (Acton, 2022). In summary, lichens assessed as having 'very high value' are generally old growth species, including species that are Red-listed in the UK and / or Europe, rare or absent in most other areas of Britain outwith their strongholds in Argyll / Lochaber, and rare at the Site-based scale. 'High value' species are notable species that are generally scarce on Site, whereas 'medium value' species are more common species.

⁸⁷ Lichen conservation status key: LC = Least Concern (IUCN Red List Category); IUCN Red-Listed species are: CR = Critically Endangered; EN = Endangered; VU = Vulnerable or NT = Near Threatened. Sc = Scottish Biodiversity List species. IR = species for which the UK has International Responsibility, as it supports a significant proportion of the European and / or global populations; L = *Lobarion* community species; NS = Nationally Scarce; NR = Nationally Rare: Conservation status follows: Woods, R. G. and Coppins, B. J. (2012) A Conservation Evaluation of British Lichens and Lichenicolous Fungi. Species Status 13. Joint Nature Conservation Committee, Peterborough.

⁸⁸ Coppins, A. M. and Coppins, B. J. (2002) Indices of Ecological Continuity for Woodland Epiphytic Lichen Habitats in the British Isles. British Lichen Society, London.

- 10.8.14 Lichens on the watercourses surveyed would predominantly be retained, with the exception of the upper stretch of the Allt an t-Sluichd at the location of Dam 1, where several lichens of medium value, a single lichen of high value on a birch tree, *Lopadium disciforme* (LC, BWI, SWI) (one of five on the Site), and a single lichen of very high value on a birch tree, *Bactrospora corticola* (NS) (one of two on the Site), would be lost within the woodland surrounding the watercourse.
- 10.8.15 In total, 10 trees with lichen specimens of very high value, 34 of high value, and 68 of medium value at the Site-based scale, would be lost from within Ness Woods SAC (within the infrastructure footprint and working corridor). Beyond the working corridor, a further two trees with lichens of very high value, eight with lichens of high value, and seven of medium value at the Site-based scale would be at risk of loss or damage, due to potential effects upon roots of the trees, within 4 m of the working corridor (see **paragraphs 10.8.29 – 10.8.33** for further details of potential effects upon retained trees). Whilst numerous individual lichens of medium, high and very high value would be lost, construction works are not anticipated to lead to the extinction of any lichen species at the Site level, as all species within the working corridor also occur within other areas of the Site.
- 10.8.16 Beyond the working corridor and 4m possible tree impact buffer, there is the potential for the qualifying woodland habitats, including the associated bryophyte and lichen communities, to be indirectly affected by fragmentation, along the proposed access track corridor.
- 10.8.17 Fragmentation can have a negative effect on plant species richness and diversity, with smaller patch sizes and greater distances between patches negatively affecting species richness and diversity; although not all plant species have been found to respond in the same way, with woodland specialist species such as ferns most affected⁸⁹. More generalist species are not so affected by spatial isolation as they tend to be more evenly distributed across the landscape matrix and therefore they tend to dominate once woodland species become locally extinct⁹⁰. Within Ness Woods SAC, the distance between woodland patches (i.e. the width of the access track corridor) is small, and the woodland patches (i.e. woodland either side of the access track corridor) are large, as they have immediate connectivity with extensive areas of woodland to the north and south of the project area. Therefore a widespread reduction in woodland plant species richness and diversity as a result of fragmentation is not expected in retained woodland habitat areas distant from the proposed access track corridor.
- 10.8.18 Fragmentation can also result in increased edge effects. Edges are associated with higher temperatures and wind speeds, greater disturbance, increased water loss, and the presence of non-woodland species, which can impact upon the ecology of woodland⁹⁰. Increased solar radiation at woodland edges decreases soil moisture, which leads to decreased decomposition of leaf litter, and reduced nutrient cycling⁹¹. Herbst *et al.* (2007)⁹² showed that evapotranspiration from trees was significantly higher at edges than in the interior of the woodland. This edge effect can dominate the water use of small woods because the higher the amount of transpiration the lower the rate of groundwater recharge. Therefore, the smaller the wood (and therefore the greater the edge to

⁸⁹ Rodriguez-Loinaz, G. Amezaga, I. and Onaindia, M. (2012) Does forest fragmentation affect the same way all growth-forms? *Journal of Environmental Management*, 94, Issue 1, Pages 125-131

⁹⁰ Ryan, L. (2012) *Impacts of nearby development on ancient woodland – addendum*. The Woodland Trust, Grantham

⁹¹ Riutta, T., Slade, E. M., Bebbler, D. P., Taylor, M. E., Malhi, Y., Riordan, P., MacDonald, D. W. and Morecroft, M. D. (2012) Experimental evidence for the interacting effects of forest edge, moisture and soil macrofauna on leaf litter decomposition, *Soil Biology and Biochemistry*, 49, pages 124 - 131

⁹² Herbst, M., Roberts, J. M., Rosier, P. T. W., Taylor, M. E. and Gowing, D. J. (2007) Edge effects and forest water use: A field study in a mixed deciduous woodland, *Forest Ecology and Management*, 250, pages 176 - 186

interior ratio) the lower the soil water recharge rate is expected to be. Changes to transpiration rates are not equal across all tree species with ash being more affected than oak, field maple (*Acer campestre*) and hawthorn (*Crataegus monogyna*). However, the effect of increased water loss was found to become negligible for woods greater than 100 hectares, which is applicable at Ness Woods SAC.

- 10.8.19 Edge effects can penetrate as far as 30m into a woodland, but this is greatly reduced for closed edges⁹³. Gonzalez *et al.* (2010)⁹⁴ found that the greater the proportion of edge to the interior the more likely the interior was to be colonised by light demanding species; therefore the amount of edge to interior, as well as the structure may be impacting on the species composition of the woodland.
- 10.8.20 The proposed access track route is sinuous, due to the technical constraints associated with gradients, and as such comprises several hairpin bends, where retained woodland in the interior of the hairpin bends has the potential to become fragmented. For assessment purposes, it has been assumed that areas of retained relatively dense woodland habitat within the hairpin bends, which measure 60m or less across, comprise woodland habitat that could become more isolated as a result of construction, and therefore has the potential to result in vegetation changes. These areas are shown by orange hatching in **Volume 2, Figures 10.3 – 10.7 and 10.8 - 10.9**, and the corresponding qualifying habitat areas are detailed in **Table 10.8: Areas of Habitat Change from Fragmentation Effects**. These areas have been included on the basis of becoming isolated from woodland interior habitat. Hairpin bends that transect existing edge habitat with open and scattered woodland, or open bracken patches (i.e. at the upper stretch of the proposed access track), are excluded from this calculation. This is on the basis that edge habitat already exists in these areas, and therefore is not at risk of becoming further fragmented from woodland interior habitat.

Table 10.8: Areas of Habitat Change from Fragmentation Effects

Habitat Type ⁹⁵	Habitat Change from Fragmentation Effects (ha)
<i>Tilio-Acerion</i> forests of slopes, screes and ravines	0.13
Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	1.04
TOTAL	1.17

- 10.8.21 Beyond the working corridor, there is the potential for lichen communities to be indirectly affected by fragmentation. Fragmentation can reduce the long-term viability / resilience of sub-populations through increasing distances between colonisation sources and thus reducing the chances of colonisation events, making species that appear to rely exclusively / almost exclusively on dispersal via vegetative propagules, sensitive to fragmentation impacts, as these tend to be short range

⁹³ Hamburg, L., Lehvavirta, S. and Kotze, D. J. (2009) Forest edge structure as a shaping factor of understorey vegetation in urban forests in Finland, *Forest Ecology and Management*, 257, Issue 2, Pages 712 - 722

⁹⁴ Gonzalez, M., Ladet, S., Deconchat, M., Cabanettes, A., Alard, D. and Balent, G. (2010) Relative contribution of edge and interior zones to patch size effect on species richness: An example for woody plants, *Forest Ecology and Management*, 259, Issue 3, Pages 266 - 274

⁹⁵ Qualifying habitat areas shown are based on the same assumptions regarding composition of the mosaic habitats that have been used for the direct habitat loss calculations

dispersal mechanisms (and most effective within a stand where veteran trees suitable for colonisation are nearby). This includes a number of *Lobarion* species recorded on the Site. *Fuscopannaria ignobilis* is non-fertile and has been recorded at three locations during the lichen surveys: on an ash tree on an island within the Allt an t-Sluichd watercourse, downstream of Proposed Dam 1 and beyond the working corridor and fragmentation area; on a veteran hazel close to the proposed access track route beyond the working corridor; and on an aspen well away from construction works. With the mitigation measures in place to maintain the natural flow regime of the Allt an t-Sluichd watercourse and protect the water quality, as detailed in **paragraphs 10.7.1 - 10.7.3**, the *F. ignobilis* on the ash tree at the Allt an t-Sluichd would not be affected by the proposals. The *F. ignobilis* on the veteran hazel close to the proposed access track (beyond the working corridor and RPAs) is not expected to be threatened from humidity changes, given its location within an open canopy area with only sparse tree cover, where changes in humidity and light levels are expected to be negligible. Therefore, this species would not be affected by the Proposed Development. *Leptogium burgessii* is scarce and local on the Site with few patches with well-developed fruits. *Parmeliella testacea* and *Nevesia sampaiana* are also sensitive to fragmentation impacts, as they are very rarely or never recorded fertile on the Site. Stands of hazel with good, healthy sub-populations of frequent *Nevesia sampaiana* are likely to be especially important to support its fungal parasite *Arthonia sampaiana*.

- 10.8.22 The retained habitat within the tightest hairpin bends is considered to have the most adverse effects with respect to fragmentation causing a significant decrease in colonisation events. Beyond these areas, fragmentation impacts are considered unlikely to significantly reduce the chances of colonisation events given that available habitat and colonisation sources are available on both sides of the proposed infrastructure areas for most species, although it is acknowledged that the reduction in available habitat for some of the most scarce species at the Site (i.e. high value species *Arthonia sampaiana*, *Bactrospora homaloptropa*, *Fuscopannaria mediterranea*, *Leptogium burgessii*, *Pectenia plumbea*, *Phlyctis agelaea* and *Bactrospora corticola*), could lower the resilience and long-term viability of these populations at the Site scale in the long-term.
- 10.8.23 Potential fragmentation effects also include a change in micro-climatic conditions. Regionally, nationally and internationally important bryophytes and lichens that occur on the Site are sensitive to changes in micro-climatic conditions (humidity, shelter and light levels), particularly old-growth epiphytic floras. Oceanic species are also particularly vulnerable to a reduction in shelter / humidity as they are on the eastern edge of their range (see **Volume 4, Appendix 10.3: Lichen Survey Report**). The *Lobarion* community is vulnerable to fragmentation due to increased dispersal distances and changes in micro-climate / reduced humidity, which is evidenced at the Site from observations of fragmentation of hazel stands elsewhere in the Survey Area, where the *Lobarion* community is in poor condition. This includes many of the lichen species of medium value, including *Sticta sylvatica* (Sc L IR), *Pannaria conoplea* (Sc L IR), *Degelia atlantica*, and *Dictyonema* sp. For bryophytes and lichens, the drying out of the Allt an t-Sluichd would have the potential to reduce the viability of the communities along the watercourse, due to a change in the humidity levels. However, no drying out of the watercourse would occur, with the implementation of the mitigation measures as detailed in **paragraphs 10.7.1 - 10.7.13**, and therefore this potential impact would be avoided.
- 10.8.24 Beyond the watercourse, within retained habitat areas surrounding the working corridor, an adverse effect upon the distribution and viability of bryophytes is not expected within areas where the canopy cover of the woodland is scattered and open with bracken areas. This is because microclimatic conditions are not expected to appreciably change in retained habitat beyond the working footprint within such areas, and given that bryophyte species recorded are generally common and widespread, with no Nationally Rare or Scarce bryophyte species recorded. The exception to this is where the working corridor passes through more dense closed canopy woodland

and old-growth hazel and birch stands, most notably the second lowest hairpin bend of the proposed access track (the area of which is included in the calculation for indirect effects of fragmentation, see **Table 10.8: Areas of Habitat Change from Fragmentation Effects**). In this location, construction of the access track would pass through an old-growth hazel stand which would increase exposure and lead to reduced availability of niches for bryophyte species reliant on more sheltered humid conditions, as well as epiphytic lichen species reliant on such conditions. The below assessment primarily focuses on this hairpin bend, as NatureScot have specifically raised a concern relating to further loss of viability of typical species as a result of micro-climatic edge effects within this area, and given that this area has the highest concentration of lichens of value. There are also a small number of records of bryophytes and lichens of value within the adjacent hairpin bend fragmentation areas, where similar effects are also possible on a smaller scale.

10.8.25 Seven very high value or high value lichen species occur within the fragmentation area of this hairpin bend, as further described individually below:

- There are two trees supporting very high value *Bactrospora homalotropa*; given that this is a sheltered oceanic woodland species, adopting a precautionary principle these two lichens are assessed as being threatened by reduced humidity in this area
- Four trees supporting very high value *Leptogium burgessii*. This is an oceanic species of sheltered moist woods, and therefore it is concluded that these would be heavily impacted by fragmentation. This is a core area for this species in the study site, and the fragmentation would reduce the suitability of this area overall and reduce long term population viability. This species is most often found fertile on better developed thalli when conditions are optimum⁹⁶; the majority of the best fertile patches (four of eight) are along the proposed access track corridor or hairpin area
- Fourteen trees supporting high value *Nevesia sampaiana*. The *Nevesia* within the survey area at Kemp appears to survive on remaining hazels despite fragmentation⁹⁷, and therefore this species may survive the reduction in humidity due to fragmentation within this area, although the conditions may become less suitable for its fungal parasite *Arthonia sampaiana* (see further below);
- *Arthonia sampaiana*, a high value fungal parasite of *Nevesia sampaiana*. Although there are no trees within the hairpin bend fragmentation areas that support this species (additional to those that would be directly lost within the working corridor, which passes through a core population), the conditions within the fragmentation areas are likely to become less suitable for this species, thus resulting in a reduction in available habitat, and reducing the viability of the species
- One tree supporting very high value *Microcalicium disseminatum*, beyond the working corridor and RPA buffer, but within close proximity. A species of veteran trees in humid localities. The main effect for this species would be the reduction of available habitat (rather than microclimatic fragmentation effects), relating to the loss of gnarly veteran birches with bare lignum patches and hollows, of which there are several suitable veteran birches within this area
- Twenty-two trees supporting high value *Parmeliella testacea*. This is an oceanic species of sheltered moist woods, and it is concluded that all of these locations within the hairpin bend

⁹⁶ Pers. obs. of Andy Acton, project lichenologist, is that in poor habitat conditions thalli are more scrappy and without fruits

⁹⁷ Pers. obs, Andy Acton, project lichenologist

would be potentially affected by the Proposed Development. This is a core area for this species within the study site, and fragmentation would make this area less suitable overall for this species, and reduce viability

- One tree within the first hairpin bend and one within the second hairpin bend supporting high value *Crutarndina petraetoides*. This is a species of sheltered woods therefore could potentially be impacted by fragmentation, but is not likely to be as vulnerable as other species requiring high humidity. However, adopting a precautionary approach these two locations are assessed as being potentially threatened by micro-climatic fragmentation effects
- One tree supporting high value *Pannaria rubiginosa* within this second hairpin bend, and two further trees within the adjacent hairpin bends. This is a species of humid sheltered oceanic woods, therefore on a precautionary basis it is assumed that these three locations are potentially threatened by micro-climatic fragmentation effects.

10.8.26 Felling of trees at the location of Dam 1 could also reduce humidity levels for old-growth lichen species *Felipes leucopellaea*, *Lopadium disciforme* and *Protoparmelia ochrococca* in this area (although it is noted that *Felipes leucopellaea* is not confined to sheltered woods but often appears to be most abundant in more sheltered woods). However, the canopy cover of the woodland in and adjacent to the construction areas is generally scattered and open with open bracken areas, with limited areas of dense and sheltered tree coverage, due to extensive over-browsing. Therefore, significant changes in micro-climatic conditions are considered unlikely to extend beyond the immediate edge of the construction area itself, in the vicinity of Dam 1.

10.8.27 The lowest part of the proposed access track extends for approximately 250 m across the slope above the Loch Ness shoreline, set back from the shoreline by between approximately 30 m and 100 m, before curving up the hillside in a series of hair-pin bends. The woodland area between the lower section of the proposed access track and the Loch Ness shoreline primarily comprises a habitat mosaic of 60% 'Tilio-Acerion forests of slopes, screes and ravines,' and 40% 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles,' made up of NVC communities W9b, W11a, W17b and U20 (see Figures 10-4 and 10-5). Ground flora species including oak fern (*Gymnocarpium droyopteris*), globeflower (*Trollius europaea*), scaly male fern (*Dryopteris dilatata*), wood anemone (*Anemone nemorosa*), wood sorrel (*Oxalis acetosella*), wood sage (*Teucrium scorodonia*), chickweed wintergreen (*Trientalis europaea*) and yellow pimpernel (*Lysimachia nemorum*) were recorded here at low cover, and tree species include birch, alder, ash, hazel and rowan. This habitat type continues south beyond the infrastructure area, and is connected with large areas of woodland habitat to the south, where Ness Woods SAC continues. Due to the width of habitat and connection to further similar woodland habitat, and the fact that the shoreline already represents woodland edge habitat, further significant fragmentation effects for this area of habitat are not considered likely, with nearby plant seed and colonisation sources available. Mammal species would be able to continue to move between this area of habitat, and habitat to the south, with all species also expected to be able to cross the proposed access track, to move between this area and further habitat to the north and east (see further information on otter and red squirrel below). Similarly, invertebrates would be able to move between this habitat area and adjoining habitat to the south, or cross the proposed access track to access further habitat to the north and east.

10.8.28 Overall, the direct loss of up to 0.60 ha, and the indirect effect of habitat change via fragmentation of 0.13 ha of 'Tilio-Acerion forests of slopes, screes and ravines' including the associated bryophyte and lichen interest, is assessed as constituting **an adverse effect upon this woodland qualifying interest, which is significant at an international level**. This is based on the fact that although the extent of loss and fragmentation is small, it represents up to 2.90% of the total habitat type within Ness Woods SAC, which given that this habitat type is very restricted in its distribution within Ness Woods SAC, and given that it is the primary reason for selection, is considered significant.

- 10.8.29 For the qualifying interest habitat ‘Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles’, the (up to) 4.96 ha of direct habitat loss, and 1.04 ha of habitat change via fragmentation, represents (up to) 1.12% of the total habitat type within Ness Woods SAC. Given the extent of the loss and fragmentation, and its status as qualifying interest habitat for the SAC, and given the loss or potential loss (via fragmentation) of bryophytes and high and very high conservation value lichens forming an important component of the qualifying woodland interest, the habitat loss is assessed to constitute an **adverse effect which is significant at an international level**.

Damage to roots of retained trees

- 10.8.30 In addition to the direct loss of trees within the infrastructure footprint and working corridor, there is also the risk of root damage to trees beyond the working corridor, as described below and detailed in **Table 10.7: Individual tree loss, and trees at risk of root damage, within Ness Woods SAC**.
- 10.8.31 On a precautionary basis, it has been assumed that all trees within the access track 3 m working corridor buffer would be lost. In practice, some trees within the 30% of the 3 m working corridor not being utilised for construction, may be retained, but a worst-case scenario has been used for assessment purposes, as works would almost certainly be required within the relevant Root Protection Areas (RPAs). In addition, it is acknowledged that there is also the risk of trees being damaged beyond the working corridor, due to the possible damage to roots for any works within the working corridor where it is not feasible to avoid RPAs. Trees within a 4 m buffer of the working corridor are shown in **Table 10.7: Individual tree loss, and trees at risk of root damage, within Ness Woods SAC**. A 4 m buffer has been applied for assessment purposes, as this represents the average (both mean and median) RPA radius of trees within close proximity to the working corridor, assessed using a sample of 30 trees along the proposed working corridor, measured in May 2023 (see **Volume 4, Appendix 10.5: Ness Woods SAC Tree Tagging Information, and Sample Root Protection Area Information**). The average RPA is deemed to represent a suitable buffer for calculating the overall number of trees whose roots could be affected. This is because whilst some trees beyond this average buffer could have RPAs extending into the working corridor (due to their positioning and / or larger than average RPAs), this is likely to be balanced by a broadly similar proportion of trees within this buffer having RPAs that do not extend into the working corridor (due to their positioning within the buffer and / or smaller than average RPAs).
- 10.8.32 A set out in relation to habitat loss, not all of the 3 m working corridor buffer along the access track would be utilised and a precautionary assumption that up to 70% of the 3 m buffer would be permanently lost has been utilised. It is also unlikely that more than 70% of the trees within the 4 m buffer outside of the working corridor, along the access track, would be affected from possible root damage. Given that it is not known which sections of the access track 3 m working corridor buffer would be utilised, it is not known which of the trees within the 4 m buffer beyond the working corridor along the access track would be affected from possible root damage. As such, **Table 10.7: Individual tree loss, and trees at risk of root damage, within Ness Woods SAC** provides details of all trees within the 4 m buffer, along with the total number of trees that would be affected on the basis of 70% of trees being affected along the access track. For the 4 m buffer around other infrastructure it is assumed that 100% of trees would be affected by possible root damage.
- 10.8.33 A precautionary assumption of 70% of trees within the 4 m buffer along the access track being affected by possible root damage has been applied for the same reasons as the 70% habitat loss assumption being applied within the 3 m working corridor buffer. Specifically, as work will not be required along the full length of the working corridor buffer along the access track, RPAs of trees would also not be affected along the full length of the 4 m buffer beyond the working corridor. An assumption of 70% is precautionary, as cut-and-fill is likely not needed in a lot of these RPA areas,

smaller trees at a distance from the works would not be affected, and micro-siting of the access road works would be undertaken where possible to minimise encroachment into RPAs, as directed by the ECoW who would mark out RPAs. Effort would be made to try and protect all of the trees outside of the working corridor, and RPAs would only be affected where the access track cannot be built in any other way (i.e. where cut-and-fill right up to it cannot be avoided).

- 10.8.34 Given the status of Ness Woods SAC, and the location of impacts situated within qualifying woodland habitat, the potential damage to roots of 107 trees beyond the working corridor is assessed as constituting an **adverse effect which is significant at an international level**.

Dust deposition

- 10.8.35 Dust deposition can impact vegetation by affecting photosynthesis, respiration, transpiration and allowing the penetration of phytotoxic gaseous pollutants, generally resulting in decreased productivity⁹⁸. Epiphytic lichens are particularly sensitive to dust deposition⁹⁸.

- 10.8.36 As detailed in **Chapter 18: Air Quality**, the activities with the potential to generate dust within close proximity (i.e. within a 400 m screening distance) to Ness Woods SAC are: construction of the powerhouse building; site clearance and preparation; construction of a platform at the lower reservoir works and tunnel portal; excavation of access tunnel and drop shaft; processing (concrete batching plant, crusher and screener); construction of on-site tracks; excavations and surfacing; on-site transportation (material transfer); excavation and operation of borrow pits 7 and 8; blasting and excavation; stockpiling; the construction of Dams 1 and 8; construction of works with rockfill (Dam 8); central processing area; crushing and screening; and concrete batching plant (for upper reservoir works).

- 10.8.37 In an unmitigated scenario, the air quality assessment (**Chapter 18: Air Quality**) concludes that dust deposition would have a predicted range of effects from negligible to substantial adverse, depending on the distance and direction from the dust generating activity. However once the dust control mitigation is applied, as summarised in **paragraphs 10.7.7** (including general good practice measures across the whole Site and additional specific measures in proximity to Ness Woods SAC), the air quality assessment concludes that the residual source emission magnitude and the pathway effectiveness for dust emissions would reduce substantially. As such, the residual dust deposition effects are considered **not significant**.

Emissions generated from road traffic, and non-road mobile machinery

- 10.8.38 An air quality assessment for exhaust emissions generated from road traffic and Non-Road Mobile Machinery (NRMM), for Ness Woods SAC / Easter Ness Forest SSSI, is detailed in **Chapter 18: Air Quality**, and is summarised here.
- 10.8.39 A review of the ecological effects of diffuse air pollution arising from road traffic on semi-natural habitats⁹⁹ found that lichen diversity declined with increasing concentrations of pollutants emitted from vehicle exhausts.

⁹⁸ Farmer, A. (1993) The effects of dust on vegetation – a review. *Environmental Pollution* 79: 63-75

⁹⁹ Smithers, R., Harris, R. and Hitchcock, G. (2016) *The ecological effects of air pollution from road transport: an updated review*. Natural England Commissioned Report NECR199

- 10.8.40 An increase in vehicle emissions can result from off-site vehicles, on-site vehicles and on-site plant during construction. The sources of emissions increase during construction are identified as: additional road vehicle movements generated during construction (from importation of material for concrete / shotcrete and access creation, importation of fuel, servicing and occasional deliveries of larger items of plant); dump trucks for material transfer using internal haul routes (primarily between the powerhouse and the upper reservoir); and remaining NRMM used at the powerhouse and associated infrastructure and Dam 1.
- 10.8.41 Critical Levels are a quantitative estimate of exposure to one or more airborne pollutants in gaseous forms, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge. Critical Levels for the protection of vegetation and ecosystems are specified within relevant UK and air quality legislation. For Nitrous Oxides (NOx) emissions, the relevant Critical Levels are 30 µg/m³ (annual mean) and 200 µg/m³ (daily mean) for all ecosystems¹⁰⁰.
- 10.8.42 Critical Loads are a quantitative estimate of exposure to deposition of one or more pollutants, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge. Critical Loads for eutrophication are habitat / species specific (derived from a range of experimental studies), whereas Critical Loads for acidification are dependent on soil chemistry, as well as habitat type.
- 10.8.43 The Air Pollution Information System (APIS) website¹⁰¹, a support tool for assessment of potential effects of air pollutants on habitats and species developed in partnership by the UK conservation agencies and regulatory agencies and the Centre for Ecology and Hydrology, has been used to provide information on background pollutant concentrations, current deposition rates, Critical Loads for nutrient nitrogen (N) (**Table 10.9: Nitrogen Critical Levels and Critical Loads**) and Critical Loads for functions for acidity (**Table 10.10: Acid Critical Load Functions and Current Loads**) for Ness Woods SAC.

Table 10.9: Nitrogen Critical Levels and Critical Loads

Site	APIS Critical Load Class (most sensitive)	NOx Annual Mean (µg / m ³)	Critical Load Range (kg N / ha / yr)	Current Load (kg N / ha / yr)
Ness Woods SAC	Acidophilous <i>Quercus</i> -dominated woodland	1.65	10-15	6.3

¹⁰⁰ IAQM (2020) *A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites*, v 1.1

¹⁰¹ <http://www.apis.ac.uk/> [accessed in November 2022]

Table 10.10: Acid Critical Load Functions and Current Loads

Site	APIS Critical Load Class (most sensitive)	Critical Load Function ¹⁰² (keq / ha / yr)			Current Load (keq / ha / yr)	
		CLmaxS	CLminN	CLmaxN	Nitrogen Deposition	Sulphur Deposition
Ness Woods SAC	Broadleaved, mixed and yew woodland	0.591	0.142	0.876	0.5	0.1

- 10.8.44 For off-site road traffic, designated sites within 200 m of the affected road network (i.e. roads which are expected to experience an increase in traffic volume as a result of the proposed construction activities, in this instance the A9 (T), B861 and B862) are considered in accordance with established criteria^{100,103}. There are no ecological designations present within 200m of the affected road network. Furthermore, the 24-hour Annual Average Daily Traffic (AADT) road traffic flows generated during the construction phase are well below the Institute of Air Quality Management (IAQM) prescribed screening criteria¹⁰⁴ of 1,000 AADT (and/or 200 Heavy Duty Vehicles (HDVs) as AADT). As such, no further assessment is required, and road traffic impacts associated with construction activities on air quality are assessed as having a neutral effect on Ness Woods SAC which is **not significant**.
- 10.8.45 For on-site NRMM, land within 50 m of NRMM emissions is considered¹⁰⁵. According to the IAQM¹⁰⁶, experience of assessing exhaust emissions from NRMM suggests that they are unlikely to make a significant impact on local air quality. According to Defra's TG22 guidance¹⁰⁷, experience of assessing the exhaust emissions from on-site plant (NRMM) and site traffic suggests that, with suitable controls and site management, they are unlikely to make a significant impact on local air quality.
- 10.8.46 On-site vehicle generation through Ness Woods SAC during construction is summarised in **Table 10.11: Construction Phase Vehicle Generation (on-site, within Ness Woods SAC)** (provided by the appointed transport consultant for the Proposed Development).

Table 10.11: Construction Phase Vehicle Generation (on-site, within Ness Woods SAC)

Time Period	HDVs (as AADT)	LDVs (as AADT)
2025 (Jul – Dec)	122	13
2026	96	98
2027	185	149

¹⁰² Critical Load functions for acidity are defined in APIS using three quantities, to account for both sulphur and nitrogen inputs: CLmaxS (maximum critical load for sulphur), CLminN (minimum critical load for nitrogen) and CLmaxN (maximum critical load for nitrogen).

¹⁰³ Highways England et al. (2019) *Design Manual for Roads and Bridges* (DMRB) LA 105

¹⁰⁴ IAQM (2020) *A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites*, v 1.1

¹⁰⁵ Following a review of approaches adopted for other Nationally Significant Infrastructure Projects (NSIP) where extensive onshore construction activities are proposed, a 50 m distance screening threshold in relation to NRMM emissions has been accepted by statutory consultees and the Planning Inspectorate (England) (Northampton Gateway, 2019 The Northampton Gateway Rail Freight Interchange Order 201X. Applicants' Response to Secretary of State's Request for Comments).

¹⁰⁶ Holman et al (2014) *IAQM Guidance on the Assessment of Dust from Demolition and Construction*, Institute of Air Quality Management, London

¹⁰⁷ DEFRA (2022) *Local Air Quality Management. Technical Guidance (TG22)*. DEFRA, London.

Time Period	HDVs (as AADT)	LDVs (as AADT)
2028	183	143
2029	45	70
2030 (Jan – Jun)	0	5

- 10.8.47 The 24-hour AADT traffic flows generated on the designated track running through Ness Woods SAC are below the screening criteria of 1,000 AADT (and/or 200 HDVs). As such, the air quality assessment concludes that the impact of on-site vehicle movements on air quality can be considered as having a neutral and **non-significant** effect on Ness Woods SAC, and no further assessment is required.
- 10.8.48 NRMM emissions are controlled through European Directives (e.g. Regulation EU 2016/1628) in terms of maximum operable emission limits. Emissions standards are applied to NRMM engines at the point of placing on the market – and typically become stricter following the introduction and availability of cleaner technologies and fuels. The most recent stringent emission standards, Stage V, were effective from 2019 for engines below 56 kW and above 130 kW, and from 2020 for engines of 56-130 kW. By the time construction activities are expected to commence (2025), all NRMM will comply with Stage V emissions, as a minimum – or a later emission standard introduced in the interim period.
- 10.8.49 Whilst taking into account the extent of NRMM proposed to be used (type, quantum and emission standards), associated control measures and the transient / phased nature of the construction works, the likelihood of NRMM emissions comprising a significant concern for Ness Woods SAC is low.
- 10.8.50 Construction works associated with Dam 1 would take a total of 24 months, with the extent and use of NRMM constantly changing as works progress. There is approximately 1.9 ha of the SAC within the 50 m screening distance threshold of the Dam working corridor, representing <0.5% of the total area of the SAC.
- 10.8.51 Construction works associated with the powerhouse platform would be greatest in intensity for the initial 12 months of work when plant is required for excavation, blasting and on-site processing. Following this period however the number of NRMM and intensity of use will significantly reduce as construction activities are limited to handling of material and on-site transportation (which has been assessed separately, above). There is approximately 5.1 ha of the SAC within the 50 m screening distance threshold of the powerhouse area, representing approximately 0.6% of the total area of the SAC.
- 10.8.52 The existing levels of NO_x, Nitrogen deposition and Nitrogen and Sulphur loads associated with the most sensitive woodland habitats are below the site-specific Critical Levels/Loads, as presented in Tables 10-8 and 10-9. The current NO_x concentration is 5.5% of the annual AQO (Air Quality Objectives) for ecological habitats, the current nitrogen deposition load is between 42% and 63% of the Critical Load range, and there is headroom of 43% and 83% between the current and maximum critical loads for Nitrogen and Sulphur-derived acid, respectively.
- 10.8.53 Based on the above, effects of emissions from NRMM upon Ness Woods SAC habitats are assessed to be **not significant**.

Impacts of water quality or a change in flow regime of watercourses

- 10.8.54 The Allt an t-Sluichd watercourse, which flows from Loch Kemp into Loch Ness, has the potential to be adversely affected if there are changes in water quality as a result of the construction of Dam 1, via inadvertent pollution events via fuel spills, changes in water chemistry from contamination with concrete, or from an increased sediment load. Specifically, the watercourse downstream of Dam 1 supports assemblages of regionally important bryophytes and nationally important lichens on rocks close to or within the watercourse, which could be adversely affected by changes in water quality (see **Volume 4, Appendix 10.4: Freshwater Lichen Survey Report**). Areas of the Allt an t-Sluichd downstream of Dam 1 (beyond the working corridor) also support 'Tilio-Acerion forests of slopes, screes and ravines' habitat. However, with the implementation of good practice pollution prevention measures and sediment management, as set out in **Chapter 7: Water Management** and **Chapter 14: Geology Soils and Water** the risk of adversely affecting the water quality is considered low. Similarly, with the pollution prevention and sediment management measures in place, construction of the access track in close proximity to Allt a' Chinn Mhonaich (which also supports regionally and nationally important bryophytes and lichens) is also considered unlikely to significantly affect water quality. As such, effects from changes in water quality are assessed to be negligible and **not significant**.
- 10.8.55 The aquatic, amphibious and splash zone lichen assemblages on the Allt an t-Sluichd occupy highly restricted and specialised niches, as they require either constant, frequent or occasional inundation or wetting provided by the natural flow regime^{108,109,110}. Therefore, a change in flow rate can negatively affect these lichens due to altering the available niches. Data on the baseline flow rate of the Allt an t-Sluichd has been collected over a 12-month period (January 2022 - January 2023) and is detailed in **Chapter 7: Water Management**. As stated in **paragraph 10.7.1** and detailed in **Chapter 7: Water Management**, the natural flow regime shall be maintained on the Allt an t-Sluichd via the installation of an outflow for which the flow rate can be varied to match existing conditions. With this in place, **no significant effects** upon the bryophyte and lichen communities, or other vegetation, on the Allt an t-Sluichd downstream of Dam 1 are predicted as a result of changes to the flow regime.

Spread of access track material

- 10.8.56 The material used for the SAC access track would be stone sourced from on-site construction works, along with an asphalt / tarmac topcoat. Habitat loss calculations account for a working corridor along the proposed access track, and it is considered unlikely that material would spread beyond this footprint, such that the effect of the spread of access track material beyond the working corridor is considered to be **not significant**.

Inadvertent introduction of invasive non-native species

- 10.8.57 Although no invasive non-native plant species listed on *Schedule 9 of the Wildlife and Countryside Act 1981 (as amended in Scotland)* were identified within the construction areas, in an unmitigated scenario, construction activities have the potential to introduce such plant species into Ness Woods SAC, via contaminated soil tracked in from machinery or brought in from footwear. Invasive species are listed as a threat for Ness Woods SAC, and non-native invasive plants can out-compete native

¹⁰⁸ Orange, A. (2017) *The Importance of Watercourses for Lichens in Eryri SSSI*. NRW Evidence Report No. 224, 159 pp

¹⁰⁹ Demars, B.O.L & Britton, A. (2011) *Assessing the impacts of small-scale hydroelectric schemes on rare bryophytes and lichens*. SNH & Macaulay Land Use Institute Funded Report. SNH Commissioned Report No. 412

¹¹⁰ Douglass, J.R & Coppins, B.J. (in prep) *Monitoring of Collema dichotomum on the River Devon, before and after the instillation of a hydroelectric scheme*

flora. However, with the implementation of a Biosecurity Management Plan and pre-construction surveys, as detailed in **paragraph 10.7.13**, the risk of introduction of invasive non-native plant species is low, and therefore **no significant effects** are predicted.

Access track construction and maintenance of groundwater and surface water flows

- 10.8.58 In an unmitigated scenario, construction particularly on sloping ground has the potential to cause localised hydrological changes to groundwater or surface water flows. Specifically, if natural flows are disrupted, there is the potential for localised drying out of some areas and increased wetting to other areas, such as downslope of the track where water could become concentrated from run-off. Flush vegetation would be vulnerable to such effects. However, no such flush vegetation was identified within the baseline surveys, within Ness Woods SAC, either within close proximity to the working corridor, or downslope of the working corridor. With mitigation measures in place as detailed in **paragraph 10.7.1**, the creation of areas of concentrated flow would be avoided, and the over / under-saturation of retained habitats would be avoided. These measures would safeguard any existing water flow paths and maintain existing water quality. Therefore, no appreciable change in the retained vegetation communities comprising typical species of the qualifying woodland habitats, as a result of drainage impacts, is predicted. Therefore, **no significant effects** are predicted.

Loss of otter resting sites and otter habitat

- 10.8.59 Construction would result in the loss of three otter lay-ups and one potential holt (non-breeding) (**Volume 2, Confidential Figure 10.10: Protected Species field signs with proposed infrastructure locations overlain**), within Ness Woods SAC, located close to the shore of Loch Ness within the proposed powerhouse platform footprint. Outside of Ness Woods SAC, construction of the dams would result in the loss of a further potential (non-breeding) holt and potential (ephemeral) lay-up (**Volume 2, Confidential Figure 10.10: Protected Species field signs with proposed infrastructure locations overlain**). No natal holts would be affected. Construction would also result in the loss of up to 5.52 ha of wooded habitat within Ness Woods SAC, suitable for otter cover.
- 10.8.60 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 **paragraphs 10.7.14 - 10.7.16**, to ensure legislative compliance.
- 10.8.61 Otters that live in freshwater habitats occupy very large home ranges, approximately 32 km for males and 20 km for females¹¹¹. Home ranges may contain up to 30 resting sites¹¹². There is a large abundance of undisturbed sheltered connected habitat suitable for otter resting places (including lie-ups and holts), both within the Site itself within Ness Woods SAC, as well as surrounding the Site, including within further areas of woodland along the shores of Loch Ness to the north and south of the Site, on the far side of Loch Ness to the west, and within sheltered habitat close to waterbodies and watercourses in the wider landscape such as the River Fechlin corridor to the east, and Loch Knockie and surrounding woodland to the south. Artificial holts would be created to compensate for the two potential holts being lost, under licence, as detailed in **paragraph 10.7.15**. Lay-ups cannot be artificially created given their above-ground nature. However, it is concluded that there is

¹¹¹ <https://www.nature.scot/plants-animals-and-fungi/mammals/land-mammals/otter#:~:text=Otters%20that%20live%20in%20freshwater,includin%20man%2Dmade%20ones> [Accessed in January 2023]

¹¹² Environment Agency (1999) *Otters and River Habitat Management*. Environment Agency, Bristol.

sufficient availability of connected and undisturbed habitat in the surrounding areas to provide suitable alternative opportunities for shelter.

- 10.8.62 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 on the Site and within the wider area (including within the remainder of Ness Woods SAC, and including abundant crevices, boulders and tree roots), the loss of up to 5.52 ha of wooded habitat suitable for otter cover, including the loss of four lay-ups and two potential (non-breeding) holts 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.

Disturbance of otter via human presence, construction noise and vibration including blasting, and temporary construction lighting

- 10.8.63 Construction activities have the potential to cause temporary disturbance to otters that use the waterbodies, watercourses and surrounding sheltered habitats on and around the Site for foraging, commuting and resting. Four further lay-ups and one holt (suitable for breeding) are located beyond the working corridor, to the north and south of the working corridor close to Loch Ness shoreline, and to the north of Dam 1, along the Allt an t-Sluichd.
- 10.8.64 Potential sources of disturbance relate to human and vehicular presence, construction noise and vibration including blasting, and temporary construction lighting.
- 10.8.65 Otters have large home ranges and are able to adapt to a certain level of human disturbance¹¹³. NatureScot advise exclusion zones of 200 m around breeding holts, and 30 m around non-breeding resting places, with a development licence required if such exclusion zones are not possible¹¹⁴. One of these lay-ups lies within 30 m of the proposed working corridor (TN 4 in **Volume 2, Confidential Figure 10.10: Protected Species field signs with proposed infrastructure locations overlain**) and therefore would be subject to disturbance during construction, requiring work under licence as detailed in **paragraph 10.7.15**. The remaining three lay-ups are located further than 30 m from the working corridor, and the retained holt is located further than 200 m from the working corridor, and given that there is woodland between the working corridor and these resting sites offering natural screening, disturbance effects to these four remaining resting sites is considered to be minimal, and a development licence for these particular resting sites is unlikely to be required. The construction works would not result in creating any obstructions between the resting sites and the Loch Ness hunting habitat.
- 10.8.66 Otters occupying freshwater areas are primarily nocturnal¹⁰⁵. The majority of the construction works will be undertaken during daylight hours. However night-time working and the use of temporary construction lighting is proposed for the tunnel portals (located in the area by the powerhouse infrastructure on the shore of Loch Ness within Ness Woods SAC, and the western shore of Loch Kemp outwith Ness Woods SAC). 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

¹¹³ Chanin, P. (2003) *Monitoring the Otter Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough

¹¹⁴ <https://www.nature.scot/sites/default/files/2018-09/Species%20Planning%20Advice%20-%20Otter.pdf> [Accessed in January 2023]

works, primarily at the tunnel portal / powerhouse infrastructure location. 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 10.7.11 - 10.7.12**). 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**.

Injury or killing of otter from traffic collisions or becoming trapped in excavations

- 10.8.67 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 in Ness Woods SAC, particularly towards the Loch Ness shoreline, although a spraint and potential lay-up was also recorded on Loch Kemp shoreline and on the Allt leacht Gowrie to the south of Loch Kemp, and one potential holt to the east of Loch Kemp. The nearest public road is the B862, located to the east of Whitebridge Plantation. Given that the majority of construction works are located in the open areas between Ness Woods SAC and Whitebridge Plantation, and given that works would not result in the restriction of access to Loch Ness and other good quality otter habitat around the Loch Ness shoreline, it is considered unlikely that construction works would displace otter towards the B862 public road, such that an increase in collision risk along the B862 public road is considered unlikely. 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 10.7.23 - 10.7.26**, 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.

Fragmentation of otter habitat from dam construction

- 10.8.68 Otter evidence has been recorded on the Allt an t-Sluichd, however the relative lack of field evidence at Loch Kemp indicates that otter are likely to use Loch Kemp on an occasional basis only. The construction of Dam 1 at the upstream end of the Allt an t-Sluichd is not anticipated to cause significant fragmentation effects to otter, as there is no obstruction of movement either side of the dam, and therefore it is expected that otters travelling between the watercourse and Loch Kemp will travel either side of the dam. Similarly, the construction of Dam 4 on the Allt Leachd Gowrie would not cause significant fragmentation effects to otter, as there would also be no obstruction to otter movement on either side of the dam, and therefore it is expected that otters occasionally travelling along the Allt Leachd Gowrie will travel either side of the dam. This is also the case for Dam 3. All other dams are situated away from major watercourses or areas where otter activity has been recorded, and also have no obstruction to movement either side of the dams. As such, **no significant effects** upon fragmentation of otter habitat from dam construction is anticipated.

Impacts to otter prey and aquatic habitat

- 10.8.69 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 birds¹⁰⁵. Loch Ness and the wider catchment supports Atlantic salmon (*Salmo salar*), brown trout, ferox brown trout (*Salmo trutta*), sea trout (*Salmo trutta*), European eel, Arctic charr (*Salvelinus alpinus*), brook lamprey (*Lampetra planeri*), sea lamprey (*Petromyzon marinus*) and river lamprey (*Lampetra fluviatilis*) (as detailed in **Chapter 13: Fish**), and represents optimal hunting habitat for otter. The concentration of otter field evidence recorded during the baseline surveys, with the highest density recorded along Loch Ness shoreline, supports the conclusion that Loch Ness represents the most important hunting area for otter within

the Proposed Development area. Loch Kemp supports a population of resident brown trout, and European eel has been detected within the Allt a Chinn Mhonaich (see **Chapter 13: Fish**). The otter baseline surveys indicate that Loch Kemp is used less frequently than Loch Ness.

- 10.8.70 **Chapter 13: Fish** identifies potential significant effects upon Arctic charr, Atlantic salmon, ferox brown trout, river and sea lamprey, and sea trout in Loch Ness, in an unmitigated scenario. Minor, non-significant effects are also identified for other species during construction. However, **Chapter 13: Fish** concludes that, once mitigation has been applied, potential effects upon these species during construction would be minor, and non-significant.
- 10.8.71 There would also be a permanent reduction in the quality of available amphibian habitat within the inundation area, due to the fluctuating water levels. However, given the extensive areas of suitable amphibian habitat that would be unaffected within the Site and surrounding landscape, including further lochs, lochans, smaller ponds and watercourses, the potential effects upon amphibian prey are considered minimal.
- 10.8.72 Overall, the potential reduced prey abundance is expected to be minor in the context of the high quality and abundant food resource of Loch Ness and the wider catchment, and **no significant effects** are predicted. Easter Ness Forest SSSI
- 10.8.73 Easter Ness Forest SSSI shares the same boundary within the Site as Ness Woods SAC, and is designated for the same woodland habitats as Ness Woods SAC. Therefore, the assessment of potential construction impacts upon the woodland habitat in Ness Woods SAC, described above, also applies to Easter Ness Forest SSSI. Otter is not a notified feature for the SSSI so the assessment upon otter detailed above does not directly apply to Easter Ness Forest SSSI.
- 10.8.74 For the same reasons as given in the assessment for Ness Woods SAC, the loss of up to 5.52 ha, and habitat change of 1.04 ha via fragmentation effects, of qualifying woodland habitat is assessed to constitute an adverse effect which is **significant at the national level**. No further significant effects have been identified.

Urquhart Bay Wood SAC

- 10.8.75 A detailed eco-hydrological assessment of the potential effects of the Proposed Development upon Urquhart Bay Wood SAC is contained within Appendix 10.6, and NatureScot confirm that they agree with the conclusion of the report, that there would be no adverse effects upon site integrity of Urquhart Bay Woods SAC. A detailed assessment in relation to the site's Conservation Objectives are provided in the separate **Shadow HRA Report**. The only potential effect identified, which has been assessed in detail within **Volume 4, Appendix 10.6: Eco-hydrological assessment of the impacts of the Loch Kemp Pumped Storage Scheme on Urquhart Bay Wood SAC** and the separate **Shadow HRA Report**, is the potential for vegetation changes as a result of a change in water level variation in Loch Ness, during the operational phase. A summary of the assessment is provided under the operational effects heading in **paragraphs 10.8.128 - 10.8.137**. No potential significant adverse effects upon Urquhart Bay Wood SAC have been identified during the construction phase. The SAC is separated from the Site by a distance of 13 km, on the opposite shore of Loch Ness. With the pollution prevention measures in place as summarised in **paragraphs 10.7.2 - 10.7.3**, there would be a negligible risk of polluting water within Loch Ness. Even prior to the pollution prevention mitigation applied, an adverse effect upon Urquhart Bay Wood as a result of water pollution within Loch Ness is considered extremely unlikely, due to the separation distance and extremely large volume of water that Loch Ness holds, which would result in rapid dilution in the unlikely event that a pollution event were to occur.

Urquhart Bay Wood SSSI

- 10.8.76 Urquhart Bay Wood SSSI shares the same boundary as Urquhart Bay Wood SAC, and is designated for the same wet woodland qualifying features as Urquhart Bay Wood SAC. As such, the assessment of potential construction impacts upon the wet woodland habitat in Urquhart Bay Wood SAC, described above, also applies to Urquhart Bay Wood SSSI.

Habitats (Outwith Designated Sites)

- 10.8.77 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 wet habitats, i.e. blanket bog, wet modified bog, flush and wet heath, which lie within 10 m of the direct habitat loss areas; the allowance of 10 m is to allow for drying effects and vegetation changes due to construction works¹¹⁵
- 10.8.78 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 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.
- 10.8.79 **Table 10.12: Summary of Habitat Loss by Phase 1 / NVC Community Type (for Habitats of Local or Greater Value, Outwith Ness Woods SAC)** details the estimated direct and indirect / temporary land take for habitats with local or greater value, and potential GWDTE communities (this excludes habitat loss within Ness Woods SAC / Easter Ness Forest SSSI, which is detailed separately in **Table 10.6: Summary of Habitat Loss within Ness Woods SAC**). An assessment of impacts to each habitat / community is also detailed in **Table 10.12: Summary of Habitat Loss by Phase 1 / NVC Community Type (for Habitats of Local or Greater Value, Outwith Ness Woods SAC)**.

¹¹⁵ This figure is in line with similar assessments for other projects, and although arbitrary, is considered precautionary based on experience at other sites.

Table 10.12: Summary of Habitat Loss by Phase 1 / NVC Community Type (for Habitats of Local or Greater Value, Outwith Ness Woods SAC)

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
Broad-leaved woodland	W17, W17b	5.48	Inundation area, access track, dam	0.62	6.10	This habitat is of local value, and loss relates mainly to the fragments of birchwood around Loch Kemp which would be inundated. Loss represents 11.5% of the total broadleaved woodland resource ¹¹⁶ in the survey area (including Ness Woods SAC), and the loss is assessed as being significant at a local level .
Scrub – scattered	W1x*	0	-	0	0	No impact.
Acid grassland	U4, U4a, U5	0.	-	0.28	0.28	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 .
Dry dwarf shrub heath	H10, H10a, H16	22.37	Inundation area, access track, surge shaft, dam, fishing lodge, kiosk	19.15	41.52	This habitat is in poor condition and is widespread across the survey area and local area, and is of local value only. However, the loss represents 35.1% of the total resource within the survey area and given the large area lost, the loss is assessed as being significant at the local level .
Wet dwarf shrub heath	M15* (incl. M15/U20, M15/U4), M15a*, M15b*	6.04	Inundation area, access track, dam, kiosk	2.74	8.78	The loss represents 29.9% of the total area of habitat in the survey area, and the 8.78 ha loss of this locally important habitat is considered significant at the local level .
Blanket bog	M1, M2, M3, M17, M17a	6.50	Inundation area, dam, surge shaft	0.38	6.88	The loss of 36.5% of the regionally important blanket bog habitat within the survey area is considered significant at a regional level .

¹¹⁶ This excludes the woodland establishment areas created in autumn 2023

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
Wet modified bog	M17, M17-20, M20b, M25a*, M15-17, M15-25	11.05	Inundation area, access track, dam	1.22	12.27	The loss of 61.7% of locally important wet modified bog habitat within the survey area is considered significant at a local level .
Flushes	M6c*, M6d*	(included in mosaic with blanket bog and wet modified bog)	-	-	-	Loss is small in extent (within a mosaic with blanket bog and wet modified bog), and the loss of the flush habitat itself is considered not significant .
Swamp, marginal and inundation	S4*, S9*, S10, A8	1.86	Inundation area	0	1.86	Loss is relatively small in extent of this locally important habitat, and is considered not significant .
Watercourses	-	(included in mosaic with M25a, M17-20)	Inundation area, dam, access track	(included in mosaic with M25a, M17-20)	(included in mosaic with M25a, M17-20)	Loss is related to two minor inflows to Loch Kemp, which would form part of the inundation zone (effects within Ness Woods SAC are assessed separately in paragraphs 10.8.3 - 10.8.69). Loss is relatively small-scale in comparison to the available habitat in the Site and wider area, and is considered not significant .
Coniferous woodland plantation (long-established woodland of plantation origin only)	-	1.46	Access tracks, security compound, inundation area, dam	4.88	6.34	Loss of the area mapped as 'long-established woodland of plantation origin' is related to a security compound, access tracks, a small area of the inundation zone, dam, and borrow pit. The loss of the locally important habitat is considered significant at the local level .
Mixed woodland semi-natural	-	0	-	0	0	No impact.

Communities marked with a "*" are potential GWDTE communities

GWDTE Communities

- 10.8.80 **Table 10.12: Summary of Habitat Loss by Phase 1 / NVC Community Type (for Habitats of Local or Greater Value, Outwith Ness Woods SAC** 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 guidance¹¹⁷. For a detailed assessment of the groundwater dependency of these habitats, please refer to **Chapter 14: Geology, Soils and Water**. In summary, the GWDTE assessment concludes that all areas of potential GWDTE are sustained by rainfall, surface water and waterlogging of the soils, rather than groundwater. As such, no GWDTEs would be affected by the Proposed Development.

Bryophytes and lichens

- 10.8.81 The bryophyte assemblage outwith Ness Woods SAC is assessed as having less than local value, and is therefore not assessed further.
- 10.8.82 The lichen assemblage on the rocky shores of Loch Kemp is assessed as having national value. The flooding of the rock habitat around Loch Kemp will subject the existing freshwater and non-freshwater lichen species to a rapid filling and emptying regime to a maximum depth of 28 m above the current conditions. Such changes are expected to destroy these lichen communities which currently experience occasional and often slow changes in water levels of tens of centimetres only. Large draw down zones in lakes and reservoirs do not support diverse freshwater lichen assemblages due to the rapidly changing conditions which the lichens cannot adapt to^{118,119}. The loss of this rocky shore lichen assemblage, including the survey area-level extinction of two Near Threatened or Nationally Scarce lichen species that were not recorded in any other locations at the Site or surrounding lochs and lochans surveyed (*Porina interjungens* (Near Threatened) and *Polychidium muscicola* (Nationally Scarce)), is assessed as constituting a permanent adverse effect, which is **significant at the national level**.
- 10.8.83 The heathland habitat in the proposed inundation zone around Loch Kemp was also assessed as being of national value for lichens. This habitat would be permanently lost, as frequent inundation is expected to kill off the existing flora. Loss of the heathland lichen assemblage within the inundation zone is assessed as constituting a permanent adverse effect, which is **significant at the national level**.

Fauna*Invertebrates*

- 10.8.84 Construction would result in the direct permanent loss of 45.96 ha of open moorland habitat (bog, heath and grassland habitat) and 11.62 ha of broadleaved woodland habitat (including areas within Ness Woods SAC) potentially of local value for invertebrates. Much of the open moorland habitat to be lost comprises dry heath in poor condition due to current management and deer grazing levels.

¹¹⁷ 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

¹¹⁸ Gilbert, O.L. (2000) *Lichens*. The New Naturalist Library. London: Harper Collins

¹¹⁹ Gilbert, O. L., Giavarini, V. J. (2000) The lichen vegetation of lake margins in Britain. *Lichenologist* 32: 365-386.

- 10.8.85 Although the habitat loss constitutes relatively large areas, there is an abundance of similar connected moorland and woodland habitat both within unaffected areas of the Site and within the wider local area beyond the Site boundary; in the case of woodland along the shores of Loch Ness; and in the case of moorland (bog, heath and grassland) within extensive areas to the north, east and south of the Site.
- 10.8.86 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.
- 10.8.87 It is concluded that the permanent loss of 57.58 ha of invertebrate habitat would result in an adverse effect, which is potentially **significant at the local level**.
- 10.8.88 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 invertebrates¹²⁰. Artificial light at night close to freshwater can concentrate fluxes of emergent aquatic insects which are more easily intercepted by terrestrial predators¹²¹. 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 as detailed in **paragraphs 10.7.11 – 10.7.12**), 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

- 10.8.89 The Site is expected to support common lizard, and has some potential to support adder and slow-worm, given the suitable habitat present. Construction would result in the direct loss of 45.96 ha of open moorland habitat potentially suitable for these species (which represents approximately 19.6% 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 zone. 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.

¹²⁰ Bruce-White, C. & Shardlow, M. (2011) *A Review of the Impact of Artificial Light on Invertebrates*. Buglife – The Invertebrate Conservation Trust.

¹²¹ 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

- 10.8.90 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).
- 10.8.91 Good practice mitigation measures aimed at reptiles (see **paragraphs 10.7.21 - 10.7.22**), would be implemented during the construction phase, to reduce the risk of inadvertent injury or killing individuals. On the basis that the proposed measures are implemented no contravention of the relevant legislation is likely.
- 10.8.92 It is concluded that the permanent loss of 45.96 ha of reptile habitat would result in an adverse effect, which is **significant at the local level**.

Otter

- 10.8.93 Otter has been assessed as part of the Ness Woods SAC assessment (see **paragraphs 10.8.59 - 10.8.69**). Construction would not result in any further adverse effects upon otter additional to those already identified within the Ness Woods SAC assessment. The good practice measures outlined in **paragraphs 10.7.23 - 10.7.26** would protect otters from death or injury during construction. As such, no additional effects upon otter beyond those already identified in the Ness Woods SAC assessment are predicted.

Pine marten

- 10.8.94 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 10.7.23 - 10.7.26**, death or injury to pine martens during construction is not likely.
- 10.8.95 No pine marten dens were identified on the Site and therefore no pine marten dens would be lost or disturbed during construction, as such no adverse effects upon pine marten dens (i.e. resting / breeding habitat) are predicted.
- 10.8.96 Pine marten can be sensitive to disturbance, for example NatureScot consider typical construction activities within 100 m of a breeding den to constitute disturbance¹²². 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 (specifically at the tunnel portal areas throughout the night, although no field evidence was recorded in these areas, along with some working at dawn and dusk during winter across the Site more widely), 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**.

¹²² 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 December 2022]

- 10.8.97 It is possible that new pine marten dens may become established before construction. As detailed in **paragraphs 10.7.14 - 10.7.16**, 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).
- 10.8.98 Construction would result in the loss of 41.85 ha of conifer plantation habitat¹²³ within which pine marten presence has been confirmed (on a precautionary basis the clear-fell plantation areas have been included within this figure, because although it currently represents suboptimal habitat for this species, in the absence of development it would be replanted and continue to function as commercial forestry, which would provide habitat for pine marten in the long-term). Construction would also result in the loss of 11.62 ha of broad-leaved woodland (including habitat within Ness Woods SAC). Although pine marten field evidence has not been recorded in the broad-leaved woodland areas, these are considered suitable habitat for this species and it is considered possible that pine marten occupy these areas occasionally or have the potential to colonise them in the future. The habitat loss represents up to 21.2% 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 ¹²⁴, therefore based on the upper limit of quoted population density, and including the broad-leaved woodland in the habitat loss calculations on a precautionary basis, the worst case scenario is that up to half of the territory of one individual may be lost. However, 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. Nonetheless, given the relatively large area affected the permanent loss of pine marten foraging and commuting habitat is considered to represent an adverse effect, which is **significant at the local level**.

Red squirrel

- 10.8.99 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 10.7.23 - 10.7.26**, death or injury to red squirrel during construction is not considered likely.
- 10.8.100 One red squirrel drey has been identified within the survey area, and this would be lost to the construction footprint. As detailed in **paragraph 10.7.16**, a licence would be obtained from NatureScot prior to works within 50 m of the drey, informed by an up to date pre-construction

¹²³ This includes clear-fell and non-clear-fell commercial forestry which would not be subject to commercial re-stocking, as it falls within the inundation areas or permanent infrastructure areas. Commercial forestry re-stocking is covered separately in **Chapter 19: Forestry** and **Volume 4, Appendix 19.2: Loch Kemp Pumped Storage Woodland Management**. Compensatory woodland creation would be provided to compensate for woodland lost, to accord with the Scottish Government's policy on the Control of Woodland Removal (CoWRP), as detailed in **Chapter 19: Forestry** and **Volume 4, Appendix 19.2: Loch Kemp Pumped Storage Woodland Management**. This figure excludes 5.76 ha which would be restored via forest-to-bog restoration, and 1.57 ha required for forest management which would be felled irrespective of the Proposed Development, which are not covered under CoWRP requirements (see **Volume 4, Appendix 19.2: Loch Kemp Pumped Storage Woodland Management** and **Volume 4, Appendix 19.3: Loch Kemp Storage: Forest to Bog Restoration Proposals** for further details). This figure also excludes 0.81 ha of broadleaved woodland within the plantation, which is instead included in the separate broad-leaved woodland loss figure.

¹²⁴ 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 December 2022]

survey, and accompanied by a Species Protection Plan, to ensure that red squirrels are not harmed and dependent young are not disturbed, to ensure legal compliance, and to ensure mitigation is provided via a compensatory artificial drey box. Additionally, red squirrels could construct new dreys prior to construction, and therefore pre-construction surveys are proposed of all suitable habitat within 50m of construction areas. If further 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 new drey is found within close proximity of a working area).

- 10.8.101 Construction would result in the loss of 53.47 ha of red squirrel foraging habitat, 11.62 ha of which represents high quality foraging habitat (the broad-leaved woodland) and 41.85 ha of which represents lower quality foraging habitat (conifer plantation). This constitutes 21.4% of the highest quality and 21.3% of the lower quality foraging 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 small¹²⁵. Therefore, construction could result in the loss of up to six red squirrel home ranges, although this is a worse-case estimate which assumes red squirrel is at maximum density throughout the suitable habitat, which is considered unlikely based on the density of field evidence.
- 10.8.102 The abundant red squirrel habitat to be retained within the Site immediately adjacent to the construction areas, along with the presence of abundant connected red squirrel habitat in the wider local area (including northwards towards Foyers and southwards along the shores of Loch Ness and Loch Knockie) means that any red squirrels displaced from the construction area would have suitable habitat to disperse into, and significant fragmentation impacts would be avoided. However, given that the retained surrounding habitats may already be at their carrying capacity for red squirrel, the loss of habitat is likely to result in a reduction of the red squirrel population size at the Site level. Overall, the permanent loss of red squirrel habitat is assessed as constituting an adverse effect, which is **significant at the local level**.
- 10.8.103 Construction activities also have the potential to disturb foraging/commuting red squirrel beyond the working corridor. However, disturbance impacts are temporary in nature, during the construction period only. Given that the areas of habitat to be affected are adjacent to larger areas of undisturbed habitat, disturbance impacts to foraging/commuting red squirrel are assessed as **not significant**.

Badger

- 10.8.104 An active main badger sett lies within woodland on the slopes above Loch Ness approximately 41 m from the proposed working corridor for the access track. Given the stand-off distance from the construction works, the main sett would not be directly damaged or destroyed by the construction works, and there would be no obstruction of access to the sett. However, some disturbance of badgers occupying the sett is possible during certain construction activities. NatureScot state that development within 30 m of a badger sett could result in interference to the sett, and this distance may be extended where more disruptive works such as blasting or pile-driving are planned¹²⁶. Blasting works are not required for the access track construction, and blasting activities associated

¹²⁵ Harris, S. and Yalden, D.W. (2008) *Mammals of the British Isles: Handbook (4th Edition)*. The Mammal Society, Southampton

¹²⁶ NatureScot (2022) *Badgers: licences for development*. Available online: <https://www.nature.scot/professional-advice/protected-areas-and-species/licensing/species-licensing-z-guide/badgers/badgers-licences-development> [Accessed in December 2022]

- with the tunnels are located over 100 m from the active sett. As such, with the implementation of an exclusion zone (see **paragraph 10.7.24**) disturbance of the active sett is not anticipated and no contravention of wildlife legislation is anticipated.
- 10.8.105 A further four disused setts occur within the same area, all of which lie either within, or within a 22 m buffer of, the proposed working corridor for the access track. These disused setts would be lost and / or damaged and / or disturbed during construction works of the access track. Badger setts are only afforded legal protection if they “*display signs indicating current use by a badger*¹²⁷”, with NatureScot interpreting this to mean the presence of field signs such as bedding, fresh spoil heaps, signs of recent digging, hair, latrines, or footprints in or around the potential sett or evidence of badgers entering or exiting the structure or place in question¹²⁷. Therefore, the four disused setts in close proximity to the access track working corridor are not legally protected in their current state, and no contravention of wildlife legislation would occur as a result of construction in this area in their current state. However, badger activity levels can change rapidly, and badgers can re-occupy disused setts or dig new setts in a short space of time. Given the reasonably close proximity of the disused setts to the active main sett, it is considered possible that badger could re-occupy these setts prior to construction commencing. However, based on current survey information these setts are not active.
- 10.8.106 As detailed in **paragraph 10.7.14**, pre-construction surveys are proposed, and if active badger setts are identified within close proximity to the working corridors, such that damage or destruction of the sett(s) could occur, or disturbance to badger occupying the sett(s) could occur, then sett closure and/or disturbance licences would be obtained and consultation with NatureScot undertaken if required.
- 10.8.107 Given the presence of badger close to the working corridor, there is an increased risk of injury or death of badgers via construction site traffic collision, and falling into / becoming trapped in excavations. However with the implementation of the good practice measures as detailed in **paragraphs 10.7.23 - 10.7.26**, the risk of death and injury is considered low to negligible, and **not significant**. Given that construction traffic will predominantly be during daylight hours and will be restricted to 15 mph, the likelihood of bisecting badger territories is considered minimal.
- 10.8.108 Construction would result in the loss of 53.47 ha of broad-leaved and conifer woodland foraging habitat, which constitutes 21.3% of the woodland foraging resource in the survey area. There is an abundance of connected suitable habitat for foraging and sett building within the survey area and wider local area which will not be impacted. Given that the majority of woodland loss would occur in areas well away from the sett locations, and in areas where no badger field evidence has been recorded (i.e. Whitebridge Plantation), the loss of woodland habitat is considered to be **not significant**.

Bats

- 10.8.109 A total of five trees with PRFs lie within the working corridor and would be felled during construction. This represents 26.3% of the potential bat roosting resource in the survey area. A further three trees with PRFs, one of which is a confirmed roost, lie beyond the working corridor, but within a 4 m buffer (4 m is calculated to be the average RPA of trees within Ness Woods SAC, see **paragraphs 10.8.30 - 10.8.34**), such that these trees could be subject to possible root damage. On a precautionary worst-

¹²⁷ <https://www.nature.scot/doc/guidance-licensing-badgers-what-badger-sett> [Accessed in December 2022]

case scenario basis, it is assumed that these trees and their confirmed roost / roosting resource could be lost, although in practice it is likely that these three trees could be retained and protected, given their locations on the outer edge of the 4 m buffer and / or distance from permanent infrastructure, and given the ECoW supervision and mitigation to be adopted as detailed in **paragraphs 10.7.4 and 10.7.10**. Therefore, on a worst-case basis, construction could result in the loss of at least one (non-maternity or hibernation) bat roost. 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. Given that the number of bat roosts to be affected is not known at this stage, on a precautionary basis this assessment assumes that all trees with PRFs to be lost / potentially damaged could support a (non-maternity or hibernation) bat roost.

- 10.8.110 As detailed in **paragraph 10.7.16**, detailed bat roost surveys shall be completed prior to construction, to characterise the confirmed roost and to identify and characterise any further roosts in trees to be felled, and a bat box would be provided per each PRF lost. Licences would be obtained, and suitable mitigation provided (as detailed in **paragraphs 10.7.14 - 10.7.18 and Section 10.9**), such that no contravention of wildlife legislation is predicted. With the implementation of such mitigation, including the provision of alternative roosting habitat, the loss / potential damage of 42.1 % of the roosting resource in the survey area, and the loss / potential damage of up to eight (non-maternity or hibernation) bat roosts is assessed as constituting a **non-significant effect**.
- 10.8.111 A total of 53.47 ha of woodland foraging resource would be lost, 11.62 ha of which constitutes higher quality foraging habitat (broad-leaved woodland) and 41.85 ha of which constitutes lower quality foraging habitat (conifer plantation). Construction would result in the creation of new woodland edge and ride habitat, along the proposed access track through Ness Woods SAC, and shorter sections within Whitebridge Plantation (existing tracks are predominantly being used within Whitebridge Plantation, however there are some short sections of new proposed track), which may provide better habitat for foraging and commuting. A total of 45.96 ha of bog, heath and grassland habitat would be permanently lost primarily to the inundation zone; these upland habitats are of lower quality for foraging bats, and would be replaced by regularly inundated habitat which is likely to provide a similar or better foraging resource to the open upland habitat lost. Overall, given the relatively large extent, the permanent loss of foraging habitat is assessed as an adverse effect, which is **significant at the local level**.
- 10.8.112 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 Ness and the shore of Loch Kemp). With the good practice lighting restrictions in place (see **paragraphs 10.7.11 - 10.7.12**), 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

- 10.8.113 Sika deer is the most abundant deer species present within the Site, with roe deer and red deer also present. Deer browsing is widespread across the Site, with deer reported to spend a lot of time on the slopes towards Loch Ness, within Ness Woods SAC.¹²⁸
- 10.8.114 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 abundant wooded areas to the north and south of the working corridor within Ness Woods SAC, as well as open moorland habitat to the north and south of the working corridor, within the wider Dell Estate. 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.
- 10.8.115 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 10.7.23 - 10.7.26**) 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 to the north and south of construction areas, well away from the B862 public road, such that deer are not expected to be displaced eastwards onto the B862 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.
- 10.8.116 Habitats across the Site have been degraded from over-grazing / browsing by deer, in particular qualifying woodland habitat within Ness Woods SAC, which is largely preventing tree regeneration, and is the main driver of Ness Woods SAC woodland habitat being in unfavourable condition. The localised displacement of deer away from the working corridor and onto other retained areas within Ness Woods SAC and other adjacent habitat within the wider Dell Estate, has the potential to cause some exacerbation of the existing deer grazing / browsing pressure in these retained areas, although this is likely to be minor and non-significant, given the large extent of the retained surrounding habitat in comparison to the areas to be affected during construction. As such, **no significant adverse effects** during construction are predicted.

Operational Effects

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

¹²⁸ Reported from the gamekeeper, Scott Barclay, pers. comm.

Ness Woods SAC*Habitats*

- 10.8.118 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. 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 (see **Section 10.7**). As such, **no significant impacts** are predicted upon either the 'Tilio-Acerion forests of slopes, screes and ravines' or 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' qualifying woodland interest features, during the operational phase.

Disturbance of otter via human presence and operational lighting

- 10.8.119 The Proposed Development would require daily human presence on the Site. This would be restricted to manning of the powerhouse, and a relatively low number of daily staff vehicle movements along the access track. It is anticipated that the Proposed Development would require 15 operational staff members to operate the site. Additional human presence would also occur at the powerhouse and adjacent quayside / pier on the shore of Loch Ness, via tourist trips to the powerhouse by boat, however access to habitats beyond would be restricted (see **Section 10.7**). Human presence would be low level and localised in extent, and human presence would mostly occur during daylight hours when otters are less active.
- 10.8.120 Internal operational lighting would be required at the Powerhouse Building, predominantly during working hours, unless operational and maintenance activities were required outwith these hours. Any external lighting required at the powerhouse building would be designed to be discrete and minimise light pollution. External operational lighting would be required at the dams and upper reservoir inlet / outlet structure during essential operational and maintenance activities only.
- 10.8.121 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 remainder of Ness Woods SAC and surrounding areas, disturbance effects to otter during operation are considered **not significant**.

Injury or killing of otter from traffic collisions or maintenance operations

- 10.8.122 Vehicle movement associated with operation and maintenance would be limited to the permanent infrastructure areas and only minimal operational / maintenance traffic would be present, which would be restricted to the access tracks and subject to a 15 mph applied speed limit.
- 10.8.123 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. As a result, there would be limited mechanisms present for causing injury to otter or causing water pollution.

- 10.8.124 Based on the above, and assuming that the proposed good practice measures are implemented, the risk of killing or injury to otter from traffic collisions or maintenance operations is very low, and **not significant**.

Impacts to otter prey

- 10.8.125 **Chapter 13: Fish** identifies potential significant effects upon Atlantic salmon, sea trout, European eel, river and sea lamprey in Loch Ness during the operational phase, in an unmitigated scenario. Minor, non-significant effects are also identified for other fish species during the operational phase, specifically Arctic charr, brown trout, lamprey, European eel, ferox brown trout and sea trout at Loch Ness, and brown trout at Loch Kemp. However, **Chapter 13: Fish** concludes that, once mitigation has been applied, potential effects upon these species during construction would be minor, and non-significant. Therefore overall, the potential reduced prey abundance is expected to be minor in the context of the high quality and abundant food resource of Loch Ness and the wider catchment, and **no significant effects** to otter prey are predicted during the operational phase.

Easter Ness Forest SSSI

- 10.8.126 Similarly to the construction impacts, given that Easter Ness Forest SSSI shares the same boundary within the Site as Ness Woods SAC, and is designated for the same woodland habitats as Ness Woods SAC, the assessment of potential operational impacts upon the woodland habitat in Ness Woods SAC, described above, also applies to Easter Ness Forest SSSI. Otter is not a notified feature for the SSSI so the assessment for otter detailed above is not relevant to Easter Ness Forest SSSI.

- 10.8.127 For the same reasons as given in the assessment for Ness Woods SAC, operational effects are predicted to be negligible and **not significant**.

Urquhart Bay Wood SAC

- 10.8.128 Urquhart Bay Wood SAC is on an alluvial delta at the confluence of the Rivers Enrick and Coilte as they flow into Loch Ness, and meets the shoreline of Loch Ness along the eastern SAC boundary. A detailed eco-hydrological assessment of the potential operational effects of the Proposed Development upon Urquhart Bay Wood SAC is contained within **Volume 4, Appendix 10.6: Eco-hydrological assessment of the impacts of the Loch Kemp Pumped Storage Scheme on Urquhart Bay Wood SAC**¹²⁹, and NatureScot confirm that they agree with the conclusion of the report, that there would be no adverse effects upon the integrity of Urquhart Bay Wood SAC. A summary of the assessment is provided below.

- 10.8.129 Modelling has been undertaken to predict water level fluctuation changes within Loch Ness (as described in **Chapter 7: Water Management**), as a result of operation of the Proposed Development in isolation, and in combination with operation of the existing operational Foyers Pumped Storage

¹²⁹ The hydrological modelling data have been updated since the eco-hydrological report within **Volume 4, Appendix 10.6: Eco-hydrological assessment of the impacts of the Loch Kemp Pumped Storage Scheme on Urquhart Bay Wood SAC** was completed. Whilst the hydrological modelling has changed, the principal of the loch level varying within existing limits remains the same. The hydrological modelling update does not have a material effect on the eco-hydrological report contained in **Volume 4, Appendix 10.6: Eco-hydrological assessment of the impacts of the Loch Kemp Pumped Storage Scheme on Urquhart Bay Wood SAC**, and does not change the conclusions of the report. The hydrological modelling of levels in Loch Ness, upon which the report is based, was originally based upon observed level information from the SEPA gauge at Foyers. This original dataset had just under 5 years of observations, based on the availability of information at the time. To improve the accuracy of the analysis a longer-term dataset was identified at the SEPA gauge at Ness-side. This dates back to September 1972 providing 50 years of historic flow information which was manipulated to estimate loch levels within Loch Ness over the period. The project engineers consider the longer duration dataset a more robust basis for evaluation of the impact of pumped hydro on Loch Ness levels.

Hydro (PSH) Scheme and the consented Red John PSH Scheme. In summary, operation of the Proposed Development is expected to result in more frequent variation in Loch Ness water levels, within likely daily and weekly cycles during pumping and generation cycles. There would be a small reduction in the average loch level. However, both the Proposed Development and Red John PSH (as well as any future schemes) would have a higher stop pumping level (implemented through their respective CAR Licences) than the existing Foyers PSH scheme on Loch Ness. The operation of these schemes would therefore not cause loch levels to reduce below the stop pumping level of the existing Foyers PSH scheme and the lowest minimum level of Loch Ness would continue to be governed by Foyers PSH, although this level may be approached more often. Other factors, such as a drought period, could cause water levels to reduce below the Foyers stop pumping level, but at this level no PSH schemes would be abstracting water from Loch Ness. The maximum current flood level of Loch Ness is unlikely to be exceeded for any significant period of time, as a result of the "stop generating" level which would stop operation of the scheme when the Loch Ness level exceeds the -1 in-10 year flood risk level (see **Figure 7.3 in Volume 4, Appendix 10.6: Eco-hydrological assessment of the impacts of the Loch Kemp Pumped Storage Scheme on Urquhart Bay Wood SAC**). For further details on how the operation of the Proposed Development would impact loch levels in Loch Ness, refer to **Chapter 7: Water Management**.

- 10.8.130 **Volume 4, Appendix 10.6: Eco-hydrological assessment of the impacts of the Loch Kemp Pumped Storage Scheme on Urquhart Bay Wood SAC** provides an assessment of potential effects of changes to water levels in Loch Ness on keystone species, and the structure and floristic composition of the qualifying habitat in Urquhart Bay Wood SAC. Two well-researched tree species with different hydrological requirements were selected for the analysis of ecological-hydrological requirements, namely common alder (*Alnus glutinosa*) and European ash (*Fraxinus excelsior*), to act as suitable surrogates for the ecosystems as a whole, for the lower-lying, waterlogged areas (where alder is dominant) and higher-lying, better drained areas (where ash is a prominent canopy species). This approach of using relevant and appropriate surrogate species has been applied successfully in other Ecological Flow Assessments, and is an approach used in accepted methodologies such as the Riparian Vegetation Response Assessment Index¹³⁰ and Downstream Response to Imposed Flow Transformation (DRIFT)¹³¹ method.
- 10.8.131 The assessment of potential effects upon Urquhart Bay Wood SAC has focussed on water level fluctuations as a result of the three schemes working in operation together, as this reflects the most likely background operating conditions under which the Proposed Development would operate. It follows that if no significant adverse effects are identified for the three pumped storage schemes operating together, then there would also be no significant adverse effects for the Proposed Development operating in isolation.
- 10.8.132 The natural level of Loch Ness varies relatively slowly because of its size and ability to temporarily store water, which provides a lag on the variations in inflow. The minimum level in Loch Ness will be approached more often, but the absolute minimum level will not change as a result of the operation of the Proposed Development. The overall range of levels will increase slightly as a result of releases

¹³⁰ Kleynhans CJ, Mackenzie J, Louw MD. (2007) Module F: Riparian Vegetation Response Assessment Index in River Eco Classification: Manual for EcoStatus Determination (version 2). Joint Water Research Commission and Department of Water Affairs and Forestry report

¹³¹ King, J., C. Brown, and H. Sabet. (2003) A scenario-based holistic approach to environmental flow assessments for rivers. Riv. Res. Appl. 19: 619-639.

- during a Generation Cycle, which would cause a temporary increase in level before the resulting increase in flow over the weir brings the level back down.
- 10.8.133 Operation of the pumped storage schemes is likely to result in daily incremental periods of inundation during a Generation Cycle, and increased wetting of the soils in the lower-lying areas of the Urquhart Bay Wood SAC. The magnitude of water level decrease during a Pumping Cycle is projected to be slightly less than the increase during a Generation Cycle and it is unlikely that soils would desiccate for long enough to have any detrimental impact on the species that are dependent on wet soils, such as alder. This is because the low permeability of the fine sediments in lower lying areas in the SAC means that these areas will have a lag in responding to short term changes (particularly decreases) in water levels, and the likelihood that groundwater level will not be solely dependent on contributions from Loch Ness, but will also be supplemented by subsurface flows from the Enrick and Coilte Rivers (depending on the differential between river surface levels and the groundwater table), and thus a daily pumping cycle is unlikely to result in marked changes in soil inundation levels. The current minimum flow levels of Loch Ness are determined by the operation of the Ness Weir and will not be affected by the Project, and it is unlikely that areas currently dominated by common alder will become desiccated as a result of the Project operation.
- 10.8.134 Any increases in inundation are most likely to affect the low-lying areas, which are dominated by species adapted to waterlogged soils, such as common alder. The minor increase in frequency of inundation may cause soils to be wetter for longer and may even decrease the risk of soil desiccation during drought periods, although this is an untested assumption. Such a scenario could potentially create a slightly more favourable environment for alder seedling establishment and maintenance of the established alder woodland.
- 10.8.135 The more diverse, higher-lying areas with well-drained soils are less likely to be impacted by the projected increases and decreases in water level, particularly as this plant community relies less on waterlogged conditions than the alder-dominated community. It is unlikely that the decreases in water level of the Loch during Pumping Cycles will result in any significant drawdown of the ground-water table, since water levels are likely to rise soon afterwards during the following generation cycle and the low permeability of the alluvial soils means a lag in these responding to desiccation. In the unlikely event that there is a minor drawdown in the ground-water table, the large range in preference of water table depth makes it unlikely that ash will be negatively impacted by this during Pumping Cycles. In addition, the average Loch Ness water level is only likely to undergo a minor change, with the main change being the magnitude of daily fluctuations. Thus, areas that are currently dry and above or near to this elevation are unlikely to change from the current state.
- 10.8.136 In summary, as long as diurnal fluctuations created by pumped storage scheme operation do not exceed the current maximum and minimum water levels of Loch Ness for any significant period of time then these are not predicted to have a long-term negative impact on Urquhart Bay Wood SAC.
- 10.8.137 Overall, the water dynamics that currently shape the structure and floristic composition of Urquhart Bay Wood SAC, namely periodicity, magnitude and extent of flooding, are unlikely to change enough to have an impact on vegetation structure and floristic composition. Therefore, the project is unlikely to have any long-term detrimental effects on the key tree and shrub species at Urquhart Bay Woods SAC. It is therefore concluded that there would be **no significant adverse impact** upon Urquhart Bay Wood SAC during the operational phase, either alone or in combination with existing and consented pumped storage schemes.

Urquhart Bay Wood SSSI

- 10.8.138 Similarly to the assessment of construction effects, given that Urquhart Bay Wood SSSI shares the same boundary as Urquhart Bay Wood SAC, and is designated for the same wet woodland qualifying feature as Urquhart Bay Wood SAC, the assessment of potential operational impacts upon Urquhart Bay Wood SAC summarised above, also applies to Urquhart Bay Wood SSSI. For the same reasons as given in the assessment for Urquhart Bay Wood SAC, operational effects are predicted to be **not significant**.

Habitats (Outwith Designated Sites)

- 10.8.139 During the operational phase, no significant effects on retained habitats are predicted. Infrastructure would be in place. 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**.

Bryophytes and Lichens

- 10.8.140 Given that no significant effects on retained habitats are predicted (see **paragraph 10.8.139**), similarly **no significant effects** upon bryophyte and lichen communities are predicted during the operational phase.

Fauna*Invertebrates*

- 10.8.141 No further loss of invertebrate habitat is required in the operational phase. Operational lighting shall be restricted to internal and external lighting at the powerhouse location only, along with external lighting at the dam and inlet / outlet locations during essential operational and maintenance activities only. Given the low level of the lighting and its limited extent, a **non significant** effect is predicted upon invertebrates during operation.

Reptiles

- 10.8.142 The risk of killing or injuring reptiles during the operational phase is considered low, given the low volume of operational Site traffic with an applied speed limit. No further loss or damage of reptile habitat is predicted to occur during the operational phase. **No significant effect** is therefore predicted upon reptiles during operation.

Otter

- 10.8.143 Operational effects upon otter within Ness Woods SAC are addressed in **paragraphs 10.8.118 - Error!** Reference source not found..
- 10.8.144 Otters are likely to occur beyond the boundaries of Ness Woods SAC from time to time, within the enlarged Loch Kemp and surrounding watercourses and waterbodies. Human activity associated with operation and maintenance would be limited to the permanent infrastructure areas and only minimal maintenance traffic would be present, which would be restricted to the access tracks and subject to an applied speed limit.

- 10.8.145 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. As a result, there would be limited mechanisms present for causing water pollution.
- 10.8.146 No operational lighting would be required close to watercourses and waterbodies outwith Ness Woods SAC, with the exception of dam and inlet / outlet locations, for essential operational and maintenance activities only.
- 10.8.147 Based on the above, and assuming that the proposed good practice measures are implemented, **no significant effects** on otter are considered likely during the operational phase.

Pine marten

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

Red squirrel

- 10.8.149 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 in relation to the Proposed Development is anticipated post-construction. The potential for red squirrel to be affected during operation is, therefore, considered to be low and **no significant effects** are predicted.

Badger

- 10.8.150 **No significant effects** upon badger are anticipated from the operation of the Proposed Development. No further badger habitat would be lost, and the limited vehicular movement and speed limits in place would minimise possible disturbance impacts and traffic collision risk.

- 10.8.151 *Bats*

- 10.8.152 No further tree loss is required, and no effects on bat roosts or bat roosting habitat are predicted during the operational phase.

- 10.8.153 Lighting at the powerhouse on the shore of Loch Ness will be required, but this will be low level and will be directed away from the Loch and surrounding shoreline habitat so as to minimise illuminating the water's edge and woodland edge habitat. This is likely to cause only a very localised low level lighting disturbance impact for foraging and commuting bats at this location. No further operational lighting would be required across the rest of the Site, with the exception of dam and inlet / outlet locations, for essential operational and maintenance activities only. Lighting disturbance impacts are therefore assessed as being **not significant**.

Deer

- 10.8.154 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.
- 10.8.155 As detailed in **paragraphs 10.8.113 – 10.8.117**, adverse grazing impacts upon the retained vegetation, and of particular relevance the Ness Woods SAC qualifying habitat, is likely to be minimal in comparison to baseline conditions.
- 10.8.156 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**.

Cumulative Effects

- 10.8.157 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 (Ness Woods SAC / SSSI)
 - developments affecting the same habitats and mobile species within 5 km and
 - other pumped storage hydro schemes at Loch Ness which could affect alluvial habitats of designated sites on the Loch Ness shoreline (Urquhart Bay Wood SAC / SSSI)
- 10.8.158 A total of 11 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 10.13: Cumulative Effects Assessment**.

Table 10.13: Cumulative Effects Assessment

Name	Details of Development	Status	Distance and Direction from Site	Cumulative effects
Loch Kemp Storage Associated Works	Switching station, underground cable, and access track	Subject to separate planning application (not submitted at time of writing)	Within Site, and partially within Ness Woods SAC	<p>No significant cumulative effects predicted.</p> <p>The location of the proposed ‘Associated Works’, to be subject to a separate planning application, are shown in Figures 10.3 – 4, 10.7 and 10.10 (subject to micro-siting). The proposed switching station and access track is located over 1 km east of Ness Woods SAC, and adjacent to the Development Area Boundary. The proposed underground cable route between the cable shaft and the switching station would follow the route of access tracks already proposed for the Proposed Development. The cable route would pass through Ness Woods SAC at two locations. Specifically, the cable would pass over Dam 1 at Loch Kemp outflow, over the Allt an t-Sluichd. The cable would also pass underground through the cable tunnel, between the powerhouse on the shore of Loch Ness, and the cable shaft to the east of Ness Woods SAC.</p> <p>Due to the cable being passed through an underground tunnel, or being sited on/beneath infrastructure already proposed for the Proposed Development (i.e. Dam 1 and access tracks), these Associated Works would not result in any further loss, damage or fragmentation of habitat within Ness Woods SAC, beyond that already occurring as a result of the Proposed Development. As such, no significant cumulative effects upon Ness Woods SAC qualifying woodland habitats are predicted as a result of these works, either during construction or operation.</p> <p>The Associated Works do not lie within habitat expected to be of high value to otter (beyond areas already being affected by the Proposed Development), and are not expected to result in any additional impacts to watercourses or waterbodies. The Associated Works are not proposed within disturbance buffers of any identified otter resting places. With standard good practice working measures in place, the Associated Works would not be expected to result in a significant increased risk of mortality or injury to otter during construction or operation. The works could result in additional disturbance to fauna (otter, as well as other typical faunal species of Ness Woods SAC qualifying habitats such as red squirrel) during construction, as a result of human and machinery presence. However, the areas of value for these species would already be disturbed as a result of construction of the Proposed Development, such that significant additional disturbance beyond that which would already occur as a result of the Proposed Development, is not anticipated, based on the assumption that construction works would be undertaken concurrently with the Proposed Development. Therefore, no significant cumulative effects upon Ness Woods SAC otter qualifying feature, nor any other species associated with the SAC qualifying habitats are predicted.</p>

Name	Details of Development	Status	Distance and Direction from Site	Cumulative effects
				Similarly, no significant cumulative effects upon any other important ecological receptors is predicted. No bog habitats would be affected, therefore no cumulative effects upon bog habitats are predicted. Some of the same habitats are likely to be affected (primarily heath), which would cause further habitat loss for faunal groups such as reptiles and invertebrates, however potential cumulative effects are negligible and not significant, given the small scale of the habitat loss, and the local abundance of similar habitat types.
Land at Allt Luaidhe	500 kW run-of-river hydro-electric power scheme	Operational	c. 3 km southwest, partially within Ness Woods SAC	No significant cumulative effects predicted. A powerhouse and 500 m of penstock falls within Ness Woods SAC / SSSI boundary, located on the shore of Loch Ness approximately 3 km southwest of the Site. The scheme has already been constructed, and tree loss was minimal (maximum of 120 trees, with compensatory planting incorporated) within an area of the SAC assessed to be of low quality. With scheme alterations and mitigation in place, NatureScot confirmed that no significant effects on Ness Woods SAC were predicted, and no Appropriate Assessment was required. Similarly, no significant effects were predicted on any other ecological features. As such, given that construction has already been completed, and that habitat loss was small and non-significant, no significant cumulative effects are predicted upon Ness Woods SAC / SSSI, or any other important ecological receptors, as a result of this development.
Culachy Estate Land	10 turbine wind farm (re-design from original 13 turbine refused scheme)	Scoping	c. 12 km southwest, partially within Ness Woods SAC	No significant cumulative effects predicted. Although the application boundary falls partially within Ness Woods SAC, the proposed turbine locations and associated infrastructure are set back well away from the SAC, on moorland, such that direct effects upon Ness Woods SAC are unlikely. There is hydrological connectivity with Ness Woods SAC. However, with good practice pollution prevention measures in place, water quality impacts would likely be negligible. The two projects are in different parts of Ness Woods SAC, within different catchments, and therefore a cumulative effect on any one part of Ness Woods SAC is not possible. Given the separation distance of 12 km from the Proposed Development, no further pathways for potential cumulative effects have been identified.
Dell Wind Farm	10 turbine wind farm (re-design from original 14 turbine consented scheme)	Scoping	c. 1.3 km south (nearest turbine is c. 8 km south)	No significant cumulative effects predicted. No significant effects upon otter were predicted for the original consented scheme, and no significant cumulative effects upon otter are predicted. The majority of the construction works would take place beyond the regular range of all other mobile species utilising the Site. Whilst some of the same habitats would likely be affected (principally bog and heath habitats), the loss is likely to be of a scale and distance from the Site, and occurring within a wider landscape with abundant similar habitats, such that potential cumulative effects would be negligible and not significant. The project is located a sufficient distance from Ness Woods SAC with no hydrological connection, such that no cumulative effects upon Ness Woods SAC are predicted.

Name	Details of Development	Status	Distance and Direction from Site	Cumulative effects
Corriegarth Wind Farm	23 turbine wind farm	Operational	c. 2.7 km east (nearest turbine c. 7 km southeast)	No significant cumulative effects predicted. Construction is already complete. No significant effects upon otter were predicted, and no significant cumulative effects upon otter are predicted. The turbines are located beyond the regular range of any further mobile species utilising the Site. Some of the same habitats have been affected (primarily bog and heath), however potential cumulative effects are negligible and not significant, given the separation distance from the Site and local abundance of similar habitat types. The project is located a sufficient distance from Ness Woods SAC with no hydrological connection, such that no cumulative effects upon Ness Woods SAC are predicted.
Corriegarth 2 Wind Farm	16 turbine wind farm	Appeal	c. 2.7 km east (nearest turbine c. 7 km southeast)	No significant cumulative effects predicted. No significant effects upon otter were predicted, and no significant cumulative effects upon otter are predicted. The majority of the construction works would take place beyond the regular range of all other mobile species utilising the Site. Whilst some of the same habitats would likely be affected (principally bog and heath habitats), the loss is likely to be of a scale and distance from the Site, and occurring within a wider landscape with abundant similar habitats, such that potential cumulative effects would be negligible and not significant. The project is located a sufficient distance from Ness Woods SAC with no hydrological connection, such that no cumulative effects upon Ness Woods SAC are predicted.
Bhlaraidh Wind Farm	32 turbine wind farm	Operational	c. 3 km west (nearest turbine c. 8 km west)	No significant cumulative effects predicted. Construction is already complete. No significant effects upon otter were predicted, and no significant cumulative effects upon otter are predicted. The turbines are located beyond the regular range of all other mobile species utilising the Site, and on the far side of Loch Ness with a low level of ecological connectivity. Some of the same habitats have been affected (primarily bog and heath), however potential cumulative effects are negligible and not significant, given the separation distance from the Site and local abundance of similar habitat types. The project is located a sufficient distance from Ness Woods SAC with no hydrological connection, such that no cumulative effects upon Ness Woods SAC are predicted.
Bhlaraidh Wind Farm Extension	15 turbine wind farm	Consented	c. 3 km west (nearest turbine c. 6.5 km west)	No significant cumulative effects predicted. No significant effects upon otter were predicted, and no significant cumulative effects upon otter are predicted. The turbines would be located beyond the regular range of all other mobile species utilising the Site, and on the far side of Loch Ness with a low level of ecological connectivity. Some of the same habitats would be affected (primarily bog and heath), however potential cumulative effects are low in magnitude and not significant, given the separation distance from the Site and local abundance of similar habitat types. The project is located a sufficient distance from Ness Woods SAC with no hydrological connection, such that no cumulative effects upon Ness Woods SAC are predicted.

Name	Details of Development	Status	Distance and Direction from Site	Cumulative effects
Loch Liath Wind Farm	13 turbine wind farm	Application	4 km west (nearest turbine c. 8 km west)	No significant cumulative effects predicted. No significant cumulative effects upon otter are predicted, given the separation distance from the Site, lack of hydrological connectivity, and suboptimal habitat for otter within the proposed wind farm footprint. The majority of the construction works would take place beyond the regular range of all other mobile species utilising the Site, with no strong ecological connectivity with the Site, being located on the far side of Loch Ness with most construction works located at least 8 km from the Site. Whilst some of the same habitats would likely be affected (principally bog and heath habitats), the loss is likely to be of a scale and distance from the Site, and occurring within a wider landscape with abundant similar habitats, such that potential cumulative effects would be negligible and not significant. The project is located a sufficient distance from Ness Woods SAC with no hydrological connection, such that no cumulative effects upon Ness Woods SAC are predicted.
Red John Pumped Storage Scheme	Pumped Storage Scheme	Consented	c. 19 km northeast	No significant cumulative effects predicted. Operation of Red John and Foyers pumped storage schemes together with the Proposed Development would increase the frequency at which the water levels of Loch Ness would fluctuate between the existing minimum and maximum water levels. An assessment of the effects of these pumped storage schemes operating together upon Urquhart Bay Wood SAC is provided in Appendix 10.6, and summarised in paragraphs 10.8.128 - 10.8.137 . No significant adverse effects as a result of the pumped storage schemes operating together is predicted upon Urquhart Bay Wood SAC.
Foyers Pumped Storage Scheme	Pumped Storage Scheme	Operational	c. 7 km northeast	In relation to Ness Woods SAC, the boundary extends to the shoreline of Loch Ness. Whilst the woodland qualifying feature habitats extend to the shoreline, the shoreline itself is rocky and the terrain is steep, and the woodland qualifying habitat does not extend into the littoral zone. No cumulative effects upon Ness Woods SAC are therefore predicted.

10.9 Additional Mitigation, Compensation and Enhancement

Mitigation, Compensation and Enhancement during Construction

10.9.1 Embedded mitigation and good practice measures are detailed in **Section 10.7**, as well as in **Chapter 7: Water Management, Chapter 13: Fish, Chapter 14: Geology, Soils and Water, and Chapter 18: Air Quality and as outlined in Volume 4, Appendix 3.3: Outline CEMP.**

10.9.2 To compensate for the significant residual effects upon Ness Woods SAC, a Compensation Package would be delivered, as detailed in the Ness Woods SAC Derogation Report, which has been developed in close consultation with NatureScot. A summary of the Ness Woods Compensation Package is provided in the following section and shown in **Volume 2, Figure 10.11: Overview of Ness Woods SAC Compensation Measures.**

10.9.3 The following compensatory measures are proposed:

- The full extent of retained Ness Woods SAC habitat that lies within the Dell Estate would be restored and managed to improve its condition from unfavourable to favourable¹³². This comprises a 234.76 ha area (of which 10.18 ha currently supports 'Tilio-Acerion forests of slopes, screes and ravines', and 116.99 ha supports 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' qualifying woodland habitat which is currently in unfavourable condition; 39.05 ha supports bracken with woodland restoration potential; and the remaining areas support dry and wet dwarf shrub heath, acid grassland, bog and conifer plantation habitat). An adaptive management approach would be adopted, as advised by NatureScot. Given that the key pressure leading to the unfavourable condition of the woodland features in the SAC is grazing / browsing, compensatory efforts focussing on managing these impacts are proposed. As such, control of grazing / browsing is proposed through deer reduction culling and feral goat eradication. This would be additional to normal practice and would provide significant value given the known potential of the habitat. Culling intensities and target deer densities would be determined via ongoing monitoring, including a woodland herbivore impact assessment¹³³. Low levels of deer grazing / browsing would then be maintained long-term, which would be secured through a commitment to a 75-year management period (the proposed length of the lease for the Proposed Development). Depending on the response of vegetation and tree regeneration rates, targeted bracken control may also be required, if the reduced deer pressure is not having the anticipated tree regeneration effects in bracken areas. Targeted supplementary tree planting could also be undertaken if required, should monitoring reveal that natural regeneration is slow. This adaptive management would be based on monitored outcomes and guided by woodland specialists, including a lichenologist.
- The same woodland adaptive management approach, as described above, would also be undertaken within areas of woodland which are outside of, but adjacent to, Ness Woods SAC, totalling 8.08 ha. This management would be undertaken to improve the condition of the woodland areas outside of the SAC to favourable status, to bring them up to SAC quality, and in time incorporate them into the SAC.

¹³² <https://jncc.gov.uk/our-work/key-aspects-of-common-standards-monitoring-csm/> [Accessed in September 2023]

¹³³ Armstrong, H., Holl, K., Thompson, R. & Black, B. (2020) Woodland Herbivore Impact Assessment Method version 04-03-2020

- The existing 4x4 track within Ness Woods SAC would be restored, to reintroduce key tree species and woodland vegetation, to 0.26 ha of the SAC with no current ecological value.
- 10.9.4 These compensation measures have been designed to compensate for the adverse effects upon the conservation objectives of the woodland qualifying features, to ensure the coherence of the national site network, as detailed further in the separate **Shadow HRA Report** and **Derogation Report**. The Compensatory Measures would maintain the extent and distribution of the qualifying woodland habitats within the site; would restore the structure, function and supporting processes of the qualifying woodland habitats; and would restore the distribution and viability of the typical species of the qualifying woodland habitats. The adaptive management is designed to achieve and maintain mixed age classes of trees, canopy cover, deadwood, understorey, ground flora and epiphytic plants; large, long-lived trees; low levels of herbivore impacts; and an absence of invasive non-native species. Through monitoring and management, the compensation measures would secure the regeneration of key tree species, and their associated oceanic bryophyte flora and lichen mycota through the provision of a variable canopy and species mosaic. By encouraging additional hazel (and other species), improving basal regeneration of existing moribund hazel, and sensitive management of existing and newly establishing hazel groves, conditions for old growth lichen and bryophyte establishment would be optimised. A variable, broken hazel canopy with gladed areas and open growth hazels would be targeted, as these comprise important features for a diverse lichen flora. Management that encourages larger, more viable hazel populations would also improve connectivity between existing hazel grove clusters, which are currently scattered and fragmented. Establishing veterans of the future adjacent to and between existing veteran hazel groves, combined with long-term sensitive management of existing veteran hazel groves, would increase the distribution and connectivity of these populations, and in turn, strengthen the resilience and long-term viability of their lichen and bryophyte communities.
- 10.9.5 These measures could be secured through a consent condition and a commitment to prepare and agree with NatureScot a detailed management plan, which would include detailed management prescriptions, monitoring and reporting requirements, for the delivery of the compensation package.
- 10.9.6 To compensate for the significant residual effects upon important ecological features outwith Ness Woods SAC, and to provide significant enhancement, a Habitat Management Plan (HMP) would be produced. An Outline HMP (non-SAC) is provided in **Volume 4, Appendix 10.7: Outline HMP (non-SAC)**, and a summary of the measures proposed is provided below:
- The priority features for management action within the Outline HMP (OHMP) (non-SAC) 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, and local biodiversity priorities of the Highland Nature Biodiversity Action Plan¹³⁴. They comprise: blanket bog; heathland (dry and wet dwarf shrub heath); native woodland; lichens; fish; aquatic macroinvertebrates; birds; pine marten; red squirrel; bats; otter; reptiles and terrestrial invertebrates.
 - The principal aims of the OHMP (non-SAC) are as follows (relevant HMP restoration and management areas as shown in **Figures 10.7.1 – 10.7.4** in **Volume 4, Appendix 10.7: Outline HMP (non-SAC)**):

¹³⁴ 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 September 2023]

- To restore and manage c. 119.3 ha of bog habitat within the Dell Estate
- To create/restore c. 29.6 ha of heathland habitat (via bracken control) and improve the condition of c. 260 ha of retained heathland habitat via improved management
- To create c. 63.1 ha of native woodland¹³⁵
- To translocate a proportion of rocky shore and moorland lichens within Kemp inundation area, if feasible
- To improve fish passage and spawning habitat on the Allt Loch Paiteag
- To provide habitat features for reptiles, otter, red squirrel, pine marten, bats, birds and macroinvertebrates
- The secondary aim of the OHMP is to re-instate c. 30.4 ha of habitat temporarily disturbed / damaged during construction.
- The following specific objectives are proposed to achieve the aims:
 - To fell trees within a c. 5.8 ha area of conifer plantation, and maintain the area free of trees, for bog restoration
 - To remove self-sown trees across c. 9.7 ha, on an ongoing basis from bog restoration areas that currently contain scattered trees
 - To increase the water table across c. 58.3 ha of bog restoration areas, through drain blocking, in order to restore the underlying processes suitable for blanket bog restoration
 - To restore eroded bog habitat via hag reprofiling, gully and bare peat restoration, across c. 61.0 ha of bog restoration areas;
 - To avoid heather cutting or burning within c. 19.5 ha of bog restoration areas
 - To reduce deer and goat grazing / browsing levels across c. 119.3 ha of bog restoration areas
 - To create conditions that should, over time increase the abundance and distribution of bog plants, particularly peat forming *Sphagnum* mosses, across c. 119.3 ha of bog restoration areas
 - To improve the condition of existing bog habitat within c. 113.5 ha of bog restoration areas, to target good condition blanket bog in a near-natural state
 - To create / restore c. 29.6 ha of heathland via bracken control
 - To enhance c. 260 ha of existing heathland via reduced grazing / browsing pressure and removal of self-seeding conifers
 - To enclose a total of c. 63.1 ha to encourage native broadleaved woodland regeneration, with native planting also undertaken
 - To translocate a proportion of rocky shore and moorland lichens within the Loch Kemp inundation area, into surrounding lochs / lochans and retained moorland, where feasible

¹³⁵ This includes 12.1 ha of woodland creation pre-works that commenced in autumn 2023

- To open up a c. 820 m section of watercourse channel, and add gravel and boulder sized sediment to an additional c. 675 m section, of the Allt Loch Paiteag, to improve fish passage, spawning and in-stream habitat;
 - To create / erect: two artificial otter holts; four reptile hibernacula; two pine marten boxes; 20 red squirrel boxes; 30 bat boxes; 30 bird boxes; log piles; and submerge coarse woody debris around loch shoreline areas;
 - To carefully store and re-instate soils in the correct profile following construction, within areas to be temporarily damaged / disturbed during construction (i.e. within the working corridor but outwith the permanent infrastructure footprint); to allow suitable conditions for the regeneration of heathland habitats from the seed bank
- Bog restoration areas proposed comprise the full extent of available areas within Dell Estate which have been identified as being suitable for bog restoration. Heathland restoration / management areas comprise the full extent of unenclosed and connected open moorland habitat within the Dell Estate, to the west of the B862 road. Native woodland creation is detailed in **Volume 4, Appendix 19.2: Loch Kemp Pumped Storage Woodland Management**, and the areas proposed have been agreed by Scottish Forestry as being suitable.
 - An investigation into the feasibility of translocating Loch Kemp rocky shore and surrounding moorland lichens would be undertaken by an appropriately experienced lichenologist. Uncertainty exists over the likely success and feasibility of lichen translocation in this situation. Lichen translocation using a range of methods is known to be successful in some situations, although extensive research is lacking. Translocation of the Loch Kemp rocky shore lichens of high value may not be feasible for many of them, as some are attached to large outcrops which would be difficult to remove pieces of suitable sizes. It may be feasible to translocate the smaller boulders, supporting *Poina interjungens*. Translocation to rocky shore locations within the surrounding lochs (such as Lochan a Choin Uire, Loch Paiteag, Lochan a Mhonaich, Lochan nan Nighean and Lochan Scristan) may be feasible, if the microclimatic conditions are suitable. Translocation of the moorland lichens of high value is likely to have higher feasibility, which could be removed as plugs and 'plugged in' to similar retained heathland within the wider Site, if the microclimatic conditions are suitable. Where deemed feasible, lichen translocation would be attempted, with the methodology, implementation and monitoring overseen by an appropriately experienced lichenologist.
 - Monitoring would be undertaken to measure the success of the restoration and management measures, to measure the achievement of the aims and objectives of the OHMP (non-SAC), and to inform adaptive management and remedial action as necessary.

Mitigation, Compensation and Enhancement during Operation

- 10.9.7 No specific mitigation measures, additional to the embedded mitigation and good practice measures detailed in **Section 10.7**, are required for the operational phase. However, compensation and enhancement measures provided as part of the HMP and SAC Compensation Measures would remain in place during the operational phase and monitoring of the measures provided as part of the HMP and SAC Compensation Measures would also continue during the operational phase (see above and also the Ness Woods SAC Derogation Report, and **Volume 4, Appendix 10.7: Outline HMP (non-SAC)**).

10.10 Residual Effects

10.10.1 This section considers the potential residual effects and associated effect significance of the construction and operation of the Proposed Development, following the implementation of the measures proposed in **Sections 10.7 and 10.9**. 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 10.5.32**). In the case of faunal species, the creation of replacement habitat has been assessed as resulting in a non-significant residual effect in the medium and long-term, given that these species are generalists, and it is considered that the replacement habitats will provide suitable habitat for shelter and food within a reasonable timeframe (boxes and woodland creation / restoration for pine marten, red squirrel and bats; and heath, bog and woodland creation / restoration / management, and additional habitat features, for invertebrates and reptiles, see **Table 10.14: Summary of Losses and Gains of Important Terrestrial Habitats where Significant Effects have been Predicted**).

Construction Residual Effects

10.10.2 The residual effects are assessed and presented in **Table 10.14: Summary of Losses and Gains of Important Terrestrial Habitats where Significant Effects have been Predicted** (**Table 10.14** also includes a summary of the potential effects and proposed mitigation, compensation and enhancement measures).

10.10.3 With the implementation of mitigation, compensation and enhancement as detailed in **Sections 10.7 and 10.9**, the remaining adverse effects which are assessed as being significant are:

- Loss and fragmentation of up to 6.69 ha of internationally important ancient woodland qualifying interest habitat in Ness Woods SAC / Easter Ness Forest SSSI, including bryophyte and lichen communities
- Loss of 6.10 ha of locally important broad-leaved woodland outwith Ness Woods SAC, and 6.34 ha of long-established woodland of plantation origin
- Loss of 50.3 ha of locally important heath habitat (Annex 1 dry dwarf shrub heath and wet dwarf shrub heath)
- Loss of 6.88 ha of regionally important blanket bog habitat
- Loss of 12.27 ha of locally important wet modified bog habitat
- Loss of nationally important lichen assemblages on the rocky shore and moorland in the proposed inundation zone around Loch Kemp

10.10.4 In order to compensate for the habitat loss, c. 170 ha of broad-leaved woodland would be managed within and adjacent to Ness Woods SAC to restore it to favourable condition; c. 63.1 ha of new native woodland would be created outside of the SAC; c. 119.3 ha of blanket bog would be restored; c. 290 ha of heathland would be created / restored / managed; and c. 30.4 ha of temporarily disturbed / damaged habitat (within the working corridor) would be reinstated, as detailed in **Section 10.9**, the Ness Woods SAC compensation package, and **Volume 4, Appendix 10.7: Outline HMP (non-SAC)**. These measures would offset the predicted loss of habitat.

10.10.5 In the short-term, there are anticipated to be locally significant adverse residual effects of habitat loss upon invertebrates, reptiles, pine marten, red squirrel and bats. Provision of alternative habitat

features would provide compensatory habitat for reptiles (four reptile hibernacula), pine marten (two den boxes), red squirrel (six boxes) and roosting bats (eight boxes), in the short-term, whilst restored, created and managed habitats mature (the remainder of the species-specific habitat features detailed in **Section 10.9** and **Appendix 10.7: Outline HMP (non-SAC)** would constitute enhancement). In the medium to long-term, the creation and restoration of broad-leaved native woodland, peatland restoration, heathland restoration and management, and other habitat creation, restoration and management measures as detailed in **Section 10.9**, to be delivered via the HMP, would provide suitable alternative habitat for these species once the planting matures and restoration / management measures improve habitat condition. As such, **no significant residual adverse effects** are predicted upon protected and other important faunal species in the medium to long-term.

- 10.10.6 In order to attempt to reduce and offset the loss of nationally important lichen assemblages on the rocky shore and moorland in the proposed inundation zone around Loch Kemp, the feasibility of lichen translocation would be investigated, and carried out where feasible. Due to the uncertainties associated with likelihood of success, lichen translocation is anticipated to only partially offset the predicted loss of rocky shore lichens, rather than fully offset the loss. Lichen translocation, coupled with the proposed heathland restoration and management, has a greater likelihood of offsetting the loss of moorland lichens within the inundation zone.
- 10.10.7 Assuming the proposed good practice mitigation measures are implemented, **no significant residual effects** are likely upon other important ecological receptors during the construction phase.
- 10.10.8 With the implementation of the measures set out in **Section 10.9**, a number of beneficial effects upon important habitats are predicted in the long-term. **Table 10.14: Summary of Losses and Gains of Important Terrestrial Habitats where Significant Effects have been Predicted** summarises the losses and gains for important terrestrial habitats (those assessed as being of local importance of greater) where a significant effect is predicted, which shows where enhancement would be provided.

Table 10.14: 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
Ness Woods SAC / Easter Ness Forest SSSI	Loss of up to 5.52 ha and fragmentation of 1.17 ha of qualifying woodland habitat	Restoration and management of c. 170 ha of woodland within and adjacent to the SAC, within a total management area of c. 243 ha.	These measures, as detailed in the separate Derogation Report , provide compensation for the adverse effects upon Ness Woods SAC, but do not specifically comprise enhancement.
Broad-leaved woodland (outwith	Loss of 6.10 ha	Creation of c. 63.1 ha of native woodland (via natural	Woodland creation proposed comprises an overall loss to creation ratio of 1:1.2 (when including conifer plantation removal) ¹³⁶ , which exceeds the minimum requirement under the

¹³⁶ Refer to **Chapter 12: Forestry** for information on commercial forestry loss and replacement, and adherence to the Scottish Government's Control of Woodland Removal policy.

Feature	Loss or Change	Creation / Restoration / Management	Compensation and Enhancement Conclusion
Ness Woods (SAC)		regeneration and tree planting).	Scottish Government's Control of Woodland Removal policy. The proposals would result in an increase of c. 51.5 ha of native woodland at the Site overall, which is of higher conservation value than conifer plantation habitat. The native woodland creation proposals are therefore concluded to provide both compensation and a substantial enhancement to the woodland resource at the Site, in the long-term.
Long-established woodland of plantation origin	Loss of 6.34 ha		
Upland heathland (dry dwarf shrub heath and wet dwarf shrub heath)	Permanent direct loss of 28.4 ha, and temporary / indirect loss of 21.9 ha	Re-instatement of c. 21.9 ha (within temporary working corridor), creation of c. 29.6 ha (via bracken control), and enhancement of c. 260 ha (via deer control and conifer control).	The area of heathland proposed to be created, restored and enhanced comprises an area ten times the area of heathland permanently lost. These proposals provide both compensation and a substantial enhancement to heathland habitat, in the long-term.
Blanket bog	Direct and indirect loss of 6.88 ha	Restoration of c. 119.3 ha of bog habitat (via ditch / gully blocking, forest-to-bog restoration, hag reprofiling, bare peat revegetation, and deer control).	The proposals provide a ratio of 1:6.2 of bog habitat lost versus restored. The restoration ratio proposed is lower than the 1:10 compensation ratio recommended in NatureScot's recent peatland guidance ¹³ , although it is understood that this guidance is likely to be revised in the near future ¹⁴ . However, it comprises the full extent of available bog habitat that is suitable for restoration across the full Dell Estate.
Wet modified bog	Direct and indirect loss of 12.27 ha		

- 10.10.9 Invertebrates, reptiles, pine marten, red squirrel and bats would also benefit from the habitat creation, restoration and management measures detailed above, in the long-term. The provision of 22 bat boxes (additional to those required to provide compensation for lost roost features – see **paragraph 10.10.5**) would also provide enhanced habitat for roosting bats, and the provision of 14 drey boxes (additional to those required to provide compensation for lost dreys – see also **paragraph 10.10.5**) would provide enhanced habitat for nesting red squirrel.

Operational Residual Effects

- 10.10.10 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

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

10.11 Conclusion

Summary of Predicted Effects

Proposed Development

- 10.11.1 **Table 10.15: Summary of Effects on Important Ecological Receptors** provides a summary of effects on important ecological receptors, proposed mitigation compensation and enhancement measures and residual effects.

Table 10.15: Summary of Effects on Important Ecological Receptors

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
Construction				
Ness Woods SAC: permanent direct loss of up to 0.60 ha, and habitat change from fragmentation of 0.13 ha of ' <i>Tilio-Acerion</i> ' forests of slopes, screes and ravines' qualifying interest habitat; including associated tree, bryophyte, lichen and ground flora; adversely affecting humidity sensitive bryophyte and lichen species within the second hairpin bend fragmentation area, via microclimatic edge effects; and reducing the resilience and therefore potentially affecting the long-term viability of lichen species that are rare at the site-based scale, via fragmentation effects.	ECoW to give toolbox talks (also relevant to all ecological receptors); minimise damage upon areas identified as having bryophyte and lichen interest; supervision by ECoW in sensitive areas including close to veteran trees; erection of protective fencing; consult lichenologist where cutting of retained leaning hazel stems is unavoidable; reinstatement of habitats within the working corridor.	Significant at an international level.	Ness Woods SAC compensation package to provide habitat creation and management measures (including goat / deer control and adaptive management), to bring 8.08 ha of woodland adjacent to the SAC up to SAC condition, allowing the SAC to be extended. This management would also be undertaken within the full extent of Ness Woods SAC within Dell Estate, equating to 234.76 ha in total (of which c. 127.17 ha comprises woodland qualifying interest habitat in unfavourable condition, and c. 39.05 ha supports bracken with woodland restoration potential) to change the condition of the woodland from unfavourable to favourable. The existing 4 x 4 track within the SAC would also be restored to woodland (0.26 ha).	Significant negative effect at international level, but offset through significant positive effect from compensatory woodland restoration / management.
Ness Woods SAC: permanent direct loss of up to 4.96 ha, and habitat change from fragmentation of 1.04 ha of 'Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles' qualifying interest habitat, including associated tree, bryophyte, lichen and ground flora; adversely affecting humidity sensitive bryophyte and lichen species within the second hairpin bend fragmentation area, via microclimatic edge effects; and reducing the resilience and therefore potentially affecting the long-term viability of lichen species that are rare				

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
at the site-based scale, via fragmentation effects				
Ness Woods SAC: risk of damage to tree roots beyond working corridor (107 trees).	Erection of protective fencing including Root Protection Zones (and collapsed / leaning / 'phoenix' trees where possible).			
Ness Woods SAC: air quality impacts from dust deposition.	Good practice dust control measures and additional dust control measures specific to Ness Woods SAC, including monitoring, to be implemented via a Dust Management Plan.	Not significant.	None.	Not significant.
Ness Woods SAC: air quality impacts from emissions generated from road traffic and non-road mobile machinery.	Good practice mitigation to minimise non road mobile machinery emissions.	Not significant.	None.	Not significant.
Ness Woods SAC: water quality impacts or a change in flow regimes of watercourses flowing through Ness Woods SAC, specifically the Allt an t-Sluichd downstream of Dam 1.	Pollution prevention and hydrological mitigation measures; pre-weathered concrete used in construction of Dam 1 where possible; installation of an outfall to maintain the natural flow regime of the Allt an t-Sluichd.	Not significant.	None.	Not significant.
Ness Woods SAC: spread of access track materials.	None.	Not significant.	None.	Not significant.
Ness Woods SAC: disruption to groundwater or surface water flows along access track	Permeable track construction using rock / aggregate won onsite; inclusion of cross drains to maintain existing surface water flow paths.	Not significant.	None.	Not significant.
Ness Woods SAC: inadvertent introduction of invasive non-native plant species.	Pre-construction invasive species survey and Biosecurity Management Plan.	Not significant.	None.	Not significant.
Ness Woods SAC: loss of four otter lay-ups and two potential (non-breeding) holts.	Obtain licence in consultation with NatureScot; pre-construction surveys; provide otter protection plan; re-create two holts lost.	Not significant.	None.	Not significant.

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
Ness Woods SAC: disturbance of otter (including one retained lay-up) (and other fauna utilising retained habitat) via human presence, construction noise and vibration including blasting, and temporary construction lighting	Restrict lighting to minimum required; direct lighting away from sensitive habitats; avoid lighting specifications with a high UV component; implementation of exclusion zones around retained otter couches / lie-ups; obtain licence in consultation with NatureScot for disturbance works within 30m of retained otter lay-up.	Not significant.	None.	Not significant.
Ness Woods SAC: injury or killing of otter from traffic collisions or becoming trapped in excavations.	Site speed limit; covering / ramping of excavations; suitable storage of materials.	Not significant.	None.	Not significant.
Ness Woods SAC: fragmentation to otter habitat from dam construction.	None.	Not significant.	None.	Not significant.
Ness Woods SAC: impacts to otter prey and aquatic habitat.	Pollution prevention mitigation measures; fish mitigation measures, including fish rescue and relocation during construction, 'soft start' piling operations, noise reduction measures and acoustic barriers during construction, fitting of intake / outlet screens and control of water velocity, suitable culvert design, implementation of fish deterrent at the intake / outlet, CCTV monitoring at the outlet, introducing dug channels for fish passage, implementing a Fish Monitoring Plan (FMP).	Not significant.	None.	Not significant.
Permanent loss (direct and indirect) of up to 6.88 ha of Annex 1 blanket bog.	Hydrological mitigation measures; erection of protective fencing; use of 'floated' temporary access where possible; reinstatement of habitats within the working corridor.	Significant at a regional level.	Restoration of up to c. 119.3 ha of peatland habitat as part of the HMP.	Significant negative effect at regional level, but offset through compensatory peatland restoration.
Permanent loss (direct and indirect) of up to 12.27 ha of wet modified bog.	Hydrological mitigation measures; erection of protective fencing; use of 'floated' temporary	Significant at a local level.	Restoration of up to c. 119.3 ha of peatland habitat as part of the HMP.	Significant negative effect at local level, but offset

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
	access where possible; reinstatement of habitats within the working corridor.			through compensatory peatland restoration.
Permanent loss of 28.41 ha and temporary / indirect loss of 21.89 ha of Annex 1 heathland (dry dwarf shrub heath and wet dwarf shrub heath)	Hydrological mitigation measures; erection of protective fencing; reinstatement of habitats within the working corridor.	Significant at a local level.	Restoration / creation / management of c. 290 ha of heathland habitat (via bracken control, self-sown conifer removal, and grazing / browsing control), as part of the HMP.	Significant negative effect at local level, but offset through significant positive effect from compensatory heathland management, providing a significant enhancement.
Permanent loss of 5.48 ha and temporary loss of 0.62 ha of native broad-leaved woodland (outwith Ness Woods SAC)	Erection of protective fencing; reinstatement of habitats subject to temporary loss.	Significant at a local level.	Creation of c. 63.1 ha of native woodland as part of the HMP, also detailed in Chapter 12: Forestry .	Significant negative effect at local level, but offset through significant positive effect from compensatory woodland creation, providing a significant enhancement.
Permanent loss of 1.46 ha and temporary loss of 4.88 ha of long-established woodland of plantation origin.	Reinstatement of habitats subject to temporary loss.	Significant at a local level.	Creation of c. 63.1 ha of native woodland as part of the HMP, also detailed in Chapter 12: Forestry .	Significant negative effect at local level, but off-set through significant positive effect from compensatory woodland creation.
Small-scale loss of acid grassland, flushes, swamp, marginal and inundation, and watercourses 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.	None.	Not significant.
Permanent loss of lichen assemblage on rocky shore and surrounding moorland of Loch Kemp.	None.	Significant at a national level.	Translocation of lichens from areas to be inundated (where feasible), and restoration /	Significant at a national level; loss of rocky shore lichens partially offset by

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
			positive management of retained heathland as part of the HMP.	translocation; translocation and other habitat restoration and management proposals have a greater chance of offsetting loss of moorland lichens.
Loss of up to 57.58 ha of locally important invertebrate habitat.	Reinstatement of habitats within the working corridor.	Significant at a local level.	Creation of log piles; restoration of up to c. 119.3 ha of peatland habitat; creation / restoration / management of c. 290 ha of heathland habitat; and creation of c. 63.1 ha of native woodland. Compensation measures for Ness Woods SAC would also benefit invertebrates.	Significant negative effect at a local level in the short-term, but no significant effect in the medium to long-term as planting matures and restored habitats improve, providing suitable alternative habitat.
Loss of up to 45.96 ha of habitat suitable for reptiles.	Reinstatement of habitats within the working corridor.	Significant at a local level.	Creation of four hibernacula; restoration of up to c. 119.3 ha of peatland habitat; creation / restoration / management of c. 290ha of heathland habitat; and creation of c. 63.1 ha of native woodland.	Significant negative effect at a local level in the short-term, but no significant effect in the medium to long-term as planting matures and restored habitats improve, providing suitable alternative habitat.
Loss of up to 53.47 ha of woodland habitat suitable for pine marten (up to half of the territory of one individual), red squirrel and foraging / commuting bats.	Reinstatement of habitats within the working corridor.	Significant at a local level.	Erect two pine marten boxes; erect 20 red squirrel boxes; erect 30 bat boxes; creation of c. 63.1 ha of native woodland. Compensation measures for Ness Woods SAC would also benefit these species/species groups.	Significant negative effect at a local level in the short-term, but no significant effect in the medium to long-term as planting matures and restored

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
				habitats improve, providing suitable alternative habitat. Fourteen of the squirrel drey boxes would provide an enhancement.
Loss of five trees with PRFs for bats, and potential damage to three further trees with PRFs for bats (including one confirmed bat roost).	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 eight bat boxes (i.e. one per tree with PRF lost / potentially damaged); undertake tree inspection / exclusion and supervised sensitive section felling under licence.	Not significant	Erect a further 22 boxes for enhancement.	Not significant, with the enhanced roosting provision providing an enhancement.
Inadvertent disturbance, injury and / or death of reptiles.	Habitat manipulation to make habitat unsuitable (overseen by ECoW); site speed limit.	Not significant.	None.	Not significant.
Inadvertent disturbance, injury and / or death of otter, pine marten, red squirrel, badger and bats	Pre-construction surveys; covering/ramping of excavations; site speed limit; suitable storage of materials.	Not significant.	None.	Not significant.
Light disturbance of invertebrates, foraging / commuting pine marten, badger, foraging / commuting bats	Restrict lighting to minimum required; direct lighting away from sensitive habitats; avoid lighting specifications with a high UV component.	Not significant.	None.	Not significant.
Disturbance via human / machinery presence, noise and vibration, of foraging / commuting pine marten, red squirrel, badger and foraging / commuting bats.	N/A	Not significant.	None.	Not significant.
Operation				

Predicted Effect	Good Practice Measures	Significance	Additional Mitigation/ Compensation/ Enhancement	Residual Significance
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 and with a low UV component; restriction of access by visitors to Ness Woods SAC habitat.	Not significant.	None.	Not significant.
Fluctuations in water levels within Loch Ness.	N/A	No significant effect upon Urquhart Bay Wood SAC, or any other important ecological features.	None.	Not significant.

Cumulative Effects

- 10.11.2 Significant cumulative effects, during both the construction and operational phases, are considered unlikely, as detailed further in **Table 10.13: Cumulative Effects Assessment**.

Statement of Significance

- 10.11.3 Following the avoidance of important receptors during the project design where possible, and with the implementation of the proposed good practice measures and additional mitigation, effects would be minimised as far as possible.
- 10.11.4 The Proposed Development would result in a significant residual negative effects including: the loss / fragmentation of ancient woodland qualifying interest habitat within Ness Woods SAC / Easter Ness Forest SSSI at the international level (including the associated lichen and bryophyte communities), loss of blanket bog at the regional level, loss of wet modified bog, dwarf shrub heath, native broad-leaved woodland (outwith Ness Woods SAC) and long-established woodland of plantation origin at the local level, and the loss of lichen communities on the rocky shore and moorland surrounding Loch Kemp at the national level. However, these effects would be compensated for by a significant positive effect through the compensatory woodland creation and restoration, peatland restoration, heathland restoration and management, rocky shore / moorland lichen translocation (if feasible), and other habitat creation and management measures proposed, to be delivered via a Compensation Package specifically for Ness Woods SAC, alongside a HMP for the remainder of the Proposed Development. Compensatory measures are not expected to fully offset the loss of the rocky shore lichen assemblage at Loch Kemp.
- 10.11.5 In the short-term, significant adverse effects are predicted at the local level for the loss of habitat for invertebrates, reptiles, pine marten, red squirrel and bats. However, no residual significant effects are predicted upon these faunal groups in the medium to long-term, once new planting matures and habitat conditions improves, via delivery of the Ness Woods SAC Compensation Package and HMP, as suitable alternative habitat would be provided in a reasonable timeframe.
- 10.11.6 With the implementation of continued good practice measures and the implementation of the proposed Ness Woods SAC Compensation Package and HMP, no significant negative effects are predicted during the operation phase.
- 10.11.7 Additional to the compensation proposed, the heathland management, native woodland creation and the provision of bat and red squirrel boxes would provide a significant enhancement, which would be delivered via the HMP.