Chapter 9: Sloy Pumped Hydro Storage Scheme: Terrestrial Ecology

Chapter 9: Terrestrial Ecology - Contents

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9. Terrestrial Ecology

9.1. Executive Summary

An Ecological Impact Assessment (EcIA) has been undertaken to consider the effects of the Proposed Development on terrestrial Important Ecological Features (IEFs) including Statutory Designated Sites, Non-Statutory Designated Sites, Ancient Woodland, and protected / notable floral and faunal species / species groups. The EcIA has been undertaken by Ecological Consultants at EnviroCentre Limited according to the latest guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM) and informed by comments and information supplied by Loch Lomond & the Trossachs National Park Authority (LLTNPA), Scottish Environmental Protection Agency (SEPA), Scottish Centre for Ecology and the Natural Environment (SCENE), and NatureScot.

The assessment considered the potential significant effects of the project and its associated activities on IEFs present within the Proposed Development Area (PDA), and for the Zone of Influence (ZoI) of the IEFs which were scoped in for assessment.

Terrestrial ecological receptors that were identified as being susceptible to impacts as a result of the Proposed Development include the qualifying features of the Loch Lomond Special Area of Conservation (otter); Scottish Biodiversity List (SBL) Priority Habitats Upland Birchwood and Wet Woodland; non-priority habitats conifer and mixed planation woodland; and faunal species and species groups, bats, badger, beaver, red squirrel, pine marten, reptiles, amphibians, and invertebrates. Terrestrial non-native invasive plant species rhododendron, Japanese knotweed, and white butterbur were also considered due to their presence within and directly adjacent to the PDA.

The PDA and surrounding area were identified as provisioning suitable habitat for the above faunal IEFs during preliminary ecological assessment. Beaver was later scoped in at the request of NatureScot as this species has established within the southern basin of Loch Lomond over recent years. Following targeted species survey, the woodland to the north of the PDA was assessed as providing moderate suitable foraging and commuting habitat for a bat assemblage of regional significance, and that the woodland habitat surrounding the site was of high suitability. Potential red squirrel resting sites (dreys) were identified within conifer plantation located to the east of the spoil management area, but within the wider woodland clearance area. No field signs of other scoped in faunal IEFs were identified within the site or surrounding area; however, the habitat was considered to be optimal to support these species / species groups.

Habitat loss to accommodate the spoil management area would result in a temporary reduction of woodland cover to the north. Existing conifer plantation, mixed plantation, and semi-natural broadleaved woodland (Upland Birchwood and Wet Woodlands) would be cleared, and the spoil management area would remain unvegetated during the construction phase. Conifer plantation will be cleared beyond the spoil management area in accordance with LLTNPA's instruction to remove and larch and rhododendron as they are potentially infected by the *Phytophthora ramorum* and *P. kernoviae* tree disease. This would result in a temporary loss of foraging and commuting habitat for bats, otter, badger, red squirrel, pine marten, amphibians, reptiles, and invertebrates during the construction phase until compensatory woodland is planted and allowed time to re-established during the operational phase. Removal of woodland would also result in the removal of potential red squirrel drey sites and of one tree which provisions a potential roost feature for bats.

There is a possibility that a small number of individual bats, otter, badger, red squirrel, pine marten, amphibians, reptiles, and / or invertebrates would experience disturbance or be displaced from a small area of their habitat due to forestry operations, increased lighting, noise, presence of plant machinery and

people during the construction phase. However, this is not considered likely to affect the conservation status of populations in a local, national or international context. Furthermore, during construction, there would be an increase in the types of hazards which could potentially harm otter, badger, red squirrel, pine marten, amphibians, and reptiles such as open trenches and active plant.

Rhododendron and other terrestrial invasive species would undergo control and eradication during the construction and operational phase and would be routinely monitored during the creation and establishment of compensatory habitat.

Biosecurity measures would be employed if plant material is to be moved for disposal within site or off-site, including plant wash down facilities, screening, and monitoring protocols. The control and eradication of terrestrial INNS is considered to be a site-level positive impact.

Providing the compensatory habitat creation measures detailed in this chapter are progressed at the onset of the operational phase, the residual effects on Priority Habitats Upland Birchwood and Wet Woodland are assessed to be non-significant.

Providing the general mitigation measures attributed to fauna, and the targeted mitigation and compensation measures detailed in this chapter and in the supporting Species Protection Plans are in place prior and during the construction phase, the residual effects on terrestrial faunal species (bats, badger, otter, red squirrel, pine marten, beaver, reptiles, amphibians, and invertebrates) are considered to be non-significant.

Whilst there are some uncertainties or limitations in the assessments and / or mitigation proposed, it is anticipated that monitoring during construction and through operation would allow for mitigation to be adapted if necessary.

The cumulative effects of the Proposed Development in combination with other cumulative developments in the vicinity are considered to be not significant.

A licence may be required in relation to destruction of bat roosting habitat and / or red squirrel dreys if these species are confirmed to be roosting/nesting within 50m of the PDA during the pre-construction checks.

Biodiversity enhancements would provide benefits to the local biodiversity, creating habitats suitable for a variety of flora and fauna that frequent the site and locale.

9.2. Introduction

EnviroCentre Limited was commissioned by ASH design + assessment ltd. on behalf of SSE to undertake an Ecological Impact Assessment (EcIA) of terrestrial ecology for the proposed pumped hydro storage (PHS) scheme at the Sloy Hydroelectric Power Station, Inveruglas, Loch Lomond. The assessment is required in order to identify important ecological features and complete an assessment of baseline data against design, construction and operational proposals to ascertain the significance of predicted effects. This chapter details the specialist ecological studies undertaken and the results of the assessment. The assessment has been carried out according to the latest guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM) by experienced and competent ecologists who are all Members of CIEEM and follow its Code of Professional Conduct. It is supplemented by technical reports with supporting figures contained within **Volume 4: Technical Appendices** of this EIA Report.

Details of the site and the Proposed Development are provided in **Chapter 4: Description of Development**.

The purpose of this chapter is to:

- Identify and describe the terrestrial Important Ecological Features (IEFs) which may be impacted by the Proposed Development.
- Describe all potentially significant terrestrial ecology impacts associated with the Proposed Development.
- Consider the avoidance and mitigation measures to be adopted within the design, construction and operational phases as well as those required to ensure compliance with nature conservation legislation and to address adverse impacts.
- Provide an assessment of the significance of any residual impacts.
- Set out the requirements for post-construction monitoring.
- Detail actions to be taken to deliver biodiversity enhancements.

9.3. Scope Of Assessment

Potential impacts to the following terrestrial ecology features have been considered within this assessment, based on the results of baseline studies (**Volume 4, Technical Appendices 9.1 to 9.4**):

- Designated sites;
- Habitats and notable flora; and
- Protected and/or notable species.

9.3.1. POTENTIAL IMPACTS AND ZONE OF INFLUENCE

Potential significant impacts considered during Scoping[1] were as follows:

- Loss of Scottish Biodiversity List (SBL) priority habitats if wet woodland, lowland mixed deciduous woodland and lowland fens are affected by the works.
- Degradation, impacting source or loss of potential Groundwater Dependent Terrestrial Ecosystems (GWDTE).
- Spread of terrestrial invasive species.
- Loss of features with potential to be used by mammals for shelter (drey, roost, burrows, den sites).

The CIEEM Guidelines identify the Zone of Influence (ZoI) as the area over which ecological features may be subject to significant effects as a result of the Proposed Development and associated activities. This is likely to extend beyond the Proposed Development Area (PDA), for example where there are mobile species or hydrological links beyond the site boundaries. Features found to be present or likely to be present within the predicted ZoI, and which have potential to be significantly affected (positively and negatively) by the Proposed Development, are included within the scope of this assessment. The features considered, associated ZoI, decision to scope in / out and justification are summarised in **Table 9.1** overleaf. Where impacts to features are considered likely to be similar, these have been grouped for succinctness.

[1] See Volume 4: Appendix 6.1: Scoping Report and Appendix 6.2: Scoping Opinion

Table 9.1 Scoping Summary

IEF	Importance of IEF	ZoI	Present in Site/Locale	Significant effects likely/Scoping Decision	Justification
Statutory Designated Sites					
Loch Lomond and The Trossachs National Park Special qualities include Argyll forest, Loch Lomond, Breadalbane and The Trossachs. It overlaps with protected areas including: • Aber Bog, Gartocharn Bog, and Bell Moss Site of Special Scientific Interest (SSSI) • Endrick Mouth and Islands SSSI • Endrick Water Special Area of Conservation (SAC) • Loch Lomond Ramsar Site • Loch Lomond Special Protected Area (SPA) • Loch Lomond Woods SAC • Portnellan - Ross Priory - Claddochside SSSI	National (Scotland)	Within and up to 1km from the PDA (furthest extent at which pollution impacts are expected)	Site	Scoped out	This site does not have an IEF that can be assessed. The National Park encapsulates multiple designated sites which have been scoped in separately where significant effects are likely.
Pollochro Woods Site of Special (SSSI)[2] • Bryophyte assemblage • Lichen assemblage • Wet woodland • Wood pasture and parkland	National (UK)	Within and up to 1km from the PDA (furthest extent at which pollution impacts are expected)	Locale	Scoped out	No significant effects are expected on the qualifying features of the SSSI due to the scale and distance of the Proposed Development from the site.

[2] https://sitelink.nature.scot/site/8621

IEF	Importance of IEF	ZoI	Present in Site/Locale	Significant effects likely/Scoping Decision	Justification
Loch Lomond Woods SAC[3] • Otter (*Lutra lutra*) • Western acidic oak woodland	International	Within and up to 1km from the PDA (furthest extent at which pollution impacts are expected)	Locale	Significant effects to qualifying feature (otter) are possible. Loch Lomond Woods SAC has been **scoped in**.	The Proposed Development is located within the territorial range of otter, a qualifying interest of the SAC and there is potential for otter to be impacted during construction and operation.
The Great Trossachs Forest National Nature Reserve (NNR)[4] • Woodland restoration project	National (Scotland)	Within and up to 1km from the PDA (furthest extent at which pollution impacts are expected)	Locale	Scoped out	No significant effects are expected on the qualifying features of the NNR due to the scale and distance of the Proposed Development from the site.
Ancient Woodland					
Ancient woodland ecologically connected to the site via uninterrupted terrestrial habitat cover. • AW_15818 • AW_15821 • AW_15822 • AW_15823 • AW_15824 • AW_15827 • AW_15828 • AW_15829 • AW_15830 • AW_16010 • AW_16014	National (Scotland)	Within the PDA.	Locale	Scoped out	No significant effects likely. These ancient woodlands have been scoped out due to their distance from the Proposed Development.

[3] https://sitelink.nature.scot/site/8298 (Accessed March 2024)

[4] https://sitelink.nature.scot/site/8298 (Accessed March 2024)

IEF	Importance of IEF	ZoI	Present in Site/Locale	Significant effects likely/Scoping Decision	Justification
Ancient woodland ecologically connected to site via hydrological pathway (Loch Lomond) • AW_15817 • AW_15819 • AW_15820 • AW_15825 • AW_16008	National (Scotland)	Within the PDA	Locale	**Scoped out**	No significant effects likely. These ancient woodlands have been scoped out as they are separated from the Proposed Development by Loch Lomond.
Habitats					
Phase 1 Broad Habitats: • Semi-Natural Broadleaved Woodland • Marshy Grassland • Flush • Valley Mire	National (Scotland)	Within PDA and the furthest extent of hydrological connection.	Site	**Scoped in**: • Semi-Natural Broadleaved Woodland **Scoped out:** • Marshy Grassland • Flush • Valley Mire	Semi-Natural Broadleaved Woodland is an SBL habitat present within the PDA and would be partially lost as a result of construction activities. Marshy Grassland is present to the south of the site, outwith the Proposed Development area and separated from the working area by the A82 road. As such it is considered unlikely that there would be a significant impact. Flush and Valley Mire habitat have been re-classified as habitats of less conservation value following the National Vegetation Classification (NVC) assessment and are now considered to be a component of the surrounding mixed plantation woodland.
Phase 1 Broad Habitats: • Conifer Plantation Woodland • Mixed Plantation Woodland • Scattered Trees	Site	Within PDA	Site	**Scoped in**: • Conifer Plantation Woodland	Habitats to be scoped in would undergo large scale habitat loss / fragmentation as a result of the Proposed Development. Scoped out habitats would undergo partial loss and / or disturbance but are not

IEF	Importance of IEF	ZoI	Present in Site/Locale	Significant effects likely/Scoping Decision	Justification
• Amenity Grassland • Wall • Building				• Mixed Plantation Woodland **Scoped out:** • Scattered Trees • Amenity Grassland • Wall • Building	considered to be of greater than site importance.
Phase 1 Broad Habitats: • Open Standing Water • Bare Ground	Negligible	Within PDA	Site	**Scoped out:** • Open Standing Water • Bare Ground	Open standing water is considered to be of negligible importance as it is frequently altered by the exiting hydroelectric scheme and does not provide accessible habitat to any species. The urban habitats present within the site boundary are considered to be of negligible ecological value.
NVC Communities: • *M27 Filipendula ulmaria – Angelica sylvestris* mire • W11 *Quercus petraea-Betula pubescens-Oxalis acetosella* woodland • W4 *Betula pubescens – Molinia caerulea* woodland	National (Scotland)	Within PDA and the furthest extent of hydrological connection.	Site	**Scoped in**: • W11 *Quercus petraea-Betula pubescens-Oxalis acetosella* woodland • W4 *Betula pubescens – Molinia caerulea* woodland **Scoped out:** • *M27 Filipendula ulmaria – Angelica sylvestris* mire	W11 and W4 Woodland are SBL priority habitats present within the PDA and would be partially lost as a result of construction activities. M27 mire is present to the south of the site, outwith the PDA and separated from the working area by the A82 road and it is considered unlikely that there would be a significant effect.

IEF	Importance of IEF	ZoI	Present in Site/Locale	Significant effects likely/Scoping Decision	Justification
Invasive Non-Natives Species					
Invasive Non-Native Terrestrial Plant Species	Negative	Within the PDA and up to 50m from the boundary	Site	Significant effects are likely. INNS have been **scoped in**	Japanese knotweed (*Reynoutria japonica*), rhododendron (*Rhododendron ponticum*), and white butterbur (*Petasites albus)* are located within the PDA.
Fauna and Fauna Species Groups					
Bats	International	Within the Proposed Development area and up to 50m from the boundary.	Site	Significant effects are likely. Bats have been **scoped in**	There is suitable habitat for bat foraging, commuting, and roost sites within the ZoI.
Otter	International	Within the PDA and within suitable watercourses up to 250m from the boundary.	Locale	Significant effects are likely. Otter have been **scoped in**	The site and adjacent watercourses and Loch Lomond provide suitable habitat for foraging, commuting and resting otter.
Water Vole (*Arvicola amphibius*)	International	Within the PDA and up to 250m from the boundary and within suitable watercourses up to 250m from the boundary.	Unlikely	No significant effects likely. Water vole have been **scoped out**	No evidence of water vole was recorded within or adjacent to the PDA. The PDA is considered to provide sub-optimal habitat for water vole and superior habitat is present in the wider landscape.
Beaver (C*astor fiber*)	International	Within the PDA and up to 50m from the boundary.	Unlikely	Significant effects are possible. Beaver have been **scoped in**	No evidence of beaver was recorded within or adjacent to the PDA. The shoreline of Inveruglas Bay adjacent to the PDA provides riparian woodland suitable for beaver foraging.
Badger (*Meles meles*)	National (UK)	Within the PDA and up to 100m from the boundary.	Locale	Significant effects are likely. Badger have been **scoped in**	There is suitable habitat for badger foraging and commuting within the ZoI.

IEF	Importance of IEF	ZoI	Present in Site/Locale	Significant effects likely/Scoping Decision	Justification
Red Squirrel (*Sciurus vulgaris*)	National (UK)	Within the PDA and up to 50m from the boundary	Site	Significant effects are likely. Red squirrel have been **scoped in**	There is suitable habitat for red squirrel foraging, commuting, and rest sites within the PDA.
Pine Marten (*Martes martes*)	National (UK)	Within the PDA and up to 100m from the boundary.	Locale	Significant effects are likely. Pine marten have been **scoped in**	There is suitable habitat for pine marten foraging, commuting, and rest sites within the PDA.
West European Hedgehog (*Erinaceus europaeus*)	National (Scotland)	Within the footprint of the development and up to 50m from the boundary.	Not known	No significant effects likely. Hedgehog have been **scoped out**	The site represents suboptimal foraging habitat for hedgehog with limited overwintering potential.
Brown Hare (*Lepus europaeus*)	National (Scotland)	Within the PDA and up to 50m from the boundary.	Unlikely	No significant effects likely. Brown hare have been **scoped out**	No evidence of brown hare was recorded within or adjacent to the PDA. The PDA lacks suitable habitat for brown hare.
Reptiles	National (UK)	Within the PDA and up to 50m from the boundary.	Likely Site	Significant effects are likely. Reptiles have been **scoped in**	There is suitable habitat for reptile foraging, commuting, and rest sites within the ZoI.
Amphibians	National (UK), Regional, Local	Within the PDA and up to 50m from the boundary.	Likely Site	Significant effects are likely. Amphibians have been **scoped in**	There is suitable habitat for amphibian foraging, commuting, and rest sites within the ZoI.
Invertebrates	Up to National (UK)	Within the PDA and up to 50m from the boundary.	Site	Significant effects are likely. Invertebrates have been **scoped in**	There is suitable habitat for a wide range of invertebrates within the ZoI.

9.4. Consultation Responses

Table 9.2: Consultee Responses

Consultee	Issues raised / discussed	Point of Inclusion
Loch Lomond & the Trossachs National Park Authority	LLTNPA request that compensatory habitat creation and enhancement focuses on native woodland restoration and expansion opportunities within the vicinity of the proposal and that wildflower-rich areas are created around existing and proposed infrastructure should be created to bolster the existing Buglife B-line which intercepts the site. LLTNPA would like to work in partnership to identify appropriate enhancement opportunities that can be delivered by the project.	Native woodland creation is detailed in **Section 9.9.2: Habitats**. Habitat creation to benefit invertebrates is detailed in **Section 9.9.4.5: Invertebrates.**
	The mitigation hierarchy should be followed where possible to avoid impacts on UK Biodiversity Action Plan (BAP)/SBL woodlands (Wet Woodland and Upland Birchwood) on the site. All semi-natural broadleaved woodland should be subject to and NVC survey and the results used to inform the layout of the proposal to avoid impacts UK BAP priority/SBL habitats and to help identify potential areas for habitat restoration/enhancement. Alternative options for the storage and re-use of the excavated rock spoil from the construction works should be explored to avoid or minimise impacts on woodland.	All woodland within the site and surrounding area underwent NVC survey, as detailed in **Volume 4, Appendix 9.2: National Vegetation Classification (NVC)**. Alternative options for storage are discussed in **Chapter 3: Site Selection and Design Evolution**.
	A tree survey should be undertaken in accordance with *British Standards 5837: Trees in relation to Design, Demolition and Construction* to identify the impacts on individual trees and identify mitigation measures to minimise impacts on trees. Where impacts on individual trees cannot be avoided, replacement tree planting should be identified in the EIA Report to compensate for any losses.	A Tree Survey and Arboricultural Impact Assessment (AIA), is included in **Volume 4: Appendix 9.4: Arboricultural Impact Assessment (AIA)**.

Consultee	Issues raised / discussed	Point of Inclusion
	NVC survey should be undertaken of potential GWDTEs identified during the 2022 update Phase 1 habitat survey. The results should be used to inform the design process to avoid groundwater dependant habitat and where this is not possible suitable restoration and/or compensation measures should be identified.	All potential GWDTEs within the site and surrounding area underwent NVC survey, as detailed in **Volume 4: Appendix 9.2: National Vegetation Classification (NVC)**. Mitigation and compensation regarding Wet Woodland are detailed in **Section 9.9.2: Habitats.**
	An INNS management plan should be produced detailing the eradication of terrestrial INNS from site and surrounding habitats.	An INNS management plan would be produced as detailed in **Section 9.9.3: INNS.**
	Any trees or structures affected by the Proposed Development should be assessed for their suitability to support bats and further survey work should be undertaken to confirm presence/absence of bats. Mitigation and compensation should be designed to minimise impacts on bats and a NatureScot Protected Species licence should be sought where necessary.	All trees with bat suitability would undergo further survey and licencing where necessary, as detailed in **Section 9.8.4.1: Bats**.
	Habitats Regulations Appraisal (HRA) screening of the proposal to identify the potential for likely significant effects on the otter qualifying interest of Loch Lomond Woods SAC. A Species Protection Plan (SPP) for otters should be included in the EIA Report.	An HRA has not been produced for the Proposed Development. The SAC and the qualifying interests are discussed in **Section 9.8.1: Designated Sites**. Possible significant effects on the qualifying interests of the Loch Lomond SAC are assessed in **Section 9.8.1: Designated Sites**. A SPP detailing mitigation measures for otter is included in **Volume 4, Appendix 9.5: Species Protection Plan (SPP)**.
	Red squirrel monitoring should be undertaken prior to woodland clearance to confirm whether any potential drey features on site are used by red squirrel. A SPP for red squirrel should be included within the EIA Report.	Details of pre-construction monitoring for red squirrel is detailed in **Section 9.10: Monitoring**.

Consultee	Issues raised / discussed	Point of Inclusion
		A SPP detailing mitigation measures for red squirrel is included in **Volume 4, Appendix 9.5: Species Protection Plan (SPP)**.
	Monitoring of the site should be undertaken to confirm whether any potential badger/pine marten resting features are present on site prior to works commencing. A SPP for badger/pine marten should be included within the EIA Report.	Details of pre-construction monitoring for badger/pine marten is detailed in **Section 9.10: Monitoring**. SPPs detailing mitigation measures for pine marten/badger are included in **Volume 4: Appendix 9.4**.
	A SPP for reptiles/amphibians should be included within the EIA Report.	A SPP detailing mitigation measures for reptiles and amphibians is included in **Volume 4: Appendix 9.5: Species Protection Plan (SPP)**.
Scottish Environmental Protection Agency	A Construction Environmental Management Plan (CEMP) should be provided including details of pollution prevention and drainage management and that site specific maps and plans should be submitted that include reference to best practice pollution prevention and construction techniques and regulatory requirements.	A CEMP including the noted information would be produced, as detailed in **Section 9.10: Monitoring**. An outline CEMP is included in **Volume 4: Appendix 4.2**.
	INNS should be treated prior to works or removed from the site as waste. Any material removed from the site is required to be disposed of to a suitably licenced facility.	INNS control and eradication is detailed in **Section 9.9.3.1: INNS - Terrestrial Plants**, and will be further detailed in the INNS management plan to be produced post consent.
	An NVC survey report should be submitted with a map that demonstrates that all GWDTE and existing groundwater abstractions are outwith a 100m radius of all excavations shallower than 1m and outwith 250m of all excavations deeper than 1m and proposed groundwater abstractions. The survey needs to extend beyond the site boundary where the distances	An GWDTE plan with an overlay of the Proposed Development is included in **Volume 4, Appendix 9.2: National Vegetation Classification (NVC).** An assessment of the groundwater status is included in **Chapter 11: Soils, Geology and Water Environment**

Consultee	Issues raised / discussed	Point of Inclusion
	require it. Where minimum buffers cannot be achieved, a detailed site specific qualitative and/or quantitative risk assessment will be required.	
	An Invasive Species Management Plan should be produced which details control and eradication methods for Japanese Knotweed and rhododendron.	INNS control and eradication is detailed in **Section 9.9.3.1: INNS - Terrestrial Plants**, and will be further detailed in the INNS management plan to be produced post consent.
	The EIA should provide information to demonstrate there is no peat on site.	No peatland habitats were recorded on site, as detailed in the NVC report in **Volume 4: Appendix 9.2: National Vegetation Classification (NVC)**.
NatureScot	The EIA should provide an assessment of impacts of beaver.	No evidence of beaver was recorded within or adjacent to the PDA. Beaver are considered within the impact assessment in **Section 9.8.4.3: Beaver** and mitigation measures are detailed in **Section 9.9.4.3: Beaver**.

9.5. Legislation, Policy and Guidance

The compilation of this chapter has taken cognisance of the legislation, planning policies, conservation initiatives and general guidance presented in **Table 9.3** below:

Table 9.3: Legislation, Policy and Guidance Documents

Scope	Document
International	• International Union for the Conservation of Nature (IUCN) Red List of Threatened Species.
European	• Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (The Habitats Directive). • Environmental Impact Assessment (EIA) Directive (2014/52/EU) on assessing the potential effects of projects on the environment.
Scottish	• Wildlife and Countryside Act 1981 (as amended) (WCA); • The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). • The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017. • National Planning Framework 4[5]. • Scottish Biodiversity List (SBL)[6]. • Scotland's Biodiversity Strategy to 2045[7].
Local Planning Policy & Other Advice Documents	• British Standard (BS) 42020:2013: Biodiversity Code of Practice for Planning and Development 2013. • The Loch Lomond and the Trossachs National Park Local Development Plan, 2017-2021[8]. • The Loch Lomond and the Trossachs National Park Local Development Plan, 2017-2021: Renewable. • Energy Supplementary Guidance. • CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, Version 1.2

[5] Available from: https://www.gov.scot/publications/national-planning-framework-4-revised-draft/ (Accessed March 2024)

[6] Available from: https://www.nature.scot/doc/scottish-biodiversity-list (Accessed March 2024)

[7] Available from: https://www.gov.scot/publications/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland/documents/ (Accessed March 2024)

[8] Available from: Our Local Development Plan - Here. Now. All of us. - Loch Lomond & The Trossachs National Park (lochlomond-trossachs.org) (Accessed March 2024)

9.6. Methodology

9.6.1. DESK STUDY

A desk study was conducted in August 2022 to gather baseline data in relation to the site. The following sources were checked:

- NatureScot Sitelink website[9] for statutory designated sites up to 5km from the site.
- Loch Lomond and The Trossachs National Park Local Development Plan (LDP)[10] for non-statutory designated sites up to 2km from the site.
- Records of ancient woodland and Scottish native woodland available through Scotland's Environment Web[11], within a 2km radius of site.
- Glasgow Museum Biological Records Centre (GMBRC) records for notable or protected species records within a 2km of the site.
- Saving Scotland's Red Squirrel (SSRS) Sightings Map[12], for records of squirrel sightings within a 2km radius from the site.
- The Scottish Biodiversity List[13] for priority habitats and species.
- The Loch Lomond Local Biodiversity Action Plan (LBAP)[14] for local priority habitats and species; and
- Aerial imagery from Google Earth[15].

9.6.2. FIELD STUDIES

A Preliminary Ecological Appraisal (PEA) was undertaken by EnviroCentre Limited on 2nd of September 2022. The surveys were designed using the guidelines endorsed by NatureScot and CIEEM[16, 17 & 18] and focussed on appraising habitats on the site and those which have potential to host or provide resource for faunal species in and around the site.

Bat monitoring was undertaken during 2023 by EnviroCentre Limited. A total of four dusk transect surveys were undertaken across the site to observe and sample the distribution of bat activity and species diversity on-site. A single transect route was walked, with the aim of sampling all accessible habitats on site during each survey. The transect surveys were undertaken on 25th May, 25th June, 25th July, and 24th August 2023. Remote acoustic monitoring was also undertaken within the site to provide additional data to inform the impact assessment for bats. Three Anabat Swift detectors were deployed and left to

[9] NatureScot Sitelink website. Available from: https://sitelink.nature.scot/map

[10] Loch Lomond and The Trossachs National Park LDP. Available from: https://www.lochlomond-trossachs.org/planning/planning-guidance/local-development-plan/

[11] Scotland's Environment Web. Available at: https://www.environment.gov.scot/maps/scotlands-environment-map/

[12] Saving Scotland's Red Squirrel (SSRS) Sightings Map, for records of squirrel sightings: https://scottishsquirrels.org.uk/

[13] Available at: https://www.nature.scot/scottish-biodiversity-list

[14] Loch Lomond and The Trossachs National Park LBAP, available to download at https://www.lochlomond-trossachs.org/park-authority/publications/wild-park-our-biodiversity-action-plan/

[15] Available at: https://www.google.com/earth/

[16] CIEEM (2017). Guidelines for Preliminary Ecological Appraisal (GPEA). Retrieved from https://cieem.net/resource/guidance-on-preliminary-ecological-appraisal-gpea/

[17] CIEEM (n.d.). General advice on surveys and methods. Retrieved from https://cieem.net/wp-content/uploads/2019/02/CSS-OVERVIEW-April-2013.pdf

[18] CIEEM (2015). Guidelines for Ecological Report Writing. Retrieved from https://cieem.net/resource/guidelines-for-ecological-report-writing /

record automatically for the hours between half an hour before sunset and half an hour after sunrise, for five consecutive days over four deployment periods (May, June, July, and August 2023).

An NVC Survey was undertaken by EnviroCentre Limited on the 25th July 2023. The survey was designed in line with the Joint Nature Conservation Committee (JNCC) handbook[19].

A Tree Survey was undertaken by EnviroCentre Limited on 12th November 2023. The survey was conducted applying the standards and methods outlined in: BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations[20], BS 5837 – Advanced: Tree Assessment for Planning[21], and Guidance Note 7: Tree Surveys - A Guide to Good Practice[22].

9.6.3. EVALUATION OF IMPORTANT ECOLOGICAL FEATURES

The evaluations are applied to those sites, habitats and species that have been scoped into the assessment. These are termed Important Ecological Features (IEFs).

European, national and local governments and specialist organisations have together identified a large number of sites, habitats and species that provide the key focus for biodiversity conservation in the UK and Ireland, supported by policy and legislation. These provide an objective starting point for identifying the important ecological features that need to be considered. **Table 9.4** shows a procedure for determining the geographical level of importance of site designations, habitats and species. Where a feature is important at more than one level in the table, its overriding importance is that of the highest level. Usually only the highest level of legal protection is listed.

Table 9.4: Geographical Level of IEFs

Level of Importance	Sites	Habitats	Species
International	Designated, candidate or proposed Special Areas of Conservation, Special Protection Areas and Ramsar sites; UNESCO (Ecological) World Heritage Sites; UNESCO Biosphere Reserves; Biogenetic Reserves.	A viable area of habitat included in Annex I of the EC Habitats Directive; a habitat area that is critical for a part of the life cycle of an internationally important species.	A European Protected Species; an IUCN Red Data Book species that is globally Vulnerable, Endangered or Critically Endangered.
National (UK)	Sites of Special Scientific Interest; National Nature Reserve; Marine	An area of habitat fulfilling the criteria for designation as an SSSI or MCZ; a habitat area that is critical for a part of	An IUCN Red Data Book species that is Vulnerable, Endangered or Critically Endangered in the UK; a species that is Rare in the UK (<15 10km grid

[19]Rodwell, J.S. (2006) *National Vegetation Classification: Users' Handbook*. JNCC Peterborough.

[20]Available from: https://shop.bsigroup.com/products/trees-in-relation-to-design-demolition-and-construction-recommendations/standard (Accessed March 2024)

[21] Barrell, J. (2016) BS 5837 – Advanced: Tree Assessment for Planning (1st ed.). Arboricultural Association.

[22]Available from: https://www.trees.org.uk/Book-Shop/Products/Guidance-Note-7-Tree-Surveys-%e2%80%93-A-Guide-to-Good-Practice (Accessed March 2024)

Level of Importance	Sites	Habitats	Species
	Conservation Zones (UK offshore).	the life cycle of a nationally important species.	squares); a Schedule 5 (animal) or Schedule 8 (plant) species included in the Wildlife and Countryside Act (WCA) 1981; any species protected under national (UK) legislation where there is the potential for a breach of the legislation; a species that is Vulnerable, Endangered or Critically Endangered in The Vascular Plant Red Data List for Great Britain[23].
National (Scotland)	National Parks; Marine Protected Areas; Marine Consultation Areas.	SBL Priority Habitats and Priority Marine Features (PMFs)[24] (Scotland); semi-natural and ancient woodland.	Species of principal importance for biodiversity in the relevant countries[25], including; SBL Priority Species and PMFs (Scotland). Species protected under the Marine Scotland Act 2010.
Regional	Regional Parks (Scotland).	Regional Local Biodiversity Action Plan habitats noted as requiring protection.	A species that is Nationally Scarce in the UK (present in 16-100 10km grid squares); a species that is included in the Regional LBAP; an assemblage of regionally scarce species.
County / Metropolitan	Woodland Trust Sites; Royal Society for the Protection of Birds Sites; Scottish Wildlife Sites.	County LBAP habitats noted as requiring protection.	A species that is included in the County LBAP; an assemblage of species that are scarce at the county level.
Local		Semi-natural habitats that are unique or important in the local area.	Species as defined by Local Authority lists (if available).
Site		Common and widespread habitats not covered above.	Common and widespread species not covered above.
Negative			An Invasive Non-Native Species (INNS) as defined by the GB Non-Native Species Secretariat (NNSS) and

[23] Cheffings, C.M. & Farrell, L. (eds), Dines, T.D., Jones, R.A., Leach, S.J., McKean, D.R., Pearman, D.A., Preston, C.D., Rumsey, F.J., Taylor, I. (2005) *The Vascular Plant Red Data List for Great Britain. Species Status No. 7*. JNCC, Peterborough. Available from: https://hub.jncc.gov.uk/assets/cc1e96f8-b105-4dd0-bd87-4a4f60449907 (Accessed March 2024)

[24] In July 2014, Scottish Ministers adopted a list of 81 priority marine features (PMFs) – many of which are features characteristic of the Scottish marine environment. Most are on other conservation status lists so may be valued higher than this.

[25] These are all the species that were identified as requiring action in the UKBAP and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework, including any additions.

Level of Importance	Sites	Habitats	Species
			supported by the GB Invasive Non-native Species Strategy (2015).

9.6.4. IMPACT ASSESSMENT

The assessment of impacts describes how the baseline conditions would change as a result of the Proposed Development and its associated activities and its addition to other cumulative developments. The term 'impact' is used commonly throughout the EIA process and is usually defined as a change experienced by a receptor (this can be positive, neutral or negative). The term 'effect' is commonly used at the conclusion of the EIA process and is usually defined as the consequences for the receptor of an impact after mitigation measures have been taken into account. The EIA Regulations specifically require all likely significant effects to be considered. Therefore, impacts and effects are described separately and the effects for the IEFs are assessed as being either significant or not according to the importance and sensitivity of the IEF.

Significant cumulative effects can result from the individually insignificant but collectively significant effects of actions taking place over a period of time or concentrated in a location, for example:

- Additive / incremental; and
- Associated / connected.

9.6.4.1. Assessment Criteria – Magnitude

The CIEEM guidance states that when describing changes/activities and positive or negative impacts, reference should be made to the following parameters where relevant:

- Magnitude;
- Extent;
- Duration;
- Reversibility; and
- Timing and frequency.

Magnitude refers to the size, amount, intensity and volume of an impact, determined on a quantitative basis if possible, but typically expressed in terms of relative severity, such as major, moderate, low or negligible. Extent, duration, reversibility, timing and frequency of the impact can be assessed separately but they tie in to determine the overall magnitude.

Criteria for describing the magnitude of an impact are presented in **Table 9.5** below:

Table 9.5: Criteria for Describing Magnitude of Impact

Magnitude	Description
Major	Total or major loss or alteration to the IEF, such that it will be fundamentally changed and may be lost from the site altogether; and / or loss of a very high or high proportion of the known population or range of the IEF.

Moderate	Loss or alteration to the IEF, such that it will be partially changed; and / or loss of a moderate proportion of the known population or range of the IEF.
Low	Minor shift away from the existing or predicted future baseline conditions. Change arising from the loss or alteration will be discernible but the condition of the IEF will be similar to the pre-development conditions; and / or having a minor impact on the known population or range of the IEF.
Negligible	Very slight change from the existing or predicted future baseline conditions. Change barely discernible, approximating to the 'no change' situation; and / or having a negligible impact on the known population or range of the IEF.

9.6.4.2. Assessment Criteria – Significance

Significance is a concept related to the weight that is attached to effects when decisions are made. For the purposes of EcIA, a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for IEFs. In broad terms, significant effects encompass effects on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution).

Significant effects are quantified with reference to an appropriate geographic scale (see **Table 9.5** above). The CIEEM guidance has one 'level of importance' and a geographical 'scale of significance'. This is to deal with the fact that the geographical scale at which the effect is significant is not necessarily the same as the geographic level of importance of the IEF.

A sensitivity scale is used to assist in the determine the significance of effects, as shown in **Table 9.6** below.

Table 9.6: Sensitivity of Important Ecological Features

Sensitivity	Definition
High	Tolerance: The IEF has a very limited tolerance of the effect.
	Adaptability: The IEF is unable to adapt to the effect.
	Recoverability: The IEF is unable to recover, resulting in permanent or long term (>10 years) change.
Medium	Tolerance: The IEF has limited tolerance of the effect.
	Adaptability: The IEF has limited ability to adapt to the effect.
	Recoverability: The IEF is able to recover to an acceptable status over the medium term (5-10 years).
Low	Tolerance: The IEF has some tolerance of the effect.
	Adaptability: The IEF has some ability to adapt to the effect.
	Recoverability: The IEF is able to recover to an acceptable status over the short term (1-5 years).
Negligible	Tolerance: The IEF is generally tolerant of the effect.

Sensitivity	Definition
	Adaptability: The IEF can completely adapt to the effect with no detectable changes.
	Recoverability: The IEF is able to recover to an acceptable status near instantaneously (<1 year).

Consideration of conservation status is important for assessing the significance of effects of impacts on individual habitats and species. The Habitats Directive provides a helpful definition of conservation status for habitats and species (as defined by Articles 1 (e) and 1(i)):

For habitats, conservation status is determined by the sum of the influences acting on the habitat and its typical species, that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area; and

The conservation status of natural habitats will be taken as 'favourable' when:

- *its natural range and areas it covers within that range are stable or increasing, and*
- *the species structure and functions which are necessary for its long term maintenance exist and are likely to continue to exist for the foreseeable future, and*
- *the conservation status of its typical species is favourable as defined in Article 1(i).*

For species, conservation status is determined by the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area.

The conservation status of species will be taken as 'favourable' when:

- *population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and*
- *the natural range of the species is neither being reduced for the foreseeable future, and*
- *there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.*

The scientific evidence gathered during the assessment process is used along with professional judgement where appropriate to determine the significance of effects according to the guidance above. Where it is not possible to justify a conclusion of no significant effect, a significant effect is assumed based on the Precautionary Principle.

9.6.4.3. Assessment Criteria – Confidence in Predictions

CIEEM does not cover levels of confidence in predictions adequately, therefore an approach has been adopted based on river conservation evaluation[26]. A simple, qualitative index based on professional judgement is assigned to each predicted effect as follows:

A: high confidence.
B: intermediate confidence.
C: low confidence.

[26] NatureScot (Scottish Natural Heritage) (2001) SERCON: System for Evaluating Rivers for Conservation, Version 2, Technical Manual.

Factors influencing confidence include:

- The frequency and effort of field sampling;
- Constraints to the field survey;
- The completeness of the data (field and desk);
- The age of the data (although recent data are not necessarily always more reliable than old data);
- The state of scientific knowledge relating to the predicted effects of development activities on the IEF (the accuracy of the magnitude assessment); and
- The accuracy of the assessment of significance.

9.6.4.4. Assessment Criteria – Success of Mitigation

The word 'mitigation' has developed a wider meaning and common usage in environmental assessment than its strict meaning related to reducing the severity of something. Mitigation can sometimes be used as a generic term for a wide range of counter-acting measures, all of which, as the Directive and Regulations prescribe, are intended to *prevent, reduce and where possible offset any significant adverse effect on the environment*. Mitigation can be used to encompass measures intended to avoid, minimise or compensate for adverse effects (this is the 'mitigation hierarchy').

Mitigation and compensation measures often carry a degree of uncertainty. Uncertainty associated with a design will vary according to a number of factors, such as:

- The technical feasibility of what is proposed.
- The overall quantity of what is proposed.
- The overall quality of what is proposed.
- The level of commitment provided to achieve what is proposed.
- The provision of long-term management.
- The timescale for predicted benefits.

The following objective scale is used for the success of mitigation:

- Certain/near certain: probability estimated at 95% chance or higher.
- Probable: probability estimated above 50% but below 95%.
- Unlikely: probability estimated above 5% but less than 50%.
- Extremely unlikely: probability estimated at less than 5%.

9.7. Baseline

9.7.1. LOCH LOMOND WOODS SAC

Loch Lomond Woods SAC is situated approximately 900m east and 3km southwest of the Proposed Development and the qualifying interests for which the site is designed are western acidic oak woodland and otter. The site comprises 1440.2ha and it extends across disconnected parcels of woodland across the eastern and western banks of Loch Lomond and some of the islands to the south.

Loch Lomond Woods is one of three sites representing old sessile oak woods (Annex 1 habitat Western Acidic Oak Woodland) in South-West Highland Zone, one of the most bryophyte rich areas of the UK. The SAC also comprises a mosaic of woodland types, including ash, elm, and alder woodlands. Particularly high-quality examples of these woodlands exist on the islands to the south where grazing pressure is reduced.

The site's designated features and condition monitoring assessment are listed in **Table 9.7** below.

Table 9.7: Loch Lomond Woods Designated Features and Site Condition Assessment

Qualifying Feature	Condition Assessment	Date of Last Survey
Otter	Favourable Maintained	25 August 2012
Western Acidic Oak Woodland	Unfavourable Declining	27 June 2002

The SAC is ecologically connected to the Proposed Development terrestrial and hydrological pathways including its uninterrupted woodland cover and Loch Lomond. Otters are water-dependant and are known to occupy very large home ranges (around 32km of shoreline for males and 20km of shoreline for females) and it is likely that the otter population of the SAC occasionally pass through or use habitats within the PDA.

The overarching conservation objectives for western acidic oak woodland in the Loch Lomond SAC are:

1. To ensure that the qualifying features of Loch Lomond Woods SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status.
2. To ensure that the integrity of Loch Lomond Woods SAC is restored by meeting the following objectives:
    a. Maintain the extent and distribution of the habitat within the site.
    b. Restore the structure, function and supporting processes of the habitat.
    c. Restore the distribution and viability of typical species of the habitat.

The overarching conservation objectives for otter in the Loch Lomond SAC are:

1. To ensure that the qualifying features of Loch Lomond Woods SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status.
2. To ensure that the integrity of Loch Lomond Woods SAC is restored by meeting the following objectives:
    a. Maintain the population of the species as a viable component of the site.
    b. Maintain the distribution of the species throughout the site.
    c. Maintain the habitats supporting the species within the site and availability of food.

Loch Lomond Woods SAC is of international importance.

9.7.2. HABITATS

Three NVC communities and 12 non-NVC habitats were recorded within the site or directly adjacent to it. The Phase 1 Habitat Plan and full description of habitats can be found in **Volume 4, Appendix 9.1: Preliminary Ecological Appraisal (PEA)** and the NVC Survey Plan and full description of communities can be found in **Volume 4, Appendix 9.2: National Vegetation Classification (NVC).**

Table 9.8 below provides a summary of habitats which have been taken forward for assessment along with status, SBL priority habitat status, and Annex 1 habitat status.

While Phase 1 habitats A1.1 Conifer Plantation and A1.3.2 Mixed Plantation Woodland are considered to be of site importance; they would require substantial removal to facilitate the Proposed Development. These woodland habitats occupy an area of ground which was cleared to facilitate the construction of the Sloy hydroelectric scheme during the 1950s.

The Phase 1 habitat A1.1.1 Semi-Natural Broadleaved Woodland within the PDA is of conservation importance; however, it is reasonably common within the Argyll and Bute area and there exists better examples of this habitat in the wider landscape.

Table 9.8: Phase 1 and NVC Habitats recorded within the Proposed Development area that have been scoped into the assessment.

Phase 1 Habitat	NVC Community (or equivalent)	Potential Groundwater Dependence	Corresponding SBL Priority Habitat[27]	Corresponding Annex 1 Habitat[28]
A1.1.1 Semi-Natural Broadleaved Woodland	W4 *Betula pubescens-Molinia caerulea* woodland	Moderately Groundwater Dependent	Upland Birchwoods	N/A
A1.1.1 Semi-Natural Broadleaved Woodland	W4c *Betula pubescens-Molinia caerulea* woodland: *Sphagnum* spp. sub-community	N/A	Wet Woodland	N/A
A1.1.1 Semi-Natural Broadleaved Woodland	W11 *Quercus petraea-Betula pubescens-Oxalis acetosella* woodland	N/A	Upland Birchwoods	N/A
A1.2.2 Conifer Plantation Woodland	N/A	N/A	N/A	N/A
A1.3.2 Mixed Plantation Woodland	N/A	N/A	N/A	N/A

The semi-natural broadleaved woodland habitat within the PDA is represented by SBL priority habitat Upland Birchwoods and Wet Woodland which are considered to be of national (Scotland) importance.

9.7.3. GROUNDWATER DEPENDENT TERRESTRIAL ECOSYSTEMS

This section should be read in conjunction with the NVC Survey report in **Volume 4, Appendix 9.2: National Vegetation Classification (NVC).**

The NVC assessment undertaken in 2023 found that there is one community within the PDA which represents potential GWDTE habitats, W4c *Betula pubescens-Molinia caerulea* woodland: *Sphagnum* spp. sub-community located in the northern part of the PDA. This NVC sub-community is included in Phase 1 habitat Semi-Natural Broadleaved Woodland (Priority Habitat Wet Woodland). This category of W4 woodland can be moderately groundwater dependent depending on the hydrogeological setting. It is considered that the on-site example of this woodland community is at least partially, if not mostly fed by surface-flow emanating from the hill ground and focussed into the site after some impediment behind, and

[27] UK Biodiversity Action Plan (2011): Priority Habitat Descriptions. Available from: https://data.jncc.gov.uk/data/2728792c-c8c6-4b8c-9ccd-a908cb0f1432/UKBAP-PriorityHabitatDescriptions-Rev-2011.pdf (Accessed March 2024).

[28] JNCC Habitats List. Available from: https://sac.jncc.gov.uk/habitat/ (Accessed March 2024).

then flow from beneath, the rail network infrastructure. Water then appears to collect/store in the gentle undulation of the site's landform before exiting the site via small burns. Therefore, it is considered that the wetland and pooling water within the PDA is not groundwater influenced, and that the water source comes via a railway culvert from the hillside to the northeast.

9.7.4. INVASIVE NON-NATIVE SPECIES

Frequent small stands of dense rhododendron are present within the plantation and semi-natural broadleaved woodland areas to the north of the site. A large area of dominating rhododendron occurs along the eastern edge of the woodland, by the A82 road to the northeast of the site. Rhododendron across the site has been subject to past management and control measures; however, it was noted as actively spreading during 2023.

Rhododendron is one of the main sporulating hosts of *Phytophthora ramorum* and *P. kernoviae*, plant pathogens which can cause mortality in trees. Unregulated clearance and movement of rhododendron material can lead to spread of these pathogens within the PDA and surrounding area. Removal of larch infected with *P. ramorum* is the key objective of the Cruach Tairbeirt Strategic Larch Removal Plan[29], an expansive forestry plantation which is located within the Proposed Development Zol.

Japanese knotweed is present within the site, between the A82 and loch edge comprising single plants and a large uninterrupted stand.

A stand of white butterbur is present within the woodland associated with the Inveruglas carpark in the east of the site.

Japanese knotweed and rhododendron are INNS listed under Schedule 9 of the Wildlife and Countryside Act (WCA) (1981)[30] as amended by the Nature Conservation (Scotland) Act (2004) and the Wildlife and Natural Environment (Scotland) Act (2011) and are of negative importance to the site.

White butterbur is listed in the Global Register of Introduced and Invasive Species – Great Britain[31] and is of negative importance to the site.

The wider landscape supports grey squirrel alongside red squirrel and the populations of the two species may be dynamic in this location.

9.7.5. FAUNAL SPECIES AND SPECIES GROUPS

The following sections should be read in conjunction with the baseline results included in **Volume 4, Appendix 9.1: Preliminary Ecological Appraisal (AIA).**

9.7.5.1. Bats

This section should be read in conjunction with the Bat Survey report in **Volume 4, Appendix 9.3: Bat Survey**.

No records of bats were returned during the 2022 desk study.

[29] Forestry and Land Scotland. Cruach Tairbeirt Strategic Larch Removal Plan. Available from: Cruach Tairbeirt Strategic Larch Removal Plan - Forestry and Land Scotland (Accessed March 2024)

[30] The Wildlife and Countryside Act: Schedule 9. Available from: https://www.legislation.gov.uk/ukpga/1981/69/schedule/9

[31] Available from: About GRIIS | GRIIS (Accessed 28 March 2024)

The existing Sloy Hydroelectric Power Station building has no obvious gaps or potential roost features (PRFs) and is considered to be of negligible suitability for bats. Additionally, the noise and vibration from the turbines during operation are likely to deter roosting bats.

Within the eastern extent of the broadleaved woodland adjacent to the existing Sloy Hydroelectric Power Station building to the north, a single dead tree is considered to have potential for roosting bats due to the presence of PRFs including woodpecker holes in the main stem which provide cavities.

Soprano pipistrelle (*Pipistrellus pygmaeus*), common pipistrelle (*Pipistrellus pipistrellus*), brown long-eared bat (*Plecotus auratus*), and Daubenton's bat (*Myotis daubentonii*) were recorded commuting and foraging within the woodland in the northern part of the PDA during the 2023 transect and static monitoring surveys. Based on current guidelines[32, 33], the PDA displays bat species assemblages significant at a regional level of importance. The woodland within the PDA is assessed as providing moderate quality forging and commuting habitat with high quality habitats being present in the locale. The habitats contain several linear features such as woodland edges that provide suitable resources for bats.

Common pipistrelle and soprano pipistrelle are listed as Least Concern in the IUCN Red List for Britian's mammals[34].The population status for these species is unknown. The range and habitat status of common pipistrelle and soprano pipistrelle are currently stable[35].

Daubenton's bat is listed as Least Concern in the IUCN Red List for Britian's mammals[34]. The population status of Daubenton's bat is unknown. The range status for Daubenton's bat is stable. The habitat status for Daubenton's bat is unknown[35].

Brown long-eared bat is listed as Least Concern in the IUCN Red List for Britian's mammals. The population status for this species is unknown. The range and habitat status are stable.

All UK bat species are European Protected Species (EPS) and are therefore of international importance.

9.7.5.2. Badger

One record of badger from 2013 was returned from GMBRC during the desk study from within a 2km radius of PDA.

No evidence of badger within the PDA was recorded during the 2022 PEA survey or subsequent 2023 site visits. Overall, badger are unlikely to utilise the site for sett creation due to wet conditions and protruding bedrock.

Primary foraging habitat is available for badger within the PDA via amenity grassland and broadleaved woodland. Secondary foraging opportunities are also available via mixed woodland.

Further primary and secondary foraging opportunities as well as opportunities for sett creation are available locally via woodland to the south, west and north of the PDA.

Badger population size, range and habitat is stable in Scotland, and it is listed as Least Concern in the IUCN Red List for Britian's mammals[35].

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[32] Collins, J. (2023) *Bat Surveys for Professional Ecologists – Good Practice Guidelines 4th Edition*. Bat Conservation Trust, London.

[33] Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield

[34] The Mammal Society, *Red List for Britian's Mammals*. Available from: MS_RL20_Britain.pdf (mammal.org.uk) (Accessed March 2024)

[35] Natural England Joint Publication JP025 (2018) A Review of the Population and Conservation Status of British Mammals: Technical Summary. Available from: MAMMALS-Technical-Summary-FINALNE-Verision-FM3290621.pdf (Accessed March 2024)

Badger are protected under the Badger Protection Act 1992[36] and are therefore of national (UK) importance.

9.7.5.3. Otter

Two historic records of otter field signs identified in 2002 were returned by GMBRC during the desk study, in Inveruglas Water 500m south of the site, and in Arklet Water, 2km east of the site.

It is considered that the riparian habitat along Loch Lomond shore provides sheltered commuting habitat and a variety of features that could be used as resting places such as cavities within rocks, bank vegetation and long rushes. However, currently regular human access from the adjacent Inveruglas Visitor Centre car park may dissuade establishment of resting areas within the headland where the Inveruglas Visitor Centre is located. Fish are present in Loch Lomond, which together with amphibians, ground nesting birds and small mammals occurring in the riparian and adjacent habitats, offer a wide variety of foraging resources.

No change to the 2022 baseline was identified during the 2023 site visits.

Otter population size and range is increasing in Scotland, and it is listed as Least Concern in the IUCN Red List for Britian's mammals[34]. Its habitat status is stable[35].

Otter are EPS and are therefore of International Importance.

9.7.5.4. Beaver

Beaver were released into Aber Burn in 2022, a tributary of the Enrick water, in the Loch Lomond NNR, which discharges into the southwestern corner of Loch Lomond's southern basin. However, three records returned by RSPB highlight that beaver have been present in the Endrick Water since at least 2019. The desk study did not return any records of beaver from Loch Lomond's northern basin, and it is considered that beaver have yet to colonise this area.

No field signs of beaver in Inveruglas Bay were identified during the 2022 survey and beaver are not present within Loch Sloy. Riparian woodland surrounding the Inveruglas Visitor Centre provides suitable tree species for forage and construction activities, including willow sp. birch, alder, and ash. Loch Sloy is not hydrologically connected to Loch Lomond, and it is unlikely that beaver would disperse across land into Loch Sloy. Furthermore, Loch Sloy is absent of riparian woodland and the habitat could not support a viable population of beaver.

Beaver population size and range is increasing in Scotland. It is listed as endangered in the IUCN Red List for Britian's mammals[34]. Its habitat status is stable[35].

Beaver are EPS and are therefore of International Importance.

9.7.5.5. Red Squirrel

Fifteen records of red squirrel were returned by SSRS during the desk study, with three records located within the broadleaved woodland within the PDA, associated with the Inveruglas visitor centre carpark in 2018.

Five potential red squirrel dreys were identified during the 2022 survey within woodland within the PDA, east of the spoil management area. The broadleaved and conifer woodland within the PDA provide

[36] Protection of Badgers Act 1992. Available from Protection of Badgers Act 1992 (legislation.gov.uk). (Accessed March 2023)

suitable habitat for foraging and commuting as well as opportunities for drey creation. Woodland habitats surrounding the PDA provide further red squirrel habitat that is well connected to suitable habitat in the wider landscape.

Red squirrel population size and range are declining across Britain. It is listed as Endangered in the IUCN Red List for Britian's mammals[34]; however, it is reduced to near threatened in Scotland. The habitat status of this species is stable[35].

Red squirrel are protected under Schedule 5 of the WCA (1981) and are therefore considered to be of national (UK) importance.

9.7.5.6. Pine Marten

No records of pine marten were returned from the desk study and no evidence of pine marten was identified during the 2022 PEA survey and the 2023 site visits.

The habitats within the PDA provide suitable sheltered foraging and commuting opportunities for pine marten. Foraging opportunities such as small mammals, birds, and berries are likely present within the PDA woodland and surrounding habitats. Trees and rock piles within woodlands in the locale could be used for den and resting sites as well as providing elevated protection from predators.

Pine marten population size and range is increasing in Scotland, it is listed as Least Concern in the IUCN Red List for Britian's mammals[34]. Its habitat status is stable[35].

Pine marten are protected under Schedule 5 of the WCA (1981) and are therefore considered to be of national (UK) importance.

9.7.5.7. Reptiles

No records of reptiles were returned from the desk study.

The PDA and surrounding habitats offer suitable foraging and commuting habitat for reptiles including wooded areas, forest edges and bracken. Basking opportunities are also available via embankments of roads and railways and rock surfaces. The stone wall and boulders located within the woodland may also provide suitable hibernation refugia for reptiles. Overall, the PDA is assessed as providing moderate suitability for reptiles: '*Some suitable vegetation cover offering foraging opportunities, basking sites and refugia*'.

Common reptile species including slow-worm (*Anguis fragilis*), adder (*Vipera berus*) and common lizard (*Zootoca vivipara*) are listed as priority species on the SBL and as such are considered of National (Scotland) Importance.

9.7.5.8. Amphibians

No records of amphibians were returned from the desk study.

No ponds are present within the PDA; however, areas of wetland exist within the PDA. Loch Lomond and the small seasonal waterbody within the planation woodland could be used as breeding areas during the aquatic phases of amphibian's lifecycles as well as providing foraging opportunities. Additionally, the wetland areas could also provide steppingstone commuting routes for amphibians on route to breeding ponds.

Terrestrial habitats found within PDA including woodland and grassland can provide resting and foraging opportunities for amphibians. Features such as the stone wall and boulders located within the woodland may also act as refugia for hibernating amphibians.

Loch Sloy is considered to be poor habitat for amphibians as it lacks shallow areas, macrophytes are absent, and predators of eggs / tadpoles, brown trout and powan are present.

Common toad (*Bufo bufo*) is a SBL priority species. Common frog *(Rana temporaria*), smooth newt (*Lissotriton vulgaris*), and palmate newt (*Lissotriton helveticus*) are protected under schedule 5 of the WCA (1981).

9.7.5.9. Invertebrates

Fourteen records of ten invertebrate species of conservation importance were returned by GMBRC during the 2022 desk study. Records were of butterfly and moth species and included count data ranging from one to 12 individuals per record.

Nine of the record species are included as Priority Species on the SBL:

- Small Pearl-bordered Fritillary (*Boloria selene*)
- Small Heath (*Coenonympha pamphilus*)
- Knot Grass (*Acronicta rumicis*)
- Autumnal Rustic (*Eugnorisma glareosa*)
- Rosy Rustic (*Hydraecia micacea*)
- Small Square-spot (*Diarsia rubi*)
- Small Phoenix (*Ecliptopera silaceata*)
- Dark Brocade (*Mniotype adusta*)
- White Ermine (*Spilosoma lubricipeda*)

One of the record species, Scotch Pearl (*Udea decrepitalis*), is listed as Nationally Notable as they are thought to occur in 30 or fewer 10km squares of the National Grid.

Of the invertebrate species records, the Small Pearl-bordered Fritillary was recorded approximately 600m west of the Proposed Development. All other species were recorded on the opposite side of Loch Lomond, at least 1km east of the Proposed Development.

The PDA falls within a B-Line, which refers to a network of "insect highways" that enhance connectivity for pollinating insects across various regions in the UK. Although B-Lines lack legal protection, they are acknowledged for their significant role in facilitating connectivity through Central Scotland. Semi-natural woodland, plantation woodland and wetland on site are likely to support a range of common and widespread species, including those listed on the SBL (above).

SBL priority invertebrate species are of national (Scotland) importance. Species listed as Nationally Notable are uncommon in Great Britian and are considered to be of regional importance.

9.7.6. EVALUATION

The evaluations have been applied only to those designated sites, habitats and species that have been scoped into the assessment and those where there is the potential for impacts that could result in significant adverse ecological effects as a result of the Proposed Development. The IEFs and the evaluations are presented in **Table 9.9** below.

Table 9.9: Evaluation of Important Ecological Features

IEF	Present on site?	Present in wider area?	Importance	Justification
Statutory Designated Sites				
Loch Lomond Woods Special Area of Conservation (SAC)	N	Y	International	SACs are of international importance
Habitats				
W4 *Betula pubescens-Molinia caerulea* woodland	Y	Y	National (Scotland)	Equivalent to SBL Priority Habitats Upland Birchwoods and Wet Woodland
W11 *Quercus petraea-Betula pubescens-Oxalis acetosella* woodland	Y	Y	National (Scotland)	Equivalent to SBL Priority Habitat Upland Birchwoods
A1.2.2 Conifer Plantation Woodland	Y	Y	Site	Common and widespread habitat in Argyll and Bute local authority area
A1.3.2 Mixed Plantation Woodland	Y	Y	Site	Common and widespread habitat in Argyll and Bute local authority area
Invasive Non-Native Species				
Terrestrial INNS (Rhododendron, Japanese knotweed, and white butterbur)	Y	Y	Negative	An invasive non-native species
Faunal Species				
Bats	Y	Y	International	European Protected Species
Otter	Y	Y	International	European Protected Species
Badger	Likely	Y	National (UK)	Badger Protection Act 1992

IEF	Present on site?	Present in wider area?	Importance	Justification
Beaver	No	Likely	National (UK)	European Protected Species
Red Squirrel	Likely	Y	National (UK)	WCA (1981) Schedule 5 species
Pine Marten	Likely	Y	National (UK)	WCA (1981) Schedule 5 species
Amphibians	Likely	Y	National (UK)	Some species included in WCA (1981) Schedule 5 and SBL
Reptiles	Likely	Y	National (UK)	Some species included in WCA (1981) Schedule 5 and SBL
Invertebrate	Y	Y	Up to National (UK)	Some species included in WCA (1981) Schedule 5 and SBL

9.8. Potential Effects

The following assessment is made assuming no avoidance mitigation or compensatory strategies are applied.

The mitigation set out in **Section 9.9** will detail the adopted strategies proposed to minimise effects as far as possible.

9.8.1. STATUTORY DESIGNATED SITES

9.8.1.1. Loch Lomond Woods Special Area of Conservation (SAC)

No direct impacts during construction or operation are expected on the qualifying features of the Loch Lomond Woods SAC, with the Proposed Development located approximately 900m from the SAC. Pollution resulting from surface water runoff and spillage of fuels or other chemicals has the potential to negatively impact otter and habitat / food sources in the PDA. However, there is not predicted to be any overall effects on otter or their conservation objectives.

No impacts on the western acidic oak woodland qualifying features of the SAC or their conservation objectives are anticipated due to the distance of the ecological separation.

Impacts relating to the disturbance to the Loch Lomond Special SAC as a result of the Proposed Development are considered to be of **low magnitude** on an IEF of **medium sensitivity**. The confidence level for this assessment is **high**.

For impacts relating to the scoped-in qualifying interests of the Loch Lomond Woods SAC and watercourses in general, see **Section 9.8.4.2: Otter**, below.

9.8.2. HABITATS

9.8.2.1. Semi-Natural Broadleaved Woodland

Woodland Loss/Fragmentation

Woodland removal to facilitate the Proposed Development would lead to a permanent net loss of semi-natural broadleaved woodland / tree habitats as well as direct fragmentation of habitats. Semi-natural broadleaved woodland loss accounts for approximately 19% (0.45ha) of the total woodland which would be lost to accommodate the spoil management area comprising:

- 0.06ha of W4 woodland
- 0.27ha of W4c woodland
- 0.12ha of W11 woodland

The overall felling area (2.38ha[37]) required to facilitate the Proposed Development includes approximately 3% birch-dominated W4 woodland, 11% birch-dominated W4c (wet woodland), and 5% birch-dominated W11 woodland, all of which are considered to be SBL Priority Habitat Upland Birchwood and Wet

[37] The overall area of required felling (2.38ha) differs from the figures reported in the RTS Forestry Woodland Site Visit report as it incorporates woodland removal around the Inveruglas Visitor Centre car park and an intervening strip of woodland located between the required felling areas (refer to RTS Forestry Woodland Site Visit report Appendix 2).

Woodland. The W4, W4c, and W11 woodlands are in moderate condition. Rhododendron is prevalent, grazing pressure is moderate to high and tree species and age class are of low diversity.

As such, impacts of the Proposed Development relating to semi-natural broadleaved woodland loss / fragmentation are considered to be permanent and of **moderate** magnitude on an IEF of **high** sensitivity. The confidence level for this assessment is **high**.

Degradation of Retained Woodland Habitat

Construction and spoil management activities can inadvertently introduce pathogens, pests, or diseases to the woodlands, impacting the health of the vegetation communities. Dust generation during construction may result in damage to habitats. Retained woodland has the potential to be accidentally damaged during construction activities (i.e., compaction within root protection zones, accidental loss of limbs, permanent damage to stems and roots) where no protective measures are implemented.

As such, impacts of the construction phase relating to degradation of retained woodland habitat are considered to be of **low** magnitude on an IEF of **high** sensitivity. The confidence level for this assessment is **high**.

9.8.2.2. Plantation Woodland

Plantation woodland loss (broadleaved and conifer) accounts for approximately 81% (1.93ha) of the total woodland which be lost to accommodate the spoil management area; however, plantation woodland is a common and widespread habitat type within Argyll and Bute and areas of this habitat are ecologically connected to the site. The total area of plantation woodland loss includes:

- 0.88ha of Conifer Plantation Woodland
- 1.05ha of Broadleaved Plantation Woodland

Conifer plantation will be cleared beyond the boundary of the spoil management area in accordance with LLTNPA' instruction to remove larch and rhododendron as they are potentially infected by the *Phytophthora ramorum* and *P. kernoviae* tree disease.

The impacts of the Proposed Development relating to plantation woodland loss / fragmentation are considered to be of **low magnitude** on an IEF of **low sensitivity**. The confidence level for this assessment is **high**.

9.8.3. INNS

9.8.3.1. Terrestrial Plants - Spread of Terrestrial Plant INNS and their Pathogens

Potential significant effects from INNS in the absence of mitigation during construction may arise from the continued establishment or spread through construction activities of white butterbur and rhododendron within and outwith the site, leading to a decline in native biodiversity. Construction activities may spread invasive plant species to the PDA and surrounding areas through the transportation of machinery and equipment, or contaminated soil and hydrological pathways.

As a segregated technique, importation of excavated material into the spoil management area may not be sufficient to suppress the growth of deposited rhododendron as rhododendron requires deep burial. Furthermore, buried soil and plant material that have been treated with a herbicide which does not break down in the environment could cause pollution or contamination of soils/water.

The presence of INNS as an IEF (of negative importance) means that assessing the impact is not the impact upon the feature, but the impact the feature can have on other IEFs. The impacts relating to the continued establishment and spread of terrestrial non-native invasive plant species as a result of the

Proposed Development are considered to be of at least **moderate** magnitude on IEFs of possibly **high** sensitivity. The confidence level for this assessment is **high**.

9.8.4. FAUNAL SPECIES AND SPECIES GROUPS

9.8.4.1. Bats

Death, Injury and Roost Loss During Tree Felling

The removal of a PRF tree of moderate suitability for roosting bats is required to facilitate development. Without mitigation, felling trees with suitability for roosting bats would result in permanent loss of roosting features and could lead to disturbance or potential killing / injury of bat(s).

Loss / Fragmentation / Degradation of Foraging and Commuting Habitat

To facilitate the Proposed Development, 2.38ha of woodland is scheduled for removal, resulting in loss of woodland foraging and commuting habitat. The existing woodland present within the proposed spoil management area provides uninterrupted woodland cover, facilitating dispersal between existing birchwood to the north and the ancient woodland (AW_15818) to the south, both of which are potentially important local roosting and foraging resources. Although woodland cover is to be lost, woodland connectivity would remain within the Network Rail land adjacent to the northwestern PDA boundary and further adjoining woodland cover on the hillside to the west.

Disturbance From Artificial Light and Noise

New artificial lighting, during the construction and operational phases has the potential to result in avoidance of surrounding suitable habitat by bats. This may result in fragmenting to remaining foraging and commuting habitats. New artificial lighting can be detrimental for the foraging success of bat species and could disrupt their dispersal and foraging corridors or cause bats to abandon roosts if lighting is positioned towards suitable tree or structural roosting features. However, lighting would not be installed within the spoil management area which is in close range to retained habitat.

The impacts relating to bats as a result of death during tree felling, habitat loss, and disturbance from the Proposed Development are considered to be of **low** magnitude on an IEF of **medium** sensitivity. The confidence level for this assessment is **high**.

9.8.4.2. Otter

Loss / Fragmentation / Degradation of Foraging and Commuting Habitat

It is not considered that any local population of otter would solely rely on the PDA given the abundance of suitable habitat in the wider area. Habitat loss and degradation of woodland and waterbodies within the PDA could lead to fragmentation of habitat and reduction of commuting and foraging opportunities. Forestry operations and spoil management during the construction phase may disrupt movement or behaviour of otter temporarily. However, woodland commuting corridors to the east and west are to be retained permanently facilitating movement between suitable foraging grounds to the north and south.

Artificial lighting during the construction and operational phases could disturb foraging and commuting otter. However, it is not envisaged that lighting would be installed within the spoil management area which is in close range to retained habitat.

Pollution Events

During both construction and operational phases there is potential for pollution events to cause permanent habitat degradation and death or injury through direct contact with toxic substances or bioaccumulation from the consumption of contaminated prey items.

Risk of Death / Injury During Construction

During construction, there would be an increase in the number and type of hazards which could potentially harm otter such as open trenches and active plant.

The impacts relating to otter as a result of habitat loss, habitat degradation, and death during construction from the Proposed Development are considered to be of **low** magnitude on an IEF of **low** sensitivity. The confidence level for the assessment is **high**.

9.8.4.3. Beaver

Disturbance from Artificial Lighting

Artificial lighting illuminating the shoreline adjacent to the tailrace during the construction and operational phases could disturb foraging and commuting beaver.

Pollution Events

During both construction and operational phases there is potential for pollution events to cause permanent habitat degradation and death or injury through direct contact with toxic substances.

9.8.4.4. Badger

Loss / Fragmentation / Degradation of Foraging and Commuting Habitat

It is not considered that any local population of badger would rely solely on the PDA given the abundance of suitable habitat in the wider area. Habitat loss and degradation of woodland within the PDA could lead to fragmentation of habitat and reduction of commuting and foraging opportunities within the site. Forestry operations and spoil management during the construction phase may disrupt movement or behaviour of badger temporarily. However, woodland commuting corridors to the east and west are to be retained permanently facilitating movement between suitable foraging grounds to the north and south.

Artificial lighting during the construction and operational phases could disturb foraging and commuting badger; however, it would not be installed within the spoil management area which is in close range to retained habitat.

Risk Of Death / Injury During Construction

During construction, there would be an increase in the number and type of hazards which could potentially harm badger such as open trenches and active plant.

The impacts relating to badger as a result of habitat loss and death during construction from the Proposed Development are considered to be of **low** magnitude on an IEF of **low** sensitivity. The confidence level for this assessment is **high**.

9.8.4.5. Red Squirrel

Loss / Fragmentation / Degradation of Resting / Foraging / Commuting Habitat

Woodland loss to accommodate the Proposed Development totals 2.38ha of optimal woodland habitat for red squirrel. This habitat contributes to overall woodland cover that aids red squirrel dispersal to adjoining woodland parcels in the wider landscape and provides foraging resources. Loss of foraging and nesting resources may limit the number of red squirrels that can be supported by the remaining woodland area. Forestry operations and spoil management during the construction phase may disrupt movement or behaviour of red squirrel temporarily.

Risk Of Death / Injury During Construction

During construction, there would be an increase in the number and type of hazards which could potentially harm red squirrel such as open trenches and active plant.

The impacts relating to red squirrel as a result of habitat loss and death during construction from the Proposed Development are considered to be of **moderate** magnitude on an IEF of **medium** sensitivity. The confidence level for this assessment is **high**.

9.8.4.6. Pine Marten

Loss / Fragmentation / Degradation of Foraging and Commuting Habitat

It is not considered that any local population of pine marten would rely solely on the PDA given the abundance of suitable habitat in the wider area. However, habitat loss and degradation of woodland within the PDA could lead to fragmentation of habitat and reduction of commuting and foraging opportunities. Forestry operations and spoil management during the construction phase may disrupt movement or behaviour of pine marten temporarily. However, woodland commuting corridors to the east and west are to be retained permanently facilitating movement between suitable foraging grounds to the north and south.

Artificial lighting during the construction and operational phases could disturb foraging and commuting pine marten; however, it is not envisaged that lighting would be installed within the spoil management area which is in close range to retained habitat.

Risk of Death / Injury During Construction

During construction, there would be an increase in the number and type of hazards which could potentially harm pine marten such as open trenches and active plant.

The impacts relating to pine marten as a result of habitat loss and death during construction from the Proposed Development are considered to be of **low** magnitude on an IEF of **low** sensitivity. The confidence level for this assessment is **moderate**.

9.8.4.7. Amphibians / Reptiles

Due to the similar terrestrial habitat requirements, amphibian and reptile potential impacts and mitigation are discussed together.

Risk of Death / Injury During Vegetation Clearance and Construction

During construction, reptiles and amphibians may be killed, injured, and / or disturbed during vegetation removal of the woodland and grassland habitats on PDA. This removal would result in a temporary (long-term) loss of foraging and resting habitat. However, further high-quality habitat types are present to the north, south, and west of the PDA. During construction, there would be an increase in the number and type of hazards which could potentially harm reptiles and amphibians such as open trenches and active plant.

Loss / Fragmentation / Degradation of Foraging / Refuge Habitat

Woodland removal would result in a temporary (long-term) loss of foraging and resting habitat. However, further high-quality habitat types are present to the north, south, and west of the site.

Impacts relating to reptiles and amphibians as a result of death, disturbance, and habitat loss from the Proposed Development are considered to be of **low** magnitude on an IEF of **medium** sensitivity. The confidence level for this assessment is **high**.

9.8.4.8. Invertebrates

Invertebrates identified during the desk study that have the potential to use the site for breeding are listed as priority species within the SBL and Nationally Notable and are considered to be of conservation concern.

The woodland and grassland habitats on site may be important for invertebrate breeding, foraging, feeding, and larva development. During construction, suitable habitat for sensitive invertebrates would be cleared resulting in temporary (long-term) loss of habitat. Invertebrates, including those of conservation concern, may be killed, injured, and / or disturbed during vegetation clearance work and subsequent construction activities.

Impacts on invertebrates are considered to be of **moderate** magnitude and the IEF considered to be of **medium** sensitivity. The confidence level for the assessment is **intermediate**.

9.9. Mitigation and Compensation

9.9.1. DESIGNATED SITES

Mitigation actions concerning otter, a qualifying interest of the Loch Lomond Woods SAC, are detailed below.

9.9.2. HABITATS

The following general recommendations are aimed at reducing impacts across the range of habitats present within the PDA and within the zone of influence.

- A CEMP would be produced detailing environmental management and monitoring measures to occur during the construction phase.
- Grassland and woodland should be retained / enhanced where possible to maintain resources for wildlife. Where retention is not feasible, compensatory habitat should be provided.
- Scottish Environmental Protection Agency (SEPA) pollution prevention guidelines[38] would be followed in order to prevent pollution of wetland habitats and watercourses during any site clearance or construction works;
- In order to protect retained trees noted in the Arboricultural Impact Assessment (**Volume 4, Appendix 9.4**), measures including a Tree Protection Plan and Tree Constraints Plan would be implemented prior to, and for the duration of construction works, as detailed in **Volume 4, Appendix 9.4**.
- Heras fencing or similar would be used to mark the construction boundary to protect off-site habitats and limit access to the works area. No building materials, spoil, machinery, or tools would be stored in areas outside of the Heras fencing.
- To compensate for the loss of semi-natural broadleaved woodland and plantation woodland within the PDA, the spoil management area would be regenerated with new native tree and planting following the construction period.
- Subsoil and topsoil uninfected by INNS or pathogens would be sourced from sites of local provenance. Soil would be dispersed in variable depths across the spoil management area.

[38] SEPA (n.d.) *Guidance Documents* [online]. Available from: https://www.sepa.org.uk/regulations/water/guidance/ (Accessed March 2024)

  - Areas with a thin coating of topsoil would be allowed to self-seed allowing pioneer broadleaved trees which have higher survival and growth rates on spoil to establish. Leaf fall would lead to a build-up of litter and formation of humus and roots would help to stabilise spoil surface.
  - Areas of deeper spoil would be stocked with native trees of local provenance consistent with the cleared W4 and W11 woodland, such as disease-resistant varieties of oak (*Quercus* sp.), birch (*Betula* sp.), common alder (*Alnus glutinosa*), grey willow (*Salix cinerea*), Scots pine (*Pinus sylvestris*), hazel (*Corylus avellana*), rowan (*Sorbus aucuparia*), hawthorn (*Crataegus monogyna*), and juniper (*Juniperus communis*). LLTNPA would be consulted regarding planting species composition.

- The Miyawaki method[39] of woodland creation would be explored in order to increase woodland growth and speed. The topsoil could be supplemented with perforator materials to help roots grow, water retainers to help soil retain moisture, organic fertilizers, and a layer of mulch to insulate the soil[40].
- Tree losses are expected, and tree replacement would be undertaken in the early life of the new planting. Tree replacement would be supplemented annually while the crop establishes.
- A Woodland Management Plan would be produced outlining how the woodland would be managed over a 10-year time scale. LLTNPA would be consulted regarding management objectives detailed in the plan.

Assuming the compensatory woodland planting measures detailed would be progressed at the onset of the operational phase, the residual effects are assessed to be **non-significant**. Providing the mitigation and compensation strategy above is adhered to, the success of compensation is **probable.** The replacement of non-native plantation woodland with native woodland would be considered to be a site-level positive effect.

9.9.3. INNS

The control and eradication of terrestrial INNS is considered to be a site-level positive impact.

9.9.3.1. INNS – Terrestrial Plants

The following general measures would be followed in relation to terrestrial INNS:

- An Invasive Species Management Plan would be produced detailing eradication / control measures and monitoring regime of all terrestrial INNS species within the PDA and wider land ownership boundary.
- Toolbox Talks would be given to all personnel regarding terrestrial invasive plants within the PDA prior to the commencement of works.
- Prior to ground works, the extent of all invasive plants within the PDA would be mapped and a plan to avoid spread of plants off-site would be shared with NatureScot.
- All terrestrial invasive species plant species would be treated at their original location.
- Rhododendron would be cut and treated again prior to burial.

[39] The Miyawaki method is a tree-planting technique that creates dense, native forests rapidly by mimicking natural ecosystems. It involves planting a mix of native species in a high-density, multi-layered structure that encourages rapid growth and biodiversity. The soil is enriched before planting, and after 2-3 years of initial care, the forest becomes self-sustaining. This method results in forests that grow up to 10 times faster, are more biodiverse, and better absorb CO2, making it effective for restoring degraded land.

[40] Forest Creators (2020). A Beginner's Guide to Miyawaki Method of Tree Plantation. Available from: A Beginner's Guide to Miyawaki Method of Tree Plantation – Miyawaki Forest, Tree Plantation NGO, Afforestation in India – Forest Creators (Accessed March 2024

- Deep burial would only be undertaken if the intended plant material is previously treated with glyphosate herbicide (biodegradable or non-persistent) only and left in-situ for the herbicides prescribed 'active' period. Soil and plant material contaminated with some persistent herbicides is classed as hazardous waste and so would need to be disposed of as such. Soil contaminated within invasive species is a controlled waste.
- Biosecurity measures would be employed if plant material is to be moved for disposal, including plant wash down facilities, screening, and monitoring protocols.
- Plant material would be covered in a barrier membrane and buried beneath the proposed re-graded ground surface.
- Landscape maintenance during the operational phase would include treatment eradication of all INNS on site.

9.9.4. FAUNA - GENERAL

The following general measures would be followed in relation to all fauna:

- Toolbox Talks would be given to all personnel prior to the commencement of works, including an overview of relevant protected species constraints on site.
- A pre-works check for protected species would be conducted by an ecologist.
- Care must be taken during clearance / groundworks to ensure wildlife is not harmed. In the event any protected species are found when the ecologist is not in attendance, works must stop, the animal must not be handled, and the project ecologist contacted immediately.
- Machinery / tools and building materials would be stored on an impermeable area such as hardstanding or pallets wherever possible.
- Any works causing high levels of noise or vibration would be limited to daylight hours to reduce disturbance to nocturnal or crepuscular species in the locale such as bats, otter, and pine marten.
- Should a protected species be seen within the PDA, all works must cease and the project ECoW contacted immediately.
- Appropriate covers would be fitted over any excavations at the end of every working day. At the very least, a shallow sloping edge or some form of ramp would be placed in the excavations to allow any animals to climb out.
- All temporarily exposed pipes must be capped overnight to prevent animals gaining access and later becoming trapped.
- Excavations would be managed to avoid the formation of temporary waterbodies.
- Specific mitigation in relation to vulnerable species on / in proximity to the PDA is detailed in the sub-sections below.

9.9.4.1. Bats

Felling of Trees

An elevated inspection of the moderate PRF tree would be undertaken ahead of site works commencing to confirm suitability and search for field evidence of roosting bats. The requirement for Protected Species Licences from NatureScot would be reviewed following the results of the bat tree inspection.

If the PRF is considered to have suitability for bats during the initial check, the PRF tree would be re-inspected to confirm no roosting bats are present immediately prior to felling.

To avoid constraints relating to summer roosting or winter hibernating bats, felling of the PRF tree would be scheduled in autumn or early spring, where possible.

To compensate for the loss of bat PRF, the provision of two woodcrete bat boxes suitable for cavity dwelling bats would be installed on up to two suitable retained trees within the PDA. Bat boxes would be

installed no lower than 4m (5-7m is preferred to prevent disturbance from people and / or predators) above ground and out of prevailing winds facing a south-easterly to south-westerly direction.

Assuming mitigation actions prior to and during works are in place, the residual effects are assessed to be **non-significant.** Providing the mitigation strategy above is adhered to, the success of mitigation is **near-certain**.

Loss / Fragmentation / Degradation of Foraging and Commuting Habitat

The tree line within the Network Rail land to the northwest of the PDA and the strip of birch woodland adjacent to the A82 would be unmodified so that habitat connectivity exists between the woodlands to the north and south of the site. The areas closest to the A82 would be replanted with fast growing native tree species[41] and augmented with nectar and fruit producing species to encourage invertebrates, provisioning prey species for bats, as early in the programme as possible to help reinforce retained commuting corridors for bats.

Disturbance to foraging and commuting bats would be temporary (long-term) while habitat corridors and compensatory woodland planting establish and mature. The residual effects are assessed to be **non-significant**. Providing the mitigation strategy above is adhered to, the success of mitigation is **near-certain**.

Disturbances to Commuting and Foraging Bats

The development design would maintain dark corridors and any permanent lighting and would be 'bat friendly' i.e., would not illuminate bat commuting, foraging and roosting habitats including woodland.

Lighting during the construction and operational phase would follow the Bats and Artificial Lighting in the UK guidance note[42].

Assuming a sensitive lighting strategy is in place during the construction and operational phase, inappropriate lighting of retained habitat would be avoided. The residual effects are assessed to be of **non-significant**. Providing the mitigation strategy above is adhered to, the success of mitigation is **near-certain**.

9.9.4.2. Badger / Otter / Red Squirrel / Pine Marten

Mitigation measures pertaining to terrestrial mammals are further detailed in the accompanying Species Protection Plans (SPPs) included in **Volume 4, Appendix 9.5. Key mitigation measures are detailed below.**

Any red squirrel dreys with 50m of the woodland clearance area that are recorded during the pre-works inspection would require monitoring to confirm their status. Felling or construction works within 50m of a confirmed or suspected breeding drey would be suspended until the juveniles have dispersed or the drey is confirmed to be of non-breeding status. The requirement for Protected Species Licences from NatureScot would be reviewed following the results of monitoring. Tree removal would be scheduled for late autumn / winter to avoid impacts to breeding squirrel dreys.

[41] Common alder (*Alnus glutinosa*), birch (*Betula sp*.), osier willow (*Salix viminalis*), hazel (*Corylus avellana*), and/or rowan (*Sorbus aucuparia*)

[42] ILP and BCT. (2018). *Bats and Artificial Lighting in the UK. Bats and the Built Environment*. ILP. Warwickshire. Available from: layout (bats.org.uk) (Accessed March 2024)

Assuming the mitigation measures detailed in the accompanying SPPs are in place during the construction and operational phases, the residual effects are assessed to be **non-significant**. Providing the mitigation strategy above is adhered to, the success of mitigation is **near-certain**.

9.9.4.3. Beaver

Terrestrial and aquatic habitat suitable for beaver within Inveruglas Bay, adjacent to the tailrace would not be illuminated during the construction or operational phases.

Stringent pollution prevention measures would be in place and managed via the CEMP, audited by the ECoW and site engineer to avoid pollution by sediment, fuels and oils to the freshwater habitat.

A sensitive lighting strategy would be in place during the construction and operational phase and inappropriate lighting of riparian woodland habitat in Inveruglas Bay will be avoided.

The residual effects are assessed to be **non-significant**. Providing the mitigation strategy above is adhered to, the success of mitigation is **near-certain**.

9.9.4.4. Amphibians / Reptiles

Mitigation measures pertaining to amphibians and reptiles are further detailed in the accompanying SPPs included in **Volume 4, Appendix 9.5**. **Key mitigation measures are detailed below.**

Disturbance of features suitable for amphibian hibernation (boulders) should be avoided within the amphibian hibernation period (October - March) to avoid death or injury to breeding / hibernating unless otherwise directed by the ECoW.

Where clearance of long grass or other dense vegetation is required, a two-stage cut would be applied to allow any reptiles, amphibians or small mammals present to disperse of their own volition. The first cut should be made to a height of no less than 150mm, with a minimum of one hour and a visual inspection before a second cut to ground level.

Assuming the mitigation measures detailed in the accompanying SPPs are in place during the construction and operational phases, the residual effects are assessed to be **non-significant**. Providing the mitigation strategy above is adhered to, the success of mitigation is **probable**.

9.9.4.5. Invertebrates

The creation of species-rich grasslands or flower meadows within the PDA, including grassland glades within the woodland planting, using location appropriate native wildflower seed mix would encourage pollinators such as bumblebees and butterflies and improve biodiversity within the PDA. These would be managed as wildflower meadows, using a 'cut and collect' mower, cutting up to four times during the growing period. There is further off-site land within the SSE's ownership which could be enhanced for invertebrates, if required.

The compensatory planting area would be enhanced for invertebrates by:

- Burying pieces of untreated dead wood just below the surface would provide shelter for a range of invertebrates. This would attract invertebrates such as spiders, snails, and beetles but it may also provide shelter over the winter for butterflies and lacewings;
- The addition of commercially available 'invertebrate hotels' would additionally provide valuable invertebrate habitat. These provide a good general insect habitat for beneficial species in summer and later in the year, including overwintering ladybirds and lacewings. Once installed, these do not need to be maintained. These would be installed in sheltered parts of the PDA close to pollen / nectar rich plants.

Assuming the mitigation measures detailed are in place during the operational phase, the residual effects are assessed to be **non-significant**. Providing the mitigation strategy above is adhered to, the success of compensation is **probable**.

9.10. Monitoring and Licencing

9.10.1. MONITORING

Monitoring would be required to determine the success of mitigation and enhancement measures and provide data on which to base adaptive management if objectives are not being achieved. It is anticipated that the following post-construction monitoring would be required. The results of monitoring would be summarised in a short-form technical report that would be shared with LLTNPA.

- Woodland planting would be monitored by a woodland specialist to ensure that planting has been successful and that it reaches the target condition to provide habitat for the IEFs. Planting would be monitored for mortality and establishment success. It is anticipated that the woodland would require annual monitoring for the first three years, as planting becomes established, and then at three-year intervals for the duration of the 10-year time scale of the Woodland Management Plan
- Terrestrial INNS control and eradication would be monitored by an INNS specialist to ensure that objectives detailed in the INNS Management Plan are being met and that actions are updated where necessary. INNS monitoring would be undertaken concurrently with woodland monitoring.
- Bat boxes, and invertebrate enhancements would be checked for the first three years for condition and signs of use.

9.10.2. LICENCING

If bat roosting habitat and / or red squirrel dreys are identified during the pre-works monitoring visits, a NatureScot protected species licence for the disturbance and/or destruction of these habitats would be required and additional mitigation and compensation outside the scope of this document would be necessary.

9.11. Residual Effects

Table 9.10 below summarises the assessment of potential impacts on each IEF, proposed mitigation and the assessed residual effects where all recommended mitigation and enhancements are implemented:

Table 9.10: Summary of Residual Effects

Important Ecological Feature	Potential Impact and Effects (before mitigation)	Avoidance, Mitigation and Enhancement Measures	Residual Effect After Mitigation and Enhancement	Requirement for Further Survey Work/Licencing
Loch Lomond Woods Special Area of Conservation (SAC)	Pollution events	SEPA pollution prevention guidelines should be followed.	Low (Non-Significant)	N/A
Semi Natural Woodland	Woodland Loss / Fragmentation	Native woodland planting. Production of Woodland Management Plan	Low (Non-Significant)	Post-construction monitoring of habitat creation area.
	Degradation of Retained Woodland Habitat	Implementation of tree protection measures to protect retained trees prior to, and for the duration of construction works.	Low (Non-Significant)	N/A
Plantation Woodland	Woodland Loss / Fragmentation	Native woodland planting.	Site-level positive effect	Post-construction monitoring of habitat creation area.
INNS – Terrestrial Plants	Spread of Terrestrial Plant INNS and their Pathogens	INNS Management Plan. INNS on site to be cut and treated. Deep burial of INNS plant material.	Site-level positive effect	Post-construction monitoring of INNS
Bats	Accidental killing / injury during tree felling. Disturbance and displacement due to removal of PRF.	Sensitive felling of PRF tree during autumn / early spring and bat box installation.	Low (Non-Significant)	Elevated inspection and pre- felling check. Bat box checks.
	Loss / fragmentation / degradation of foraging / commuting habitat.	Planting of nectar and fruit producing species to encourage invertebrates.	Low (Non-Significant)	N/A

Important Ecological Feature	Potential Impact and Effects (before mitigation)	Avoidance, Mitigation and Enhancement Measures	Residual Effect After Mitigation and Enhancement	Requirement for Further Survey Work/Licencing
		Establishment of commuting corridor in new woodland planting.		
	Disturbance from artificial light and noise.	Implementation of wildlife sensitive lighting strategy.	Low (Non-Significant)	N/A
Otter	Loss / fragmentation / degradation of foraging / commuting habitat.	Mitigation measures detailed in otter SPP in **Appendix 9.5.**	Low (Non-Significant)	Pre works check to advise need for further monitoring, alteration of SPP, or licensing requirements.
	Pollution events		Low (Non-Significant)	N/A
	Risk of death / injury during construction		Low (Non-Significant)	N/A
Beaver	Disturbance from Artificial Lighting	Implementation of wildlife sensitive lighting strategy.	Low (Non-Significant)	N/A
	Pollution Events	Pollution prevention measure.	Low (Non-Significant)	N/A
Badger	Loss / fragmentation / degradation of foraging / commuting habitat.	Mitigation measures detailed in badger SPP in **Appendix 9.5.**	Low (Non-Significant)	Pre works check to advise need for further monitoring, alteration of

Important Ecological Feature	Potential Impact and Effects (before mitigation)	Avoidance, Mitigation and Enhancement Measures	Residual Effect After Mitigation and Enhancement	Requirement for Further Survey Work/Licencing
				SPP, or licensing requirements.
	Risk of death / injury during construction		Low (Non-Significant)	N/A
Red Squirrel	Loss / fragmentation / degradation of resting / foraging / commuting habitat.	Mitigation measures detailed in red squirrel SPP in **Appendix 9.5.**	Low (Non-Significant)	Pre works check to advise need for further monitoring, alteration of SPP, or licensing requirements.
	Risk of death / injury during construction			N/A
Pine Marten	Loss / fragmentation / degradation of foraging / commuting habitat	Mitigation measures detailed in red squirrel SPP in **Appendix 9.5.**	Low (Non-Significant)	Pre works check to advise need for further monitoring, alteration of SPP, or licensing requirements.
	Risk of death / injury during construction		Low (Non-Significant)	
Reptiles/Amphibians	Injury / death during vegetation clearance and construction	Mitigation measures detailed in reptile and amphibian SPP in **Appendix 9.5**.	Low (Non-Significant)	N/A

Important Ecological Feature	Potential Impact and Effects (before mitigation)	Avoidance, Mitigation and Enhancement Measures	Residual Effect After Mitigation and Enhancement	Requirement for Further Survey Work/Licencing
	Loss / fragmentation / degradation of foraging / refuge habitat		Low (Non-Significant)	
Invertebrate	Loss / fragmentation / degradation of suitable habitat	On site native wildflower planting. Provision of insect habitat including buried dead wood, log piles, and insect hotels.	Low (Non-Significant)	N/A
	Injury / death during vegetation clearance	N/A	Low (Non-Significant)	

9.12. Cumulative Impacts

Cumulative effects can occur where a proposed development results in individually insignificant impacts that, when considered in-combination with impacts of other proposed or permitted plans and projects, can result in significant effects.

This section of the EcIA assesses the ecological effects of the Proposed Development cumulatively with the ecological effects of other developments that have either received planning permission or are the subject of a planning application which has not yet been determined.

The Argyll and Bute Council Interactive Planning Map[43] was utilised to identify nearby developments. The recent developments (registered / approved within the past 5 years) listed below were identified within 5km of the site, where development could lead to potential cumulative impacts on IEFs associated with the Sloy PHS development.

9.12.1. DEVELOPMENT WITH PLANNING APPROVAL

9.12.1.1. Cruach-Tairbeirt Forestry Works

2021/0451/NOT

Planning application 2021/0451/NOT pertains to a proposed development located 1.3km to the southwest of the Sloy PHS developmentand which includes the construction of 7200m of new forestry road, including eight turning points and four passing places to provide access to the Cruach-Tairbeirt forest block. This would facilitate tree felling, including the felling of larch trees infected with or expected to become infected with *Phytophthora ramorum*. The new road will also provide access for deer control and other work that will take place after felling. It is anticipated that felling and replanting will have a positive impact on biodiversity because the restocking will result in increased age class, species and habitat diversity.

The total plan area for Cruich Tairbeirt occupies c. 895 ha of mainly productive conifer plantation, and also native broadleaf woodland including Gen Lion Woods SAC and SSSI and Kenmore Woods. It is a 5-year plan to remove infected Larch following an SPHN notice served in 2022.

Overall, there is no expected cumulative effects to IEFs identified within this assessment.

2022/0258/NOT

Planning application 2022/0258/NOT pertains to a proposed development located 1.8km to the southwest of the Sloy PHS development and includes the construction of 1850m of forestry road, including eight turning points and two laybys on land At Dubh Chnoc, Inveruglas, to facilitate tree felling.

Overall, there is no expected cumulative effects to IEFs identified within this assessment.

9.12.2. DEVELOPMENT WITHOUT PLANNING APPROVAL

The following planning application has also been reviewed to assess cumulative impacts. However, due to its early stage, limited details regarding, proposed development, presence of notable flora or fauna, or mitigation is available.

[43] Loch Lomond & The Trossachs National Park *Planning – Map Search,* [Online]. Available from: Map Search (lochlomond-trossachs.org) (Accessed April 2024).

9.12.2.1. Sloy Transformer Replacement Project

Pre-planning consultation 2023/0149/PAC covers the development of a new substation platform including earthworks and tree clearance, construction of the substation and associated infrastructure, and removal of redundant overhead line apparatus. LLTNPA state that a planning application must be submitted no later than 27 October 2024. Without further ecological assessment, further cumulative effects of IEFs identified within this assessment cannot be predicted.

9.13. Biodiversity Enhancements

In order to comply with local and national planning policy and planning policy guidance, the following enhancements would be delivered:

- Additional planting of diverse native trees, woodland and wildflower grassland would enhance the commuting and foraging resources, for bats, badger, hedgehog, red squirrel pine marten, and invertebrates within the locale. Plants and seeds of local provenance would be sourced to achieve the best biodiversity outcome.
- Speed limits should be set on all on site roads to limit the risk of vehicle-animal collisions.
- The proposed development should incorporate suitable bat boxes to provide permanent roosting opportunities. Boxes should be installed on up to two retained trees at least 3m high.

9.14. Summary and Conclusion

No significant effects on Important Ecological Features are predicted after mitigation measures are taken into consideration.

There is a possibility of a limited number of individual bats, otter, badger, red squirrel, pine marten, amphibians, reptiles, and / or invertebrates experiencing disturbance or being displaced from a small area of local habitat, but this is not considered likely to affect the conservation status of populations in a local, national or international context.

Habitat loss to accommodate the spoil management area would result in a temporary reduction of existing woodland cover, comprising of plantation and semi-natural broadleaved woodland, this would result in the loss of habitat suitable for bat roosting and red squirrel dreys. There would be a temporary loss of foraging and commuting habitat for bats, otter, badger, red squirrel, pine marten, amphibians, reptiles, and invertebrates during the construction phase until woodland is re-established following compensatory planting during the construction and operational phases. Retained woodland habitat will be protected with deer-proof fencing and retained trees will be protected following the measures detailed in the Arboricultural Impact Assessment.

Commuting corridors would be retained and protected to the east and west of the PDA so that woodland to the north and south of the site is not fragmented. The habitats most impacted during construction are common and widespread within this area of Argyll and Bute and similar, high-quality examples are available adjacent to the site.

Rhododendron and other terrestrial invasive species would undergo control and eradication and would be routinely monitored during the creation and establishment of compensatory habitat.

Whilst there are some uncertainties or limitations in the assessments and / or mitigation proposed, it is anticipated that monitoring both during construction and through operation would allow for mitigation to be adapted if necessary.

The cumulative effects of the Proposed Development in combination with other developments in the vicinity are considered to be not significant.

A European Species Protection Licence (ESPL) may be required in relation to loss of bat roosting habitat and / or red squirrel dreys if these species are confirmed to be roosting/nesting within 50m of the PDA during the pre-construction checks.

Biodiversity enhancements would provide benefits to the local biodiversity, creating habitats suitable for a variety of flora and fauna that frequent the site and locale.