Kilfinnan Road
Ecological Appraisal

September 2023

CONTROL SHEET

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EnviroCentre Limited Office Locations:

Glasgow **Edinburgh** **Inverness** **Banchory**

Registered Office: Craighall Business Park 8 Eagle Street Glasgow G4 9XA
Tel 0141 341 5040 info@envirocentre.co.uk www.envirocentre.co.uk

EnviroCentre Limited is registered in Scotland under no. SC161777.

VAT no. GB 348 6770 57.

EXECUTIVE SUMMARY

EnviroCentre Limited were commissioned by SSE Renewables to conduct an Ecological Appraisal to inform a planning application for proposed road upgrade works required to facilitate access in relation to the consented Coire Glas Pumped Storage Scheme (CGPSS). The aim of the study is to identify any ecological constraints which need to be considered within design and execution of proposed road upgrade works.

The site is approximately 4.6km long and comprises the existing minor public road, known as 'Kilfinnan Road' from the junction with the A82 in the east to the entrance of Clunes Forest, to the south west of Kilfinnan (farm). The proposed project involves creation of a temporary diversion road to maintain local access during the construction period; construction of new sections of road; a new bridge across the Kilfinnan Burn; a working construction corridor along the route for maintained access, development activity, spoil and materials storage, and site compounds.

The following Phase 1 habitats of were identified within the site; Broadleaved Semi-natural Woodland, Coniferous Plantation Woodland, Dense Scrub, Improved Acid Grassland, Semi-improved Neutral Grassland, Improved Grassland, Marshy Grassland, Bracken Continuous, Dry Dwarf Shrub Acid Heath, Wet Dwarf Shrub Heath, Acid/neutral Flush, Basic Flush, Standing Water, Running Water, Buildings and Bare Ground.

Juniper which is a priority species is present within the broadleaved woodland understory and scattered through the bracken and dry dwarf shrub heath habitats. Rhododendron, an Invasive Non-native Species is present within the site along the roadside and scattered on the slope to the north of Kilfinnan Road.

There are several wetland habitats within and adjacent to the site which potentially represent ground water dependent terrestrial ecosystems, however the hydrogeological setting indicates they are more likely surface water derived.

There have been direct sightings, or field evidence identified for otter, bats, red squirrel, pine marten, various bird species and reptiles within the site. There is an otter couch used irregularly c.100m south of the site. Kilfinnan Bridge is host to a transitional/non-breeding day roost for up to three pipistrelle bats.

Key mitigation includes; re-instatement of habitats following construction, compensatory planting and habitat creation to off-set permanent habitats loss, pollution prevention, biosecurity measures, pre-checks for protected species ahead of site clearance and employment of an Ecological Clark of Works to audit adherence to mitigation.

If mitigation is employed then the project is considered unlikely to result in permanent adverse impacts to the notable and protected ecological features identified and there will be no overall loss in conservation status. Biodiversity gains will be delivered through the enhancement of existing habitats (INNS removal and supplementary planting on woodland edges) and optimising management of retained and re-created habitats.

A derogation licence may be required for disturbance to roosting bats during construction of the new bridge adjacent to Kilfinnan Bridge. The bridge should be retained for use by roosting bats in perpetuity however if this is not viable, a licence for roost destruction will be required and compensatory roosts provided. Further hibernation survey is recommended for the barn at North Laggan.

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1 INTRODUCTION

1.1 Terms of Reference

EnviroCentre Limited were commissioned by SSE Renewables to conduct an Ecological Appraisal to inform a planning application for proposed road upgrade works required to facilitate access in relation to the consented Coire Glas Pumped Storage Scheme (CGPSS).

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.

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 Project Background and Description

Consent for CGPSS was issued in October 2020 (ref. ECU00000577) via Section 36 of the Electricity Act 1989, with a deemed planning permission under Section 57(2) of the Town and Country Planning (Scotland) Act 1997. The permission included access from the A82 east of the Site along Kilfinnan Road and allows for the upgrade of the existing road. However, ongoing design development has identified a preferred layout, which would provide certainty at this stage of being able to accommodate all vehicle movements expected to be required for the delivery of the project. This would require several departures from the current alignment, which although relatively minor, are deemed by The Highland Council (THC) to sit beyond the remit of upgrades allowed by the current consent, and therefore a separate planning application is to be required.

The project underwent Environmental Impact Assessment (EIA) screening in 2022 with the THC concluding that an EIA would be required. The Scoping Report requested that ecology was scoped out. This scoping was based on the findings of the EIA[1] conducted to support the original planning consent, which found no significant impacts, and a Preliminary Ecological Appraisal[2] (and further targeted survey[3]) conducted in 2021 which identified no significant changes to the conditions on site and no likely significant effects which could not be mitigated. It was agreed ecology could be scoped out within the Scoping Response (22/05277/SCOP) and subsequent email communications with THC[4]. Updated protected species and habitat surveys were requested within the councils scoping response to ensure a valid baseline to inform mitigation plans.

The proposed road upgrade will involve the following works:

- Widening of the junction with the A82;
- Creation of a temporary diversion road to maintain local access during the construction period;
- Construction of new sections of road where the existing road geography and physical constraints are not suitable for upgrade;
- A new bridge across the Kilfinnan Burn;
- A working construction corridor along the route for maintained access, development activity, spoil and materials storage, and site compounds;

[1] Available at: https://www.sserenewables.com/hydro/coire-glas/ (Accessed 16/07/2023)
[2] EnviroCentre (2021) Report Number 9531: *Coire Glas, Kilfinnan Road Preliminary Ecological Appraisal*.
[3] EnviroCentre (2021) Report Number 9642 *Kilfinnan Bat Survey*.
[4] Email from Karen Couper to Mhairi Mackintosh dated 12th May 2023

- Verge widening and localised works to tie in access on the existing road; and
- Road upgrades including modifications to the horizontal and vertical alignment, installation of drainage and associated earthworks.

1.3 Scope of Report

The aim of the study is to identify any ecological constraints which need to be considered within design and execution of proposed road upgrade works. The main objectives were as follows:

- Review existing ecological data pertaining to the site;
- Identify and describe the baseline conditions of the site;
- Identify impacts to habitats and species as a result of the proposed works;
- Detail mitigation to be implemented to avoid or minimise any predicted negative impacts, alongside any monitoring required;
- Provide details of biodiversity enhancements to be delivered as a result of the project; and
- Advise on protected species licence requirements.

1.4 Site Description

The site is approximately 4.6km long and comprises the existing minor public road, known as 'Kilfinnan Road' from the junction with the A82 in the east (OS Grid Reference NN 3000 9861) to the entrance of Clunes Forest, to the south west of Kilfinnan (farm). As well as the existing road, the site encompasses areas of predominantly agricultural land and areas of plantation forestry. There are a number of private residential homes, holiday lodges and farm buildings within and adjacent to the site. The Kilfinnan Burn flows perpendicularly across the site along with several smaller water courses running off the eastern slopes of Ben Tee and the southern slopes of Meall nan Dearcag. The Caledonian Canal and Loch Lochy are located to the south and west of the site and north of the site is a mix of woodland, pastoral land and moorland.

The bedrock underlying the site is Great Glen Fault Zone Cataclasite, a metamorphic rock formed by crushing of original rock material within the fault zone. Superficial deposits include of Glaciofluvial Deposits, Alluvial Fan Deposits and Aluuvium and River Terrace Deposits comprised of gravel, sand, silt and clay. There are also areas lacking in superficial deposits entirely.

1.5 Legislation, Policy and Guidance

Legislation, policy and guidance relating to wildlife and biodiversity of relevance to this report includes:

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (The Habitats Directive);
- Water Framework Directive (WFD) 2000/60/EC of the European Parliament;
- Wildlife and Countryside Act 1981 (as amended) (WCA);
- The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended);
- National Planning Framework 4[5];
- Scottish Biodiversity List (SBL)[6]
- Scotland's Biodiversity Strategy to 2045[7]

[5] Available at: https://www.gov.scot/publications/national-planning-framework-4-revised-draft/ (Accessed 16/07/2023)
[6] Available at: https://www.nature.scot/doc/scottish-biodiversity-list (Accessed 16/07/2023)
[7] Available at: https://www.gov.scot/publications/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland/documents/ (Accessed 16/07/2023)

- Highland Nature Biodiversity Action Plan 2021 – 2026 (LBAP)[8]
- Highland Council Local Development Plan (LDP)[9]
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, Version 1.2

A summary of protected species legislation and licensing 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 Limited.

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 Limited 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.

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EnviroCentre Limited accepts no liability for use of the report for purposes other than those for which it was originally provided, or where EnviroCentre Limited has confirmed it is appropriate for the new context.

[8] Highland Nature Biodiversity Action Plan 2021-2026 Available at: https://www.highland.gov.uk/downloads/file/27148/highland_nature_biodiversity_action_plan_2021_%E2%80%93_2026 (Accessed 11/07/2023)
[9] Available at: https://www.highland.gov.uk/info/178/development_plans/199/highland-wide_local_development_plan (Accessed 11/07/2023)

2 METHODS

2.1 Desk Study

A desk study was conducted in May 2023. The following sources were checked:

- Existing ecological information related to the site available within the Revised Coire Glas Pumped Storage Scheme EIA Report[1], the PEA[2], further targeted survey reports[3] and EnviroCentre site knowledge;
- The Scottish Biodiversity List for Priority Habitats and Species[6];
- Highland Biodiversity Action Plan 2021-2026[8] for Local Priority Habitats and Species; and
- Aerial imagery from Google Earth[10].

2.2 Field Survey

A protected species and habitat survey was undertaken by Mhairi Mackintosh, an experienced and competent ecologist, who is a member of the Chartered Institute of Ecology and Environmental Management (CIEEM). The surveys were designed using guidelines endorsed by NatureScot and CIEEM. The survey focussed on plants and habitats on the site and those faunal species that are most likely to be found in the habitats which make up the landscape in and around the site. The survey was undertaken on the 18th and 19th of April 2023. Conditions during the survey were sunny and dry with temperatures between 8 – 12°C. Full survey methods can be found in Appendix C.

Further targeted bat surveys were conducted on two structures and four trees which were identified as having features suitable for roosting bats and were likely to be affected by the proposed works. These surveys were undertaken between the 9th of May and the 7th of June 2023. Full details of the surveys are presented in Appendix D.

2.3 Constraints

2.3.1 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. Species distribution patterns should be interpreted with caution as they may reflect survey/reporting effort rather than actual distribution.

2.3.2 Field Survey

The field survey was conducted within the optimum period for plant growth, however individual species grow and flower at different times through the season and therefore individual species may have been missed. It is considered that sufficient species were identified to inform the Phase 1 and GWDTE surveys.

Some areas of the site and survey buffer were not surveyed in detail due to access issues associated with private properties and dense forestry plantation. Steep slopes along parts of the Caledonian Canal

[10] Available at: https://www.google.com/earth/ (Accessed 15/04/2021)

were not safe to access. All areas which were not fully accessed were surveyed from a distance using binoculars where necessary. It is considered that this was adequate for the assessment of habitats and suitability for protected species.

2.4 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 E and F, 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

Full descriptions of the habitat and protected species results can be found in Appendices C and D. Survey Result Plans and Photographs are presented in Appendix G and H

3.1 Habitats

The Phase 1 Habitats identified during the survey are listed within the table below, along with their conservation status and evaluation of geographic level of importance.

Table 3-1: Summary of baseline habitats.

Phase 1 Habitat	Geographic Level of Importance	Justification
A1.1.1 Broadleaved Semi-natural Woodland	National (Scotland)	The birch dominated woodlands represent the Upland birch woodland SBL priority habitat
A1.2.2 Coniferous Plantation Woodland	Site	Coniferous plantations are common and widespread habitats with little conservation value in themselves, however, they provide habitat for a variety of species such as birds, pine marten and red squirrel
A1.3.1 Mixed Semi-natural Woodland	National (Scotland)	Although the species are mixed, these stands also correspond to the Upland birch woodland SBL priority habitat
A2.1 Dense Scrub	Site	Gorse scrub is a common and widespread habitat which provides habitat for nesting birds, shelter for small mammals and reptiles and is an important pollen source for insects such as bees.
B1.2 Improved Acid Grassland	Site	Improved acid grassland is a common and widespread habitat within the uplands. It has some value in providing habitat for invertebrates and small mammals and species which prey on these fauna.
B2.2 Semi-improved Neutral Grassland	Site	Grazed neutral semi-improved grassland of the type found on the site is common and widespread, however, the tussocky rush structure can be important be host to species such as ground nesting wading birds.
B4 Improved Grassland	Site	Improved grasslands are widespread and common habitats. Whilst they are floristically poor, the short cropped grass can host invertebrates such as worms which in turn provide foraging resource for birds and mammals.
B5 Marshy Grassland	National (Scotland)	Vegetation fits the purple moor-grass and rush pasture SBL priority habitat description.
C1.1 Bracken Continuous	Site	Bracken is a common and widespread habitat which provides cover for ground nesting birds and reptiles.

D1.1 Dry Dwarf Shrub Acid Heath	International	Dry dwarf shrub acid heaths are included within the Annex I habitat 4030 European Dry Heaths. Although it should be noted that the examples within the site are generally species poor.
D2 Wet Dwarf Shrub Heath	International	Wet dwarf shrub heaths are included within the Annex I habitat 4010 Northern Atlantic Wet Heaths with *Erica Tetralix.*
E2.1 Acid/neutral Flush	National (Scotland)	This habitat is included within the Lowland fen SBL priority habitat.
E2.2 Basic Flush	International Importance	This habitat is considered to be part of the Annex I habitat 7230 Alkaline Fens. The examples within the site are currently in a degraded state due to poaching and grazing by livestock.
G1 Standing Water	Site	The water body does not match the criteria for conservation importance set out in the guidance[11] for priority habitat. The water body may provide habitat for more common invertebrate species and therefore foraging resource for birds and bats which may be present in the locale.
G2 Running Water	National (Scotland)	The majority of the water courses on site meet the headwaters criteria for Rivers SBL priority habitat, defined as "a watercourse within 2.5km of its furthest source as marked with a blue line on OS landranger maps with a scale of 1:50,000."[12]
J3.6 Buildings	Site	Buildings are a common and widespread habitat which can provide nesting and roosting resource for birds and bats.
J4 Bare Ground	N/A	N/A

During the surveys Juniper (*Juniperous communis*) was identified as occurring within the semi-natural broadleaved woodland understory and scattered throughout bracken and dry dwarf shrub heath habitats. It is also a priority species and therefore of national (Scotland) importance.

It should be noted that whist there are habitats on site which fit within International and National Priority habitat descriptions, the examples within the site are generally of a sub-optimal quality, having been heavily influenced by sheep grazing which takes place across open hill side to the north of the road, as well as in the enclosed fields below. As such the structure and floristic diversity is reduced.

3.2 GWDTE

There are several wetland habitats within the site and survey area representing potential GWDTEs. These are listed on Scottish Environment Protection Agency's (SEPAs) guidance as having high and moderate dependency on ground water, depending on the hydrogeological setting. It is considered,

[11]Available at: https://www.webarchive.org.uk/wayback/archive/20210825130901/https://www.nature.scot/priority-habitat-ponds (Accessed 27/05/2023)
[12] Available at: https://www.nature.scot/priority-habitat-rivers (Accessed 27/05/2021)

however, that within the site, these wetlands most likely are surface water derived. Full details of the GWDTE found on site are available in Appendix C.

3.3 INNS

Rhododendron was present alongside the Kilfinnan Road, occurring in dense patches (Protected species Map 3), probably a result of historic planting associated with the residential properties. There are also more scattered individual bushes up the hill, to the north which have likely spread via windblown seed (Protected Species Map 3).

3.4 Faunal Species and Species Groups

It should be noted that water vole and badger were considered as part of the baseline studies but due habitat being considered sub-optimal and a lack of evidence of activity within the survey areas, no impacts are predicted and therefore they are not discussed further within the main body of the report. Further details can be found in Appendix C.

3.4.1 Bats

Bat surveys have confirmed brown long-eared (*Plecotus auritus*), Daubenton's (*Myotis daubentoniid*), common and soprano pipistrelles (*Pipistrellus pipistrellus and Pipistrellus pygmeaus*) utilising the site for foraging. A transitional roost for up to 3 pipistrelle bats was present within Kilfinnan Bridge during surveys conducted in May 2023. Surveys previously conducted at the site in relation to adjacent exploratory works for CGPSS (2 x summer emergence surveys in 2021 and 2 x hibernation checks in winter 2023) found no roosts or evidence of bat use.

There are several buildings and trees within and adjacent to the site which are suitable for a variety of roosting bats. The habitat present within the site and surrounding area is considered to be highly suitable for foraging and commuting bat.

Bats are a European Protected Species and are therefore of international importance.

3.4.2 Otter

Otter are known to be active within the area, with spraints being found beneath Kilfinnan Burn bridge during one of the bat surveys. EnviroCentre Limited also has knowledge of an otter couch c.100m south of Kilfinnan bridge, under a tree root on the bank of Kilfinnan Burn (Protected Species Map 1). This couch has been monitored in relation to adjacent exploratory work associated with the project and is used infrequently.

Otter are a European Protected Species and are therefore of international importance.

3.4.3 Red Squirrel

Red squirrel are known to be present within the area. No dreys have been found within the site and no red squirrel have been seen during surveys. Foraging remains indicative of red squirrel were present within the plantation beside Laggan Locks (Protected species Map 2).

The various coniferous plantations and smaller broadleaved woodland patches are considered to offer suitable red squirrel foraging and drey creation resource throughout the year. They are connected through the site via scattered trees and are connected to woodland within the wider area.

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

3.4.4 Pine Marten

Pine marten are active within the site and surrounding area. During the survey several scats were identified within the wider survey area and a pine marten was spotted during one of the bat surveys at Kilfinnan Bridge. No pine marten dens have been identified.

The plantation woods are unlikely to offer suitable den sites via cavities within tree trunks but there may be opportunities for den creation under the root plates of windblown trees. Nearby buildings, mature broadleaved trees or rocky crags may also be used. The woodlands and surrounding habitat are likely to host a variety of foraging resources such as small mammals, insects, birds, fungi and berry producing shrubs and trees.

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

3.4.5 Birds

A variety of birds species have been observed utilising habitats within the site for foraging and breeding. These predominantly comprised of small passerines which nest in trees and scrub, farmland birds such as Skylark (*Alauda Arvensis*) and Swallow (*Hirundo rustica*), as well as waders such as Lapwing (*Vanellus vanellus*), and Oyster Catchers (*Haematopus ostralegus*) which forage and nest within the fields present within and adjacent to the site.

Swallow nests are present within the Barn at North Laggan (Protected Species Map 3).

These birds are of national, regional and local importance due to being on the Birds of Conservation Concern (BoCC) Red, Amber and Green lists.

3.4.6 Reptiles

EnviroCentre have observed slow worm (*Anguis fragilis*) within the site, on Kilfinnan Road and common lizard (*Zootoca vivipara*) within the wider area associated with CGPSS. These observations were made by Envirocentre staff undertaking work in relation to the adjacent exploratory works for CGPSS.

The habitat is considered to be highly suitable for these species as well as adder (*Vipera berus*), particularly along the Kilfinnan Road. The terrain either side of the existing road is sloped and south facing slope, which is ideal for basking reptiles. The habitat is varied with areas of stone piles, bracken and scrub as well as more open grassland, suitable for basking, foraging and refugia.

4 IMPACT ASSESMENT

4.1 Predicted Impacts – Construction Phase

4.1.1 Habitats

The main impacts to habitats on the site will be the permanent loss of habitats within the footprint of the new sections of road and temporary loss of habitat where vegetation needs to be cleared during construction but may be re-instated following works. The estimated permanent and temporary loss of habitats of conservation importance, based on available site layout and clearance plans[13] at the time of writing, are summarised in table below. Habitats which will **permanently** lose more than 5% of the total site area have been highlighted. As water courses have been mapped as a linear feature they are not included in the area summary. There may be some additional culverting required where new road sections cross watercourses and new bridge required over Kilfinan Burn but there should be no overall loss of habitat.

Table 4-1: Summary of estimated habitat loss.

Phase 1 Habitat	Geographic Level of Importance	Total area within the site m^2	Permanent Habitat Loss m^2 (%)	Temporary Habitat Loss m^2 (%)
A1.1.1 Broadleaved Semi-natural Woodland	**National (Scotland)**	**32736**	**2541 (8)**	**7135 (22)**
A1.2.2 Coniferous Plantation Woodland	Site	52920	2304 (4)	11310 (21)
A1.3.1 Mixed Semi-natural Woodland	National (Scotland)	6103	8 (0.1)	151 (2)
A2.1 Dense Scrub	**Site**	**4410**	**252 (6)**	**1000 (23)**
B1.2 Improved Acid Grassland	**Site**	**6786**	**486 (7)**	**766 (11)**
B2.2 Semi-improved Neutral Grassland	Site	151876	720 (0.4)	21789 (14)
B4 Improved Grassland	Site	91862	852 (1)	27943 (30)
B5 Marshy Grassland	National (Scotland)	1090	0 (0)	74 (7)
C1.1 Continuous Bracken	Site	97242	4352 (4)	21149 (22)
D1.1 Dry Dwarf Shrub Acid Heath	International	6615	116 (2)	283 (4)
D2 Wet Dwarf Shrub Heath	International	4697	62 (1)	188 (4)
E2.1 Acid/neutral Flush	National (Scotland)	1558	0 (0)	0 (0)
E2.2 Basic Flush	International Importance	13242	460 (3)	864 (7)
G1 Standing Water	Site	516	0 (0)	0 (0)

[13]Latest version at the time of writing issued June 2023.

The largest area of both permanent and temporary habitat loss is continuous bracken. This is the predominant vegetation cover within open land to the north of the existing road. It is a habitat which is abundant in the wider area and whilst it provides shelter for faunal species, it is generally poor in species diversity. It can cause issues where it spread into more diverse habitat such as heaths or grasslands and shades out ground flora.

There will also be temporary and permanent loss of coniferous plantation woodland. This woodland has been planted to be felled and would have been due for removal as part of standard forestry operations regardless of the road plans.

Of the habitats of higher conservation importance, dry dwarf shrub heaths will have a small area of permanent loss and a greater area of temporary loss during the construction period. Whilst dry heaths are Annex I habitats, the example on site is generally species poor, fragmented and degraded through over-grazing.

Likewise, the SBL priority habitat broadleaved semi-natural woodland, will incur in areas of both permanent and temporary losses; however, both of these losses will be comparatively higher than the loss of coniferous plantation woodland relative to their total area.

The remaining habitats which are considered to be of conservation importance on a scale greater than the site have very minimal habitat loss which is unlikely to impact on the overall functioning or conservation status of the habitat.

Additional impacts which may occur if mitigation is not implemented through construction include:

- Pollution of watercourses and/or wetland habitats via silted surface water run-off or a fuel or oil spill.
- Degradation or loss of wetland habitats if existing hydrological flows of water are disrupted.
- Loss of species of national (Scotland) importance if juniper is removed during ground clearance.
- Spread of Rhododendron if biosecurity protocols are not implemented.
- Damage to trees to be retained if tree protection measures are not in place.
- Damage to vegetation in retained habitats and/or soil compaction through vehicle tracking, inappropriate storage materials outwith the working area.

4.1.2 Protected Species

The following impacts are predicted to occur as a result of the proposed road upgrade works without mitigation:

- Loss and/or fragmentation of suitable habitat for bats, bird, pine marten, red squirrel and reptile habitat as a result of temporary and permanent habitat loss as detailed above. The areas of habitat which will be permanently lost are not considered likely to have an impact on the overall conservation status or viability of populations for any of the species present as there is suitable alternative habitats for them to utilise.
- Death, injury or disturbance of bats, nesting birds, pine marten or red squirrel if utilised buildings or trees are removed without appropriate survey and mitigation. Death, injury or disturbance to nesting birds may also be caused during ground clearance.
- Disturbance to bats, nesting birds, pine marten, red squirrel or otter if activities producing significant levels of noise such as pile driving or rotary drilling are undertaken for prolonged periods within proximity of rest sites.

- Disturbance of foraging and commuting nocturnal and crepuscular species such as bats, otter and pine marten if artificial lighting is used during the construction period or installed permanently on the completed road upgrade.
- Death or injury of reptiles if refugia such as rock piles or dense bracken are removed during the hibernation period.
- Death or injury of otter, red squirrel, pine marten, birds and reptiles due to increased traffic during construction of the upgraded road. It is anticipated that during the 18 month period of construction there will be an additional 105 HGV and 57 LGV vehicle movements associated with the Kilfinnan Road upgrade as well as the main consented CGPSS[14].

4.2 Predicted Impacts – Operational Phase

Road improvements will facilitate greater volume of traffic to access the CGPSS site during the construction phase. Once constructed, there will continue to be some additional traffic for maintenance and operation. Additional traffic will result in an increased risk of death or injury of otter, red squirrel, pine marten, birds and reptiles due to traffic accidents.

[14] Data provided by SSE Renewables via email on the 27th Sept 2023.

5 FURTHER SURVEY, MITIGATION, MONITORING, LICENSING AND ENHANCEMENTS

5.1 Further Survey

It is considered that baseline data on protected species is valid for a period of 12 months. If works on site have not commenced by June 2024, an updated protected species survey will be required to ensure mitigation and licensing recommendations remain suitable.

The baseline habitat conditions are considered valid over a longer period and will not need to be repeated unless works have not commenced by 2028.

Hibernation surveys for bats are recommended for the North Laggan farm building to confirm use and determine licence and mitigation requirements.

The trees identified as having bat PRFs are not currently expected to be felled or subject to arboricultural works, however, if this changes, a climbed inspection of PRFs should be conducted ahead of works to confirm bat absence.

5.2 Mitigation

5.2.1 General Good Practice

- Prior to works commencing on site (including any site clearance) a Construction Environment Management Plan (CEMP) detailing site specific mitigation and monitoring will be agreed with planning authority and implemented to avoided and reduce negative impacts.
- An independent Ecological/Environmental Clerk of Works (ECoW) will be employed to audit and report on adherence to the CEMP as well as any other relevant planning consents, environmental permits, legislation and mitigation. It is anticipated that ECoW presence would not be required full time for the duration of the project but at key points to undertake task including but not limited to:
    - Pre-works checks and mitigation plan updates ahead of works commencing;
    - Watching briefs for works near sensitive receptors e.g., water courses;
    - Nesting bird checks if vegetation clearance or similar works are conducted April – August, inclusive;
    - Reptile checks ahead of potential refugia being removed (April to October) and
    - Regular audits of surface water management.
- Works within 10m of water courses will be avoided as far as practicable and SEPAs Pollution Prevention Guidelines for working near water will be implemented throughout works.
- All site personnel will be made aware of ecological constraints present in and around the site within the site induction.
- A 15 mph speed limit will be implemented during road upgrade works and for all traffic associated with the CGPSS.

5.2.2 Habitats

- Compensatory habitats will be provided to mitigate the loss of habitats due to road construction.
- Vegetation clearance will be limited to the smallest practicable working area to reduce exposed soil and sub-soil and subsequent risk of contaminated surface water run-off.
- A soil management plan will be produced to manage soil stockpiles, reducing degradation of soils to be used in re-instatement.
- Works will avoid the removal of juniper where possible. Where removal cannot be avoided, individuals should be transplanted to an appropriate location as determined by an ecologist.
- Where temporary access tracks are required to cross wetland habitats, low pressure vehicles, floating roads, bog mats or similar measures will be utilised to minimise harm.
- Where the new areas of road dissect wetland habitats then the hydrological flow of water will be retained via drainage channel to allow water to flow beneath the road.
- The location of Rhododendron will be clearly demarcated with appropriate signage ahead of works commencing. Works within 10m of Rhododendron should be avoided where possible. If works are required within the exclusion zone, biosecurity measures such as wheel and boot washes will be implemented to avoid the spread of soils contaminated with Rhododendron seeds.
- Trees protection measures as per BS 5837 (2012) will be put in place to avoid damage to retained trees.
- The working area limits should be clearly demarcated with no vehicle/plant movements or material storage outside of the agreed area.

5.2.3 Faunal Species

- A pre-works survey of trees should be made ahead of felling to ensure no red squirrel drey or pine marten dens are present.
- Vegetation removal should be avoided within the nesting bird season (April – August inclusive). If vegetation removal cannot be done outside this period then a nesting bird check should be undertaken by a suitably qualified and experienced ecologist to confirm absence within 48hours prior to works.
- The use of temporary artificial lights will be avoided as far as possible. Where use of artificial lights cannot be avoided, the lights should be fitted with shades and directed away from woodland, watercourses and wetland habitats likely to be used by nocturnal and crepuscular species such as otter and bats.
- Removal or disturbance of potential reptile refugia (areas of dense bracken, stone dykes, stone or log piles) will be avoided within the hibernation period (Nov – March). Outside of this timeframe, the refugia should be subject to a thorough search by a suitably experienced ecologist prior to removal. Removal should also be avoided within the 2 hours period following dawn and in the two hours prior to evening to avoid cooler periods of the day when individuals will be sluggish and unable to move away voluntarily. Any stone or log piles removed to facilitate works will be re-created under supervision of an ecologist so that there is no net loss of refugia.
- Wildlife warning signs will also be utilised to raise awareness.

5.2.4 Monitoring

- Water quality monitoring will be conducted throughout the construction period, with monitoring locations to be agreed with the regulatory authorities in advance. Monitoring should commence ahead of works commencing to establish a baseline.

- The otter couch and any other rest features identified during pre-works checks or through construction will be monitored regularly to confirm use and the requirement for any additional mitigation or licensing.
- Post-construction monitoring of re-instated and compensatory habitats will be conducted to determine successful establishment and determine management requirements. Further details of habitat monitoring can be found in the Biodiversity Action Plan (BAP) provided in Appendix I.

5.3 Licensing

If Kilfinnan bridge is to be demolished, a derogation licence will be required for destruction of a transitional and non-breeding day roost for up to 3 pipistrelle bats.

It is considered that continuation of current use of the bridge will not require a licence as the bats have moved in since preparatory works at the lower loch commenced and following installation of the abutments. Works to create the new bridge however are within 30m of the existing bridge and will result in additional disturbance and so a disturbance licence will be required prior to the works commencing.

At present no otter holts have been identified within the site or likely disturbance distances. Should holts be identified as a result of pre-works checks or during works, a licence may be required for disturbance and/or destruction as appropriate.

5.4 Biodiversity Enhancements

The BAP provided in Appendix I provides full details of biodiversity enhancements which will be delivered by the project and how they are to be achieved. It is envisaged that enhancements will be delivered via the following actions:

- Expand the area of native woodland and scrub habitats.
- Remove non-native and invasive species from the site.
- Create species rich acid grassland within roadside verges.
- Supply additional shelter and breeding habitat for protected and notable species.
- Provide safe road crossings for small mammals, reptiles and amphibians.

6 CONCLUSION

Whilst there are habitats and species of international and national importance present within the site, it is considered that if mitigation is put in place, the project can be delivered without compromising the integrity of the conservation status of these ecological features. If the BAP is fully implemented the project will be able to deliver biodiversity gains in line with NFP4. A protected species licence will be required for disturbance of roosting bats within Kilfinnan Bridge. Additional licence requirements will be subject to further surveys and conformation of plans in relation to the existing Kilfinnan Bridge.

APPENDICES

A SITE LOCATION PLAN

Please see plan reference LH000012-COIG-SID-SD-0002-01 (Site Location Plan)

B PROTECTED SPECIES LEGISLATION

European Protected Species (Bats and 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;
- take or destroy its eggs; and
- 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, bat roosts are protected all of the time as long as it can be shown that the bats use the roost 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 and 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.

Water Vole

Water voles are partially protected under Schedule 5, Part 4 of the Wildlife and Countryside Act 1981 (as amended). It is an offence to 'intentionally or recklessly':

- damage, destroy or obstruct access to any structure or place which a water vole uses for shelter or protection; or to
- disturb a water vole while it is occupying a structure or place which it uses for that purpose.

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.

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[15] 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.

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

C HABITAT AND PROTECTED SPECIES SURVEY

Protected Species and Habitat Survey

1.1 Methods

1.1.1 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[1] and was used to determine the potential presence of any Annex I and/or priority habitats.

This section provides details of the methods adopted in the survey areas described in Table 2.

Table 1: Survey Areas

Habitat/Species/Species Group	Survey Area
Phase 1 Habitats	Site
GWDTE	Site plus up to 250m
Invasive Non-Native Species (INNS)	Site
Bats	Site plus 50m
Otter (*Lutra lutra*)	Site plus watercourses up to 250m
Pine marten (*Martes martes*)	Site plus 50m
Red squirrel (*Sciurus vulgaris*)	Site plus 50m
Water vole (*Arvicola amphibious*)	Site plus 50m
Badger (*Meles meles*)	Site plus 100m
Birds	Site plus 50m
Reptiles	Site

1.1.2 Groundwater Dependent Terrestrial Ecosystems

Plant communities within wetlands were categorised using the National Vegetation Classification (NVC) and compared to the list within Scottish Environment Protection Agency (SEPA) GWDTE guidance[2] to determine ground water dependency. Observations of local topography, land management, underlying geology, and features such as springs, diffuse ground water emergence and floristic indicators of base enrichment were made to aid the assessment.

1.1.3 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 (*Rhododendron ponticum*)
- Japanese knotweed (*Reynoutria japonica*);

[1] JNCC (2010) *Handbook for Phase 1 Habitat Survey A Technique for Environmental Audit.*
[2] Scottish Environment Protection Agency (2017) Land Use Planning System SEPA Guidance Note 31. Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Ground Water Dependent Terrestrial Ecosystems. LUPS-GU31.

- Giant hogweed (*Heracleum mantegazzianum*); and
- Himalayan balsam (*Impatiens glandulifera*).

1.1.4 Bats

An assessment was undertaken in accordance with the criteria set out by the Bat Conservation Trust (BCT)[3]. The suitability of roosting, commuting and foraging habitats was classified according to the criteria in Table 2 below. It should be noted that as there were a large number of trees within the survey area, an overall assessment for the various tree types on site has been made rather than assessing the suitability of individual trees. Similarly, where groups of similar buildings occur, these have been assessed as a group rather than individually.

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

Table 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 gappy 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.

Potential Roosting Features (PRFs) in trees and structures are listed in Table 3 below.

Table 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.)
Partially detached plated bark	Behind hanging tiles, weatherboarding, eaves, soffit boxes, fascias and lead flashing	Junction of timber joints, mortise and tenon joints
Cankers, included bark and compression forks with potential cavities	Under tiles and slates	Behind purlins
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

1.1.5 Otter

The otter survey followed best practice guidelines[4], and aimed to identify suitable otter habitat and field signs, 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).

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

In order to assess their importance, the status of otter resting sites was assigned from Low to High according to Table 4 below[5].

Table 4: Status of Otter Resting Sites

Resting Site Status	Definition
Low	Feature with limited evidence of otter activity – low number of spraints, not all age classes present. Insufficient seclusion to be a breeding site or key resting site, unlikely to have links to the key otter requirements. Most likely to provide a temporary 'stop off' for otters when moving through their territory. Loss/disturbance of such a feature is unlikely to be significant in terms of the individual or population.
Moderate	Feature containing sprainting with a range of age classes, but not in significant quantities. Availability may be limited by season, tides or flow. Unlikely to be suitable as a breeding/natal site but will be a key resting site and may be linked to other important features within the territory. The impact arising from a loss or disturbance of such a feature will be determined by the availability of more suitable or well used sites within the otter's territory.
High	Feature has a high level of otter activity, including an abundance of sprainting of all age classes, large spraint mounds, well used grooming hollows, paths and slides. Affords a high degree of cover and is linked to key features such as fresh water and abundance of prey. May be suitable as a breeding area (spraints may be absent from natal holts). The site is usually available at all times of year and at high and low tide/flow. The loss/ disturbance of such as feature will often be considered significant in terms of the individual or population.

1.1.6 Water Vole

The water vole survey consisted of assessing the habitat suitability of the site[6] whilst undertaking a survey for field evidence following standard survey guidelines[7].

Factors that influence the suitability of habitat for water voles include:

- Positive: The presence of riparian vegetation along the banks and in the water.
- Positive: A steep bank on a watercourse reducing the risk of burrow inundation.
- Positive: Slow-flowing, relatively deep (over 1m) watercourses.
- Negative: The presence of rocky or otherwise impenetrable substrates.
- Negative: Over-shading by trees.
- Negative: Fast flowing or shallow water, and flashy watercourses.
- Negative: The presence of American mink.

The presence of water vole field evidence was noted. Field evidence includes:

- Faeces: 8-12 mm long, 4-5 mm wide; cylindrical and blunt ended pellets; colour variable with food type. Most droppings left in latrines near the nest, at range boundaries and at water entry points;
- Latrine sites: concentrations of faeces, often with fresh droppings on top of old ones;
- Runways: often 5-9 cm broad and multi-branched; usually within 2m of water's edge and often forming tunnels through vegetation; leading to water's edge or burrows;

[5] Bassett, S., & Wynn, J. (2010). *Otters in Scotland: How Vulnerable Are They to Disturbance?* CIEEM In Practice, (70), 19–22.
[6] Strachan, Rob & Moorhouse, Tom. (2006). *Water Vole Conservation Handbook, Second Edition*.
[7] Dean, M., Strachan R. Gow, D. & Andrews, R. (2016). *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series)*. Eds: Fiona Mathews and Paul Chanin. The Mammal Society, London.

- Burrows: 4-8 cm diameter, wider than high; eroded entrances then contract down to typical size; entrances located at water's edge; however some entrances can be up to 3m from the water; no spoil heaps;
- Nests: size and shape of a rugby ball, often in base of rushes, sedges or reeds;
- Feeding stations: located along runways, or at platforms along water's edge; usually a pile of cut/chewed vegetation in sections approximately 10cm long; vegetation ends show marks of two large incisors. Piles of chopped grass, sedge or rush stems, rush pith and leaves;
- Lawns: short, grazed vegetation around land entrances, often used during nursing periods;
- Footprints: difficult to tell from rat; adult hind foot 26-34 mm (heel to claw); stride 120mm (smaller than rat); occur at water's edge and lead into vegetation; and
- Sound: characteristic 'plop' when a vole enters the water.

Emphasis was placed on locating latrine sites, as they are the most useful sign for recording purposes. They indicate whether there is definite presence of water voles at a site.

1.1.7 Red Squirrel

A survey was undertaken based on best practice guidance[8] 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.

1.1.8 Pine Marten

A passive sign survey was conducted for pine marten according to standard guidance[9]. 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 assessment of the habitat was also undertaken to identify 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.

[8] Gurnell, J., Lurz, P., McDonald, R. & Pepper, H. (2009) *Practical Techniques for surveying and monitoring squirrels. Forestry Commission Practice Note 11.*
[9] 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

1.1.9 Badger

A badger survey was undertaken in suitable and accessible habitat, with reference to the methodology described by Scottish Badgers[10] and NatueScot[1112], which aimed to identify the following field evidence:

- Setts (any structure or place, which displays signs indicating current use by badger/located within an active badger territory, as defined by NatureScot guidance[13]);
- 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.

Badger foraging habitat was classified on a primary and secondary basis as per best practice guidance[14]. An assessment 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.

1.1.10 Birds

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

[10] 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 15/04/2021)
[11] 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 15/04/2021)
[12] NatureScot: Protected Species Advice for Developers – Badger. Available from: https://www.nature.scot/species-planning-advice-badger (Accessed on 15/04/2021)
[13] 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.*"
[14] 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 15/04/2021)

1.1.11 Reptiles

An assessment of the suitability of the habitats for reptiles was undertaken in accordance with the criteria set out by Amphibian and Reptile Conservation[15]. This takes into account 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.

1.2 Results

Please see Appendix G for survey results plan and Appendix H for photographs.

1.2.1 Habitats

The following Phase 1 Habitats were identified during the survey:

- A1.1.1 Broadleaved Semi-natural Woodland;
- A1.2.2 Coniferous Plantation Woodland;
- A1.3.1 Mixed Semi-natural Woodland;
- A2.1 Dense Scrub;
- B1.2 Improved Acid Grassland;
- B2.2 Semi-improved Neutral Grassland;
- B4 Improved Grassland;
- B5 Marshy Grassland;
- C1.1 Bracken Continuous;
- D1.1 Dry Dwarf Shrub Acid Heath;
- D2 Wet Dwarf Shrub Heath;
- E2.1 Acid/neutral Flush;
- E2.2 Basic Flush;
- G1 Standing Water
- G2 Running Water;
- J3.6 Buildings; and
- J4 Bare Ground

[15] Edgar, P., Foster, J. and Baker, J. (2010). *Reptile Habitat Management Handbook*. Amphibian and Reptile Conservation, Bournemouth

1.2.2 Broadleaved Semi-natural Woodland

Broadleaved woodland habitat category includes all woodland with less than 10% coniferous trees within the canopy. Semi-natural woodland comprises all stands which do not obviously originate from planting.

Broadleaved, semi-natural woodland is present within the site, largely within riparian areas on the banks of Kilfinnan Burn (Photo 1) and Allt Cruinneachaidh. The relative cover of species varies between stands, but silver birch (*Betula pendula*) and downy birch (*Betula pendula*) are abundant with ash (*Fraxinus excelsior*), grey willow (*Salix cinerea*), alder (*Alnus glutinosa*) and rowan (*Sorbus aucuparia*) occurring frequently. Juniper (*Juniperous communis*) and gorse (*Ulex europeaous*) are present frequently in the understory. The field layers are generally grazed semi-improved grassland. The canopy trees are mature but due to heavy grazing pressure there are no seedlings or saplings present.

The birch dominated woodlands likely represent the Upland Birchwoods priority habitat.

Juniper is also a priority species.

1.2.3 Coniferous Plantation Woodland

Coniferous woodland is comprised of all woodland with 10% or less broadleaved species present in the canopy. Plantation woodland includes all obviously planted woodland.

Coniferous plantation woodland is present in the North Laggan plantation, situated to the north of the road were it joins the A82 (Photo 2). There is also a small unnamed plantation to the north of Kilfinnan Road. Sitka spruce (*Picea sitchensis*) is the dominant species, with occasional compartments containing larch and Scot's pine. The age of stands is variable with some mature and semi-mature trees recorded. Due to the dense nature of the planting, there is little in the way of ground flora within the North Laggan plantation, although shade tolerant species such as foxglove (*Digitalis purpurea*) are present occasionally around the edges as well as glittering wood-moss, common tamarisk-moss and greater fork-moss (*Dicranum majus*). The smaller plantation north of Kilfinnan Road had more developed ground flora at least on the edge and comprised frequent Yorkshire fog (*Holcus lanatus*) occasional common dog violet (*Viola rivana*), primrose (*Primula vulgaris*), pignut (*Conopodium majus*) and native bluebell (*Hyacinthoides non-scripta*). Species such as bluebell are generally considered to be an indicator of ancient woodland.

1.2.4 Mixed Semi-natural Woodland

Mixed woodland includes all woodland that has between 10 – 90% cover of both broadleaved and coniferous trees.

Mixed semi-natural woodland is present on a bank leading down into a field to the south of Kilfinnan Road (Photo 3). Silver birch is present abundantly and makes up c.75% of the canopy, however Sitka spruce, likely self-seeded from nearby plantation is also present frequently. Scot's pine and grey willow are present occasionally. The field layer on the sloped bank within the field is dominated by bracken, with two small areas of acidic flushes.

1.2.5 Dense Scrub

Scrub habitat is defined as seral or climax vegetation dominated by locally native shrubs, usually less than 5m tall, with occasional trees.

Dense scrub dominated by gorse is present to the north of Kilfinnan farm. There are also several smaller stands of gorse scrub scattered throughout the site, largely along the roadside, but these were considered too small to map accurately.

1.2.6 Semi-Improved Acid Grassland

Acid grasslands are often present on unenclosed hill land on a range of acid soils. They can be wet or dry and are generally species poor. Semi-improved grasslands include those which have been modified through the application of artificial and/or natural fertilisers, intensive grazing and drainage so that they have reduced species diversity.

Semi-improved acid grasslands are present on the hill upslope of Kilfinnan Road, between Kilfinnan farm and Clunes Forest to the south. Species include frequent sweet vernal grass (*Anthoxanthum odoratum*), sheep's fescue (*Festuca ovina*), mat grass (*Nardus stricta*) and wavy hair grass (*Avenulla flexuosa*). Tormentil (*Potentila erecta*) and heath bedstraw (*Galium saxatile*) are present occasionally. Bracken (*Pteridium aquilinum*) is also scattered throughout where the habitat grades into continuous bracken cover.

This area is sheep grazed with a very short and species poor sward.

There are smaller areas of improved acid grassland along the roadside verges (varied width of 0.5m to 2m interspersed with bracken for much of the length of the road) to which were too small to map separately.

1.2.7 Semi-improved Neutral Grassland

Neutral grasslands are typically enclosed and more intensively managed than acid or calcareous grasslands. They include a wide range of communities on neutral soils and include grasslands which are periodically inundated, permanently moist or water logged.

Neutral semi-improved grassland is present in many parts of the site, in fields to the south of Kilfinnan Road. Dominant species are largely Yorkshire fog (*Holcus lanatus*) and soft rush (*Juncus effusus*). White clover (*Trifolium repens*), creeping buttercup (*Ranunculus repens*), field woodrush (*Luzula campestris*) and common mouse-ear (*Cerastium fontanum*) occur frequently. Spring turf-moss (*Rhytidiadelphus squarrosus*) is also present abundantly.

These fields tended to be wet, at least in parts. In some areas, where the fields have been grazed by sheep, the sward is very short and open, with patches of dense soft rush in wetter areas (e.g. Photo 4). In other areas, where the fields are cattle grazed, the swards are more heavily dominated by soft rush throughout and there are areas of poaching (e.g. Photo 5).

1.2.8 Improved Grassland

Improved grasslands are those that have been so heavily modified by the application of fertilisers, grazing, drainage or herbicide application that they have become very species poor and are

dominated by a small number of agricultural species. This habitat category also includes grasslands which have been sown in the past.

Improved grasslands are present within the fields to the south of the road. These fields were dominated by grasses, however species were difficult to identify due to the sward being very tightly grazed by sheep (Photo 6). Yorkshire fog, red fescue (*Festuca rubra*) and perennial ryegrass (*Lolium perenne*) were present abundantly, along with frequent white clover, creeping buttercup and daisy (*Bellis perrenis*). Springy-turf moss is abundant throughout.

1.2.9 Marshy Grassland

Marshy grasslands include a range of vegetation types including those with a high cover of purple moor-grass (*Molinea caraerula*), rushes, sedges and wet meadows with tall herb species such as meadowsweet (*Filipendula ulmaria*).

Marshy grassland is present in a flushed area of an improved grassland field towards North Laggan. Water flows from a roadside drain, through the field and collects in an area of standing water to the south (Photo 7). It is dominated by soft rush in parts and sharp-flowered rush (*Juncus acutiflorus*) in others. A variety of herb species are also present including frequent marsh bedstraw (*Galium palustre*), creeping forget-me-not (*Myotis secunda*) and occasional marsh thistle (*Circsium palustre*). There are scattered patches of pointed spear-moss (*Calligronella cuspidate*), bog bead-moss (*Aulacomnium palustre*), fountain apple-moss (*Philonotis fontana*) and blunt leaved-bog moss (*Sphagnum palustre*) interspersed with waved silk-moss (*Plagiothecium undulatum*) in the ground layer.

1.2.10 Bracken Continuous

There are several areas of dense bracken within the site, largely on the slopes above Kilfinnan Road (Photo 8). Due to the dense nature of the bracken growth there is little in the way of associated ground vegetation.

1.2.11 Dry Dwarf Shrub Acid Heath

Dry dwarf shrub acid heath includes habitats which have 25% or more cover of ericoids in dry conditions and base deficient soils.

Dry dwarf shrub acid heath is present on the slopes above Kilfinnan Road, often in patches amongst the bracken (Photo 9). Ling is by far the dominant species with few other associates. Gorse and juniper are present occasionally. Scattered trees including larch, Sitka spruce and silver birch, most likely self-seeded from nearby woodland and plantation are present occasionally.

1.2.12 Wet Dwarf Shrub Heath

Wet dwarf shrub includes habitats which have 25% or more cover of ericoids on wetter ground with species such as purple moor-grass and sphagnum mosses becoming more abundant than in dry heaths.

Wet dwarf shrub heath is present within the site, on flushed slopes above Kilfinnan Road (Photo 10). Ling, purple moor-grass, bog myrtle (*Myrica gale*) and bog asphodel (*Narthecium ossifragum*) are present abundantly. Common deer grass (*Trichophorum germanicum),* common cottongrass

(*Eriophorum angustifolium*), heath rush (*Juncus squarossus*), heath bedstraw (*Galium saxatile*), cross-leaved heath (*Erica tetralix*) and cowberry (*Vaccinium vitis-idea*) are present frequently, along with occasional sharp-flowered rush, lousewort (*Pedicularis sylvatica*) and carnation sedge (*Carex panicea)*. Within the ground layer, blunt leaved-bog moss is present abundantly and woolly fringe-moss (*Racomitrium lanuginosum*) are present occasionally. Hooked Scorpion-moss (*Scorpidium scorpiodes*) is also locally abundant with shallow stony flushes.

Whilst wet dwarf shrub heaths are generally on more acidic ground, the presence of species indicative of base enrichment such hooked scorpion moss and base tolerant species such as blunt leaved-bog moss indicate a mineral influence on the floristic composition. The bedrock is at or near the surface in this area and so surface water flowing over the bedrock is likely creating more basic conditions.

1.2.13 Acid/neutral Flush

Flushes are habitats associated with water movement and generally occur on gently sloping ground in linear or triangular patches. They to have a well-established ground layer of mosses with small sedges and rushes. Acid/neutral flushes are characterised by the abundant presence of sphagnum mosses.

Acidic flushes occur in two small areas of the site, on sloped ground to the south of Kilfinnan (Photo 11). Blunt leaved-bog moss and lustrous bog-moss (*Sphagnum subnitens*) dominant the ground layer with common hair-cap moss (*Polytrichum commune*) present occasionally. At the top of the flush species such as common yellow-sedge (*Carex viridula subsp oedocarpa*), bulbous rush (*Juncus bulbosus*) and heath wood-rush (*Luzula multiflora*) are present occasionally. Towards the base of the flush soft rush is present frequently with rare Yorkshire fog. A variety of herbs are also present occasionally and include marsh violet (*Viola palustris*), devil's bit scabious (*Succisa pratensis*), common sorrel (*Rumex acetosa*) and marsh thistle.

1.2.14 Basic Flush

Basic flushes tend to be dominated by pleurocarpous brown mosses rather than sphagnum mosses, overlain by small sedges or a mixed herb layer.

Basic flushes occur at various points on the slopes up from the Kilfinnan Road (Photo 12). The species composition was variable between stands but all had a prevalence of brown mosses including hooked scorpion-moss and rusty hook-moss (*Scorpidium revolvens*). Other mosses present occasionally include tree-moss (*Climacium dendroides*), yellow starry feather-moss (*Campylium stellatum*), tall thyme-moss (*Plagiomnium elatum*) and twisted bog-moss (*Sphagnum contortum*). Sedges present included common yellow-sedge as well as carnation sedge (*Carex panacea*) and other sedge species not identifiable at the time of survey. Bulbous rush and sharp-flowered rush were present occasionally. Common butterwort (*Pingucula vulgaris*), cross-leaved heath, crowberry (*Empetrum nigrum*), purple moor-grass and bog asphodel were all present frequently and round-leaved sundew (*Drosera rotundifolia*) and yellow saxifrage (*Saxifraga* aizodes) was present rarely. The flushes were all present in areas of sheep grazed slopes with thin covering of mineral and peaty soils and had a short open sward with evidence of trampling.

1.2.15 Standing Water

Standing water includes lakes, reservoirs, pools, ponds, water filled ditches and canals.

Standing water is present within the site, with a pond present within a field to the south east of Kilfinnan Road (Photo 13). The water is in a low point in the topography and the water levels appear to

change seasonally. At the time of the survey it covered 0.3 ha. Vegetation within the pond was sparse with some pondweed (potomogeton sp) and bulbous rush present. Given the location within an area of grazed improved grassland, it is considered that the water will most likely be eutrophic.

1.2.16 Running Water

Running water comprises all rivers and streams.

There are multiple watercourses flowing through the site, from the slopes above Kilfinnan Road, through to Loch Lochy and the Caledonian Canal. There are bridges over the larger watercourses including the Kilfinnan Burn (Photo 14) and Alt Cruinneachaidh. The smaller, unamed watercourses are channelled into roadside ditches and culverted under the road. The watercourses are of variable depth and width, however, the majority have rocky banks and channel substrate with little in the way of vegetation.

1.2.17 Buildings

There are numerous buildings and building groups within and adjacent to the site. There are a mix of residential and holiday homes as well as agricultural buildings with associated landscaping and gardens.

1.2.18 Bare Ground

Bare ground is present within the site in the form of asphalted roads.

1.3 GWDTE

There are several wetland habitats within the site and survey area representing GWDTE habitats. Table 5 below summarises the NVC communities present within the wetlands along with the corresponding Phase 1 Habitat description and GWDTE Assessment. Full floristic descriptions can be found in the appropriate Phase 1 descriptions. A map of the GWDTE habitats can be found in Appendix G.

Table 5: GWDTE Assessment

NVC Community	Phase 1 Habitat	SEPA GWDTE Assessment	Additional Comments
M6c *Carex echinata – Sphagnum fallax/denticulatum* mire *Juncus effusus* sub-community	Acid/neutral Flush	Highly dependent	This community is a soligenous mire, receiving water from the inflow of surface water or uprising of ground water. It is present within 2 areas of the site. Both appear to receive water from drainage associated with Kilfinnan Road.
M10a *Carex dioica - Pinguicula vulgaris* mire *Carex viridula subsp. Oedocarpa – Juncus bulbosus* sub-community	Basic Flush	Highly Dependent	This is a soligenous mire community and contains many species indicative of base rich water. Due to bedrock being at or near the surface, it is possible that the mineral element is coming from surface water flowing over the bedrock rather than from ground water upwelling.
M15a *Tricophorum germanicum – Erica tetralix* mire *Carex panicea* sub-community	Wet Heath	Moderately Dependent	Whilst the M15 community can arise in rain fed peaty soils, this particular community is more closely associated with ground water and contains number of species indicative of base enrichment. As with M10 community, at this site the base enrichment could be coming from surface water flow over the bedrock.
M23 *Juncus effusus/acutiflorus – Galium palustre* rush pasture	Marshy Grasssland	Highly dependent	Where this community occurs within the improved grassland field, the water appears to arise from the outflow of a drainage channel which runs alongside Kilfinnan Road, capturing surface water run-off from the slopes above.
MG10 *Holcus lanatus – Juncus effusus* rush pasture	Neutral Grassland Semi-improved	Moderately dependent	This community is present with grazed fields and is typically found in soils which are permanently wet. Within the context of this site, the community is found in areas of low, gently sloped ground which receives surface water run-off from the slopes above via drainage ditches and culverts under the Kilfinnan Road. Some areas are likely to have permanently high water tables given their low point in the topography.

1.4 INNS

Rhododendron was present in the slopes alongside the Kilfinnan Road regularly. In places it appears as desnse patches, most likely planted and in others it is spread thinly up the slope, where it has most likely spread through seed dispersal from roadside planting.

1.5 Faunal Species and Species Groups

The Faunal Survey Results Map can be found in Appendix H and Photographs in Appendix I.

1.5.1 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 April 2023.

1.5.2 Bats

Several structures with low to high suitability for roosting bats were identified within the site and survey area. The descriptions and suitability assessment for these is provided in Table 6 below.

The trees within North Laggan Plantation, the plantation alongside the Caledonian Canal and the plantation block to the north west of Laggan Locks, largely comprise closely planted conifers of varying ages. Due to the straight growth form they typically lack the types of features described in Table 3 and are therefore considered to have negligible suitability for roosting bats.

There are also numerous patches of broadleaved woodland and scattered broadleaved trees within the site and survey area. The younger trees have generally not had time to develop the types of features which bats can use and so are considered to have negligible suitability. Areas of mature broadleaved trees were largely of a suitable size and age to host roosting bats, with features including knot holes, branch tears and fluted trunks. These are considered to have low – moderate suitability for roosting bats.

Overall, the survey area provides numerous and varied roosting opportunities for bats. The woodlands, scattered trees, agricultural fields, water courses and loch provide continuous foraging and commuting habitat through the site and link to the riparian corridors to the south and north of the site. The habitats present may be utilised by a variety of species likely to be present in the area including common and soprano pipistrelle (*Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritous*), Daubenton's (*Myotis daubentonii*) and Natterer's (*Myotis natterii*). The site is therefore considered to comprise habitat of high suitability for bats.

Table 6: Suitability assessment of structures within the survey area.

Structure(s)	Description	Suitability Assessment	Photograph Number
Building Group 1	Group of two storey, semi-detached residential properties with pitched, tiled roofs. PRFs present under tiles at the gable ends, and around chimneys and at wallheads, behind guttering. Due to heating, largely considered suitable for summer and transitional roosts only.	Moderate - High	15
North Laggan	Residential property with slate pitched roof, wooden cladding on some walls and wooden fascia boards. PRFs under slates, cladding and fascia boards. Due to heating, largely considered suitable for summer and transitional roosts only.	High	N/A

Structure(s)	Description	Suitability Assessment	Photograph Number
Barn at North Laggan	Stone barn with wooden cladding on the gable end and wooden fascia. Prefabricated sheet roof with daylight panels. PRFs within gaps in stonework, behind fascia and wooden cladding. Considered suitable for summer roosts as well as winter hibernation.	Moderate	16
Mowgy Cottage	Residential property with pitched slate roof. PRFs under slates and areas of raised flashing around the ridge and chimneys.	High	N/A
Stonefield	Two storey residential property with hipped tilled roof. Modern construction which appears well sealed. Wooden fascia. PRFs suitable for summer roosting behind fascia.	Low	N/A
Building Group 2	Residential cottage and adjacent barn. Both stone walled with pitched, slate roofs. The barn appears to have been re-roofed recently with no obvious roost access points. The cottage has PRFs under raised flashing, under loose slates and at the wall head, behind guttering. Considered suitable for summer roosting.	Moderate	N/A
Building Group 3	Two adjacent buildings with pitched slate roofs and some corrugated metal outbuildings. One appears more recently built/roofed and well-sealed and had no obvious PRFs. The other has PRFs under gaps around lead flashing and likely at the wall head. The outbuildings do not have any PRFs.	Moderate	N/A
Building Group 4	Group of holiday lodges with pitched, tiled roofs, wooden cladding and fascia boards as well as one residential property with slate pitched roof, dormer windows and wooden cladding and fascia. PRFs suitable for summer roosting behind cladding and fascias in all buildings. Residential property also has PRFs under raised flashing around dormers and ridge.	Moderate - High	N/A
Kilfinnan Bridge	Concrete block bridge. PRFs between blocks on underneath and cavity above blocks. There are also gaps between the main bridge structure and recently added abutments being used to strengthen the bridge. Suitable for both summer and winter hibernation roosts.	Moderate	17

Structure(s)	Description	Suitability Assessment	Photograph Number
Building Group 5	Farm house and associated outbuildings. The farm house is slate roofed with PRFs at wall head and under loose slates suitable for summer roosting. Outbuildings are constructed from various materials such as stone, concrete block and prefabricated sheets. Some have wooden fascias. PRFs suitable for summer and winter roosting in gaps in stonework and summer only roosting behind fascias.	Low - Moderate	18
Building Group 6	Holiday lodges made from timber with tiled, pitched roofs and some with wooden fascias. PRFs behind wooden cladding, around gable ends and behind fascias, suitable for summer roosting.	Moderate	N/A

1.5.3 Otter

No otter signs or resting places were identified during the current survey. It is considered that the riparian habitat along Loch Lochy, the Caledonian Canal, Kilfinnan Burn and numerous smaller water courses provide suitable foraging and commuting habitat for otter. Fish are present within the larger water bodies and smaller water courses and surrounding habitats will provide amphibians, ground nesting birds and small mammals. There are also a variety of features which may be used as resting places such as long rush and grass dominated vegetation, cavities within rocks and hollows under tree roots.

1.5.4 Water Vole

No evidence of water vole activity was identified during the survey. The water courses crossing the survey area were generally shallow and rocky, meaning there was little substrate suitable for burrow creation. There is also a lack of in channel and bankside vegetation due to a lack of suitable growth substrate. (e.g. Photo 19). Where there was riparian vegetation, it tended to comprise of trees, over shading other vegetation, or very closely grazed grasses, providing little cover for water vole. With reference to the methods, the following positive and negative features were identified:

- Positive: A steep bank on a watercourse reducing the risk of burrow inundation.
- Negative: The presence of rocky or otherwise impenetrable substrates.
- Negative: Over-shading by trees.
- Negative: Fast flowing or shallow water, and flashy watercourses.

Overall, it is considered that the water courses within the survey area are sub-optimal for water vole.

1.5.5 Red Squirrel

A small number of cone remains indicative of red squirrel foraging were identified within the plantation forestry north west of Laggan Locks (Photo 19). No dreys were found.

North Laggan plantation and smaller broadleaved woodland patches are considered to offer suitable red squirrel foraging and drey creation resource throughout the year. They are connected through the site via scattered trees and are connected to woodland within the wider area.

1.5.6 Pine Marten

No den sites were identified. The plantation woods are unlikely to offer suitable den sites within tree trunks but there may be opportunities for den creation under the root plates of windblown trees. Nearby buildings, mature broadleaved trees or rocky crags may also be used. The woodlands and surrounding habitat are likely to host a variety of foraging resources such as small mammals, insects, birds, fungi and berry producing shrubs and trees.

1.5.7 Badger

No evidence of badger was found during the survey.

The broadleaved woodlands and grazed agricultural fields provide primary foraging resource for badger, whilst the mixed woodland, rough grassland and scrub would provide secondary foraging. However, the bed rock appears to be close to the surface throughout much of the survey area and ground conditions are wet and water-logged in many places meaning habitat is sub-optimal for badger sett creation.

1.5.8 Birds

During the survey the following birds were observed utilising habitats within the site:

- Pied wagtail (*Motacillia alba*);
- Jackdaw (*Corvus mondula);*
- Buzzard (*Buteo buteo*);
- Wood pigeon (*Columba palumbus*); and
- Wheatear (*Oenanthe oenanthe*),

The woodland, watercourses, loch and agricultural land provide a variety of foraging, nesting and loafing resources for birds throughout the year.

1.5.9 Reptiles

No direct sightings of reptiles were made during the current survey, however, the habitat is considered to be highly suitable for slow worm (*Anguis fragilis*), adder (*Vipera berus*) and common lizard (*Zootoca vivipara*), particularly along the Kilfinnan Road. The terrain either side of the existing road is on a south facing slope, which is ideal for basking reptiles. The habitat is varied with areas of stone piles, bracken and scrub as well as more open grassland, suitable for basking, foraging and refugia.

D BAT SURVEY METHODS AND RESULTS

Bat Survey Methods and Results

1.1 Methods

Within site clearance plans Kilfinnan Bridge and the barn at North Laggan Farm (see Appendix G for locations) are marked for removal to facilitate road upgrades. Both features were identified as being of moderate suitability for roosting bats during the April 2023 survey. Therefore, in reference to current guidance[1], both buildings were subject to closer internal and external inspection as well as two dusk emergence surveys within the main bat activity season (May to August). Additionally, five trees which are in proximity to planned works and have potential roost features were also subject to a ground-based inspection and an emergence survey.

Details of the survey dates and weather conditions are provided in Table 1 below.

Table 1: Bat activity survey sites and weather conditions

Structure	Survey Date	Sunset	Weather
Kilfinnan Bridge	9th May 2023	21:19	Dry and still with a clear sky towards the end of the survey. Initial temperature was 11°C and final temperature dropped to 9°C. Activity survey started at 21:00 and finalized at 22:50.
	6th June 2023	22:07	Cloudy but dry with light breeze. Initial temperature was 13°C and final temperature dropped to 12°C. Activity survey started at 21:52 and finalized at 00:07.
North Laggan Farmhouse shed	11th May 2023	21:23	Dry and still with a clear sky towards the end of the survey. Initial temperature was 11°C and final temperature dropped to 10°C. Activity survey started at 21:00 and finalized at 22:55.
	6th June 2023	22:07	Cloudy but dry with light breeze. Initial temperature was 13°C and final temperature dropped to 12°C. Activity survey started at 21:52 and finalized at 00:07.
Trees	7th June 2023	22:08	Dry, 80% cloud cover and breezy. Still towards the end of the survey. Temperature was 13°C throughout the survey. Activity survey started at 22:08 and finalized at 00:08.

Bat activity surveys aim to establish roost presence or absence and characterise any roosts found within, or adjacent to the site. Foraging and commuting routes in the surrounding landscape are also noted. The resulting data is used to inform the requirement for, and design of, mitigation and/or compensation, in line with current wildlife legislation. The survey effort (i.e. number of survey visits) is scoped from the suitability of the structures to host roosting bats, as determined by the Preliminary Roost Assessment (PRA) results.

Frequency division bat detectors (Bat Box Duet) coupled with audio recorders were utilised as well as time expansion detectors (Echo Meter Touch (EMT) and Anabat Swift) to gather digital sound file samples of bat activity during the surveys. A Thermal camera (Guide IR Pro 19) and an Infrared camera (Cannon AX60, coupled with 2 x Nightfox infrared torches) were used to gather digital images of bat activity and aid surveyors in low light conditions. Observations of bat activity were noted with species, time identified, location and behaviour all recorded.

Accurate numbers of bats can be difficult to identify during flight, therefore bat passes are used as a proxy measurement for activity levels. A bat pass comprises one sound file triggered by a bat call

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

being detected by the EMT or Anabat Swift. Post survey analysis was conducted to confirm species identification and any observed species that were not possible to identify at the time of survey.

During the activity survey, surveyors were positioned at vantage points to gain visual and audible coverage of all features which offer potential roosting sites to bats. The vantage point locations for each survey can be seen in Figures 1, 2 and 3 below. The surveyor profiles can be found in Table 2.

Figure 1: Kilfinnan Bridge Vantage Point Locations.

Figure 2: Barn at North Laggan Farm Vantage Point Locations.

Figure 3: Vantage Point Locations at Trees 1, 2, 3 and 4 (from left to right)

Figure 4: Vantage Point Location at Tree 5.

Table 2: Surveyor Profiles

Surveyor	Experience
Marta Zabalegui – Consultant Ecologist Lead Surveyor	Marta has experience in conducting bat surveys through emergence/re-entry surveys and Preliminary Roost Assessments on buildings, structures and trees throughout Scotland.
Scott Fraser – Consultant Ecologist Surveyor	Scott has experience in conducting bat surveys through emergence/re-entry surveys, hibernation surveys and Preliminary Roost Assessments on buildings, structures and trees throughout Scotland. Scott also has experience in deploying Guide TrackIR Pro 19 thermal imaging equipment and Anabat detectors to aid bat surveys.
Antonia Stewart – Graduate Consultant Surveyor	Antonia had two seasons experience as a freelance bat surveyor prior to joining Envirocentre as a graduate consultant in May 2023. Antonia is experienced in bat activity survey of structures and trained in the use of hand held detectors and supplementary audio and visual recording equipment.
Luigi Cristofaro – Graduate Consultant Surveyor	Luigi has experience in conducting PRAs , activity surveys of structures and trees and bat transect surveys. Luigi is trained in the use of handheld detectors and supplementary audio and visual recording equipment, as well as analysis of audio sound files for bats.
Mhairi Mackintosh – Principal Ecologist Project Manager and Reviewer	Mhairi is a licenced bat worker who has been involved in bat work since 2012. She has experience of undertaking emergence surveys on a variety of building types as well as transect surveys and advanced survey techniques including harp trapping and mist netting. She has published research into the effectiveness of bat mitigation, is chair of the North East Scotland Bat group and a Bats in Houses Case Work Officer with NatureScot. She has produced

1.2 Results

Please read this in conjunction with the Photographs in Appendix H.

1.2.1 Kilfinnan Bridge

No evidence of bats was identified during the external inspection. Gaps suitable for roosting bats are present underneath the bridge and may lead to internal cavities (Photo 17).

During the first emergence survey three pipistrelle bats emerged from the underside of the bridge on the eastern side between 21:35 to 22:04 and flew north along the water course. These bats were not echolocating at the time of emergence and so species cannot be confirmed. The size and flight pattern were consistent with those of pipistrelle bats. Additionally, most activity identified during the survey comprised a combination of soprano and common pipistrelle calls, with occasional foraging and commuting over the burn and to the south of the bridge. In total there were two brown-long eared bat, 34 common pipistrelle, 40 soprano pipistrelle and 14 pipistrelle species passes recorded on the Anabat Swift.

During the second survey there were no emergences recorded. The majority of the activity comprised of common and soprano pipistrelle calls.

The roost is assessed as being a transitional roost and/or day roost used by small numbers of female bats prior to maternity roosts forming. It may also be used by non-breeding females or males throughout the year.

1.2.2 North Laggan Farmhouse

No evidence of roosting bats, such as droppings or staining, was identified during the inspection of the building. However, several external PRFs were identified, including:

- Gaps in stonework (Photograph 22);
- Gaps between wall and wooden rafters (Photograph 22); and
- Gaps between wooden cladding and external wall on east aspect (Photograph 23).

The corregated metal lean-to on the south aspect of the building is in a deteriorated state and very open offering negligible roosting features.

No bats were seen emerging from the building during the surveys. Both common and soprano pipistrelles were observed utilising the building for sheltered foraging. Foraging activity from both species was recorded within hard standing to the north of the building, associated with other farm buildings, and along the riparian tree corridor which follows the Allt Cruinneachaidh, flowing west to east to the south of the building. One Brown long-eared bat pass was recorded on the Anabat swift.

1.2.3 Trees

A description of the PRFs within the trees following the ground- based inspection is presented below. No evidence of bats was observed during the inspection. The PRFs presented opportunities for small numbers of bats to roost but were unlikely to offer shelter for greater numbers of bats or roosts of higher conservation status. Trees 1,3,4 and 5 were assessed as offering moderate suitability for roosting bats with Tree 2 being of low suitability due the limited shelter offered by the PRF.

Table 3: Tree Ground Based PRF Inspection

Tree Number	Description of PRFs
1	Sycamore tree with PRFs in the form of a rot hole in the stem, cracked branch and to limbs growing close together creating a small cavity (Photo 25).
2	Conifer with a fluted trunk and raised bark offering limited shelter (Photo 26).
3	Sycamore with a knot hole, canker, snapped stem and branches. (Photo 27)
4	Sycamore with rot hole in trunk, branch tear and knot hole (Photo 28).
5	Larch with torn branches mid way up the stem (Photo 29).

No roosts were identified during the emergence surveys of the trees. Bat activity was limited to occasional passes from common and soprano pipistrelle bats commuting along the roadside tree line.

1.3 Additional

Whilst not the focus of the survey, it should be noted that evidence of nesting birds, including swallows was identified within the Barn at north Laggan (Photo 30). A Pine marten was spotted in an area of open land adjacent to Kilfinnan Bridge during the initial bat survey. An otter spraint was also identified under the bridge during the external inspection.

E GEOGRAPHICAL LEVEL OF IMPORTANCE OF ECOLOGICAL FEATURES

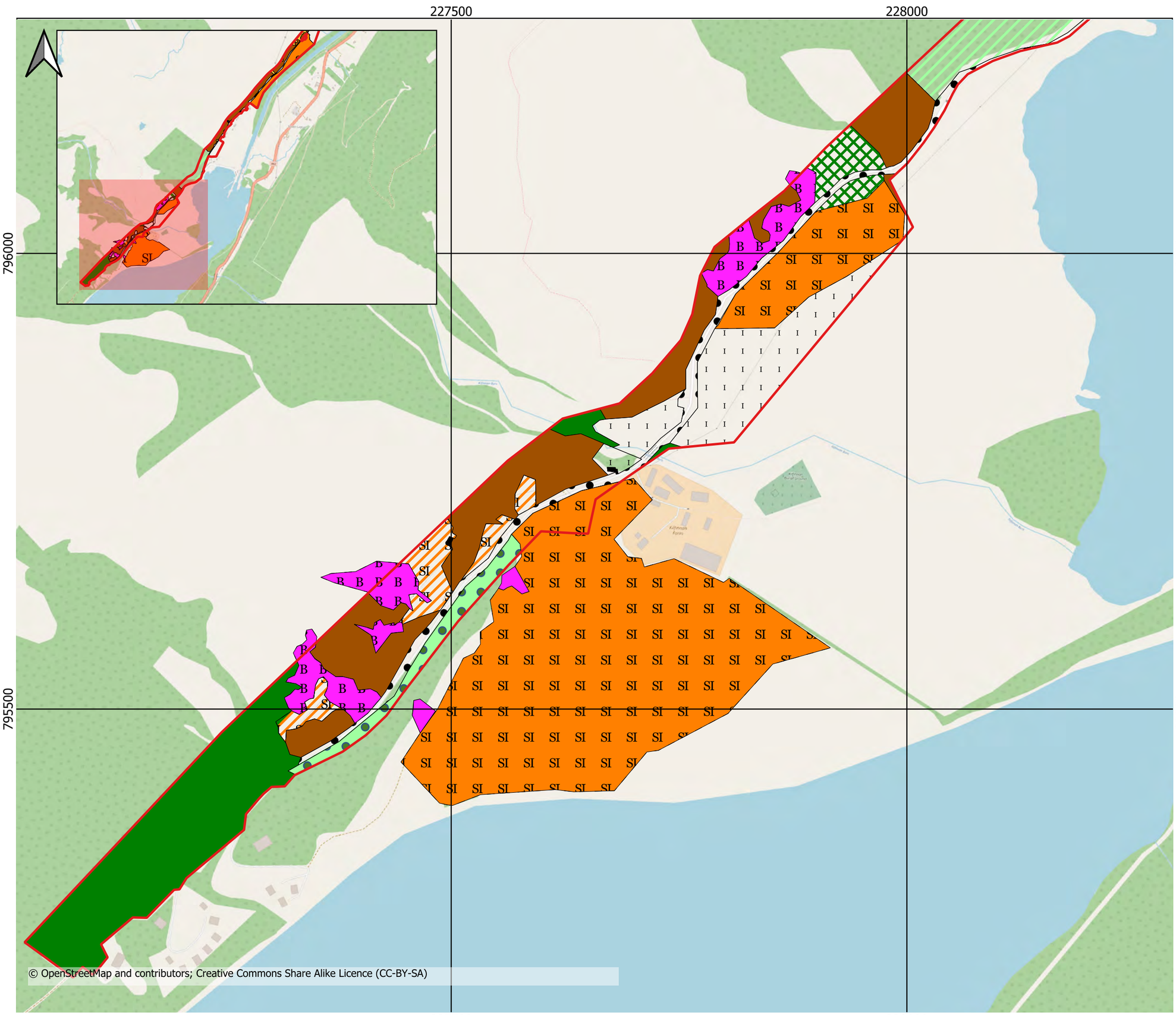
Level of Importance	Sites	Habitats	Species
International	Designated, candidate or proposed Special Areas of Conservation, Special Protection Areas and Ramsar sites; UNESCO (Ecological) World Heritage Sites; UNESCO Biosphere Reserves; Biogenetic Reserves.	A viable area of habitat included in Annex I of 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.
National (UK)	Sites of Special Scientific Interest; National Nature Reserve; Marine Conservation Zones (UK offshore).	An area of habitat fulfilling the criteria for designation as an SSSI 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 (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 .		
National (Scotland)	National Parks; Marine Protected Areas; Marine Consultation Areas.	Scottish Biodiversity List (SBL) Priority Habitats and Priority Marine Features (PMFs) (Scotland).	

Level of Importance	Sites	Habitats	Species
	Species of principal importance for biodiversity in the relevant countries , 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; 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).

F 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 (Scotland)		Any species on the Scottish Biodiversity List	Supporting greater than 5% of the Scottish 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

G SURVEY RESULTS PLAN



Legend

- Site Boundary
- A1.1.1 Broadleaved Semi-natural Woodland
- A1.2.2 Coniferous Plantation Woodland
- A1.3.1 Mixed Semi-natural Plantation
- A2.1 Dense Scrub
- B1.2 Improved Acid Grassland
- B2.2 Semi-improved Neutral Grassland
- B4 Improved Grassland
- C1.1 Continuous Bracken
- E2.1 Acid Flush
- E2.2 Basic Flush
- J3.6 Building
- J4 Bare Ground
- Small Watercourse

Do not scale this map

Client
SSE Renewables

Project
Kilfinnan Road

Title
Phase 1 Habitat Map 1 of 4

Status
Final

Drawing No.	Revision	Date
676743-QGIS004	A	28 Sept 23
Drawn	**Checked**	**Approved**
MM	AS	GN

Scale
1:4,000 @ A3

Rev	Date	Amendment	Initials
A	26 Oct 2023	Updated site boundary layer and extended habitats to match.	LC

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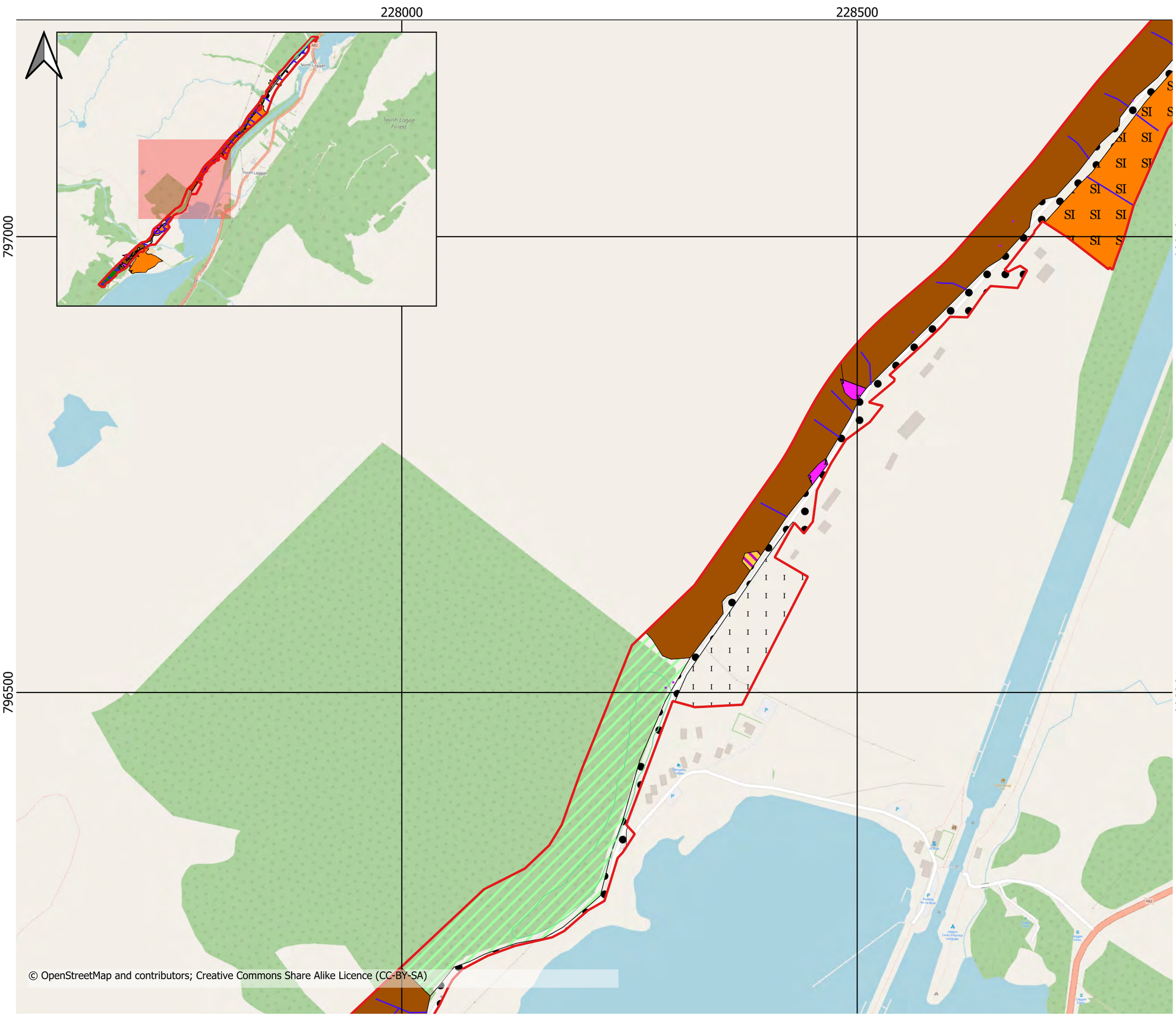

Legend

- Site Boundary
- A1.2.2 Coniferous Plantation Woodland
- B2.2 Semi-improved Neutral Grassland
- B4 Improved Grassland
- C1.1 Continuous Bracken
- D2 Wet Dwarf Shrub Heath
- E2.2 Basic Flush
- J4 Bare Ground
- Small Watercourse

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Client
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Project
Kilfinnan Road

Title
Phase 1 Habitat Map 2 of 4

Status
Final

Drawing No.	Revision	Date
676743-QGIS005	A	28 Sep 23
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Scale
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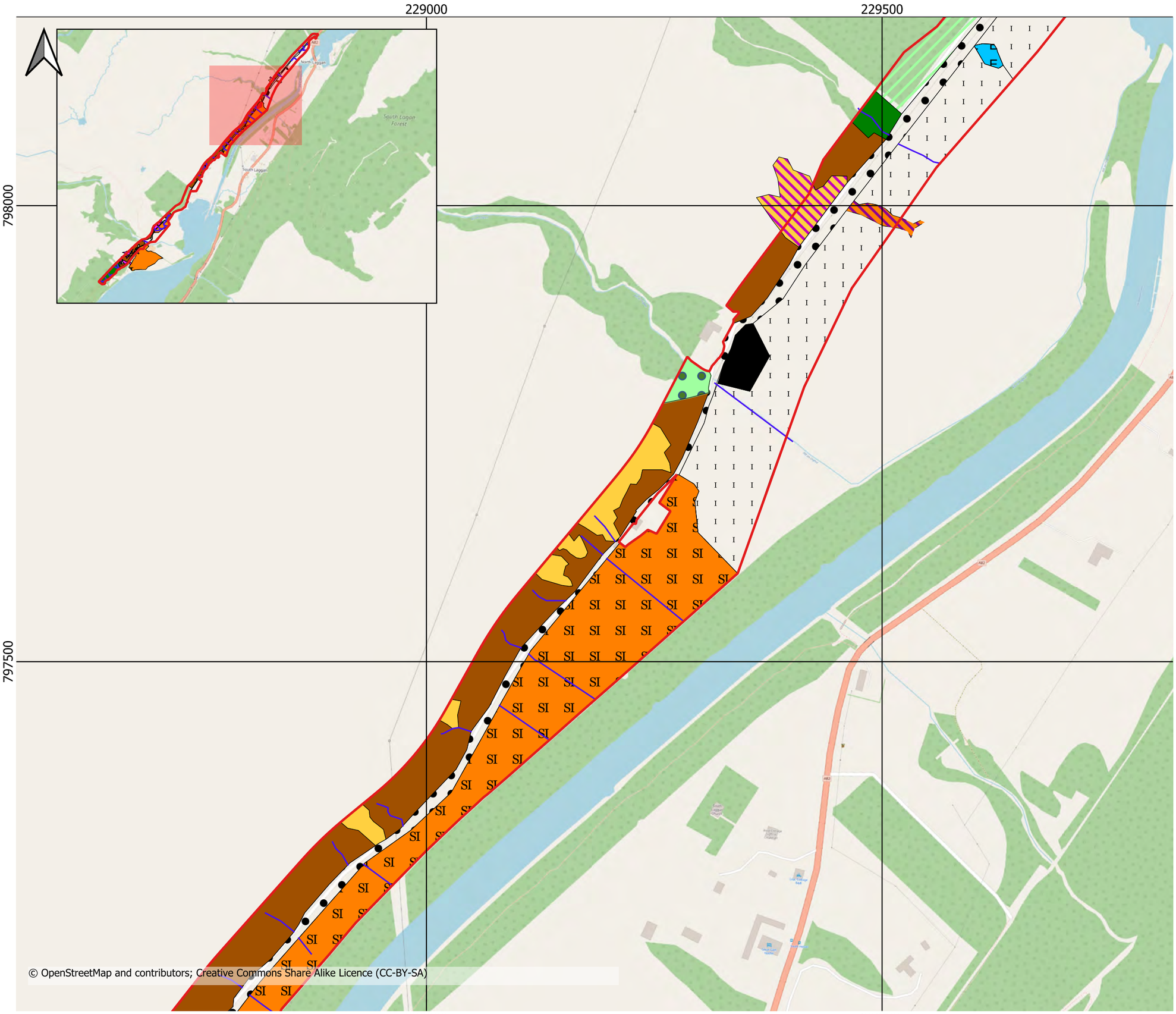

Legend

- Site Boundary
- A1.1.1 Broadleaved Semi-natural Woodland
- A1.2.2 Coniferous Plantation Woodland
- A1.3.1 Mixed Semi-natural Plantation
- B2.2 Semi-improved Neutral Grassland
- B4 Improved Grassland
- B5 Marshy Grassland
- C1.1 Continuous Bracken
- D1.1 Dry Dwarf Shurb Acid Heath
- D2 Wet Dwarf Shrub Heath
- G1.1 Standing Water
- J3.6 Building
- J4 Bare Ground
- Small Watercourse

Do not scale this map

Client
SSE Renewables

Project
Kilfinnan Road

Title
Phase 1 Habitat Map 3 of 4

Status
Final

Drawing No.	Revision	Date
676743-QGIS006	A	28 Sep 2023
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A	26 Oct 2023	Updated site boundary layer and extended habitats to match.	LC

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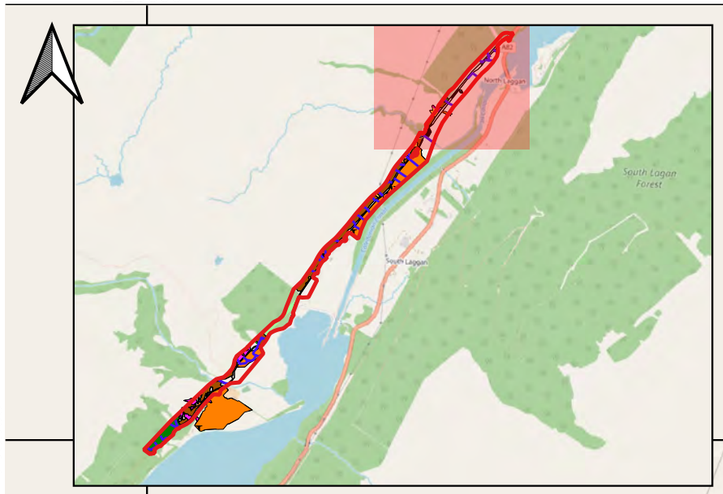

Legend

- Site Boundary
- A1.2.2 Coniferous Plantation Woodland
- A1.3.1 Mixed Semi-natural Plantation
- A1.3.1
- B4 Improved Grassland
- B5 Marshy Grassland
- C1.1 Continuous Bracken
- D1.1 Dry Dwarf Shrub Acid Heath
- D2 Wet Dwarf Shrub Heath
- D2
- J3.6 Building
- J4 Bare Ground
- J4
- Small Watercourse

Do not scale this map

Client
SSE Renewables

Project
Kilfinnan Road

Title
Phase 1 Habitat Map 4 of 4

Status
Final

Drawing No.	Revision	Date
676743-QGIS007	A	28 Sep 2023
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A	26 Oct 2023	Updated site boundary layer and extended habitats to match.	LC

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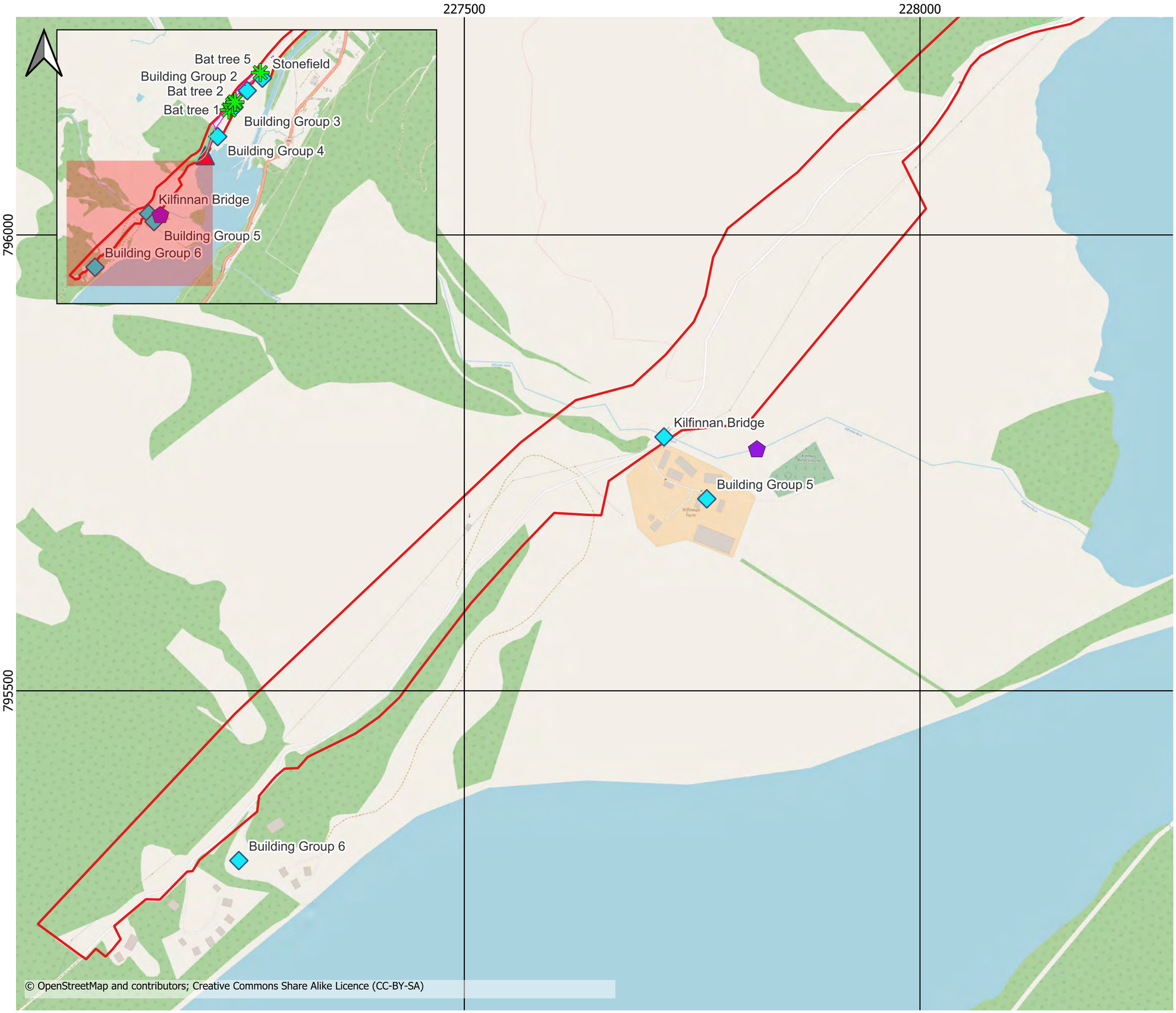

Legend

- Site Boundary
- Structure with Potential Bat Roost Suitability
- Otter

Do not scale this map

Client
SSE Renewables

Project
Kilfinnan Road

Title
Protected Species Map 1 of 3

Status
Final

Drawing No.	Revision	Date
676743-QGIS001	A	28 Sep 2023
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A	02 Nov 2023	Updated site boundary layer	LC

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Legend

- Site Boundary
- Structure with Potential Bat Roost Suitability
- Red Squirrel
- Bat tree
- Rhododendron

Do not scale this map

Client
SSE Renewables

Project
Kilfinnan Road

Title
Protected Species Map 2 of 3

Status
Final

Drawing No.	Revision	Date
676743-QGIS002	A	28 Sep 2023
Drawn	**Checked**	**Approved**
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Rev	Date	Amendment	Initials
A	02 Nov 2023	Updated site boundary layer	LC

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Building Group 1
North Laggan
North Laggan Barn
Mowgy Cottage
Bat tree 5
Stonefield
Building Group 2
Bat tree 2
Bat tree 1
Building Group 3
Building Group 4

Building Group 1

North Laggan
North Laggan Barn

Mowgy Cottage

Legend

- Site Boundary
- Structure with Potential Bat Roost Suitability
- Rhododendron

Do not scale this map

Client
SSE Renewables

Project
Kilfinnan Road

Title
Protected Species Map 3 of 3

Status
Final

Drawing No.	Revision	Date
676743-QGIS003	A	28 Sep 23
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Scale
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A	02 Nov 2023	Updated site boundary layer	LC

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H PHOTOGRAPHS

Photograph 1: Broadleaved semi-natural woodland on the banks of an unnamed burn, north of the road, to the south of Kilfinnan.

Photograph 2: North Laggan Plantation.

Photograph 3: Mixed semi-natural woodland to the south of Kilfinnan.

Photograph 4: Semi-improved neutral grassland, sheep grazed.

Photograph 5: Semi-improved neutral grassland, cattle grazed.

Photograph 6: Improved Grassland.

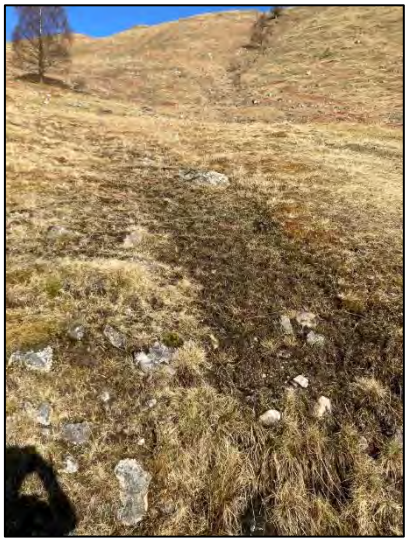
Photograph 7: Marshy grassland within improved grassland field.

Photograph 8: Continuous bracken on the slope above Kilfinnan Road.

Photograph 9: Dry dwarf shrub heath and bracken.

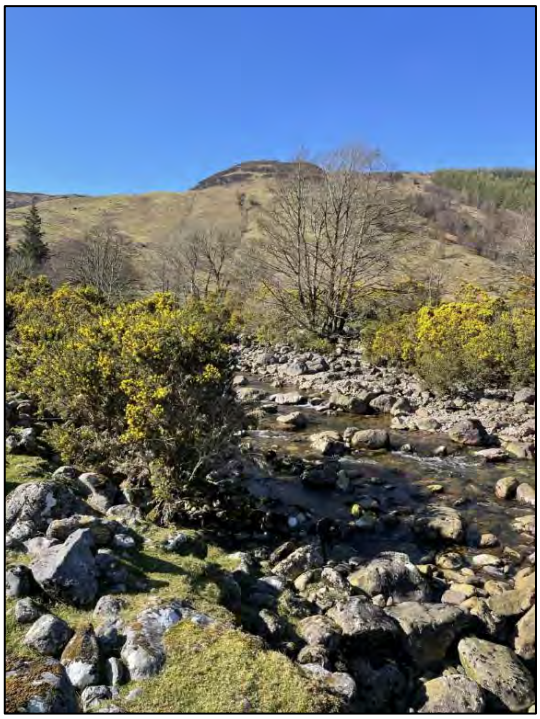
Photograph 10: Wet dwarf shrub heath.

Photograph 11: Acid flush



Photograph 12: Basic Flush

Photograph 13: Standing water.



Photograph 14: Kilfinnan Burn

Photograph 15: Building group 1

Photograph 16: Barn at North Laggan

Photograph 17: Kilfinann Bridge.

Photograph 18: Building group 5

Photograph 19: Rocky banks of Kilfinnan Burn

Photograph 20: Squirrel feeding remains.

Photograph 21: Location of pipistrelle bat emergences at Kilfinnan Bridge.

Photograph 22: Potential Roost Features (PRF) within the Barn at North Laggan.

Photograph 23: Wooden cladding on the Barn at North Laggan representing a PRF

Photograph 24: Interior of metal lean-to on south aspect of the Barn.

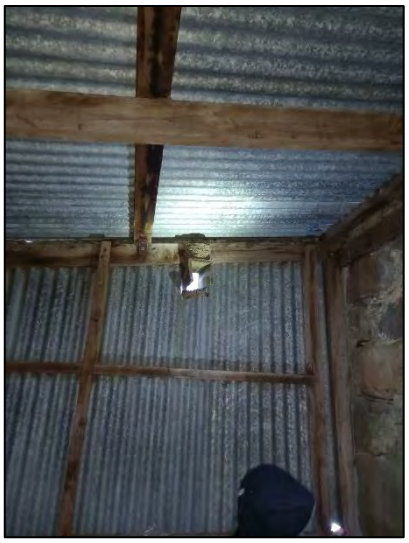
Photograph 25: PRFs in Tree 1.

Photograph 26: PRFs in Tree 2.

Photograph 27: PRF in Tree 3.

Photograph 28: PRF in Tree 4.

Photograph 29: PRF in Tree 5.



Photograph 30: Swallow nest within the Barn at North Laggan.

I BIODIVERSITY ACTION PLAN

Biodiversity Action Plan

The purpose of this Biodiversity Action Plan (BAP) is to provide site specific actions to be undertaken in conjunction with the proposed Kilfinnan Road upgrade, in order to meet National Planning Framework 4 Policy 3, requiring development proposals to deliver biodiversity enhancements. The plan also takes into consideration local priorities for biodiversity action highlighted within the Highland Nature Biodiversity Action Plan 2021 – 2026[1]. The plan will set out initial actions to be taken in order to create new habitats and improve existing ones. It also outlines future management required to maintain the habitats and a monitoring programme to determine if objectives are being met. The results of monitoring will determine future management actions with the plan to be reviewed following each monitoring period. The plan covers the initial ten year period post construction.

1.1 Aim

The overall aim of the plan is to provide more resilient and connected habitats with increased value for biodiversity. This can be met by achieving the following objectives:

- Expand the area of native woodland and scrub habitats.
- Remove non-native and invasive species from the site.
- Create species rich acid grassland within roadside verges.
- Supply additional shelter and breeding habitat for protected and notable species.
- Provide safe road crossings for small mammals, reptiles and amphibians.

1.2 Objectives

1.2.1 Expand The Area of Native Woodland and Scrub Habitats

Semi-natural broadleaved woodland is present within riparian corridors, particularly along Kilfinnan Burn and Allt Cruinneachaidh. Juniper scrub is also present within dry heath habitat on the slopes above Kilfinnan Road. Natural regeneration and expansion of these native woodlands and scrub habitat is currently constrained by livestock and deer grazing. Woodland is a priority habitat within the Highland Nature BAP with actions for the protection and regeneration of native woodlands being a key action. As well as providing important habitat for a range of species, woodlands can help tackle climate change through carbon storage, they can also stabilise soils, reducing erosion and slow water flow through catchments, providing natural flood defence. Juniper is also a local and national priority species.

In order to expand the native woodland, landscaping plans should include the planting of new woodland, in buffer areas, either side of the existing native woodland. This planting will increase the overall area of native woodland within the site and reduce edge effects within the existing woodland. The new planting should include a mix of taller canopy trees as well as smaller understory species. Suitable species include:

- Downy birch (*Betula pubescens*)

[1] Highland Nature Biodiversity Action Plan 2021 – 2026. Available at: https://www.highlandenvironmentforum.info/wp-content/uploads/2022/01/Highland-Nature-Biodiversity-Action-Plan-2021-2026-_compressed-.pdf (Accessed 18/09/2023).

- Silver birch (*Betula pendula*)
- Sessile oak (*Quercus petraea*)
- Aspen (*Populus tremula)*
- Alder (*Alnus glutinosa*)
- Scots pine (*Pinus sylvestris*)
- Rowan *(Sorbus acuparia*)
- Juniper (*Juniperous communis*)
- Holly (*Ilex aquifolium*)
- Hazel (*Corylus avellana*)

Landscape plans should also seek to create additional patches of juniper scrub within the bracken and dry dwarf shrub heath mosaic present on the slopes above Kilfinnan Road, between the unnamed plantation beside Laggan Locks and the North Laggan Plantation.

All new planting should be of local provenance where possible to reduce biosecurity risks associated with movement of plants and ensure specimens are suited to local growth conditions.

Planting should also be protected from herbivore damage. This protection may be done via livestock fencing and/or non-plastic tree guards. The woodlands can also be expanded through protection of natural regeneration from herbivores via the same methods.

Areas of expanded woodland and scrub should be monitored annually for the first five years post construction to check for any failed growth. Any failed planting should be replaced. Tree guards and fencing should also be checked and replaced or repaired as necessary. Any naturally regenerated saplings identified during annual checks should be protected with installation of additional tree guards.

1.2.2 Remove Non-Native and Invasive Species from the Site

Rhododendron and Sitka spruce are spreading within the site and on the adjacent hillside into acid grassland and dry dwarf shrub heath. These non-native and invasive are spreading from nearby ornamental planting associated with residential properties and plantation woodland. The invasive non-native species (INNS) can overshade and out complete native fauna, reducing biodiversity. Control of INNS is a key action within the Highland Nature BAP with Rhododendron highlighted as a species of concern as its leaf litter is toxic to many native species, and it spreads prolifically. Removal of INNS will provide space for more diverse native flora to grow.

Sitka spruce (and any other non-native conifer) growth outside of the plantations should be felled and the wood used on site to create log piles which will be of benefit to fungi, insects, small mammals, amphibians, and reptiles.

Rhododendron treatment may require a variety of techniques depending on the age and form of growth. Treatment should follow best practice guidelines[2] and will likely involve a combination of:

- Stem injection within mature bushes where individual stems can be accessed. This is the preferred method f and should be used where viable.
- Where individual stems cannot be accessed for injection treatment, mature bushes should be cut back and stumps treated with herbicide.
- Smaller bushes can be treated with foliar herbicide spray.
- Seedlings and young saplings can be hand pulled.

[2] Forestry Commission Best Practice Guide: Managing and Controlling Invasive Rhododendron. Available at: https://forestry.gov.scot/publications/93-managing-and-controlling-invasive-rhododendron (Accessed 18/09/2023)

Any cut, pulled, or dead rhododendron material should be disposed of appropriately. This may involve onsite burning or chipping, or off site removal for disposal at an appropriate waste facility.

Treatment (particularly for rhododendron) should commence pre-construction to reduce risk of spreading INNS during ground works. Monitoring and treatment of any new growth should take place annually for the first five years. The requirement for further monitoring and treatment will be reviewed after the initial five year period.

As rhododendron can spread via seeds which may lie dormant within the soil, biosecurity measures will be required for works in areas where rhododendron is present during construction as outlined in section 5.2.2 of the Ecological Appraisal.

1.2.3 Create Species Rich Acid Grassland Within Roadside Verges

Roadside verges present an opportunity for the creation of a species rich grassland corridor which will provide shelter and foraging habitat for a range of invertebrate species. Given the surrounding open habitats (outside of improved agricultural fields) largely comprise of acid grassland and heath and Scotland's Soil map[3] indicates mineral podzols are present, a seed mix suitable for nutrient poor, acid conditions should be used. Scotia seeds highland grassland mix[4] or similar is recommended.

Seed should be sown as directed by the supplier either during spring or autumn months for the best chance of establishment. Once established this type of grassland does not need regular mowing or management to maintain biodiversity value. If cutting is required for safety purposes at the road edge the area cut should be kept to the minimum required and is best done in early spring or late summer/autumn. Any cuttings should be removed to reduce nutrient input through decomposition.

Growth and establishment should be monitored annually for the first three year and then at years five and ten. Monitoring should comprise an assessment of condition based on the DEFRA Biodiversity Metric 4.0 Condition Assessment for Grasslands of high and medium distinctiveness[5] (or other suitable toolkit adapted for Scotland if one becomes available). If monitoring reveals conditions to be moderate or poor, adaptive management measures may be required.

1.2.4 Supply Additional Shelter and Breeding Habitat for Protected and Notable Species

Additional shelter and breeding habitat features can be created on site for a range of species by undertaking the following:

- Where tree felling is required to facilitate road upgrades, some felled wood should be retained on site in the form of log piles. This type of structure may be colonised by fungi and provide food and/or shelter for invertebrates, amphibians, small mammals and reptiles. To create a log piles, select a free-draining, south-facing location and pile logs and branches on the ground to create a heap. For the greatest biodiversity benefits log piles are up to 5m in length and 2m or more high. The base should contain the largest material with gaps left between parallel logs. The foundation of the pile should be designed with 15-25cm diameter logs placed parallel to each other. Secondly, place branches and logs perpendicularly on top of the foundation.

[3] Scotlands Soil Map available at: https://map.environment.gov.scot/Soil_maps/?layer=1# (Accessed 19/09/2023)
[4]Highland Grassland Mix available at: https://www.scotiaseeds.co.uk/shop/highland-grassland-mix/ (Accessed 19/09/2023)
[5] DEFRA Biodiversity Metric 4.0. Technical Annex I Condition Assessment Sheets and methodology. Available at: https://publications.naturalengland.org.uk/publication/6049804846366720 (Accessed 19/09/2023)

Lastly, smaller debris is added on top to form a mound. If brash/log piles do need to be managed this should be done in September – early-November, when birds are less likely to be nesting and wildlife is unlikely to be hibernating.

- Similarly, stones removed from the ground during works can be piled above ground to create shelter or a range of species.
- Two hibernacula for reptiles can be created on the south facing slopes adjacent to the road. This can be achieved by digging a hole 2-4m in diameter and 0.5m deep. It should be lined with sand or gravel and then backfilled loosely with a selection of logs, brash and rocks. It should then be capped with the excavated soil and turfs covering the top. Small gaps should be left for reptiles to access.
- Three x pine marten den boxes[6] should be erected within areas of mature trees which will be retained. These should be sited at least 30m from the roadside.
- Ten x red squirrel nest boxes[7] should be positioned within areas of retained mature trees at least 3m from the ground. These should also be sited at least 30m from the roadside.
- Ten x bat boxes should be erected on mature retained trees. A height of at least 3m is preferable. These should comprise a mix of woodcrete designs to suite the variety of bat species present within the area. Boxes such as the Schwegler 1FF and double fronted 2F are recommended.
- Twenty x bird nest boxes for a variety of woodland species which might be present should be placed within retained trees.
- Two x nest boxes suitable for Dippers and Wagtails[8] should also be erected on the newly constructed Kilfinnan Bridge.

The placement and installation of all habitat features should be overseen by a suitably experienced Ecological Clerk of Works (ECoW) or the project ecologist.

Monitoring of all features is recommended in years one, three, five, seven and 10. This monitoring will comprise checks for damage or loss of features. Any features damaged or lost should be replaced as necessary.

Monitoring of feature uptake is also recommended in years three and seven. This may include the use of camera traps (pine marten dens, stone and log piles), external visual checks/surveys (bird and squirrel nest boxes), and internal box checks (by an appropriate licenced ecologist for bat boxes). Monitoring of uptake will indicate if the siting is appropriate and allow for re-positioning if necessary. Data collected can be used as a case study to inform future projects and species records will be reported to the Highland Biological Recording Group.

1.2.5 Provide Safe Road Crossings for Small Mammals, Reptiles and Amphibians

It is not considered the road at Kilfinnan is large enough to be a barrier to movement of animals within the site but there are hazards associated with traffic collisions and amphibians and reptiles, becoming trapped in drainage and cattle grids which do not have suitable sides for climbing out of.

Where appropriate culverts should have a small mammal ledge with minimum width 150mm and 600mm headroom to allow for underground crossing.

[6] Boxes such as this are recommended: https://www.nestbox.co.uk/products/pine-marten-den-box (Accessed 21/09/2023)
[7] Boxes such as this are recommended: https://www.nestbox.co.uk/products/red-squirrel-nest-box (Accessed 21/09/2023)
[8] Boxes such as this are recommended: https://www.nhbs.com/vivara-pro-woodstone-grey-wagtail-and-dipper-nest-box?bkfno=238825&ca_id=1495&adlocale=uk&gclid=Cj0KCQjw06-oBhC6ARIsAGuzdw29SlKLa-MwCthO9LDhvp3TFVvyik7VzhHmL5vwcIEtAd_IE9BsenIaAtthEALw_wcB (Accessed 21/09/2023)

Any cattlegrids used should have sloping sides so that amphibians and reptiles do not become trapped and drown. Similarly, if any gully pots are installed, amphibian ladders should be used to provide a means of escape.

No specific monitoring or management for these measures are required past initial installation.

1.3 Programme

The table below sets out the actions to be undertaken in years one to ten of the plan.

Table 1: Recommended programme for actions to be undertaken.

Objective	Pre-/during construction	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Expand the area of native woodland and scrub habitats	Establishment of new planting and herbivore protection	Monitor and replace failed growth Check and repair/replace damaged herbivore protection	Monitor and replace failed growth Check and repair/replace damaged herbivore protection	Monitor and replace failed growth Check and repair/replace damaged herbivore protection	Monitor and replace failed growth Check and repair/replace damaged herbivore protection	Monitor and replace failed growth Check and repair/replace damaged herbivore protection Review need for further monitoring					
Remove non-native and invasive species from the site	Initial treatment and removal	Survey for and treat re-growth	Survey for and treat re-growth	Survey for and treat re-growth	Survey for and treat re-growth	Survey for and treat re-growth Review need for further monitoring or treatment					

Create species rich acid grassland within roadside verges	Establishment of grassland habitat	Monitor via condition assessment	Monitor via condition assessment	Monitor via condition assessment		Monitor via condition assessment					Monitor via condition assessment
Supply additional shelter and breeding habitat for protected and notable species	Installation of habitat features	Check for damage/loss and replace if necessary		Check for damage/loss and replace if necessary Monitor uptake		Check for damage/loss and replace if necessary		Check for damage/loss and replace if necessary Monitor uptake			Check for damage/loss and replace if necessary
Provide safe road crossings for small mammals, reptiles and amphibians	Installation of safe crossing features										

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796200

796000

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Enhancement of existing semi-natural riparian woodland through the planting of locally sourced native tree stock and protection of natural re-generation. Removal of non-native tree species such as Sitka Spruce.

Planting newly created verges with seed mix appropriate for local conditions. Scotia seed mix for highland grasslands or similar recomended.

Imagery source: Esri, DigitalGlobe, GeoEye, Earthstar Geographic, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS

Legend

- Site Boundary
- New Road
- New Roadside Verges
- Existing Road

Do not scale this map

Client
SSE Renewables

Project
Kilfinnan Road

Title
Biodiversity Action Plan 1 of 4

Status
Final

Drawing No.	Revision	Date
676743-QGIS008	-	31 Aug 2023
Drawn	**Checked**	**Approved**
MM	AS	AS

Scale
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Rev	Date	Amendment	Initials
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8 Eagle Street, Craighall Business Park, Glasgow, G4 9XA.
T: 0141 341 5040 E: info@envirocentre.co.uk
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Legend

- Site Boundary
- New Road
- New Roadside Verges
- Existing Road

Do not scale this map

Client
SSE Renewables

Project
Kilfinnan Road

Title
Biodiversity Action Plan 2 of 4

Status
Final

Drawing No.	Revision	Date
676743-QGIS009	-	31 Aug 2023
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W: www.envirocentre.co.uk

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Removal of Sitka Spruce and other non-natives. Enhancement of juniper scrub through planting with locally sourced stock and protection of natural re-generation.

Creation of stone and log piles on south facing slopes to provide shelter for reptiles

Imagery source: Esri, DigitalGlobe, GeoEye, Earthstar Geographic, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS

Legend

- Site Boundary
- New Road
- New Roadside Verges
- Existing Road

Do not scale this map

Client
SSE Renewables

Project
Kilfinnan Road

Title
Biodiversity Action Plan 3 of 4

Status
Final

Drawing No.	Revision	Date
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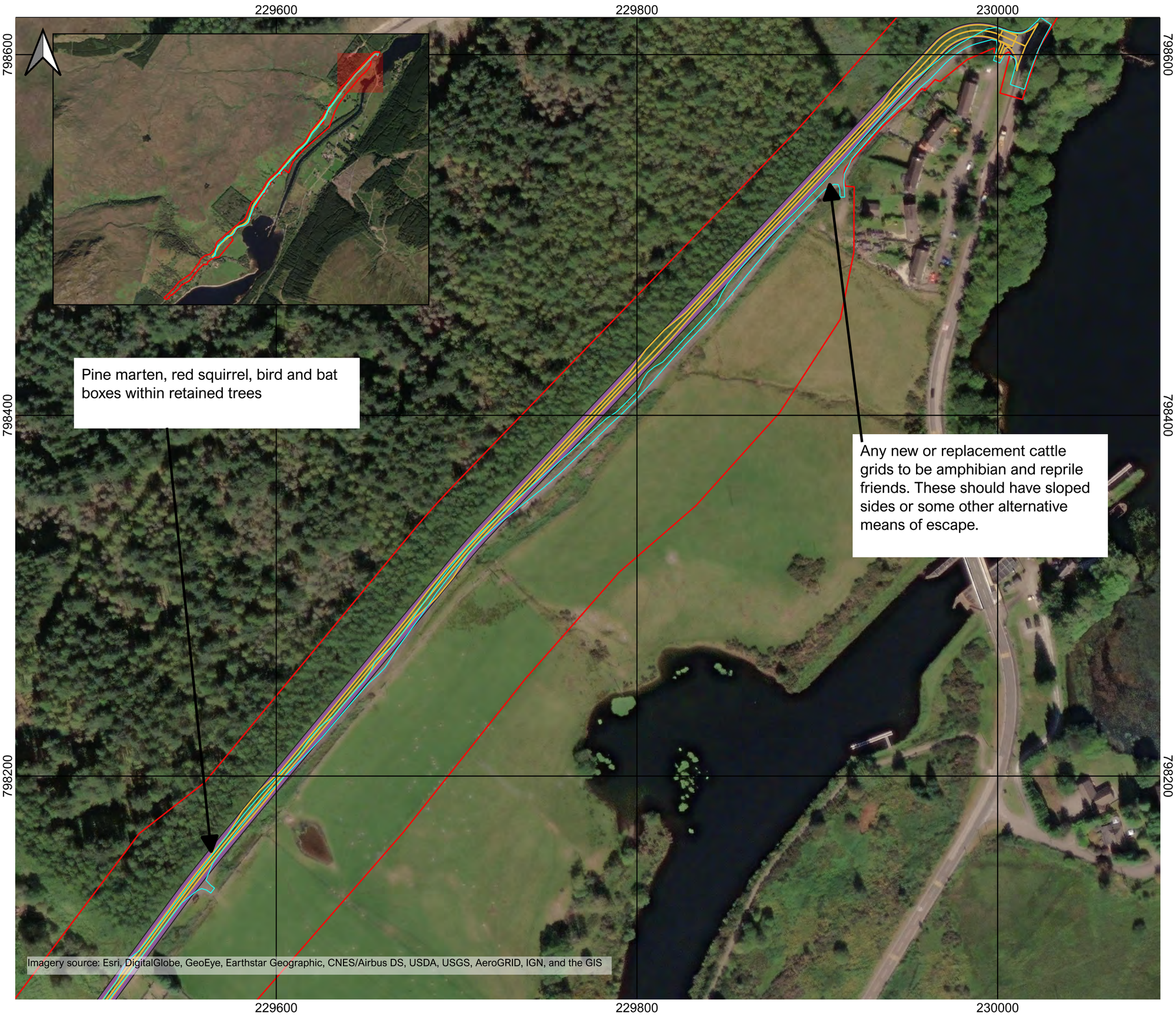
T: 0141 341 5040 E: info@envirocentre.co.uk
W: www.envirocentre.co.uk



Legend

- Site Boundary
- New Road
- New Roadside Verges
- Existing Road

Do not scale this map

Client
SSE Renewables

Project
Kilfinnan Road

Title
Biodiversity Action Plan 4 of 4

Status
Final

Drawing No.	Revision	Date
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Rev	Date	Amendment	Initials
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W: www.envirocentre.co.uk