Appendix 9.1: Sloy Pumped Hydro Storage Scheme: Preliminary Ecological Appraisal (PEA)

Appendix 9.1

Sloy Pumped Hydro Storage Scheme
Preliminary Ecological Appraisal

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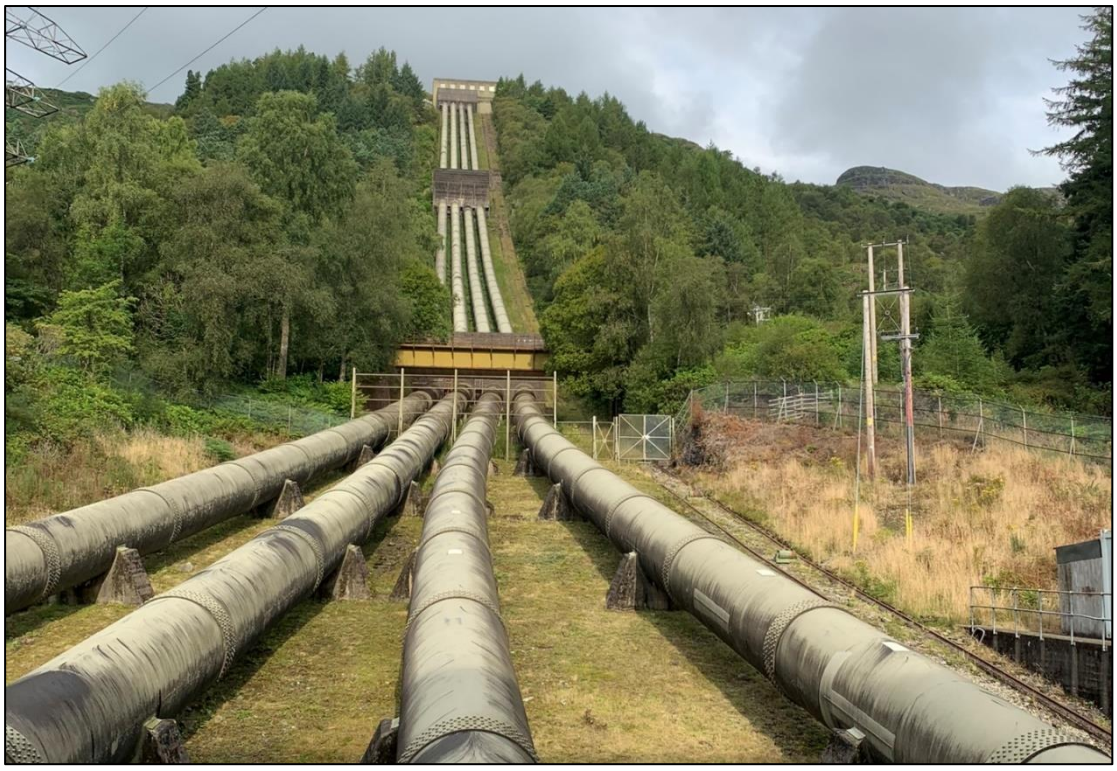
Sloy Power Station
Preliminary Ecological Appraisal



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Sloy Power Station
Preliminary Ecological Appraisal

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EXECUTIVE SUMMARY

EnviroCentre Limited was commissioned by ASH Design + Assessment to conduct a Preliminary Ecological Appraisal (PEA) at a site referred to as the Sloy Hydroelectric Power Station site, near Inveruglas, Loch Lomond. The site is located within the Loch Lomond and The Trossachs National Park and the proposed development involves the construction a pumphouse building, pump intake, transformer compound, and a spoil storage area in order to convert the existing hydroelectric power station into a hydro pumped storage scheme. No design has been provided to inform this appraisal.

A Phase 1 Habitat survey identified 12 broad habitats including conifer plantation woodland, mixed plantation woodland, broadleaved scattered trees, flush and spring, open standing water, amenity grassland, buildings and bare ground plus Scottish Biodiversity List (SBL) Priority Habitats wet woodland and lowland mixed deciduous woodland (semi-natural broadleaved woodland).

Four potentially Groundwater Dependent Terrestrial Ecosystems (GWDTEs), or at least sources of groundwater reaching the surface, were identified within the site, which include wet woodland, marshy grassland, valley mirey and flush/spring habitats. Further investigation of these features may be required should they deem to be affected by proposed works.

Invasive non-native species (INNS) Japanese knotweed, rhododendron and white butterbur are present within the site. An INNS management plan should be applied with the aim of eradicating these species. This appraisal also highlights that the project team should consider the risk of transferring invasive species (flora and fauna) from Loch Lomond to Loch Sloy via the pump storage proposal.

A single dead tree was noted within the woodland to present **moderate** suitability to host roosting bats. If this tree is to be felled or undergo any arboricultural works, further investigation will be required to ascertain the presence/absence of roosting bats and inform any mitigation, compensation or licensing requirements ahead of works.

Five features consider to be red squirrel dreys were recorded within the woodland. A targeted squirrel survey of the woodland within and surrounding the site to locate any existing or new dreys within the site is required ahead of any works. If trees hosting drey features are to be felled, further monitoring and mitigation would be required.

House martin were observed nesting under the eaves of the power station building. A disused mammal burrow was identified within the east of the woodland. If works are to affect the mammal burrow, a survey to identify use is recommended. Suitable habitat for otter, pine marten, reptiles, amphibians and badger are also present within and adjacent to the site.

Without avoidance and mitigation strategies, the potential impacts of the proposed development include:

- Loss of SBL Priority Habitats if wet woodland, lowland mixed deciduous woodland and lowland fens are affected by works.
- Degradation, impacting source or loss of potential GWDTE.
- Spread of invasive species.
- Loss of features used by mammals for shelter (drey, roost, nest, burrows, den sites)

Broad suggestions for avoidance and mitigation have been included in this report, as well as opportunities for biodiversity gains which could be considered in design.

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1 INTRODUCTION

1.1 Terms of Reference

EnviroCentre Limited was commissioned by ASH Design + Assessment to conduct a Preliminary Ecological Appraisal (PEA) at a site referred to as the Sloy Hydroelectric Power Station site, near Inveruglas, Loch Lomond.

The 'site' is defined as the area demarcated by the red line boundary as shown in Appendix A. The 'survey area' constitutes the area of the 'site' plus appropriate buffers as detailed in Section 2.2.

The results and recommendations in this document relate to the site boundary as provided by the client at the time of the survey.

1.2 Scope of Report

The aim of the survey is to provide a baseline ecological evaluation of the site to inform the proposed plans. The objectives were as follows:

- Conduct a desk study to gather previously recorded biological data relating to the site;
- Categorise and map the broad habitats present on the site;
- Search for field evidence of a range of protected or notable species which may frequent the survey area;
- Identify suitable habitat for protected or notable species in the survey area;
- Evaluate the habitats and species applicable to site against geographic levels of importance;
- Appraise the potential impacts to habitats and species should no avoidance, mitigation or compensation be applied within the proposed project;
- Make recommendations for any further survey to inform the proposed project and/or species licensing requirements.
- Suggest broad measures to avoid, minimise and compensate for the predicted negative ecological effects associated with the proposed project; and
- Suggest opportunities offered by the proposed development to deliver biodiversity gain.

1.3 Site Description

The site is located at Sloy Hydroelectric Power Station, centred at NN 32163 09872. The site is situated at the southeast base of Ben Vorlich and covers an area of over 4 hectares (ha) and is located within the Loch Lomond and The Trossachs National Park. The site is on undulating ground, which slopes downwards in the west, towards the shores of Loch Lomond, reaching a maximum elevation of 35 metres (m) above the sea level and a minimum of 6m. The site comprises the power station building with associated amenity grassland, hardstanding vehicle access/parking, a small site compound and woodland. The site also includes the Inveruglas Visitor Centre car park and associated habitats adjacent to Loch Lomond. The wider landscape is dominated by woodland to the north, west and south. Loch Lomond binds the site to the east and a trainline is present to the west of the site. The region comprises extensive woodland leading to mountainous grass and heathland.

1.4 Project Description

The proposal design involves the construction a pumphouse building, pump intake, transformer compound, and a spoil storage area in order to convert the existing hydroelectric power station into a hydro pumped storage scheme. This will require an extended site compound to the north of the station to facilitate on site works. No fixed design was available at the time of this appraisal. The information from this appraisal will inform design as far as ecological considerations.

1.5 Legislation, Policy and Guidance

Legislation, planning policies, conservation initiatives and general guidance relevant to this study include:

- The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended);
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended);
- The Wildlife and Countryside Act 1981 (as amended) (WCA);
- The Nature Conservation (Scotland) Act 2004;
- The Wildlife and Natural Environment (Scotland) Act 2011 (WANE);
- The Protection of Badgers Act 1992;
- The British Standard for Biodiversity;
- The Scottish Biodiversity Strategy;
- Scottish Planning Policy (2014); and
- The Loch Lomond Local Development Plan
- Loch Lomond Local Biodiversity Action Plan.

A summary of protected species legislation is provided in Appendix B.

1.6 Report Usage

The information and recommendations contained within this report have been prepared in the specific context stated above and should not be utilised in any other context without prior written permission from EnviroCentre.

If this report is to be submitted for regulatory approval more than 12 months following the report date, it is recommended that it is referred to EnviroCentre for review to ensure that any relevant changes in data, best practice, guidance or legislation in the intervening period are integrated into an updated version of the report.

2 METHOD

2.1 Desk Study

In order to anticipate the potential ecological sensitivities at the site, a desk study was conducted in advance of the field survey, in August 2022. The following sources were checked:

- NatureScot Sitelink website[1] for statutory designated sites up to 5km from the site;
- Loch Lomond and The Trossachs National Park Local Development Plan (LDP)[2] 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[3], 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[4], for records of squirrel sightings within a 2km radius from the site.
- The Scottish Biodiversity List[5] for Priority Habitats and Species;
- The Loch Lomond Local Biodiversity Action Plan (LBAP)[6] for Local Priority Habitats and Species; and
- Aerial imagery from Google Earth[7].

2.2 Field Survey

All field survey work was undertaken by EnviroCentre ecologists Douglas Blease and Marta Zabalegui Bosque, who are members of the Chartered Institute of Ecology and Environmental Management (CIEEM). The surveys were designed using the guidelines endorsed by NatureScot and CIEEM[8, 9 & 10] 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. The survey was undertaken on 2nd of September 2022 when conditions were dry and still. The average air temperature was 18°C.

This section provides details of the methods adopted in the survey areas described in Table 2-1, below.

Table 2-1: Survey Areas

Habitat/Species/Species Group	Survey Area (Where accessible)
Habitats	Site
Ground Water Dependent Terrestrial Ecosystems (GWDTE)	Site plus consideration of a 250m buffer

[1] NatureScot Sitelink website. Available at: https://sitelink.nature.scot/map (Accessed August 2022)
[2] Loch Lomond and The Trossachs National Park LDP, available to download at https://www.lochlomond-trossachs.org/planning/planning-guidance/local-development-plan/ (Accessed August 2022)
[3] Scotland's Environment Web. Available at: https://www.environment.gov.scot/maps/scotlands-environment-map/ (Accessed August 2022)
[4] Saving Scotland's Red Squirrel (SSRS) Sightings Map, for records of squirrel sightings: https://scottishsquirrels.org.uk/ (Accessed September 2022)
[5] Available at: https://www.nature.scot/scottish-biodiversity-list (Accessed August 2022)
[6] 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/ (Accessed August 2022)
[7] Available at: https://www.google.com/earth/ (Accessed August 2022)
[8] CIEEM (2017). Guidelines for Preliminary Ecological Appraisal (GPEA). Retrieved from https://cieem.net/resource/guidance-on-preliminary-ecological-appraisal-gpea/
[9] CIEEM (n.d.). General advice on surveys and methods. Retrieved from https://cieem.net/wp-content/uploads/2019/02/CSS-OVERVIEW-April-2013.pdf
[10] CIEEM (2015). Guidelines for Ecological Report Writing. Retrieved from https://cieem.net/resource/guidelines-for-ecological-report-writing /

Habitat/Species/Species Group	Survey Area (Where accessible)
Invasive Non-Native Species (INNS)	Site plus approximately a 50m buffer
Bats (*Chiroptera* sp.)	Site
Otter (*Lutra lutra*)	Site plus approx. 100m along Loch Lomond shore (access restricted to the north by rocky shore and to the south by private land)
Red Squirrel (*Sciurus vulgaris)*	Site plus approximately a 50m buffer
Pine Marten (*Martes martes*)	Site plus approximately a 50m buffer
Badger (*Meles meles*)	Site plus approximately a 100m buffer
Reptiles	Site plus approximately a 50m buffer
Amphibians	Site plus approximately a 50m buffer
Birds (*Avifauna*)	Site plus approximately a 50m buffer

2.3 Phase 1 Habitat Survey

A Phase 1 Habitat Survey is a method that rapidly records vegetation and wildlife habitat over large areas. The information is used to identify ecologically sensitive features, inform additional species surveys and, ultimately, recommend mitigation and enhancement measures in connection with a proposed development.

The Phase 1 Habitat Survey was undertaken according to the standard Joint Nature Conservation Committee method[11] and was used to determine the potential presence of any Annex I and/or priority habitats.

2.4 Groundwater Dependent Terrestrial Ecosystems

The Functional Wetland Typology[12] was used to aid identification of wetland habitats that derive their water from groundwater and surface water. This information is useful in identifying if and where further surveys are required to identify the presence and potential sensitivity of Groundwater Dependent Terrestrial Ecosystems (GWDTEs). To help assess ground water dependency, observations of local topography, underlying geology, and features such as springs, diffuse ground water emergence and floristic indicators of base enrichment were made.

2.5 Invasive Non-Native Species

The survey included a check for the presence of any invasive non-native species (INNS) including but not limited to the following:

- Rhododendron (*R. ponticum*);
- Japanese knotweed (*Reynoutria japonica*);
- Giant hogweed (*Heracleum mantegazzianum*); and
- Himalayan balsam (*Impatiens glandulifera*).

[11] JNCC (2010) Handbook for Phase 1 Habitat Survey A Technique for Environmental Audit.
[12] SNIFFER (2009) *WFD95: A Functional Wetland Typology for Scotland - Field Survey Manual. Version 1*. ISBN: 978-1-906934-22-4

2.5.1 Bats

An appraisal of the habitat to support bat activity and roosting was undertaken in accordance with the criteria set out by the Bat Conservation Trust (BCT)[13]. The suitability of roosting, commuting and foraging habitats was categorised according to the criteria in Table 2-2 below.

Table 2-2: Suitability Classification of Roosting, Commuting and Foraging Habitats for Bats

Suitability	Roosting Features	Foraging and Commuting Habitats
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edges. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. The site is close to and connected to known roosts.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due their size, shelter, protection, conditions and/or surrounding habitat but unlikely to support a roost of high conservation status.	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis; or A tree of sufficient size and age to contain potential roost features but with none seen from the ground; or features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as a fragmented hedgerow or unvegetated stream, but isolated. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree or a patch of scrub.
Negligible	A structure or a tree with negligible features likely to be used by roosting bats.	Negligible habitat features likely to be used by foraging or commuting bats.

Typical Potential Roosting Features (PRFs) were recorded on site if found as per the descriptions listed in Table 2-3 below.

Table 2-3: PRFs in Trees and Structures Frequently Used by Bats for Roosting

PRFs in trees frequently used as bat roosts	Access points in structures frequently used as bat roosts	Frequently used roosting locations in structures
Hollows and cavities from woodpecker, rot and knot holes	Gaps in windowsills and window panes	Top of chimney breasts, gable ends and dividing walls
Hazard beams and other vertical or horizontal cracks and splits in stems or branches	Underneath peeling paintwork or lifted rendering	All beams and roof beams (ridge, hip etc.)

[13] Collins, J.(ed.) (2016). *Bat Surveys for professional Ecologists: Good Practice Guidelines, 3rd edition.* Bat Conservation Trust

PRFs in trees frequently used as bat roosts	Access points in structures frequently used as bat roosts	Frequently used roosting locations in structures
Partially detached plated bark	Under tiles and slates	Behind purlins
Cankers, included bark and compression forks with potential cavities	Behind hanging tiles, weatherboarding, eaves, soffit boxes, fascias and lead flashing	Junction of timber joints, mortise and tenon joints
Partially detached ivy with stem diameters in excess of 50mm	Gaps in brickwork and stonework	Between tiles/slates and the roof lining
Bat or bird boxes	Gaps in rendering behind gutters	Under flat roof materials

2.5.2 Otter

The field survey included a search for otter field signs along the shoreline of Loch Lomond in front of the site in reference to standard guidelines[14], including:

- Spraints (otter faeces/droppings used as territorial signposts. Often located in prominent positions and can be placed on deliberate piles of soil or sand). Three categories are used for describing otter spraint: Dried fragmented (Df); Dried intact (Di); and Not fully dry (Nd);
- Footprints;
- Feeding remains (can often be a useful indication of otter presence);
- Paths/slides (otter can often leave a distinctive path from and into the watercourse);
- Holts (underground shelter) are generally found:
    - Within trees roots at the edge of the bank of a river;
    - Within hollowed out trees;
    - In naturally formed holes in the river banks that can be easily extended;
    - Or preferably in ready-made holes created by other large mammals such as badger setts, rabbit burrows or outlet pipes; and
- Couches/lay-ups (couches or lay-ups are places for lying up above ground are usually located near a watercourse, between rocks or boulders, under dense vegetation).

2.5.3 Red Squirrel

An appraisal of the site's habitats for red squirrel resource was undertaken in reference to standard guidance[15] which involves a search of suitable habitat (primarily coniferous woodland) for two distinct signs of squirrel activity. It should be noted that neither of these methods accurately distinguishes between red or grey squirrels (*Sciurus carolinensis*).

- Drey count – dreys are the nests made by both species of squirrel in trees. Dreys are distinguishable from birds' nests as they are normally 50cm in diameter and 30cm deep, comprise a ball shape and are usually densely constructed. The dreys are normally located close to the main stem of the tree at a height of 3m or more; and
- Feeding evidence – where cone producing trees (conifers) are evident evidence of squirrel feeding is searched for. Although the two species of squirrel cannot be distinguished from feeding remains, the manner in which squirrels break open seeds and nuts, which are then left on the forest floor, is diagnostic.

[14] Chanin, P. (2003). *Monitoring the Otter Lutra Lutra. Conserving Natura 2000 Rivers, Monitoring Series (No. 10).* Peterborough: EN, CCW, EA, SEPA, SNH & SNIFFER.

[15] Gurnell, J., Lurz, P., McDonald, R. & Pepper, H. (2009) *Practical Techniques for surveying and monitoring squirrels. Forestry Commission Practice Note 11.*

2.5.4 Pine Marten

A passive sign survey was conducted for pine marten according to standard guidance[16]. The survey included a search for scats (e.g. on prominent features such as tree stumps, dead logs or stones), footprints and identification of any potential den sites (elevated tree cavities and between rocks or crags) as well as the presence of scats on paths, rides and track ways through woodland or rock habitats.

An appraisal of the habitat was also undertaken to highlight likely prey resources, which include small mammals, birds and invertebrates, and potential resting sites and commuting opportunities.

It should be noted that in areas where pine marten populations are sparse and territorial defence is relatively unimportant, searches for signs (incl. scats) may fail to detect presence simply because the animals are less likely to deposit scats as territory markers; in such situation most scats are deposited at den sites and in foraging areas.

2.5.5 Badger

An appraisal of the site's habitats for suitability to host badger was undertaken in reference to the methodology described by Scottish Badgers[17] and NatureScot[1819]. Where found, the following field evidence would be recorded:

- Setts (any structure or place, which displays signs indicating current use by badger/located within an active badger territory, as defined by NatureScot guidance[20]);
- Day beds (above ground area where badgers sleep, characterised by flattened vegetation or bundles of grass);
- Dung pits (single faeces deposit placed in a small excavation);
- Latrines (collection of faecal deposits often used by badger clans to mark home range boundaries);
- Foraging signs such as diggings or snuffle holes (badgers use their snout to turn over vegetation or soft soil to forage for bulbs and invertebrates);
- Paths (network of paths generally linking setts to foraging habitat);
- Breach points (gaps in fences or crossing points over roads);
- Scratching posts (marks on tree trunks/ fallen trees where badgers have left claw marks);
- Guard hair; and
- Footprints.

[16] Birks, J. (2012) Pine marten. In: Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trewhella, W.J., Wells, D. and Wray, S. (2012). *UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation*. The Mammal Society, Southampton

[17] Scottish Badgers: Surveying for Badgers – Good Practice Guidelines. Version 1: 2018. Available from: https://www.scottishbadgers.org.uk/userfiles/file/planning_guidelines/Surveying-for-Badgers-Good-Practice-Guidelines_V1.pdf (Accessed on August 2022)

[18] NatureScot: Licensing Guidance. Available from: https://www.nature.scot/sites/default/files/2018-10/Guidance%20-%20Licensing%20-%20Badgers%20-%20What%20is%20a%20Badger%20sett_.pdf (Accessed on August 2022)

[19] NatureScot: Protected Species Advice for Developers – Badger. Available from: https://www.nature.scot/species-planning-advice-badger (Accessed on August 2022)

[20] NatureScot definition of current use: "*There is no case law to clarify what signs of current use means. For the purpose of this guidance, and in the absence of such case law, we consider that the presence of field signs such as bedding, fresh spoil heaps, signs of recent digging, hair, latrines, or footprints in or around the potential sett or evidence of badgers entering or exiting the structure or place in question would indicate current use of the structure / place by a badger.*"

Badger foraging habitat was classified on a primary and secondary basis as per best practice guidance[21]. An appraisal of the distribution of primary and secondary habitat (defined below) within the survey area was undertaken:

- Primary foraging habitat: short grazed or mown grassland, improved or unimproved, golf course habitat and broadleaved woodland (> 80% broadleaves); and
- Secondary foraging habitat: arable, rough grassland (not grazed by domestic stock or mown), scrub and mixed woodland.

2.5.6 Reptiles

An appraisal of the site's habitats to host reptiles was undertaken in reference to the criteria set out by Amphibian and Reptile Conservation[22]. This considers habitat type, basking and foraging opportunities, and linkages to other areas of potential reptile habitat. The quality of the reptile habitat was assessed using the following criteria:

- High – Suitable vegetation cover offering foraging opportunities, basking sites and a variety of refugia. Good linkages with other areas of reptile habitat. For example semi-improved grassland with areas of dense continuous scrub.
- Moderate – Some suitable vegetation cover offering foraging opportunities, basking sites and refugia. Limited linkages to other areas of suitable reptile habitat. For example dense continuous scrub surrounded by short improved grassland.
- Low – Unsuitable vegetation cover with no linkages to other areas of suitable reptile habitat. For example dense mature conifer plantation, closely mown amenity grassland.

In addition, direct sightings of reptiles, and features that offer suitable hibernation refugia (e.g. dry stone walls, vegetated stone piles containing cavities etc.) were recorded.

2.5.7 Amphibians

An appraisal of the site's habitats to host amphibians was undertaken in reference to the criteria set out by the Joint Nature Conservation Committee (JNCC)[23]. This criteria includes habitat requirements necessary for amphibian populations as follows:

- Breeding habitat - ponds or standing water that provide food and shelter
- Terrestrial habitat - close to breeding ponds
- Connectivity to additional suitable aquatic and terrestrial habitat
- Foraging resources i.e., invertebrates
- Hibernation sites – normally below ground in systems that protect against frost, flooding and predators

[21] The Highland Council. Best Practice Guidance – Model badger Protection Plan (BPP)– Badger foraging habitats (2006). Available from: https://www.highland.gov.uk/downloads/file/2635/badger_best_practice_guidance_badger_protection_plans_september_2006 (Accessed on August 2022)
[22] Edgar, P., Foster, J. and Baker, J. (2010). *Reptile Habitat Management Handbook*. Amphibian and Reptile Conservation, Bournemouth
[23] JNCC (2004). *Common Standards Monitoring Guidance for Reptiles and Amphibians*. [Online] Available at: https://data.jncc.gov.uk/data/43e8e8ed-5f05-4613-a277-f116b34829f4/CSM-ReptilesAmphibians-2004.pdf

2.5.8 Birds

Habitats within the survey area were appraised for their suitability to support breeding and over wintering birds. Observations of birds were noted during the survey.

2.6 Constraints

2.6.1 Desk Study

Desk studies are limited by the reliability of third party information and the geographical availability of biological and/or ecological records and data. This emphasises the need to collate up-to-date, site-specific data based on field surveys by experienced surveyors. The absence of a species from biological records cannot be taken to represent actual absence. Species distribution patterns should be interpreted with caution as they may reflect survey/reporting effort rather than actual distribution.

2.6.2 Field Survey

Potential red squirrel drey features were present within the woodland. However, the features were located too high up in the trees and obscured by vegetation to confidently assess from the ground, even with the aid of binoculars.

Field survey for otter would ideally extend up to 200m from the site boundary, however this was limited by inaccessible rocky shore to the north and private land to the south. Loch Lomond is known to host a strong otter population and it is not anticipated that the proposed area of works would serve to disturb otter activity associated with the Loch.

2.7 Evaluation of Ecological Features

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. A geographical level of importance, as described in Appendices C and D, has been assigned to the designated sites, habitats and species identified on the site and in the survey area. 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.

3 BASELINE ECOLOGICAL CONDITIONS

3.1 Statutory Designated Sites

The site falls within Loch Lomond and The Trossachs National Park[24] (NP) and Loch Lomond National Scenic Area[25] (NSA). An additional six statutory designated sites are present within a 5km radius of the site boundary, as detailed in Table 3-1.

Table 3-1: Statutory Designated Sites

Site Name	Designation*	Distance and orientation	Designated Features
Loch Lomond and The Trossachs National Park	NP/NSA	On site	Special qualities include Argyll forest, Loch Lomond, Breadalbane and The Trossachs. It overlaps with protected areas including: Aber Bog, Gartocharn Bog and Bell Moss SSSI Endrick Mouth and Islands SSSI Endrick Water SAC Loch Lomond Ramsar Site Loch Lomond SPA Loch Lomond Woods Special Area of Conservation Portnellan - Ross Priory - Claddochside SSSI
Pollochro Woods[26]	SSSI	860m east	Bryophyte assemblage Lichen assemblage Wet woodland Wood pasture and parkland
Loch Lomond Woods[27]	SAC	860m east and 3km southwest	Otter (*Lutra lutra*) Western acidic oak woodland
The Great Trossachs Forest[28]	NNR	860m east	Woodland restoration project
Ben Vorlich[29]	SSSI	1.4km west	Alpine flush Subalpine wet heath Tall herb ledge
Craig Royston Woods[30]	SSSI	2.1km southwest	Moth assemblage Upland oak woodland
Glen Loin[31]	SSSI	3km southwest	Upland mixed ash woodland Upland oak woodland

* Sites of Special Scientific Interest (SSSI); Special Areas of Conservation (SAC); National Nature Reserves(NNR)

All the statutory designated sites detailed above are considered to be ecologically connected to the site.

[24] https://sitelink.nature.scot/site/8621
[25] https://sitelink.nature.scot/site/9135
[26] https://sitelink.nature.scot/site/8621
[27] https://sitelink.nature.scot/site/8298
[28] https://sitelink.nature.scot/site/10503
[29] https://sitelink.nature.scot/site/193
[30] https://sitelink.nature.scot/site/444
[31] https://sitelink.nature.scot/site/713

3.2 Non-Statutory Designated Sites

No non-statutory designated sites are present within the site boundary.

Inversnaid Royal Society for the Protection of Birds (RSPB) reserve is located on the eastern shore of Loch Lomond, approximately 1km east of the site. It overlaps with Pollochro Woods SSSI and is considered an internationally important example of rare Atlantic oak woodland. It is considered to be ecologically connected to the site via Loch Lomond and surrounding woodlands.

3.3 Ancient and Native Woodland

No ancient woodland is present within the site boundary.

An area of Ancient woodland (of semi-natural origin) (ASNO) is present adjacent to southwestern site boundary. Additionally, there are ten areas of ASNO, two areas of Long-Established Woodland (of plantation origin) (LEPO) and two areas of other type of ancient woodland within a 2km radius of site.

All of the aforementioned areas of woodland are considered to be ecologically connected to the site via Loch Lomond water and woodland corridors in the locale.

Ancient/long-established woodland is a habitat of principal importance for biodiversity[32] and is therefore considered to be of national importance.

The northern portion of the site and the woodland surrounding Inveruglas car park is listed in the Native Woodland Survey of Scotland as 'Wet Woodland', as shown in Figure 1 below:

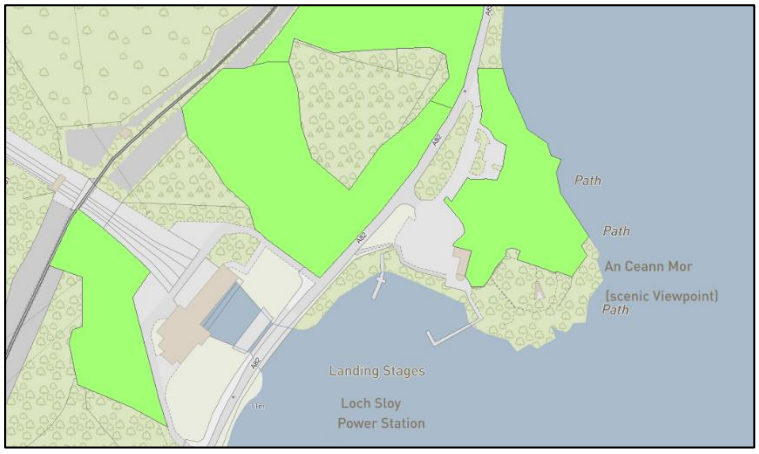


Figure 1: Native Woodland Survey of Scotland[33]

3.4 Habitats

The Phase 1 Survey Results Map can be found in Appendix E and the Photographic record in Appendix G.

Twelve Phase 1 habitats were identified during the survey and include:

- A1.1.1 Semi-Natural Broadleaved Woodland;

[32] Joint Nature Conservation Committee (JNCC). (2007). UK Biodiversity Action Plan (UKBAP) Priority Habitats & Species. [online] Available from: https://hub.jncc.gov.uk/assets/98fb6dab-13ae-470d-884b-7816afce42d4 (Accessed August 2022)
[33] Scotlands Environment Web. Available at, https://map.environment.gov.scot/sewebmap/ (Accessed Sept. 2022)

- A1.2.2 Conifer Plantation Woodland;
- A1.3.2 Mixed Plantation Woodland;
- A3.1 Scattered Trees
- B5 Marshy Grassland;
- E2 Flush
- E3.1 Valley Mire;
- G1 Open Standing Water;
- J1.2 Amenity Grassland;
- J2.5 Wall;
- J3.6 Building; and
- J4 Bare Ground

3.4.1 Semi-Natural Broadleaved Woodland

The majority of the site comprises mature semi-natural broadleaved woodland, concentrated north east of the power station and includes dominant birch (*Betula* sp.) with frequent rowan (*Sorbus aucuparia*), hawthorn (*Crataegus monogyna*) and Scot's pine (*Pinus sylvestris*) and occasional ash (*Fraxinus excelsior*), willow (*Salix* sp.) and hazel (*Corylus avellana*) as well as rarely found holly (*Ilex aquifolium*) and sycamore (*Acer pseudoplatanus*). Following the recent removal of densely spread rhododendron (*Rhododendron ponticum*) throughout the woodland, the understorey vegetation density is lacking. However, various native plant species were observed recolonizing the ground, including tutsan (*Hypericum androsaemum*), broadleaf enchanter's night (*Circaea lutetiana*), St John's wort (*Hypericum perforatum*), bramble (*Rubus fruticosus*), wood sorrel (*Oxalis acetosella*), lesser celandine (*Ficaria verna*), woodland figwort (*Scrophularia nodosa*), wood sage (*Teucrium scorodonia*), male scaly fern (*Dryopteris affinis*), deer fern (*Blechnum spicant*) and mosses such as *Polytricum* sp. and *Thuidium* sp.. Frequent small stands of rhododendron are re-establishing in the area (Photo 1). Within the woodland, along the southeast woodland edge, adjacent to the A82 road verge, Rhododendron remains and dominates the understory in this area (Photo 2).

The species composition in the furthest north area of the woodland differs from the majority of the woodland, where birch, rowan and sessile oak (*Quercus petraea*) are the only tree species present. The understorey comprises bracken (*Pteridium* sp.), heath bedstraw (*Galium saxatile*), *Poa* sp., wood fescue (*Festuca altissima*), wavy hair grass (*Deschampsia flexuosa*), tormentil (*Potentilla erecta*), narrow-leaved willow herb (*Epilobium montanum*), bramble, foxglove (*Digitalis purpurea*), soft rush (*Juncus effusus*) and mosses species including clubmoss, *Polytricum* sp. and *Sphagnum* sp..

Wetter ground conditions in the east of the woodland have resulted in predominately birch being present in this area (Photo 5).

A small area of semi-natural broadleaved woodland is present around the carpark in the south east of the site, laying on the opposite side of the A82 (Photo 6) and comprises a mix of ash, birch, alder (*Alnus glutinosa*), willow and rowan. Bramble, knapweed (*Centaurea nigra*), soft rush, deer fern, strawberry (*Fragaria sp.*), comfrey (*Symphytum officinale*), ragwort (*Jacobaea vulgaris*), broad-leaved willowherb (*Epilobium montanum*), carrot flower (*Daucus carota*), plantain (*Plantago* sp.), creeping buttercup (*Ranunculus repens*), nettle (*Urtica dioica*), broad-leaved dock (*Rumex obtusifolius*) and herb Robert (*Geranium robertianum*) form the understorey.

Semi-natural broadleaved woodland habitat likely represents SBL priority habitat Lowland Mixed Deciduous Woodland and the area of birch dominated woodland, likely represents SBL priority habitat Wet Woodland. The woodland on site is therefore considered to be of national (Scotland) importance.

3.4.2 Conifer Plantation Woodland

There are two areas of conifer plantation woodland situated within the semi-natural broadleaved woodland habitat, north of the station (Photo 7). The trees have been obviously planted in these areas and consist of a species composition dominated by semi-mature Sitka spruce (*Picea sitchensis*) and larch (*Larix decidua*). Occasional holly (*Ilex aquifolium*) and rowan were observed. The understorey comprises blaeberry (*Vaccinium myrtillus*), deer fern, wood sage, rhododendron, wood sorrel and moss.

Conifer plantation woodland have little conservation value, however they can provide habitat for a variety of birds, pine marten and mammals. It is therefore considered to be of site importance.

3.4.3 Mixed Plantation Woodland

A strip of mixed plantation woodland is present along the shore of Loch Lomond, in the south east of the site (Photo 8). The trees in this woodland have been obviously planted and consist of semi-mature willow, sycamore, alder, larch and turkey oak (*Quercus cerris*).

Mixed plantation woodland have little conservation value, however it is considered of site importance as it can provide habitat for a variety of birds, pine marten and mammals.

3.4.4 Broadleaved Scattered Trees

Scattered trees are present across the amenity grassland surrounding the power station building and include semi-mature sycamore, ash, Norway maple (*Acer platanoides*) and sweet chestnut (*Castanea sativa*).

Scattered trees, although common and widespread, are considered of site importance as they create commuting and foraging habitat as well as providing resources for nesting birds.

3.4.5 Marshy Grassland

A small area of marshy grassland is present in the south of the site adjacent to the shore of Loch Lomond (Photo 9).

The ground conditions are water-saturated and species include dominant sharp-flowered rush (*Juncus acutiflorus*), with abundant meadowsweet (*Filipendula ulmaria*), mint (*Mentha* sp.), and occasional flag iris (*Iris pseudacorus*) present. Young willow is also present within this habitat.

This habitat likely represents SBL priority habitat Purple Moor-grass and Rush Pasture and is therefore considered to be of national (Scotland) importance.

3.4.6 Flush and Spring

A flush/spring is present within the broadleaved woodland (Target note 1), creating an area of saturated ground (Photo 3). A small stream with little water coming from a railway pipe higher up runs downhill (Target note 2, photo 4).

The plant community around these areas includes a higher moss and fern density and species such as St John’s wort and lesser celandine.

Although not a priority habitat, flush and spring can create damp resting sites for amphibians as well as support invertebrate assemblage providing foraging resources.

3.4.7 Valley Mire

An area of valley mire habitat is present within the east of the woodland. This habitat is fed by water from the valley sides and comprises surface water with very little flow (Photo 10).

Species found within the habitat include pondweed (*Potamogeton* sp.), common water-starwort (*Callitriche stagnalis*) and *Sphagnum* sp.

Valley mire represents SBL priority habitat Lowland Fens and it is therefore considered to be of national (Scotland) importance.

3.4.8 Open Standing Water

Open standing water is located within the site adjacent to the power station building (Photo 11). The water in this location is contained within a cement tailrace, which links Loch Lomond waters to the power station for use when power station is active.

Open standing water within the site is considered to be of negligible value as it is frequently altered by the station and does not provide accessible habitat to any species.

3.4.9 Amenity Grassland

Areas of regularly mown amenity grassland are situated around the power station building (Photo 12).

The species composition is dominated by creeping red fescue (*Festuca rubra*) and sweet vernal grass (*Anthoxanthum odoratum*), with white clover (*Trifolium repens*), dandelion (*Taraxacum officinale*) and springy turf moss (*Rhytidiadelphus squarrosus*) being abundant.

Amenity grassland is considered of site importance as it can provide foraging resources to wildlife.

3.4.10 Wall

An old intact, moss-covered, dry-stone wall is present within the east of the semi-natural broadleaved woodland, extending into one of the coniferous plantation woodland areas (Photo 5).

Walls are not a priority habitat but are of ecological site importance as they could offer suitable shelter and basking habitat for reptiles as well as linear commuting features for a range of species.

3.4.11 Building

The power station building is in the southern portion of the site (Photo 11). It comprises a two-storey concrete building that connects to four separate steel surface penstocks.

Buildings can provide nesting and roosting resourcing for birds and bats and therefore are considered of site importance.

3.4.12 Bare Ground

Road, carpark and other asphalted areas around the station building comprises bare ground (Photo 6).

Bare ground is considered of negligible value.

3.5 Groundwater Dependent Terrestrial Ecosystems

Four wetland areas which could represent potential GWDTE habitats were identified within the site, including wet woodland, marshy grassland, valley mirey and flush/spring.

3.6 Invasive Non-Native Species

Japanese knotweed is present within the site, between the A82 and coastline comprising a single plant and then leading to an approximately 50m long stand (Photo 9).

Frequent small stands of dense rhododendron are present within the woodlands of the site. A large area of dominating rhododendron occurs along the edge of the woodland, by the A82 road in the northeast of the site (Photo 2). Sporadic rhododendron, subject to recent cutting and mulching, is present throughout the remaining woodland.

A stand of white butterbur (*Tussilago alba*) is present within the woodland associated with the Inveruglas carpark in the east of the site.

Japanese knotweed, rhododendron and white butterbur are INNS listed under Schedule 9 of the Wildlife and Countrysite Act (1981)[34] 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.

3.7 Faunal Species and Species Groups

The Faunal Survey Results Map can be found in Appendix F and the Photographic record in Appendix G.

3.7.1 Disclaimer

Faunal species are transient and can move between favoured habitats regularly throughout and between years. This survey provides a snapshot of field signs present in the survey area in September 2022.

3.7.2 Bats

No records of bats were returned from the desk study.

3.7.2.1 Building

The power station building is a two-storey concrete building with a flat concrete roof. There are no obvious gaps or potential roost features. Additionally, the penstocks are connected to the building

[34] The Wildlife and Countryside Act: Schedule 9. Available from : https://www.legislation.gov.uk/ukpga/1981/69/schedule/9 (Accessed September 2022)

turbines which, when working, may be noisy and cause vibrations, and therefore deter potential roosting bats. The building is therefore considered to offer **negligible** suitability as per **Error! R eference source not found.**:' *A structure or a tree with negligible features likely to be used by roosting bats.*' (Photo 11).

3.7.2.2 Trees

A single dead tree located in the eastern area of the broadleaved woodland (NH69673 34861) is considered to have **moderate** suitability for roosting bats due to the presence of PRFs including woodpecker holes in the main stem which provide cavities, in reference to **Error! Reference source n ot found.**: *'A tree with one or more potential roost sites that could be used by bats due their size, shelter, protection, conditions and/or surrounding habitat but unlikely to support a roost of high conservation status.*' (Photo 13).

3.7.2.3 Foraging/Commuting habitat

On-site broadleaved woodland and wetlands as well as Loch Lomond and woodland edges create good foraging and commuting opportunities for bats. These habitats are well linked to additional suitable commuting and foraging habitats for bats in the wider area including woodland, grassland and watercourses. Overall, the site is considered to offer **high** suitability for bats: '*High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland*.'

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

3.7.3 Otter

Two otter field signs identified in 2002 were returned via GMBRC, in Inveruglas Water 500m south of site and in Arklet Water burn approximately 2km east of site.

No evidence of otter was identified during the survey. 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 (Photo 14) although regular human access of the area would dissuade regular establishment of resting areas. Fish are present in Loch Lomond, which together with amphibians, ground nesting birds and small mammals occurring in the riparian and adjacent habitats, offers a wide variety of foraging resources.

Otter are European Protected Species (EPS) and are therefore of International Importance.

3.7.4 Red Squirrel

Fifteen records of red squirrel sightings were returned from the desk study from SSRS, with three records located within the broadleaved woodland on site, associated with the carpark in 2018.

Five potential red squirrel dreys were recorded within the woodland (Photo 15).

The broadleaved and conifer woodland within the site provide suitable habitat for foraging and commuting as well as opportunities for drey creation. Woodland habitats surrounding the site would provide further red squirrel habitat, that is well connected to suitable habitat in the wider landscape.

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

3.7.5 Pine Marten

No records of pine marten returned from the desk study and no evidence of pine marten was identified during the survey.

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

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

3.7.6 Badger

A record of badger in 2013 was returned from GMBRC within a 2km radius of site.

No evidence of badger was recorded during the survey. Overall, although limited by some wet areas, and areas of protruding bedrock, the woodland within the site could provide opportunity for sett creation and foraging resource.

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

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

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

3.7.7 Reptiles

No records of reptiles were returned from the desk study.

The site 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 (Photo 16 and 17). Overall, the site is assessed as providing moderate suitability for reptiles: '*Some suitable vegetation cover offering foraging opportunities, basking sites and refugia*'.

Common reptiles 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.

3.7.8 Amphibians

No records of amphibians were returned from the desk study.

No ponds are present within the site, however areas of wetland exist within the site.

The loch and valley mire habitats 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 site 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 (Photos 16 and 17).

Common toad (*Bufo bufo*) is a SBL priority species and as such is of national (Scotland) importance.

3.7.9 Birds

The records request returned a large number of bird records. Those considered relevant to the site are detailed in Table 3-2:

Table 3-2: Birds returned from the desk study within 2km of the site.

Latin Name	Common Name	BoCC[35]
Turdus merula	Blackbird	Green
Pyrrhula pyrrhula	Bullfinch	Amber
Buteo buteo	Buzzard	Green
Cuculus canorus	Cuckoo	Red
Dendrocopos major	Great Spotted Woodpecker	Green
Motacilla cinerea	Grey Wagtail	Amber
Corvus cornix	Hooded Crow	Green
Delichon urbicum	House Martin	Red
Falco columbarius	Merlin	Red
Cygnus olor	Mute Swan	Green
Pandion haliaetus	Osprey	Amber
Motacilla alba	Pied Wagtail	Green
Turdus philomelos	Song Thrush	Amber
Accipiter nisus	Sparrowhawk	Amber

Bird species encountered during the survey included:

- Jay (*Garrulus glandarius*), pied wagtail, chiffchaff (*Phylloscopus collybita*) and buzzard which are on the BoCC green list and all are of local importance.
- House martin which is on the BoCC red list and is of national importance

Suitable habitat for nesting, overwintering and foraging for a range of birds is present within the woodland, scattered trees and power station building, within the site. House martin were observed nesting under the eaves of the power station building.

All wild bird species are protected under the Wildlife and Countryside Act 1981.

3.7.10 Other Observations

A disused mammal burrow was present within the woodland (Photo 18). The burrow lacked any diagnostic evidence to determine use.

[35] Birds of Conservation Concern 5, available at: https://www.bto.org/sites/default/files/publications/bocc-5-a5-4ppsinglepages.pdf

4 POTENTIAL IMPACTS, FURTHER SURVEY AND LICENSING

4.1 Potential Impacts

Without avoidance and mitigation strategies, the following impacts could be reasonably predicted as a result of the proposed development:

- Loss of SBL Priority Habitats if wet woodland, lowland mixed deciduous woodland and lowland fens are affected by the establishment of the site, temporary access route and rock storage area.
- Loss and fragmentation of habitats considered of site importance to facilitate the establishment of the site, temporary access route and rock storage area.
- Degradation, impacting source or loss of potential Ground Water Dependent Terrestrial Ecosystems such as wet woodland, marshy grassland, valley mirey and flush/spring.
- Pollution of wetland habitats and/or standing water via silted surface water run-off or a fuel or oil spill.
- Spread of invasive non-native species Japanese knotweed, rhododendron and white butterbur.
- Destruction of a potential bat roost if the tree with PRF of moderate suitability is to be felled or undergo any arboricultural works to facilitate the development.
- Destruction of red squirrel dreys if trees with potential dreys are to be felled.
- Disturbance or death of red squirrels if works are to be undertaken during sensitive breeding season (April-September)
- Disturbance of active bird nests during vegetation removal and construction if works take place between March and September.
- Death or injury of reptiles and amphibians if stone wall or boulder refugia are removed, especially during the hibernation period.
- Loss and fragmentation of foraging and commuting habitats for bats, otter, red squirrel, pine marten, amphibian, reptile and birds through removal of the woodland habitats.
- Disturbance of foraging and commuting nocturnal and crepuscular species such as bats, otter and pine marten as a result of lighting, noise and vibration if works are conducted outside of daylight hours.
- The possibility of spreading invasive plants and fauna between Loch Lomond and Loch Sloy dependant on the project design and pump storage function.

Some positive potential impacts might include:

- Continuation of INNS management aiming for eradication of Japanese knotweed, rhododendron and white butterbur.
- Woodland management aiming to promote native composition and reduce species known to host pathogens such as *Phytophthora ramorum*[36]

[36] Ramorum disease. Available at: https://www.forestresearch.gov.uk/tools-and-resources/fthr/pest-and-disease-resources/ramorum-disease-phytophthora-ramorum/ (Accessed Sept. 2022)

4.2 Additional Survey Work and Licensing

4.2.1 Habitats/GWDTE/INNS

4.2.1.1 GWDTE

Wet woodland, marshy grassland, valley mire and flush/spring on site may be indicative of GWDTE. Scottish Environmental Protection Agency (SEPA) guidance states that all potential GWDTEs within 250m of excavations deeper than 1m, and within 100m of excavations shallower than 1m, should be identified to assess the risks to their integrity.

Therefore, further investigation of these habitats may be required including a hydrogeological risk assessment[34] of the proposed development in relation to groundwater. National Vegetation Classification (NVC) survey of these habitats may reveal floristic indicators and so if targeted botanical study is required to inform the hydrogeological risk assessment, then this would be scheduled for May-July to capture data on flowering plants.

4.2.1.2 INNS

Maintaining baseline data on INNS (rhododendron, Japanese knotweed and white butterbur) is suggested to fully inform future management of these species, aiming to eradicate them from site.

4.2.2 Protected Species

4.2.2.1 Bats

If the tree categorised as offering moderate suitability for roosting bats is to be felled or undergo any arboricultural works, a detailed inspection will be required to identify presence/absence of roosting bats and inform any mitigation, compensation or licensing requirements ahead of works.

4.2.2.2 Red Squirrel

A targeted squirrel survey of the woodland within and surrounding the site to locate any existing or new dreys within the site is required ahead of any works. If the trees hosting drey features are to be felled, further survey works will be required to inform any mitigation, compensation or licensing requirements.

4.2.2.3 Otter, Badger, Pine marten, Reptiles, Amphibians and Birds

No evidence of otter, pine marten, badger, reptiles and amphibians was identified during the survey, however suitable habitat exists for these species. Therefore, no further surveys are required other then annual updates and/or pre-works checks for these species.

4.2.2.4 Others

If works are to affect the disused mammal burrow, a survey to identify use is recommended.

4.3 Mitigation

The following broad mitigation is recommended to avoid and/or minimise the above potential impacts, based on the current level of information available for the site:

- Retention of SBL priority habitats lowland broadleaved, wet woodland and lowland fen where possible. If not feasible, compensatory measures should be undertaken which may include habitat creation and enhancement of retained habitats.
- If extending the site compound to the north of the power station, it is suggested that the area not designated as Native Woodland is considered as shown in red within Figure 2 below. This

would avoid disrupting the main wetland features, retain the core native woodland, avoid the steeper topography of the area and reduce fragmentation of the wider woodland habitats.

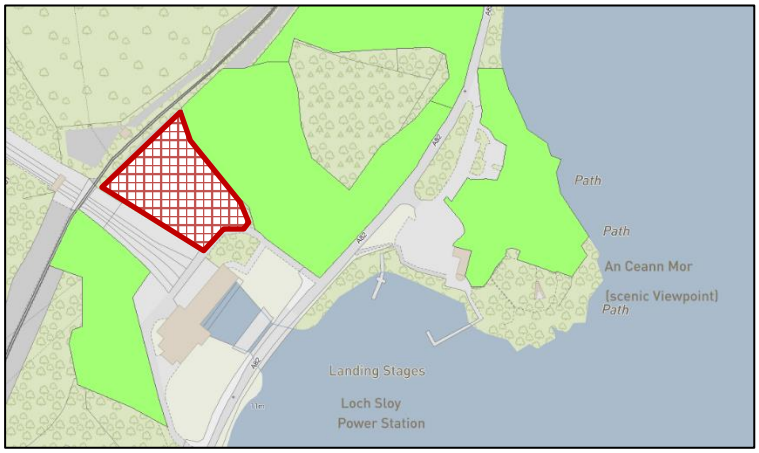


Figure 2: Red hatched area of undesignated woodland

- Ground works should be designed to avoid effects on potential GWDTEs and wet woodland. By using the area shown in Figure 2, it is assumed that minimal or no impact to wetland habitats would be the result.
- The project design for pumping water from this location westwards, should factor in the risks of spreading invasive plants across land and transferring aquatic fauna from Loch Lomond to Loch Sloy.
- A pre-works check of the site for otter, red squirrel, pine marten, badger, amphibians, reptiles and nesting birds should be completed prior to any works commencing, by a suitably qualified ecologist.
- All contractors should be made aware of the potential presence of protected species (i.e. otter, red squirrel, birds) on site and in the wider landscape via a tool box talk by a suitably trained ecologist or Ecological Clerk of Works (ECoW).
- SEPA's Pollution Prevention Guidelines should be implemented.
- An INNS management plan should be designed and implemented to avoid the spread of and aim to eradicate rhododendron, Japanese knotweed and white butterbur form the site.
- Vegetation clearance should be scheduled to commence outside of the breeding bird and red squirrel season (March to September inclusive). Any works to the station building should be done outside nesting bird season where possible.
- Once the area to be converted to site compound has been defined, any removal of potential reptile and amphibian refugia (such as piles of stone/drystone walls etc) should be avoided within the hibernation period (November to March). Otherwise, removal and re-location will need to be carefully conducted under a watching brief by a qualified ecologist.
- Any lighting required during works will be fitted with shades to reduce light spill outside the working area. Use of lighting within the works should be directed away from woodland and water.
- Lighting within the warm white spectrum (ideally <2700Kelvin) should be adopted as it is less harmful to wildlife. Further guidance on bat friendly lighting is available at: https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/
- High impact works such as ground works causing noise and vibration should be limited to daylight hours to avoid disturbance to nocturnal species.
- Any excavations created during works should not be left open for mammals to become trapped. Appropriate covers should be fitted at the end of every working day. At the very least, a shallow sloping edge or some form of ramp should be placed in the excavations to allow any animals to climb out.

- Following completion of any temporary use of area resulting in habitat loss, then habitat restoration should be designed and implemented.

4.4 Opportunities for Biodiversity Gain

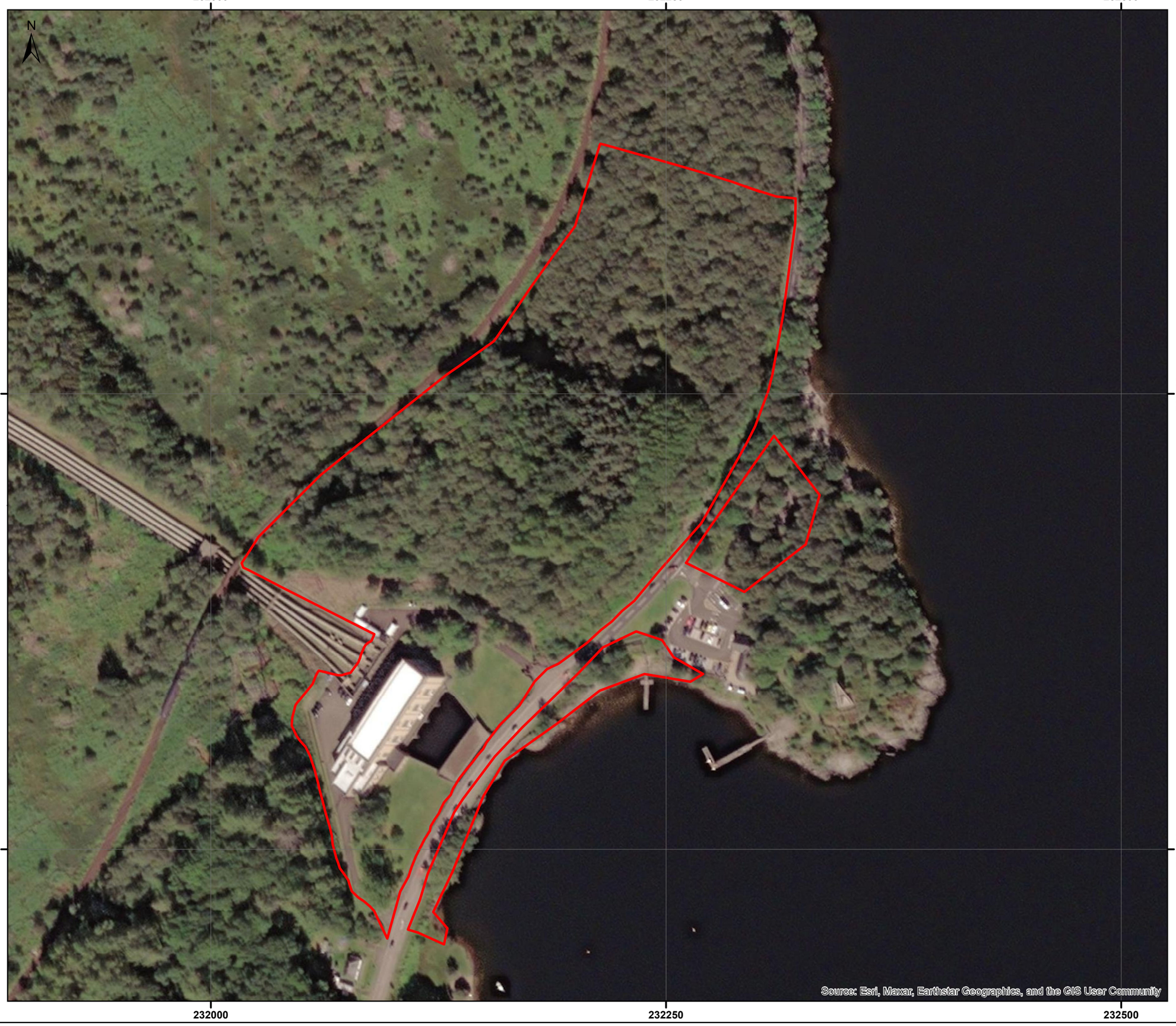
The project could design and implement a habitat management plan for wider site woodland restoration and to promote healthier ecosystems. Sourcing plants, seeds, trees of local provenance give the best outcome in terms of biodiversity.

The project could increase roosting resources for bats and nesting resources for birds through purpose-built and installed bat boxes and bird boxes within the surrounding habitats.

Woodpiles may be formed with the felled trees in the remaining woodland to encourage invertebrates and fungi. These features may also provide hibernation or refugia opportunities for reptile and amphibians.

It is recommended that any vegetation planting should include a wide range of native species of local provenance, including berry or nectar producing plants that encourage invertebrates and, therefore, bats, and to provide additional cover and foraging opportunities for badgers to utilise.

A SITE BOUNDARY



Legend

Site Boundary

Do not scale this map

Client
ASH Design + Assessment

Project
Sloy Pumping Station

Title
Site Plan

Status
FINAL

Drawing No.	Revision	Date
176783-GIS003	-	15 Sep 2022
Drawn	**Checked**	**Approved**
SK	MZ	DB

Scale
1:2,000 @A3
0 10 20 40 60 Metres

Rev	Date	Amendment	Initials
-	-	-	-

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B SUMMARY OF PROTECTED SPECIES LEGISLATION

European Protected Species – all bats & otter

European Protected Species (EPS) are protected under the Conservation (Natural Habitats &c.) Regulations 1994 (the "Habitat Regulations") as amended. Under this legislation it is an offence to deliberately or recklessly:

- capture, injure or kill such an animal;
- harass an animal or group of animals;
- disturb an animal while it is occupying a structure or place used for shelter or protection;
- disturb an animal while it is rearing or otherwise caring for its young;
- obstruct access to a breeding site or resting place, or otherwise deny an animal use of a breeding site or resting place;
- disturb an animal in a manner or in circumstances likely to significantly affect the local distribution or abundance of the species;
- disturb an animal in a manner or in circumstances likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young;
- disturb an animal while it is migrating or hibernating;
- possess, control, transport, sell or exchange specimens of any animal listed on Annex IV of the Habitats Directive. This applies to living or dead specimens and to their derivatives.

It is an offence of strict liability to damage or destroy a breeding site or resting place of such an animal. These sites and places are protected even when the animal isn't present. For example, great crested newt ponds are protected all of the time as long as it can be shown that the newts use the ponds some of the time.

A licence may be issued to permit the otherwise unlawful activities listed above if these three tests are satisfied:

- There must be a licensable purpose which includes 'preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;'
- There is 'no satisfactory alternative'; and
- The derogation (i.e. any permission/licence granted) is 'not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range'.

Red Squirrel & Pine Marten

Red squirrel and pine marten are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Subject to certain exceptions, it is an offence to intentionally or recklessly:

- kill, injure or take (capture) an individual;
- damage, destroy or obstruct access to any structure or place which they use for shelter or protection;
- disturb an individual while it is occupying a structure or place which it uses for that purpose; or to
- possess or control, sell, offer for sale or possess or transport for the purpose of sale any live or dead animal or any derivative of such an animal.

Knowingly causing or permitting any of the above acts to be carried out is also an offence.

In some cases licences may be issued by NatureScot to enable certain otherwise illegal activities to take place for social, economic or environmental reasons (including development) as long as:

- the licensed activity will contribute to significant social, economic or environmental benefit;
- there is no satisfactory alternative; and
- there will be no significant negative impact on the conservation status of the species.

Badger

Badgers are protected under the Protection of Badgers Act (1992) (as amended). Offences under the Act include:

- wilfully taking, injuring or killing a badger;
- cruelty to a badger;
- intentional or reckless interference with a badger sett;
- sale or possession of a badger; and
- marking or ringing of a badger.

Interfering with a badger sett includes:

- damaging or destroying a sett or any part of it;
- obstructing access to a sett;
- disturbing a badger while it is in a sett; and
- causing or allowing a dog to enter a badger sett.

Where an offence is committed the individual (as well as the body corporate, Scottish partnership or, as the case may be, unincorporated association) is guilty of the offence and is liable to be proceeded against and punished accordingly.

Licences can only permit someone to ‘interfere’ with a badger sett for the purpose of development. A licence cannot permit the removal, translocation or killing of badgers for the purpose of development.

Interference primarily means anything that might:

- disturb any badger in a sett; and
- damage or block the tunnels that radiate from a sett’s entrances.

Licences aren’t generally issued during the breeding season (30 November to 1 July). Activities that necessarily involve disturbance should be scheduled to take place outside of this period.

Birds

All wild bird species in the UK are protected under the Wildlife and Countryside Act 1981 (as amended), with species listed on Schedules A1, 1 and 1A afforded additional protection.

For any wild bird species, it is an offence to intentionally or recklessly:

- kill, injure or take a bird;
- take, damage, destroy or interfere with a nest of any bird while it is in use or being built;
- obstruct or prevent any bird from using its nest;
- take or destroy an egg of any bird;
- possess or control a living or dead wild bird; and
- possess or control an egg of a wild bird (or any such derivatives).

For any wild bird species listed on Schedule 1, it’s an offence to disturb:

- any bird while it is building a nest;
- any bird while it is in, on, or near a nest containing eggs or young;
- any bird while lekking; and
- the dependent young of any bird.

For any wild bird species listed on Schedule 1A, it's an offence to intentionally or recklessly harass any bird.

For any wild bird species listed on Schedule A1, it's an offence to intentionally or recklessly take, damage, destroy or interfere at any time with a nest habitually used by any bird.

Licences cannot be issued for the purpose of development in relation to any of the above offences.

Common Lizard/Slow Worm/Adder

Common lizards/Slow worms/Adders are partially protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under the legislation you are not permitted to intentionally or recklessly permit or cause the killing and injury of individuals.

Licences permitting otherwise unlawful acts in relation to the above are not available for development purposes.

Invasive Non-Native Species (Plants)

Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to plant, or otherwise cause to grow, any plant in the wild at a location outside its native range.

'Native range' is defined in the 1981 Act as, "the locality to which the animal or plant of that type is indigenous, and does not refer to any locality to which that type of animal or plant has been imported (whether intentionally or otherwise) by any person."

The Scottish Governments Non-natives Code of Practice[37] defines 'in the wild'. Just about everywhere is wild except for:

- arable and horticultural land;
- improved pasture;
- settlements; and
- private and public gardens.

In exceptional circumstances it may be possible to obtain a licence from NatureScot to permit the above offence.

[37] https://www.gov.scot/publications/non-native-species-code-practice/

C GEOGRAPHICAL LEVEL OF IMPORTANCE OF ECOLOGICAL FEATURES

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; a Category A internationally important bryophyte assemblage[38].
National (UK)	Sites of Special Scientific Interest/Areas of Special Scientific Interest; National Nature Reserves; Nature Conservation Review Sites; Marine Conservation Zones (UK offshore).	An area of habitat fulfilling the criteria for designation as an SSSI/ASSI or MCZ; a habitat area that is critical for a part of the life cycle of a nationally important species.	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 squares); a Schedule 5 (animal) or Schedule 8 (plant) species included in the Wildlife and Countryside Act 1981; any species protected under national (UK) legislation where there is the potential for a breach of the legislation; a Category A nationally important bryophyte assemblage[39]; a species that is Vulnerable, Endangered or Critically Endangered in The Vascular Plant Red Data List for Great Britain[40].
National	National Parks; Marine Protected Areas; Marine Consultation Areas.	Habitats of principal importance for biodiversity in the relevant countries[41], including; Scottish Biodiversity List (SBL) Priority Habitats and Priority Marine Features (PMFs)[42].	Species of principal importance for biodiversity in the relevant countries[43], including; SBL Priority Species and PMFs.
Regional	Regional Parks.	Regional Local	A species that is

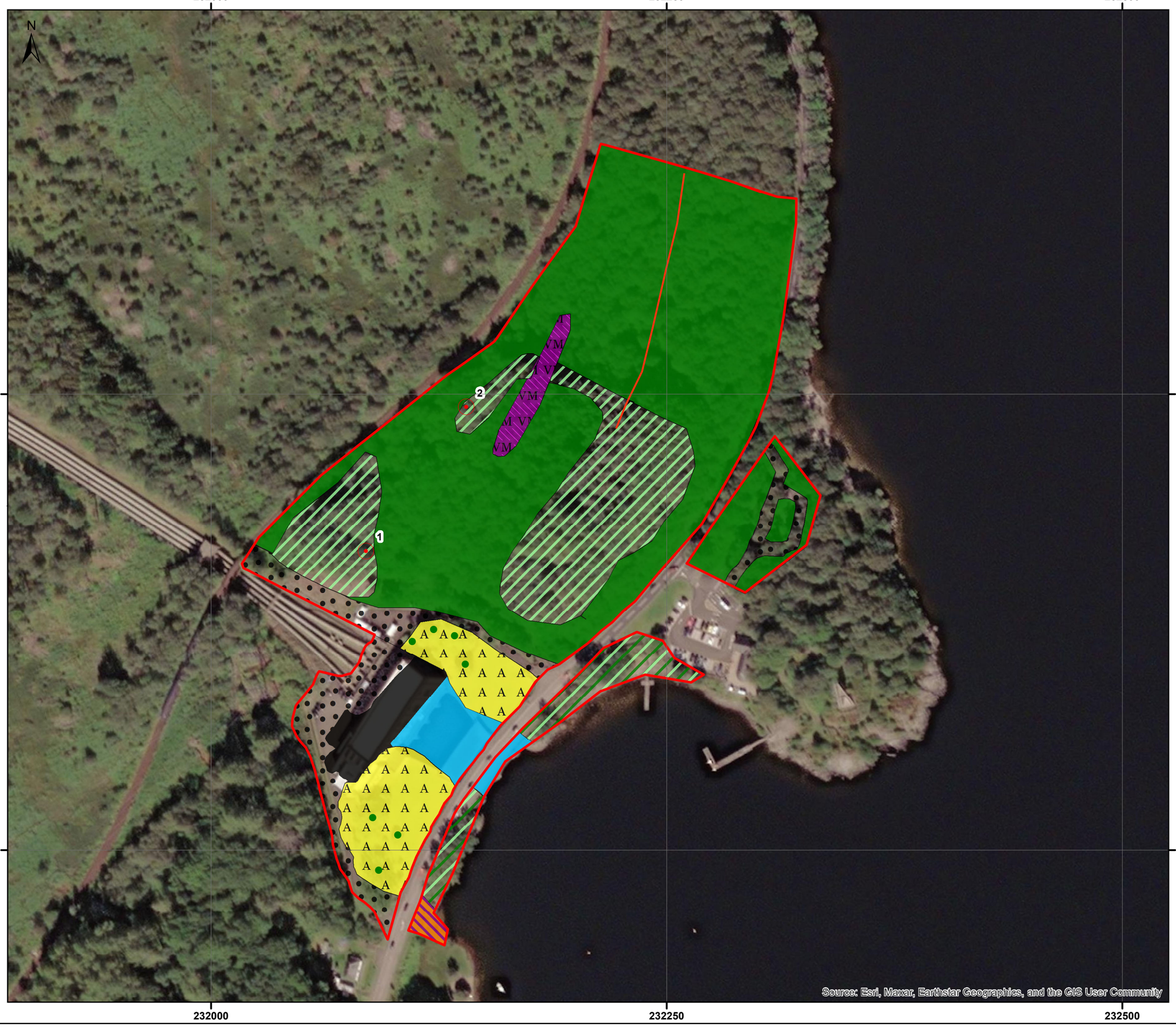
[38] Averis, A.B.G, Genney, D.R, Hodgetts, N.G, Rothero, G.P. & Bainbridge, I.P. 2012. Bryological assessment for hydroelectric schemes in the west highlands – 2nd edition. Scottish Natural Heritage Commissioned Report No. 449b
[39] Averis, A.B.G, Genney, D.R, Hodgetts, N.G, Rothero, G.P. & Bainbridge, I.P. 2012. Bryological assessment for hydroelectric schemes in the west highlands – 2nd edition. Scottish Natural Heritage Commissioned Report No. 449b
[40] 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 at: https://hub.jncc.gov.uk/assets/cc1e96f8-b105-4dd0-bd87-4a4f60449907 (Accessed January 2022)
[41] These are all the habitats that were identified as requiring action in the UK Biodiversity Action Plan and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework, including any additions.
[42] 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.
[43] 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
		Biodiversity Action Plan habitats noted as requiring protection.	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; Local Wildlife Sites.	County LBAP habitats noted as requiring protection; semi-natural, ancient woodland >0.25ha in extent.	A species that is included in the County LBAP; an assemblage of species that are scarce at the county level.
Local		Semi-natural, ancient woodland <0.25ha in extent;; 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 supported by the GB Invasive Non-native Species Strategy (2015); legally controlled species under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended by the relevant country legislation).

D GEOGRAPHICAL LEVEL OF IMPORTANCE OF ORNITHOLOGICAL FEATURES

Level of Importance	Assessment Criteria		
	Legal Protection	**Conservation Status**	**Population Size**
International	Any species within Annex 1 of the EU Birds Directive	Any species which is listed as Critically Endangered or Endangered on the IUCN Red List	Supporting greater than 1% of the EC population
National (UK)	Any species within Schedule 1 of the Wildlife and Countryside Act	Any species on the BoCC Red List	Supporting greater than 1% of the UK population
National (England)		Any species that is listed as Species of Principal Importance for Conservation;; any species on the BoCC Red List	Supporting greater than 5% of the English population
National (Scotland)		Any species on the Scottish Biodiversity List	Supporting greater than 5% of the Scottish population
National (Ireland & Northern Ireland)		Any species on the Birds of Conservation Concern in Ireland 2014-19 (BoCCI)	Supporting greater than 5% of the Irish population
National (Wales)		Any species in the Section 7 list of Species of Principal Importance for Conservation; Any species considered to be in decline in The State of Birds in Wales 2011 (SBW)	Supporting greater than 5% of the Welsh population
Regional		Any species on the BoCC Amber List	Supporting greater than 0.5% of the UK population
County		Any species that is listed as a Priority Species in the LBAP	Supporting greater than 0.05% of the UK population
Local		BoCC Green List; or species with no conservation concern; common and widespread throughout the UK	Supporting less than 0.05% of the UK population

E PHASE 1 HABITAT CLASSIFICATION PLAN



Legend

- Site Boundary

JNCC Code

- A1.1.1 Semi-Natural Broadleaved Woodland
- A1.2.2 Conifer Plantation Woodland
- A1.3.2 Mixed Plantation Woodland
- A3.1 Broadleaved Scattered Trees
- B5 Marshy Grassland
- E3.1 Valley Mire
- G1 Open Standing Water
- J1.2 Amenity Grassland
- J2.5 Wall
- J3.6 Building
- J4 Bare Ground
- Target Note

Note:
Target Note 1: Flush/Spring
Target Note 2: Stream

Do not scale this map

Client
ASH Design + Assessment

Project
Sloy Pumping Station

Title
Phase 1 Habitat Map

Status
DRAFT

Drawing No.	Revision	Date
176783-GIS001	-	13 Sep 2022
Drawn	**Checked**	**Approved**
SK	MZ	DB

Scale
1:2,000 @A3
0 10 20 40 60 Metres

Rev	Date	Amendment	Initials
-	-	-	-

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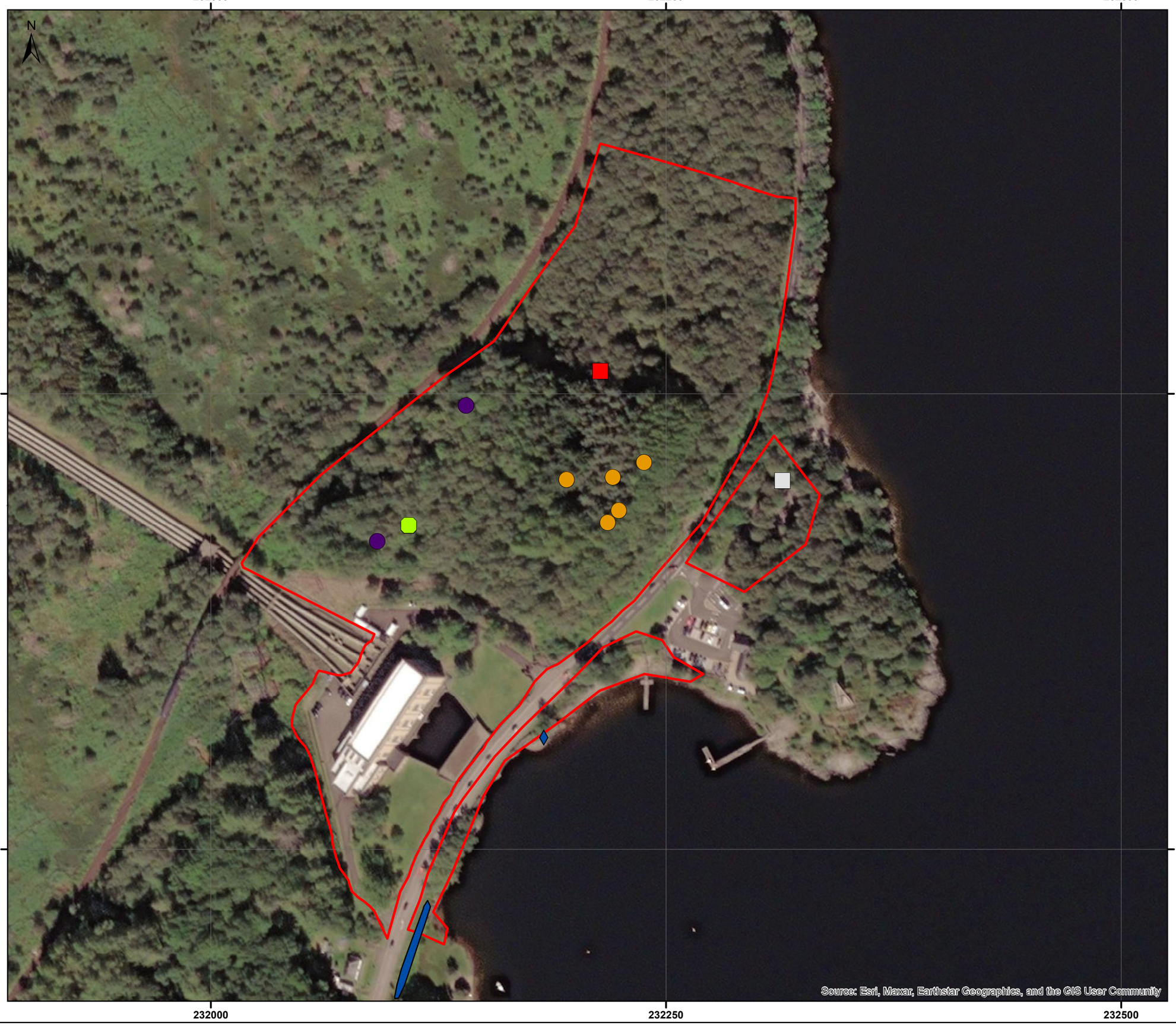
W: www.envirocentre.co.uk

F FAUNAL RESULTS PLAN



Legend

- Site Boundary
- Tree with PRF - Moderate
- Potential Squirrel Drey
- Mammal Burrow
- Reptilte & Amphibian Hibernation Refugia

Invasive Non Native Species

- Japanese Knotweed
- White Butterbur

Do not scale this map

Client
ASH Design + Assessment

Project
Sloy Pumping Station

Title
Ecological Constraints Plan

Status
DRAFT

Drawing No.	Revision	Date
176783-GIS002	-	14 Sep 2022
Drawn	**Checked**	**Approved**
SK	MZ	DB

Scale
1:2,000 @A3
0 10 20 40 60 Metres

Rev	Date	Amendment	Initials
-	-	-	-

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G PHOTOGRAPHIC RECORD

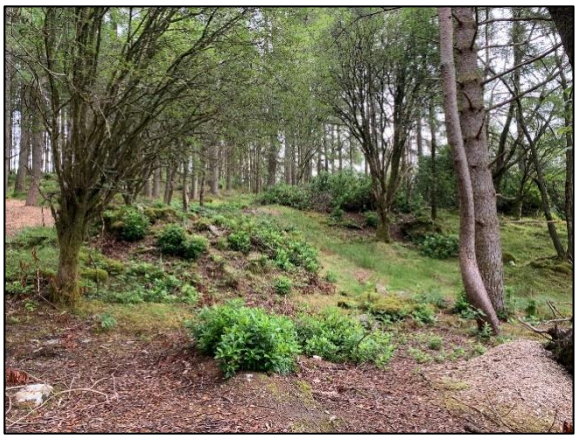

Photo 1: Semi-Natural broadleaved woodland with small rhododendron stands

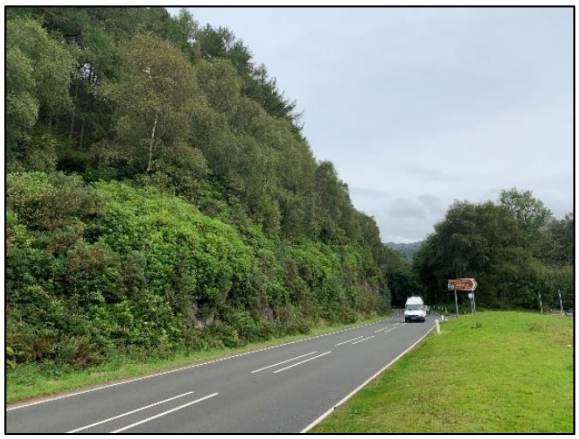

Photo 2: Large rhododendron stands in semi-natural broadleaved woodland by road verge

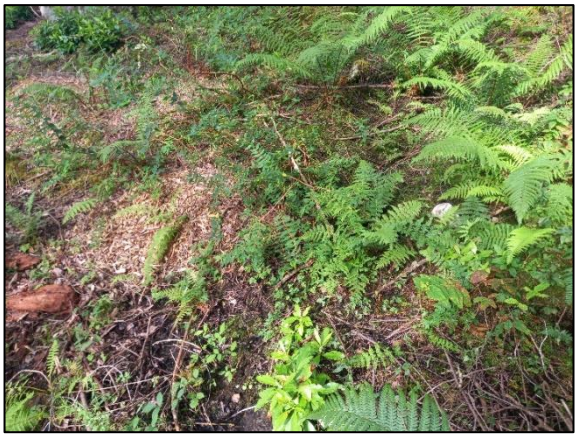

Photo 3: Natural spring/flush in woodland

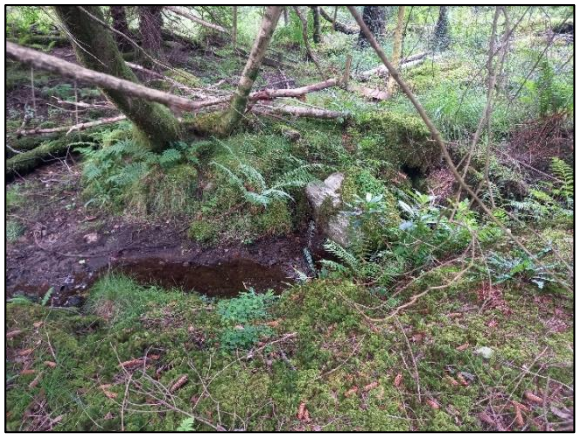

Photo 4: Small stream in woodland

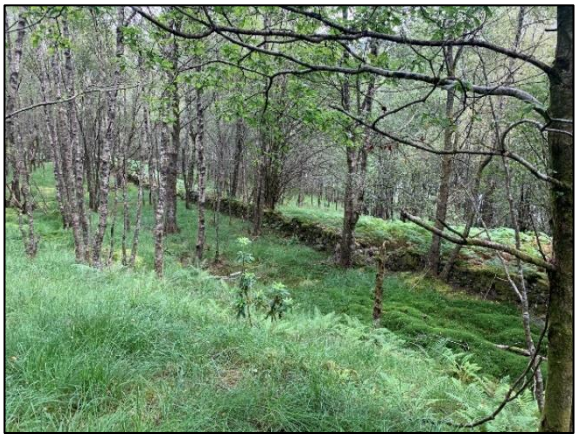

Photo 5: Birch wet woodland and stone wall

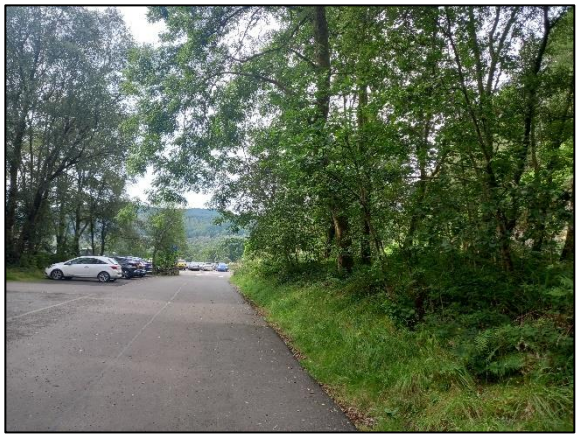

Photo 6: semi-natural broadleaved woodland in parking area

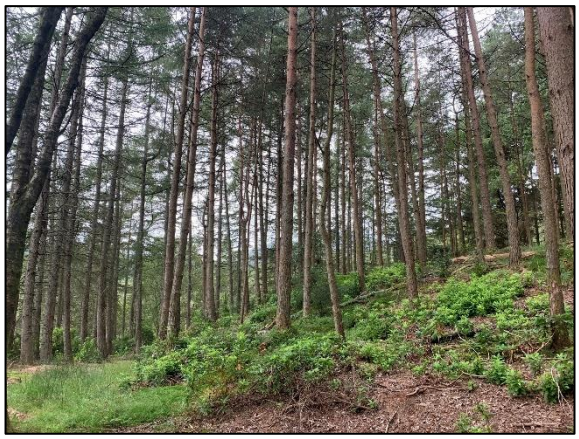

Photo 7: Conifer plantation woodland

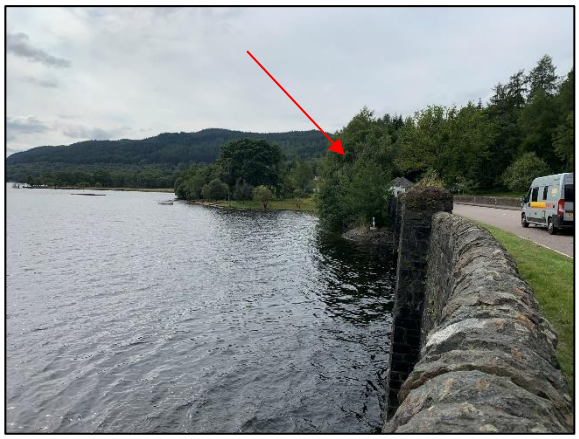

Photo 8: Mixed plantation woodland strip along Loch Lomond (red arrow)

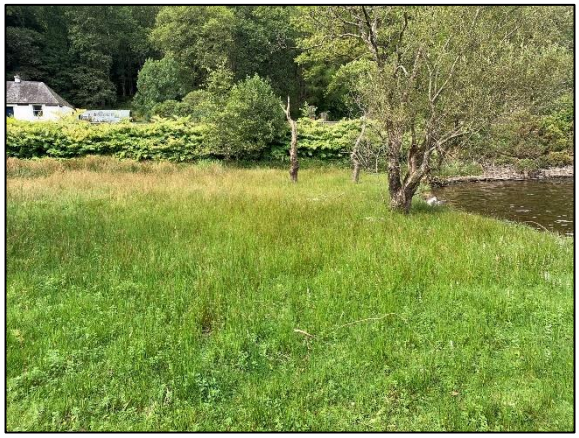

Photo 9: Marshy grassland adjacent to Loch Lomond and Japanese knotweed in the background

Photo 10: Valley mire within woodland

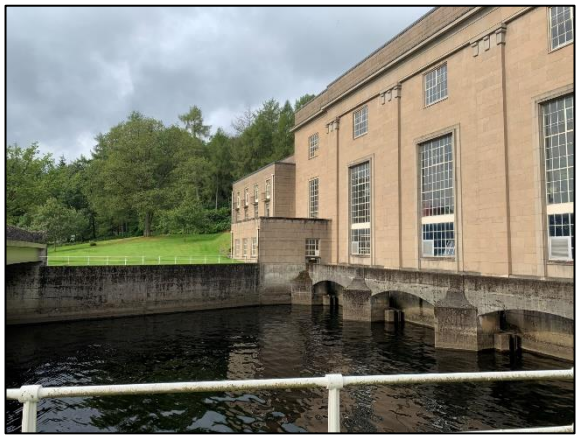

Photo 11: Open standing water and power station building

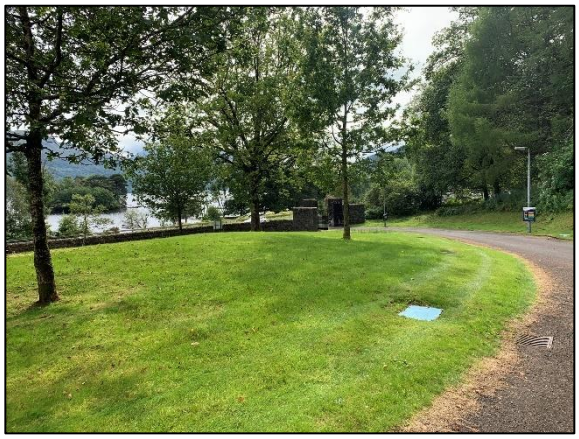

Photo 12: Amenity grassland with scattered trees

Photo 13: Woodpecker holes on dead tree providing moderate PRF for bats

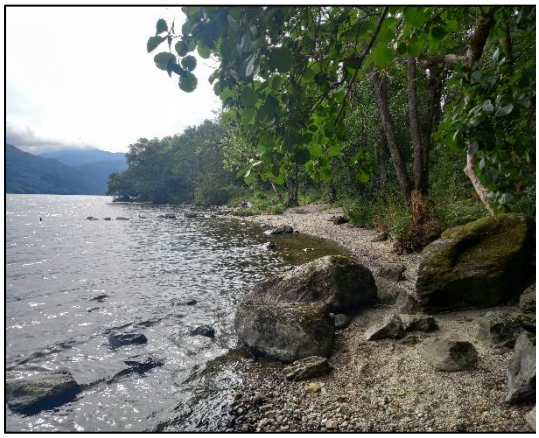

Photo 14: Waters edge of Loch Lomond with riparian woodland creating good habitat for otter

Photo 15: Potential red squirrel drey

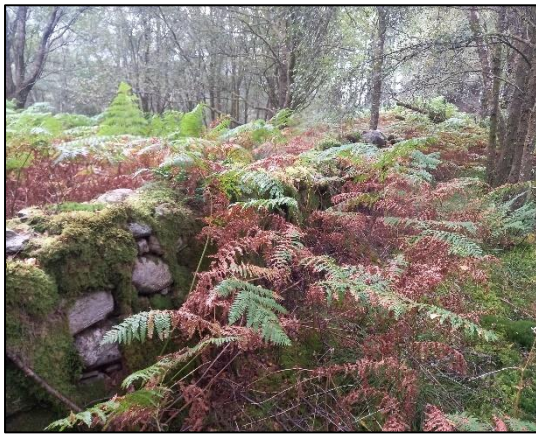

Photo 16: Stone wall offering reptile and amphibian hibernation habitat

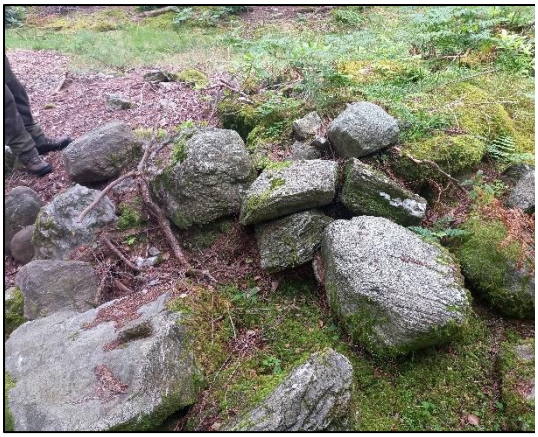

Photo 17: Boulders offering reptile and amphibian hibernation habitat

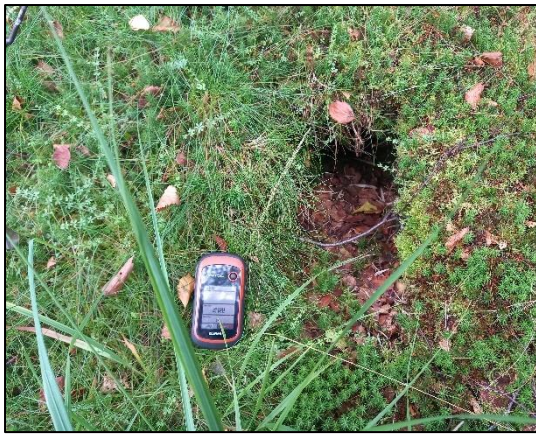

Photo 18: Mammal burrow