Scottish & Southern Electricity Networks

TRANSMISSION

Spittal to Loch Buidhe to Beauly 400 kV OHL Connection Environmental Impact Assessment Volume 5 | Technical Appendix

Appendix 8.4 | Protected Species Technical Report

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Scottish & Southern Electricity Networks
TRANSMISSION

VOLUME 5: APPENDIX 8.4 - PROTECTED SPECIES TECHNICAL REPORT

1. INTRODUCTION

1.1.1 Environmental Resources Management Ltd (ERM) was commissioned by Scottish and Southern Electricity Networks Transmission (SSEN Transmission) to undertake protected species surveys for the Spittal to Loch Buidhe to Beauly (SLBB) 400 kV Overhead Line (OHL) Connection project (hereafter the 'Proposed Development').

1.1.2 A desk-based appraisal is presented based on publicly available data sets and resources, ariel imagery, as well as data purchased from the Highland Biological Recording Group (HBRG).

1.1.3 Protected species surveys focused on otter, water vole, badger, red squirrel, pine marten, Scottish wildcat, as well as roosting potential for bats. Great crested newts were considered separately, on account of their limited distribution, with the results of those surveys presented in **Annex B** of this report. The protected species surveys aimed to identify priority ecological features and species of greatest ecological importance to inform the Proposed Development's Environmental Impact Assessment (EIA) Report.

1.1.4 This Technical Appendix details the findings of the protected species surveys undertaken by ERM within the survey area for the Proposed Development. This Technical Appendix should be read in conjunction with **Volume 2, Chapter 8: Ecology and Nature Conservation** of the EIA Report.

1.1.5 All scientific names for species featured within this appendix and the other associated documents as part of the EIAR can be found in **Volume 5, Appendix 8.6: Species List**.

1.1.6 Surveys for FWPM are reported separately within **Volume 5, Appendix 8.9: Confidential Freshwater Pearl Mussel Report**.

1.2 Site Location and Description

1.2.1 The Proposed Development extends approximately 171 km south from the hamlet of Spittal in Caithness to the village of Beauly in Inverness-shire, within THC area of northern Scotland. The Proposed Development has been split into five sections as listed below:

- Section A: Spittal to Brora;
- Section B: Brora to Loch Buidhe;
- Section C: Loch Buidhe to Dounie;
- Section D: Dounie to near Strathpeffer; and
- Section E: Near Strathpeffer to Beauly.

1.2.2 A full description of the site location and section-specific information can be found in **Volume 2, Chapter 3: Project Description** of the EIAR. The location of the Proposed Development is shown in **Volume 3, Figure 3.1: The Proposed Development**, including all temporary and permanent infrastructure, including working corridors, as well as the proposed operational corridor (within woodland areas).

1.3 Legislation, Policy and Guidance

1.3.1 A full list of legislation, policy, and guidance pertinent to this project and the associated impacts assessment can be found in **Volume 5, Appendix 8.1: Legislation Policy and Guidance**.

2. METHODS

2.1 Desk-Based Study

2.1.1 A desk-based study was undertaken to inform the field surveys through identification of designated sites and species of importance that are present within the Study Area. The Study Area varies for different ecological features, each of which is presented as follows.

Zone of Influence

2.1.2 The 'zone of influence' (ZoI) for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries. A ZoI has been identified over which impacts on sensitive ecological receptors have been considered. The ZoI varies based on the perceived impact pathways identified as detailed below:

- Hydrological connectivity (surface water) downstream, is limited to 1 km, aligned with standard practice measures outlined in **Volume 2, Chapter 10: Water Environment**;
- Groundwater connectivity is considered out to 250 m in line with SEPA guidance; and,
- Protected species disturbance zones inline with NatureScot Standing Advice for Planning Consultations[1].

2.1.3 The Study Area for statutory designated sites has been set at 1 km from the Proposed Development and any potential management felling areas. Any designated sites identified with no likely connectivity to the Proposed Development or potential management felling areas have been scoped out and are not discussed within this report.

2.1.4 NatureScot SiteLink and open-source data sets were used to identify all relevant statutory designated sites.

2.1.5 Records of protected species, invasive non-native species (INNS) and "other species" records, as well as information on non-statutory designated sites were received from the Highland Biological Recording Group (HBRG) for the Study Area (2 km).

2.1.6 In addition to the above, desk-based baseline data reviewed included information from freely downloadable datasets which were searched for information on statutory and non-statutory designated sites as well any protected / notable flora and fauna. Only records within the last 25 years have been included.

Bat Habitat Appraisal

2.1.7 Areas of woodland habitat crossed by the Proposed Development, were identified and assessed for their potential to provide opportunities for commuting and foraging bats. This habitat assessment was undertaken in accordance with the BCT guidance, presented in **Table 3** and only habitat of moderate of high potential suitability was reported.

2.1.8 Aerial mapping overlaid with the Proposed Development design and mapped results from the habitat survey were used to identify locations where woodland clearance is required to enable the Proposed Development. The appraisal excluded commercial forestry on account of its rotational clearance / replanting as part of the forestry management strategy and general low suitability for bats. Further to this, areas of recent tree planting or young

[1] NatureScot (2024). Planning and Development: Protected Species. https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-protected-species [Accessed 16.04.25]

self-seeded trees were excluded on account of them being unlikely to be of sufficient height to provide linear landscape features by which bats are likely to navigate, and no operational requirement to remove the saplings for safe operation of the proposed OHL.

2.2 Survey Area

2.2.1 Survey areas presented within this report vary depending on the species being looked at, species specific survey areas have therefore been identified inline with best practice.

2.2.2 The Survey Area generally covers a 200 m survey corridor around the proposed OHL alignment (100 m either side of the OHL centre line) and 50 m either side of the centre line of associated access tracks. This larger survey area accounts for the likely inclusion of a Limit of Deviation within OHL consent application. A species-specific buffer was then applied as follows;

- 30 m (red squirrel, badger, pine marten, bats, water vole);
- 200 m up and downstream (for otter) on suitable watercourses to account for disturbance to natal holts; and,
- 200 m from the Proposed Development for Scottish wildcat.

On account of a long survey programme, required to cover the Proposed Development, surveys were undertaken on a number of design iterations including community alternative alignments and design moves to accommodate technical constraints or other environmental constraints, such as Schedule 1 birds or cultural heritage features. Where field data collected from surveys now exceeds 2 km from the current design this has been excluded from the report.

2.3 Field Surveys

2.3.1 All ecological field surveys have been undertaken in respect of the Proposed Development, where the Proposed Development encompasses a single alignment plus ancillary infrastructure such as permanent / temporary access tracks, compounds and pulling locations. An appropriate buffer has been applied to this depending on the species, as detailed above.

2.3.2 On account of the long survey programme, required to cover the full survey area for the Proposed Development, surveys were undertaken on a number of design iterations including community alternative alignments and design moves to accommodate technical constraints or other environmental constraints such as Schedule 1 bird habitat or cultural heritage features. Where field data collected from surveys now exceeds 2 km from the current design this has been excluded from this report.

Protected Species

2.3.3 Protected species are those that are deemed ‘sensitive’ and especially vulnerable to persecution or over-exploitation and are protected under legislation such as the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), Wildlife and Countryside Act 1981 and Protection of Badgers Act 1992. Other notable species of priority, such as those included on the Scottish Biodiversity List (SBL)[2] or Highland Nature Biodiversity Action Plan (HNBAP)[3] which are of particular importance for the conservation of biodiversity in Scotland, were also recorded where encountered.

[2] NatureScot. Scottish Biodiversity List. https://www.nature.scot/doc/scottish-biodiversity-list [Accessed 16.04.25].
[3] The Highland Council. Highland Nature Biodiversity Action Plan 2021-2026. https://www.highland.gov.uk/downloads/download/2260/highland_nature_biodiversity_action_plan_2021_to_2026 [Accessed 16.04.25].

2.3.4 Evidence of protected species including the animals themselves, their places of shelter and other field signs were searched for throughout the relevant Survey Area (detailed above). Species searched for included those highlighted as present or likely to be present due to their known UK distribution, pertinent desk-based records and the presence of suitable habitat. These species and their field signs are described below:

Otter

2.3.5 All watercourses and surrounding habitats were searched, following general 'standard' survey guidance (Chanin P 2003)[4], for the following signs:

- Shelters (holts): underground features where otters live. They can be tunnels within bank sides, underneath root-plates or boulder piles, and even man-made structures such as disused drains. Holts are used by otters to rest during the day and are the usual location of natal or breeding sites;
- Temporary shelters (couches): these are above ground resting sites. They may be partially sheltered, or fully exposed. Couches may be regularly used, especially in reed beds and on in-stream islands. Couches can be very difficult to identify and may consist of an area of flattened grass or earth. Where rocks or rock armour are used as couches, these can be almost impossible to identify without observing the otter in situ;
- Faeces (spraints or anal gel): may be used to mark territories, often on in-stream boulders. They can be present within or outside shelters and temporary shelters. Spraints have a characteristic smell sometimes described as being like jasmine tea, and often contain fish remains;
- Foraging signs: the remains of prey items may be found at preferred feeding stations. Remains of fish, crustaceans, mollusks, or skinned, legless amphibians may indicate the presence of otter;
- Prints: otters have characteristic footprints that can be found in soft ground and muddy areas;
- Paths: these are terrestrial routes that otters take when moving between resting sites and watercourses, or at high flow conditions when they will travel along bank sides in preference to swimming; and
- Slides and play areas: slides are typically worn areas on steep slopes where otters slide on their bellies, often found between holts or couches and watercourses. Play areas are used by juvenile otters in play and are often evidenced by trampled vegetation and the presence of slides.

2.3.6 Any of the above signs (apart from paths) are diagnostic of the presence of otter. It is often not possible to identify temporary shelters with confidence unless other field signs are also present. In order to confirm breeding status of a shelter usually requires monitoring with a remote camera, undertaken under licence. Camera monitoring did not form part of the current survey scope. Spraints are the most reliably identifiable evidence of the presence of this species.

Badger

2.3.7 Habitat within the Survey Area with the potential to support badgers was searched for field signs, with particular attention given to areas to woodland edges, linear features such as drystone walls and areas underlain by mineral soils. Field signs of badger are described in Scottish Badgers (2018)[5]. Field signs searched for include:

- Shelters (setts): individual or groups of entrances (holes), the size of a sett is generally indicated by the number of active entrances (including size of spoil heaps). This also maybe suggestive of its value within the social group and this in turn maybe indicative of the type of sett (main, annex or satellite) (**Table 1** and **2**);

[4] Chanin, P. 2003. Monitoring the Otter Lutra lutra. Conserving Natura 2000 River Monitoring Series No. 10, English Nature, Peterborough.
5 https://www.scottishbadgers.org.uk/information-hub/badger-surveying/ Accessed 05.12.24.

- Faeces (latrines and dung pits): these are small, excavated pits in which droppings are deposited in. Latrines are a collection of dung pits often used as territorial markers;
- Hairs: tufts of hair can often be found on fences, or in the entrances and spoil heaps of setts;
- Foraging signs: small scrapes, also known as snuffle holes, where badgers have searched for earthworms, insects and plant tubers. Feeding signs can also include dug up wasp or bee nests and ripped up dung of other species including cattle;
- Scratching posts: marks on trees (including fallen trees) where badgers have scratched leaving claw marks or ripped at areas of rotten bark to sharpen claws;
- Prints: badgers have characteristic footprints that can be found in soft ground and muddy areas; and,
- Paths: these are routes that badgers take when moving between setts and foraging areas.

2.3.8 Where setts were recorded their sett entrance classification and sett type were noted, in line with the definitions outlined in Scottish Badgers (2018), which are reproduced below in **Table 1** and **Table 2** below.

Table 1: Sett Entrance Classifications and Associated Descriptions (Scottish Badgers (2018), Surveying for Badgers: Good Practice Guidelines, Version 1.)

Classification	Description
Well Used	Are clear of debris and vegetation, sides worn smooth but not necessarily excavated recently.
Partially Used	Are not in regular use and have debris e.g. twigs and leaves in the entrance. They could be used after only a minimal amount of clearance.
Disused	Not in use for some time, are partially blocked and could not be used without considerable effort. Rabbits and foxes may take over part of a sett and keep disused entrances open.
Collapses	Where a tunnel has collapsed.
Air Holes	Where badgers have made a small hole in a tunnel roof from below.

Table 2: Categories of Sett and Associated Descriptions

Classification	Description
Main	Main setts usually have several holes with large spoil heaps, and the sett generally looks well used. There are obvious paths to and from the sett and between sett entrances. In the British National Badger Survey the average number of holes for a main sett was twelve, although main setts may be much smaller, even a single hole in exceptional circumstances. Normally the breeding sett and in continuous use, it is possible to find a main sett that has some disused or dormant entrances.
Annex	These are often close to a main sett, normally less than 150 m away, and are connected to the main sett by one or more well-worn paths. Usually there are several holes but the sett may not be in use all the time, even if the main sett is very active. The average number of holes per annexe sett in the British survey was eight.
Subsidiary (Satellite)	These are usually at least 50 m from a main sett, and do not have an obvious path connecting with another sett. They are not in continuous use. The average number of holes per subsidiary sett in the British survey was four.
Outlier (Satellite)	These often have little spoil outside the holes, have no obvious path connecting them with another sett, and are only used sporadically. When not in use by badgers, they are often taken over by foxes or even rabbits. However, they can still be recognised

Classification	Description
	as badger setts by the shape of the tunnel (not the actual entrance hole), which is at least 25 cm in diameter, and rounded or a flattened oval shape (i.e. broader than high). Fox and rabbit tunnels are smaller and often taller than they are broad. The average number of holes per outlying sett in the British survey was two.
Other	Badgers may adopt temporary rest sites sometimes referred to as daybeds generally open structures within dense vegetation.

Red Squirrel

2.3.9 Areas of woodland that have the potential to support red squirrel were surveyed, following visual, drey count, and feeding sign survey guidance from Gurnell et al. (2009)[6]. Field signs searched for included:

- Sightings: visual sightings of red squirrels;
- Shelters (Dreys): dreys are usually built close to the main stem of a tree, over 3 m from ground level and are c. 50 cm x 30 cm in size, composed of sticks and branches, often lined with leaves, grass, moss and lichen; and
- Foraging signs: stripped cones (cone cores), often scruffy (not neat), found below trees or at feeding stations.

Pine Marten

2.3.10 Signs of pine marten were searched for within the Survey Area, following the general survey methodology used by O'Mahony et al. (2005)[7] in that the survey area was walked slowly and searched for;

- Scats: searches for pine marten scats were made along linear features such as fence lines, stone walls or forestry tracks / rides. Also searches for scats on prominent features such as tree stumps, dead logs or stones, and around rock piles and dense scrub where the species could establish a den; and
- Shelters (Dens): identification of features which could be used as a den. Dens can include the utilisation of upturned trees, tree cavities, rocks or manmade structures such as log piles or large bird boxes.

2.3.11 Pine marten scat is difficult to differentiate from other species such as fox[8] and requires the use of environmental Deoxyribonucleic acid (eDNA) analysis to confirm origin. Where possible scats were sent for eDNA analysis to confirm identification.

Water Vole

2.3.12 All watercourses within the Survey Area were surveyed for water vole field signs as described in Dean et al. (2016)[9]. This involved searching for the following field signs:

- Faeces (droppings): recognisable by their size, shape, and colour. If not too dried-out these are also distinguishable from rat droppings by their smell;
- Latrines: droppings, often deposited in piles and frequently drummed / flattened with hind feet;
- Foraging (feeding stations): food items are often brought to feeding stations along pathways and hauled onto platforms. Recognisable as neat piles of chewed vegetation, often cut at a 45-degree angle;

[6] Gurnell, J., Lurz, P., Wauters, L. 2009. *Practical techniques for surveying and monitoring squirrels*.
[7] O'Mahony, D., O'Reilly, C., Turner, P. 2005. *National Pine Marten Survey of Ireland 2005.*
[8] A. Davidson, JDS. Birks, RC. Brooks, TC. Braithwait and JE. Messenger (2002) On the origin of faeces: morphological versus molecular methods for surveying rare carnivores from their scats. Journal of Zoology, 257, 141-143. The Zoological Society of London. London.
[9] 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.

- Lawns: may appear as grazed areas around land holes;
- Shelters (burrows): appear as a series of holes along the water's edge distinguishable from rat burrows by size and position;
- Nests: where the water table is high above ground woven nests may be found;
- Footprints: tracks may occur at the water's edge and lead into bank side vegetation. May be distinguishable from rat footprints by size; and
- Runways in vegetation: low tunnels pushed through vegetation near the water's edge; these are less obvious than rat runs.

2.3.13 Dean et al. (2016) states that water vole droppings are the only field sign that can be used to determine water vole presence reliably on their own; a collection of these field signs found in close proximity to each other can indicate water vole presence. Experience is required to distinguish feeding signs, burrows and footprints of water voles from those of other species.

Scottish Wildcat

2.3.14 Surveys for signs of Scottish wildcat were undertaken in line with NatureScot Guidance[10]. Wildcats tend to occupy woodland edges or a mosaic of habitats incorporating woodland, scrub, rough grassland, and moorland. A walk-over survey aims to establish if there are potential den sites present, which are diverse and could include rocky cairns, boulders, tree hollows, under root plates and dense gorse, as well as fox earths, badger setts, and rabbit burrows. Scats are not commonly found at den sites, though they were searched for throughout the survey area. Wildcats may also leave signs of flattened vegetation, smoothing of bark on branches, and hair or prey remains.

2.3.15 Due to the near impossibility of differentiating wildcat scat or hair from hybrid or feral / domestic cats, by eye, the use of eDNA assessment is required to confirm origin.

Bats

2.3.16 Surveys for bats were limited to identification of potential roost features through walkover survey.

2.3.17 Identified trees or groups of trees likely to require felling within the Survey Area were classified based on their general age and condition then inferring suitability, using the suitability guidelines in **Table 3: Guidelines for assessing the potential suitability of proposed** development sites for bats Assessment of the potential for bat roosts in the habitats was made based on ground observations throughout the Survey Area. Any buildings (or other suitable habitat features) identified for removal as part of the Proposed Development or located within the Survey Area were assessed for their potential to support roosting bats. All bat habitat assessment and classification was undertaken in line with Bat Conservation Trust (BCT)[11] guidance.

Table 3: Guidelines for assessing the potential suitability of proposed development sites for bats

Potential suitability	Description	
	Roosting habitats in structures	Potential flightpaths and foraging habitats
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of

10 Guidance - Wildcat Survey Methods. NatureScot https://www.nature.scot/doc/guidance-wildcat-survey-methods Accessed 22.01.25.
11 Collins, L. (ed) 2023. Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.

Potential suitability	Description	
	Roosting habitats in structures	Potential flightpaths and foraging habitats
	complete absence of crevices / suitable shelter at all ground / underground levels).	shade / protection for flight lines or generate / shelter insect populations available to foraging bats).
Negligible	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flightpaths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protected, appropriate conditions and / or suitable surrounding habitat to be used on a regular basis or by larger number of bats (i.e. unlikely to be suitable for maternity and not a classic cool / stable hibernation site, but could be used by individual hibernating bats).	Habitat that could be used by small numbers of bats as flightpaths such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity or hibernation – categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for flightpaths 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.
High	A structure 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 their surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool / stable hibernation site.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flightpaths such as river valleys, streams, hedgerows, lines of trees and woodland edge. 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. Site is close to and connected to known roosts.

[a] Negligible is defined as 'so small or unimportant as to be not worth considering, insignificant'. This category may be used where there are places that a bat could roost or forage (due to one attribute), but it is unlikely that they actually would (due to another attribute).

[b] For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

[c] Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten et al., 2016 and Jansen et al., 2022). Common pipistrelle swarming has been observed in the UK (Bell, 2022 and Tomlinson, 2020) and winter hibernation of numbers of this species has been detected at Seaton Delavel Hall in Northumberland (National Trust, 2018). This phenomenon requires some research in the UK, but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in prominent buildings in the landscape, urban or otherwise.

Reptiles and Amphibians

2.3.18 Species specific surveys for reptiles and amphibians (outside of GCN) were not undertaken, though incidental observations and general habitat suitability were recorded throughout protected species and habitat surveys.

2.3.19 Great crested newt surveys are reported within **Annex B**.

Invasive Non-Native Species (INNS)

2.3.20 Incidental notes were recorded for invasive non-native species during all protected. These species included, but were not limited to, American mink and sika deer.

2.4 Survey Limitations

2.4.1 Due to the length of the Proposed Development route, survey limitations have been generalized by survey type across the entire survey area and are not described by section.

- There were several occasions in May and June 2024 where poor weather (heavy rain preceding and / or during the surveys) lead to watercourse levels being elevated at the time of the protected species surveys. Some in-stream rocks were covered by water, which therefore may have impacted visibility or availability of signs such as otter spraints, which may have been washed away.
- Small sections of several watercourses throughout the Survey Area could not be safely accessed and were not surveyed fully due to one or a combination of features including deep gorges / ravines, steep banks, significant erosion, and dense or impassable vegetation cover. Where possible notes and photos were taken to assess the potential for the target species to be present.
- There is some uncertainty associated with identifying scats produced by pine marten due to their variability in composition and their similarity with those produced by other species such as fox (*Vulpes vulpes*) (Davidson et al. 2002[12]). DNA analysis is often used as a method to increase reliability of identification, although it is often not possible to determine to species level with this method due to possible degradation of samples or the collection of scat samples from species that cannot be sequenced (Croose et al., 2014[13]). Where possible, samples of scats were taken and analysed, and scats that were otherwise undeterminable between pine marten and fox were considered as 'potential pine marten' as a precautionary approach.
- Due to habitat and environmental factors such as dense stands of coniferous woodland plantations, areas of wind-blown trees, wet and boggy ground conditions, and areas of tall vegetation, surveying was occasionally unsafe and in-depth protected species walkover surveys were not possible, for example where tall bracken may have concealed badger setts. In these circumstances, surveys were restricted. While all habitats were assessed for species-specific suitability, some areas were not surveyed to their full extent for field signs. However, survey coverage and access were generally good across the Survey Area and these limitations, individually and combined, are not considered significant. Where possible notes and photos were taken to assess the potential for the target species to be present, and the periphery of the area searched for signs of use.
- Due to the length of the Proposed Development, surveys were carried out over several months and seasons. Species habits, movements, and sign production can change throughout different seasons.

[12] Davidson, A. et al. (2002) *On the origin of faeces: morphological versus molecular methods for surveying rare carnivores from their scats*. Journal of Zoology, 257 (2), 141-143.
[13] Croose, E., et al. (2014) *Distribution of the pine marten in southern Scotland in 2013.*

- Shooting, fishing and other works (forestry or Ground Investigations) restricted access to some estates, however it was often possible to rearrange access for periods when these activities were not being undertaken. Where access was not gained these areas have been highlighted for future survey.
- Great crested newt surveys were in some instances affected by cold temperatures that limited bottle trapping, and surveyors experienced limited access or visibility of ponds due to water reduction or vegetation growth throughout the season, which created difficult conditions for torch surveys. Additionally, bottle trap surveys were not carried out on some ponds due to UXO risk. Where surveys were not completed an assumed population value has been allocated.
- The inclusion of management felling areas came later in the design process, necessarily following completion of the forestry impact assessment. The inclusion of these areas came after the completion of the protected species surveys and so there is only partial coverage of these areas within the protected species survey. Due to the commercial nature of these felling areas, biodiversity value is likely to be low on account of low species diversity (monoculture) and a common age class, harvested before features of value to biodiversity develop (potential shelter features). As such limitations are considered only to apply to pine marten, red squirrel, badger and potentially Scottish wildcat.

3. RESULTS

3.1 Desk Study Results

Designated Sites

3.1.1 **Table 4** details all statutory designated sites identified within 1 km of Sections A-E with ecology or nature conservation features. Those with ornithological or geological features are dealt with in **Volume 2, Chapter 9: Ornithology** and **Volume 2, Chapter 10: Geological Environment** respectively. Full details, descriptions, and proximity to the Proposed Development of each statutory designated site listed below can be found in **Volume 2, Chapter 8: Ecology and Nature Conservation**.

Table 4: Statutory designated sites

Site Name	Approximate Distance to Proposed Development	Qualifying Interests / Notified Natural Features	Connectivity with Proposed Development
Section A			
Berriedale and Langwell Waters SAC	0 m	Qualifying Interests: • Atlantic salmon	The Proposed Development passes through this designated site and is therefore likely directly connected to it.
Caithness and Sutherland Peatlands SAC	0 m	Qualifying Interests: • Blanket bog • Depressions on peat substrates • Otter • Acid peat-stained lochs • Wet heath • Clear water lakes / lochs • Marsh saxifrage • Very wet mires	The Proposed Development passes through this designated site and is therefore likely directly connected to it.
River Thurso SAC	653 m	Qualifying Interests: • Atlantic salmon	This designated site is located within 1 km of the Proposed Development and may be hydrologically connected through the Burn of Tacher.
East Caithness Cliffs SAC	182 m	Qualifying Interest: • Vegetated sea cliffs	The closest point of the Proposed Development is associated with existing roads and on the far side of the A9 from the SAC. The A9 and associated drainage will be impeding groundwater flow.
Moray Firth SAC	194 m	Qualifying Interests: • Subtidal sand banks • Bottlenose dolphins	The closest point of the Proposed Development is associated with existing roads and on the far side of the A9 from the SAC.

Site Name	Approximate Distance to Proposed Development	Qualifying Interests / Notified Natural Features	Connectivity with Proposed Development
			The A9, highland main line and associated drainage will be impeding groundwater flow.
Caithness and Sutherland Peatlands Ramsar Site	0 m	Interest Features: • Blanket Bog • Mire • Oligotrophic lochs in addition to dystrophic lochs, lochans & pools, and wet heath • Sphagnum lindbergii and S. majus. (moss species) • Bog orchid • Oreodytes alpinus (water beetle) • Otter • Freshwater pearl mussel.	The Proposed Development passes through this designated site and is therefore likely directly connected to it.
Dunbeath Water SSSI	0 m	Notified Natural Features: • Upland birch woodland	The Proposed Development passes through this designated site and is therefore likely directly connected to it.
Langwell Water SSSI	0 m	Notified Natural Features: • Upland birch woodland	The Proposed Development passes through this designated site and is therefore likely directly connected to it.
Shielton Peatlands SSSI	0 m	Notified Natural Features: • Blanket bog	The Proposed Development passes through this designated site and is therefore likely directly connected to it.
Berriedale Water SSSI	0 m	Notified Natural Features: • Upland birch woodland	The Proposed Development passes through this designated site and is therefore potentially directly connected to it.
Berriedale Cliffs SSSI	182 m	Notified Natural Features: • Maritime cliff	The closest point of the Proposed Development is associated with existing roads and on the far side of the A9 from the SSSI. The A9 and associated drainage will be impeding groundwater flow.
Coire na Beinne Mires SSSI	198 m	Notified Natural Features: • Blanket bog	Only location within 250 m is an access track connecting to the far side

Site Name	Approximate Distance to Proposed Development	Qualifying Interests / Notified Natural Features	Connectivity with Proposed Development
			of the A9 from the SSSI. The A9 and associated drainage will be impeding groundwater flow, there are also several intersecting rivers running parallel on the far side of the A9.
Ousdale Burn SSSI	305 m	Notified Natural Features: • Upland birch woodland	The closest point of the Proposed Development is out with 250 m for potential groundwater connectivity.
World Heritage Sites Scotland: Flow Country	0 m	Inscribed under criterion ix as an outstanding example representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals. Attributes under this criterion include; • a) most extensive near continuous example of natural, actively accumulating, blanket bog ecosystem found globally. • b) climatic, topographic gradients and geological diversity: bog macroform diversity. • c) archive it stores (4th dimension). • d) natural laboratory – ongoing scientific and educational use. • e) carbon sequestration and storage. • f) water filtration and the impact on the water quality of associated riverine habitats.	The Proposed Development passes through this designated site and is therefore likely directly connected to it.
Section B			
Mound Alderwoods SAC	4 m	Qualifying Interests: • Alder woodland on floodplains	This designated site is located within 250 m of the Proposed Development and may be

Site Name	Approximate Distance to Proposed Development	Qualifying Interests / Notified Natural Features	Connectivity with Proposed Development
			connected to it through groundwater.
Dornoch Firth and Loch Fleet Ramsar Site	4 m	Interest Features: • Wetland types: Mound Alderwoods - estuarine alder woodland • Estuaries • Sand dunes • Vascular plants: Baltic rush; Seaside centaury; and Dwarf eelgrass and eelgrass. • Mammals: harbour seal; and otter.	This designated site is located within 250 m of the Proposed Development and may be connected to it through groundwater.
Mound Alderwoods SSSI	4 m	Notified Natural Features: • Wet woodland • Intertidal marine habitats and saline lagoons.	This designated site is located within 250 m of the Proposed Development and may be connected to it through groundwater.
Strathfleet SSSI	0 m	Notified Natural Features: • Upland oak woodland • Vascular plant assemblage	The Proposed Development passes through this designated site and is therefore likely directly connected to it.
Carrol Rock SSSI	14 m	Notified Natural Features: • Upland birch woodland	This designated site is located within 250 m of the Proposed Development and may be connected to it through groundwater.
Torboll Woods SSSI	268 m	Notified Natural Features: • Upland oak woodland	The closest point of the Proposed Development is out with 250 m for potential groundwater connectivity.
Section C			
River Oykel SAC	0 m	Qualifying Interests: • Freshwater pearl mussel • Atlantic salmon.	The Proposed Development passes through this designated site and is therefore likely directly connected to it.
Kyle of Sutherland Marshes SSSI	0 m	Notified Natural Features: • Flood-plain fen • Wet woodland • Vascular plant assemblage	The Proposed Development passes through this designated site and is therefore likely directly connected to it.
Section D			

Site Name	Approximate Distance to Proposed Development	Qualifying Interests / Notified Natural Features	Connectivity with Proposed Development
Allt nan Caorach SSSI	0 m	Notified Natural Features: • Upland birch woodland • Subalpine dry heath	The Proposed Development passes through this designated site and is therefore likely directly connected to it.
Section E			
Conon Islands SAC	344 m	Qualifying Interests: Alder woodland on floodplains	Closest point is upstream out with 250 m for potential groundwater connectivity. Downstream elements exceed 1 km distance for hydrological connectivity.
Lower River Conon SSSI	344 m	Notified Natural Features: • Wet woodland • Open water transition fen (includes swamp) • Saltmarsh	Closest point is upstream out with 250 m for potential groundwater connectivity. Downstream elements exceed 1 km distance for hydrological connectivity.

Invasive Non-native Species

3.1.2 Records of the following INNS were identified during the desk study within the Study Area for the Proposed Development:

- American mink (Sections C, D and E); and,
- Sika deer (all Sections).

Records of mink were also identified on the north coast of Scotland west of Thurso (NBN Atlas) suggesting mink are likely present throughout the Proposed Development but under recorded within Section A and B.

Protected Species

3.1.3 Records of protected species returned during the desk-based study are included in **Table 5** below.

Table 5: Summary of Desk-based Study Results for Protected Species.

Species		Section				
		A	B	C	D	E
Mammals	Badger	✓	✓	✓	✓	✓
	Brown hare	X	X	✓	✓	✓
	Mountain hare	X	✓	X	✓	✓
	Otter	✓	✓	✓	✓	✓
	Pine marten	✓	✓	✓	✓	✓
	Red squirrel	✓	✓	✓	✓	✓

Species		Section				
		A	B	C	D	E
	Scottish wildcat[14]	X	✓	✓	✓	✓
	Water vole	✓	✓	✓	✓	✓
Bats	Pipistrelle species	✓	✓	✓	✓	✓
	Brown long-eared	X	✓	✓	✓	✓
	Nyctalus spp.	X	X	X	✓	✓
	Myotis spp.	✓	✓	✓	✓	✓
Reptiles	Adder	✓	✓	✓	✓	✓
	Common lizard	✓	✓	✓	✓	✓
	Slow worm	✓	✓	✓	✓	✓
Amphibians	Great crested newt	X	X	X	✓	✓

Bat Habitat Appraisal.

3.1.4 A total of 42 points where the Proposed Development crosses woodland habitat with High or Moderate bat commuting or foraging potential were identified through desk-based appraisal. A summary is presented in **Table 6** with detailed information presented in **Annex A** of this report.

Table 6: Areas of Bat Foraging / Commuting Potential by Section

Species		Section				
		A	B	C	D	E
Bat habitat suitability	High	4	3	2	0	8
	High / Moderate	0	0	0	2	0
	Moderate	1	3	1	7	11

3.2 Field Survey Results

Protected Species

3.2.1 The field survey results are summarized per Section in **Table 7** to **Table 11: Protected Species Results Summary**. Full detailed field survey results are presented in **Volume 3, Figures 8.4: Protected Species Survey Results**.

3.2.2 Freshwater pearl mussel records are presented in **Volume 5, Appendix 8.9: Confidential Freshwater Pearl Mussel Report** and great crested newt records are presented in **Annex B** of this report. Sensitive records are presented in **Volume 3, Figure 8.6: Confidential Protected Species Survey Results**.

[14] Records before the year 2000 were excluded from NBN search

Table 7: Section A Protected Species Results Summary

Species	Survey Results Summary	General Habitat Suitability
Otter	Eighty-two instances of otter spraint were recorded throughout Section A. Twenty-nine records of potential otter shelters / temporary shelters were recorded within Section A. There were eight instances of otter tracks, paths, slides or prints.	Section A provides extensive suitable habitat for otter. Many rivers and burns pass through that are connected to freshwater lochs or lochans and a range of habitats that provide shelter and suitability for otter to commute, forage, and breed. Additionally, Section A passes through three sites that are designated for otter.
Badger	Six instances of tracks, one snuffle hole, one dung pit and two setts were recorded within Section A.	Seven instances of suitable habitat for badger were recorded throughout Section A, featuring a variable combination of sloped woodlands, soft soil, and cover suitable for setts and foraging. However, overall, the Section does not offer significant habitat suitability for badgers.
Pine marten	Ten scats, and three features with den potential were recorded, in addition to one instance of pine marten tracks.	The majority of habitat throughout this section is unsuitable for pine marten, though there are isolated areas of forestry that could be suitable for the species. There are some records of pine marten within the general area, though no records were returned within 2 km of the route in the last 15 years during the desk-based study, and the area remains outside of the species' main distribution in Scotland. A local crofter north of Berriedale mentioned to surveyors that pine marten have been observed in the plantation woodland close to their property, though it lies outside the Proposed Development and protected species survey area.
Scottish wildcat	No field signs or evidence of wildcat were found within Section A.	There are expanses of open uplands and heathlands occasionally fringed with coniferous woodland and dispersed native woodland, providing cover and hunting habitats for wildcat. There are historical records in the general region, however, no signs were recorded during field surveys, and no records were returned within 2 km of the route in the desk-based study.
Red squirrel	No field signs or evidence of red squirrel were found within Section A.	While some suitable woodland habitat exists within Section A, it lies outside of the species' known distribution in Scotland.
Water vole	Thirty-two instances of droppings or latrines and 34 potential water vole burrows were recorded, though some records included multiple latrines or burrows attributed to a single point so actual counts may be higher. Observations included six feeding stations or remains of suspected water vole feeding, and 14 potential tracks / trails.	The section passes through a large expanse of upland blanket bog containing transition mires, quaking bogs, marshes, fens, and northern Atlantic wet heaths. These habitats contained features throughout that were suitable for water vole, primarily extensive and connected watercourses with soft banks, slow flowing water, and an abundance of rush and grass species that provide suitable feeding and cover for water vole.
Bats	Structures across four locations presented features with bat roost potential.	Habitats providing suitable roosting habitat for bats within the survey area comprised of upland birchwoods, mixed woodland, other broadleaved woodland, and alder woodland on

Species	Survey Results Summary	General Habitat Suitability
		floodplains. Of these woodlands, some included veteran trees which are highly likely to be suitable for roosting bats. Some of these woodlands border watercourses or waterbodies, such as Langwell and Berriedale waters and Loch Toftingall, which provide suitable foraging and commuting habitat. Additionally, the Section features some areas of mosaic habitats featuring farmland, hedgerows, woodland edges, and grassland, which also provide valuable foraging and commuting habitat, though many of the woodlands throughout Section A are isolated with a lack of connectivity.
Other notable species	Sightings included two adder, one slow worm, and 12 common lizard, three of which were gravid females. Five small newt species (palmate or smooth newt) were observed, as well as eight sightings of common frog (all life stages) and four common toads.	One incidental record of optimal reptile habitat was recorded, though Section A passes through various types of suitable habitat and several reptile species were sighted during surveys.
INNS	Three instances of American mink scat were recorded within Section A.	

Table 8: Section B Protected Species Results Summary

Species	Survey Results Summary	General Habitat Suitability
Otter	Forty-two instances of spraints were recorded throughout Section B, as well as two potential otter paths. Additionally, there were 22 observations of potential shelters / temporary shelters.	Many rivers and burns pass through Section B that offer suitable foraging habitat, with nearby farmland, woodland, and upland habitats that provide shelter, commuting and breeding habitat.
Badger	One incidence of prints was recorded in Section B. In addition, there were two potential badger setts.	Sloping agricultural fields with woodland cover were recorded as offering suitable habitat for badger. Habitat throughout Section B was occasionally suitable with some farmland and coniferous woodland though few signs were found.
Pine marten	Eleven instances of potential pine marten scat were found within Section B.	The section passes through a few areas of coniferous and mixed woodland that provide suitable habitat for pine marten, particularly around the Loch Buidhe Substation and the forestry south of Loch Horn, with surrounding open areas suitable for hunting.
Scottish wildcat	No field signs or evidence of wildcat were found within Section B.	There are expanses of open uplands and heathlands occasionally fringed with coniferous woodland and dispersed native woodland, providing cover and hunting habitats for wildcat. However, no signs were recorded during field surveys, and no records were returned within 2 km of the route in the desk study.
Red squirrel	No field signs or evidence of red squirrel were found within Section B.	While some suitable woodland habitat exists within Section B, the majority of the Survey Area lies outside of the red squirrels known distribution in Scotland.
Water vole	Thirty-four records of burrows, some of which contained multiple burrows in one record, as well as being combined with latrines and runs. Five records of latrines, some of which contained multiple instances of latrines in one record, three records of foraging, five records of paths or prints, and one record of a dead water vole.	Suitability assessments found that most watercourses throughout Section B were unsuitable or sub-optimal habitat, many being too rocky or fast flowing for water vole, or shallow vegetated ditches or wet flushes with little running water.
Bats	Two instances of potential roost features were identified within Section B. One observation was of three veteran or ancient alder trees with multiple PRFs, and one was of a structure with a damaged slate roof and stone walls in poor condition which provided multiple gaps and cracks.	Habitats providing suitable roosting habitat for bats within the survey area comprised of wet woodland, upland birchwoods, mixed woodland, and other broadleaved woodland. Of these woodlands, some included ancient, veteran or mature trees which are highly likely to be suitable for roosting bats. Some of these woodlands border watercourses or waterbodies, such as Clynemilton Burn, River Fleet, Abhainn an t-Stratha Chàrnaig and Loch Brora, which provide suitable foraging and commuting habitat.

Species	Survey Results Summary	General Habitat Suitability
		Additionally, Section B features some areas of mosaic habitats such as farmland, hedgerows, woodland edges, and grassland, which also provide valuable foraging and commuting habitat, though many of the woodlands throughout Section B are isolated and lack connectivity.
Other notable species	Eight common frogs, five common toads and 14 common lizards were recorded, as well as four adders, two of which were adult males. Additionally, there were two observations of small newts (palmate or smooth newt). Additionally, there was one observation of a fritillary sp.	
INNS	Two instances of potential mink scat was recorded, in addition to one sighting of three sika deer.	

Table 9: Section C Protected Species Results Summary

Species	Survey Results Summary	General Habitat Suitability
Otter	Otter spraints were recorded at 11 locations along Section C. There were eight potential shelter / temporary shelters, two of which featured spraints and / or paths and slides. There were two potential trails, one containing an unidentified mammal print. An adult otter was seen crossing a ride within coniferous woodland.	The Kyle of Sutherland is a large and significant watercourse that runs through Section C, which provides optimal habitat for otter. Several other watercourses, as well as a mix of upland habitats, coniferous and broadleaf woodland, and farmland, provide suitable habitat for foraging, commuting, shelter, and breeding, throughout Section C.
Badger	Two latrines were recorded, and one potential sett was observed.	Areas of woodland throughout Section C were found to be suitable for badgers, with slopes, soft soil and a mosaic of tree cover. Similar habitats, as well as suitable farmland, are dispersed throughout the southern part of Section C.
Pine marten	Twenty instances of suspected pine marten scat were recorded, most of which were found along forestry tracks.	A large proportion of Section C offers coniferous woodland cover that provides suitable breeding and hunting habitat for pine marten. One landowner incidentally mentioned having pine martens denning on their property.
Scottish wildcat	No field signs or evidence of wildcat were found within Section C.	The mosaic of upland habitats, farmland, and forestry provide suitable hunting and breeding habitats for wildcat, and records exist in the area.
Red squirrel	Ten instances of feeding remains consisting of piles of stripped pinecones, typically on prominent mounds used as feeding stations. Two suspected dreys, one set of tracks in mud, and one sighting of an adult red squirrel in the canopy of coniferous woodland were recorded in Section C.	A large proportion of Section C offers coniferous and mixed species woodland, which provide suitable habitat for red squirrels. One landowner incidentally mentioned having red squirrels visit their birdfeeder.
Water vole	Three potential burrows were found in sub-optimal habitat within Section C.	Suitability assessments identified some suitable watercourses throughout Section C, though no optimal habitats were recorded; deer trampling was frequently observed around watercourses.
Bats	Two instances of potential roost features were recorded, one of which was a large grove of veteran trees, including beech, oak, and sycamore, with multiple PRFs and surrounding habitat suitability for bats.	Habitats providing suitable roosting habitat for bats within the Survey Area comprised of mixed woodland, semi-natural woodland, ancient woodland, wet woodland, lowland mixed deciduous woodland, and other broadleaved woodland. Of these woodlands, some included ancient, veteran or mature trees, which are highly likely to be suitable for roosting bats. Some of these woodlands border watercourses or waterbodies, such as the Kyle of Sutherland, Culrain Burn, and the River Carron, which provide suitable foraging and commuting habitat.

Species	Survey Results Summary	General Habitat Suitability
		Additionally, Section C features some areas of mosaic habitats such as farmland, hedgerows, woodland edges, and grassland, which also provide valuable foraging and commuting habitat.
Other notable species	Incidental observations included one adder, one smooth newt, three common lizards, four common toads, two common frogs and one fritillary *sp.* (butterfly).	
INNS	No INNS were recorded within Section C.	

Table 10: Section D Protected Species Results Summary

Species	Survey Results Summary	General Habitat Suitability
Otter	Spraints were recorded at 51 locations throughout Section D, as well as four tracks / prints, and one instance of feeding remains found next to a burn. There were 54 instances of potential shelter / temporary shelters. One adult otter was observed foraging in water.	Many rivers and burns pass through Section D that provide high quality foraging habitat for otter, including the major rivers Averon, Carron, Glass, and Sgitheach. Section D also offers a mosaic of upland habitats, coniferous and broadleaf woodland, and farmland, providing suitable habitat for foraging, commuting, shelter, and breeding.
Badger	Three instances of tracks in mud were recorded, as well as one potential latrine, three snuffle holes, and one badger sett were found in Section D.	Section D contains a mix of woodland, farmland and upland habitats, which offer suitability for badger, though there are large portions of open upland habitats that remain unsuitable for the species.
Pine marten	Scat was recorded at 59 locations throughout Section D. Four potential den sites and one track / prints were recorded.	The section contains several expanses of plantation woodland that provides suitable habitat for pine marten, particularly those of Dounie, Torrachilty and Novar Estate. Two landowners incidentally mentioned a known presence of pine marten. Suitable habitat for pine marten was observed throughout Section D, detailing pockets of broadleaf and conifer trees, structural diversity, rocky features for potential den sites, and surrounding mosaics of bog and heath suitable for hunting.
Scottish wildcat	No field signs or evidence of wildcat were found within Section D.	Much of the section offers a mix of suitable habitats. Observations noted suitable habitat for wildcat, detailing pockets of broadleaf and conifer trees, mixed species and age plantation with open understory and occasional glades, structural diversity, rocky features for potential den sites, and a surrounding mosaic of bog and heath suitable for hunting.
Red squirrel	Feeding remains were recorded at 23 locations throughout Section D, some of which were multiple instances attributed to one record, as well as 12 potential dreys. One red squirrel was seen in Section D.	This section contains several expanses of well-connected coniferous and mixed species woodland that provide optimal habitat for red squirrel.
Water vole	Forty instances of burrows were recorded, some of which had multiple signs attributed to one record including latrines, feeding remains, and / or runs. Additionally there were 18 instances of latrines or droppings, three instances of potential feeding remains and / or stations, four paths, and one print, making up at least three distinct colonies throughout Section D.	Suitability assessments indicated that there were some suitable or optimal watercourses throughout Section D, though most were unsuitable or sub-optimal due to being narrow, dry, boggy, or wet rides / flushes and artificial drains with few features suitable for the species. Field signs were mostly found in isolated clusters.
Bats	Ten PRFs were recorded throughout Section D.	Habitats providing suitable roosting habitat for bats within the Survey Area comprised of upland birchwoods, lowland mixed deciduous woodland, mixed woodland, wet woodland, and

Species	Survey Results Summary	General Habitat Suitability
		other broadleaved woodland. Of these woodlands, some included ancient, veteran, or mature trees which are highly likely to be suitable for roosting bats. Some of these woodlands border watercourses or waterbodies, such as the River Carron, River Averon, River Glass, Poll a' Ghrausaich, Peffery Burn, and Abhainn Sgitheach, which provide suitable foraging and commuting habitat. Additionally, Section D features some areas of mosaic habitats such as farmland, hedgerows, woodland edges, and grassland, which also provide valuable foraging and commuting habitat.
Other notable species	There were six instances of common frog, some observations containing multiple individuals as well as spawn and froglets. Four small newts (palmate newts or smooth newt). Thirteen instances of common lizard with some observations containing multiple individuals. One observation of an adder, and another of a shed adder skin. One small heath and a single wood ant nest were recorded within Section D.	Multiple observations of suitable reptile habitat including stone dykes, borrow pits, crags, and rocky heath habitat occurred within Section D.
INNS	Two American mink scats were recorded and five sika deer were seen within Section D.	

Table 11: Section E Protected Species Results Summary

Species	Survey Results Summary	General Habitat Suitability
Otter	Potential paths or slides leading into water were recorded at four locations, and spraints were recorded at 56 locations. There were 35 instances of shelter / temporary shelters recorded within Section E.	Several rivers, burns, and freshwater lochs pass through Section E, including the major rivers Orrin, Conon, and Beauly, providing optimal habitat for breeding and foraging. The network of watercourses as well as mosaic of woodland, farmland, and open upland habitats provide suitable otter habitat.
Badger	There were 32 instances of setts, potential setts or solitary burrows within Section E, though in some cases multiple entrances were attributed to one observation point. One large sett was recorded on an embankment where nine entrance holes were observed. Bedding was present in spoil heaps, though sett entrances looked inactive (webs and no fresh signs). One large soil mound containing bedding by an entrance hole was recorded within a conifer plantation. Another large sett was observed within a woodland, consisting of over 25 entrance holes, many of which were freshly excavated, and several instances of nearby snuffle holes and latrines. Four latrines and 30 snuffle holes were recorded. There were 22 instances of prints / tracks and two observation of guard hairs within Section E.	Section E passes through many areas of woodland, farmland, and forestry that provide suitable sett and foraging habitat for badgers. General habitat suitability was recorded throughout Section E, which included several sloping features with soft soil and woodland cover suitable for setts, and overall, approximately 91 signs or potential signs were recorded throughout Section E.
Pine marten	Thirty-seven instances of potential pine marten scat were recorded; two samples were sent out for eDNA analysis, both of which returned positive results. An adult pine marten was observed among a timber pile. Two instances of prints were recorded, as well as three potential den features within Section E.	Section E offers many areas of coniferous and mixed species woodland and open upland habitats, particularly around Fairburn, that provide optimal breeding and hunting opportunities for pine marten.
Scottish wildcat	One potential den was recorded underneath a large boulder within mixed woodland and heath mosaic habitat.	Section E offers many areas of coniferous and mixed species woodland and open upland habitats, particularly around Fairburn, that provide suitable shelter, breeding and hunting opportunities for wildcat.
Red squirrel	Five instances of feeding remains were recorded, as well as one squirrel sighting, and two potential dreys within Section E.	Several large areas of well-connected coniferous and mixed species woodland exist through Section E that offer suitable habitat for red squirrel.

Species	Survey Results Summary	General Habitat Suitability
Water vole	Five instances of burrows were recorded, three of which had multiple burrows and latrines attributed to one observation point. There was one instance of a latrine within Section E.	Eleven records of suitable or optimal watercourses were noted throughout Section E, though overall Section E does not offer significant water vole habitat suitability.
Bats	Twenty PRFs were recorded throughout Section E, many of which were associated with ancient or veteran trees that featured combinations of knot holes, rot holes, broken limbs, cavities, and flaking bark. Several trees were in well-connected woodland habitat, or part of lines or groups of trees.	Habitats providing suitable roosting habitat for bats within the Survey Area comprised of upland birchwoods, lowland mixed deciduous woodland, mixed woodland, wet woodland, and other broadleaved woodland, alder woodland on floodplains. Of these woodlands, some included ancient, veteran, or mature trees which are highly likely to be suitable for roosting bats. Some of these woodlands border watercourses or waterbodies, such as the River Beauly, River Orrin, River Conon, and Allt Goibhre, which provide suitable foraging and commuting habitat. Additionally, Section E features some areas of mosaic habitats such as farmland, hedgerows, woodland edges, and grassland, which also provide valuable foraging and commuting habitat.
Other notable species	Six common lizard sightings, one adder, two fritillary sp. sightings. A single slow worm record was reported by a local landowner within Aultgowrie wood approximately 565 m from the Proposed Development at its closest point. There was one common toad and 13 records of common frog, for many of which there were multiple individuals attributed to one observation point. Five small newts (palmate newt or smooth newt).	Drystone walls were recorded as providing optimal habitat for reptiles, as well as mosaic habitats of heath and bracken with rock features that provide basking opportunities and shelter.
INNS	One instance of potential mink scat was recorded within Section E.	

4. SUMMARY

4.1.1 Otter signs and suitable habitat were regularly recorded throughout all five Sections, with many major and minor watercourses and waterbodies crossing the route. The species is widespread throughout the region, and observations included live sightings of otters as well as many potential holts and field signs.

4.1.2 Signs and habitat suitability for pine marten were recorded throughout all five Sections, though they were more abundant in Sections C to E, probably a reflection of more abundant suitable habitat. The majority of observations were of scat, though there was one live sighting of a pine marten and several potential den sites recorded.

4.1.3 Badger signs and habitat suitability were recorded throughout all five Sections, though most were found within Section E. Badger signs became less abundant throughout the northern parts of the protected species Survey Area, potentially a reflection of lower habitat suitability with a greater abundance of wet ground e.g. blanket bog and hence larger territories. Several setts were identified within the Survey Area.

4.1.4 Water vole signs and habitat suitability were recorded throughout all five sections, though most were found in isolated clusters in Sections A, B, and D. Several distinct colonies were highlighted within the Survey Area.

4.1.5 Red squirrel signs and habitat suitability were found throughout Sections C, D, and E, and were absent from Sections A and B most likely due to lower levels of contiguous tree cover across these sections. Most observations were of feeding signs, though several dreys were identified, and there were three live sightings of red squirrels.

4.1.6 Wildcat habitat suitability was found throughout much of Sections C, D, and E, though potential signs were rare and not definitive. There were no confirmed signs of wildcat within the Survey Area and only one potential den site was identified in Section E.

4.1.7 Bat roost potential and habitat suitability was recorded throughout all five Sections. Most observations were of trees with PRFs, though some structures were identified within the Survey Area that possessed PRFs. An appraisal of woodland loss to enable the Proposed Development identified 17 habitats with High potential suitability for foraging / commuting and 23 habitats with Moderate potential suitability for bat foraging / commuting. An additional two habitat areas were identified as borderline Moderate / High suitability. As such, the Survey Area passes through areas that provide suitable roosting, commuting and foraging habitat for bats.

4.1.8 Fifty-nine reptiles and fifty-eight amphibian observations were recorded throughout the Survey Area, and suitable habitat was recorded regularly throughout all five Sections. Additionally, four record of fritillary sp. (butterfly), one small heath, and one wood ant nest were recorded; the region features many different habitats that support a wide range of invertebrate species.

4.1.9 Evidence of American mink were recorded across all sections bar Section C of the Survey Area, with sika deer being recorded within Section B and D.

4.1.10 The results are summarized in **Table 12**.

Table 12: Summary of Protected Species Survey Findings

Species		Section				
		A	B	C	D	E
Mammals	Otter	✓	✓	✓	✓	✓
	Pine marten	✓	✓	✓	✓	✓
	Badger	✓	✓	✓	✓	✓
	Water vole	✓	✓	✓	✓	✓
	Red squirrel	X	X	✓	✓	✓
	Scottish wildcat	X	X	X	X	✓
	Bats	✓	✓	✓	✓	✓
	Reptiles	✓	✓	✓	✓	✓
	American mink	✓	✓	X	✓	✓
	Sika deer	X	✓	X	✓	X

ANNEX A – COMMUTING AND FORAGING BAT HABITAT

Habitat Location	Section	Habitat Description	Habitat Suitability (BCT rating)
Dunbeath Water SSSI intersecting towers N83 and N84	A	Ancient woodland site with adjacent suitable habitat for foraging/commuting bats (river valley). Offers good connectivity between surrounding suitable habitat.	High
Berriedale Water SSSI intersecting towers N109 and N110.	A	Upland birchwoods with adjacent suitable habitat for foraging/commuting bats (the Berriedale Water). Offers good connectivity between surrounding suitable habitat.	High
Langwell Water SSSI intersecting towers N114 and N115.	A	Broadleaved woodland with adjacent suitable habitat for foraging/commuting bats (the Langwell Water). Offers good connectivity between surrounding suitable habitat.	High
Approx 0.9ha of woodland between towers N114 and N115 (just north of the Langwell Water SSSI)	A	Upland birchwoods with adjacent suitable habitat for foraging/commuting bats (the Langwell Water). Offers good connectivity between surrounding suitable habitat including Langwell Water SSSI.	High
Approx 0.5ha of woodland between towers N148 and N149 (just north of the River Helmsdale)	A	Upland birchwood adjacent to the River Helmsdale which offers good connectivity between surrounding suitable habitat for commuting/foraging bats.	Moderate
Approx 0.8ha of woodland between towers N219 and N220	B	Semi-natural broadleaf woodland. Potential for tree lines to act as connecting feature between surrounding woodland and freshwater habitats (notably Loch Brora), used by both commuting and foraging bats.	High
Approx 3ha of woodland between towers N223 and N225	B	Two separate areas of scattered broadleaf woodland. Potential for tree lines to act as connecting feature between surrounding woodland and freshwater habitats (notably Loch Brora and the Carrol Burn), used by both commuting and foraging bats.	Moderate
Approx 1ha of woodland between towers N240 and N241	B	Area of broadleaf woodland adjacent to extensive conifer plantation. Potential for tree lines to act as connecting feature between surrounding woodland and freshwater habitat (notably Loch Horn), used by both commuting and foraging bats.	Moderate
Approx 5.5ha of woodland between towers N241 and N242	B	Area of scattered broadleaf woodland adjacent to extensive conifer plantation. Potential to act as connecting feature between surrounding woodland and freshwater habitat (notably Loch Horn), used by both commuting and foraging bats.	Moderate
Approx 0.6ha of wet woodland between towers N265 and N266	B	Area of wet woodland on the bank of the River Fleet which provides good connectivity to surrounding suitable habitat (including Mound Alderwoods SSSI). River likely used as flightpath for commuting and foraging bats.	High

Habitat Location	Section	Habitat Description	Habitat Suitability (BCT rating)
Strath Carnaig and Strath Fleet Moors SSSI & SPA - Approx 2 ha of mixed broadleaf woodland between towers N275 and N276	B	Area of broadleaf woodland on both north and south bank of the Abhainn an t-Stratha Charnaig which provides good connectivity to surrounding suitable habitat. River likely used as flightpath for commuting and foraging bats.	High
Approx 2.5ha of woodland between towers S21 and S22	C	Area of mixed woodland adjacent to the A836 offering good connectivity to surrounding suitable habitat (including Kyle of Sutherland Marshes SSSI). Potential for tree lines to act as connecting feature between surrounding patches of trees and freshwater habitats, used by both commuting and foraging bats.	Moderate
Approx 0.5ha of broadleaf woodland between towers S23 and S24 (adjacent to Kyle of Sutherland Marshes SSSI)	C	Area of woodland on the bank of the Kyle of Sutherland offering good foraging opportunities and connectivity for commuting bats.	High
Approx 8 ha of broadleaf woodland between towers S24 and S26 (adjacent to Kyle of Sutherland Marshes SSSI)	C	Area of broadleaf woodland offering good, continuous connectivity to surrounding suitable habitat (including Kyle of Sutherland Marshes SSSI), for use by both commuting and foraging bats.	High
Approx 3 ha of upland birchwood between towers S38 and S40	D	Areas of upland birchwood adjacent to extensive conifer plantation. Potential to act as connecting feature between surrounding woodland and freshwater habitat (notably the River Carron), used by both commuting and foraging bats.	Moderate
Approx. 0.9 ha of mixed deciduous woodland between towers S38 and S39	D	Area of deciduous woodland on north bank of the River Carron which provides good connectivity to surrounding suitable habitat. River likely used as flightpath for commuting and foraging bats.	Moderate/High
Approx. 0.1 ha of wet woodland between towers S38 and S39	D	Strip of wet woodland along the south bank of the River Carron which provides good connectivity to surrounding suitable habitat. River likely used as flightpath for commuting and foraging bats.	Moderate
Approx. 0.6 ha of broadleaf woodland between towers S88 and S89	D	Areas of broadleaf woodland offering good, continuous connectivity to surrounding suitable habitat (including the River Avon and Loch Morie), for use by both commuting and foraging bats.	Moderate
Approx. 1 ha of mixed woodland adjacent to tower S99	D	Small patch of woodland which offers some connectivity to surrounding habitats via the nearby Allt a' Ghreaich and could still be used by foraging bats.	Moderate
Approx. 1 ha of mixed woodland between towers S114 and S115	D	Stretch of woodland running along the bank of the River Glass which provides good connectivity to surrounding suitable habitat (including the Allt nan Caorach SSSI). River likely used as flightpath for commuting and foraging bats.	Moderate/High

Habitat Location	Section	Habitat Description	Habitat Suitability (BCT rating)
Approx. 0.25 ha of broadleaf woodland between towers S115 and S116 (adjacent to Allt nan Caorach SSSI)	D	Small patch of semi-natural woodland which offers good connectivity to surrounding habitats (including the Allt nan Caorach SSSI) via nearly watercourses (Poll a' Ghreusaich and River Glass) and could still be used by foraging bats.	Moderate
Allt nan Caorach SSSI - Approx 1.5 ha of upland birchwood between towers S115 and S116	D	Upland birchwood on both sides of the Poll a' Ghreusaich. Despite some felling it still offers good connectivity to surrounding habitats via nearly watercourses for commuting/foraging bats.	Moderate
Approx. 0.4 ha of upland birchwood between towers S123 and S124	D	Strip of upland birchwood running adjacent to the River Sgitheach which offers good connectivity to surrounding habitats. River likely used as flightpath for commuting and foraging bats.	Moderate
Approx. 2.4 ha of mixed woodland between towers S155 and S156	E	Area of mixed broadleaf/conifer woodland adjacent to plantation woodland (including some clear fell). Potential to act as connecting feature between surrounding woodland and freshwater habitat (notably the adjacent lake), used by both commuting and foraging bats.	Moderate
Approx. 5.5 ha of mixed woodland between towers S157 and S158	E	Area of mixed broadleaf/conifer woodland adjacent to plantation woodland (including some clear fell). Potential to act as connecting feature between surrounding woodland and freshwater habitat (notably several nearby lakes), used by both commuting and foraging bats.	Moderate
Approx. 11.2 ha of upland birchwood between towers S158 and S161	E	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats.	High
Approx. 0.1 ha of upland birchwood between towers S162 and S163	E	Small area of upland birchwood habitat which provides connectivity to the wider landscape that could be used by foraging bats.	Moderate
Approx. 2.5 ha of mixed woodland between towers S162 and S164	E	Areas of mixed broadleaf/coniferous habitat, incorporating areas of clear fell, which provides connectivity to the wider landscape that could be used by foraging bats.	Moderate
Approx. 0.6 ha of broadleaf woodland intersecting towers S167 and S168	E	Stretch of woodland with treelines offering flightpaths for commuting bats.	Moderate
Approx. 1.5 ha of lowland mixed deciduous woodland intersecting towers S168 and S169	E	Stretch of good-quality woodland with treelines offering flightpaths for commuting bats between areas of suitable habitat.	High
Approx. 1.2 ha of upland birchwood between towers S179 and S182	E	Areas of birchwood habitat, intersected by existing OHL which provides connectivity to surrounding woodland and freshwater habitat (notably Loch Achonachie) that could be used by foraging bats. Tree lines could be used by commuting bats.	Moderate

Habitat Location	Section	Habitat Description	Habitat Suitability (BCT rating)
Approx. 0.5 ha of mixed woodland intersecting towers S186 and S187	E	Tree-lined watercourse that is likely to be used regularly by commuting/foraging bats.	High
Approx. 0.9 ha of upland birchwood between towers S190 and S191	E	Small area of upland birchwood habitat which provides connectivity to the wider landscape that could be used by foraging bats.	Moderate
Approx. 1.6 ha of broadleaf woodland adjacent to tower S192	E	Tree-lined watercourse (River Orrin) that is likely to be used regularly by commuting/foraging bats.	High
Approx. 16.5 ha of upland birchwood between towers S193 and S200	E	Areas of upland birchwood either side of the Allt Goibhre which is likely to be used regularly by commuting/foraging bats.	High
Approx. 3.2 ha of mixed woodland between towers S197 and S198	E	Area of mixed broadleaf/conifer woodland on the south side of the Allt Goibhre which is likely to be used regularly by commuting/foraging bats.	High
Approx. 1.3 ha of mixed woodland between towers S202 and S203	E	Area of mixed broadleaf/conifer woodland north of the Allt Fionnaidh which is connected to the wider landscape and offers commuting/foraging opportunities for bats.	Moderate
Approx. 0.3 ha of upland birchwood between towers S218 and S219	E	Tree-lined watercourse (Breakachy Burn) that is likely to be used regularly by commuting/foraging bats.	High
Approx. 3.2 ha of upland birchwood intersecting towers S223 and S224	E	Area of upland birchwood which is connected to the wider landscape and offers commuting/foraging opportunities for bats.	Moderate
Approx. 6 ha of mixed woodland between towers S228 and S229	E	Areas of mixed woodland either side of the River Beauly which is likely to be used regularly by commuting/foraging bats.	High
Approx. 1.1 ha of mainly coniferous mixed woodland between towers S229 and S230	E	Areas of mixed woodland comprised of mostly coniferous trees, including areas of clear fell. Close proximity to the River Beauly provides foraging/commuting opportunities for bats.	Moderate
Approx. 1.5 ha of mixed woodland between towers S231 and S232	E	Areas of mixed woodland comprised of mostly broadleaf trees, adjacent to farmland and plantation woodland. Close proximity to the River Beauly provides foraging/commuting opportunities for bats.	Moderate

ANNEX B – GREAT CRESTED NEWT SUMMARY 2024

Loch Buidhe – Beauly OHL

Great Crested Newt Summary 2024 - Main Line

PREPARED FOR

SSEN Transmission

DATE
18/12/2024

REFERENCE
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Loch Buidhe – Beauly OHL

Great Crested Newt Summary 2024 - Main Line

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

Acronym	Description
eDNA	Environmental DNA
GCN	Great Crested Newt
HSI	Habitat Suitability Index
NS	NatureScot
SSEN	Scottish & Southern Electricity Networks
OHL	Overhead Line
OS	Ordnance Survey

1. INTRODUCTION

Environmental Resources Management Ltd (ERM) has been commissioned by Scottish & Southern Electricity Networks (SSEN) Transmission to assess the potential impacts associated with the proposed 400 kV Overhead Lines (OHL) between Spittal, Loch Buidhe, and Beauly.

This report provides a summary of the great crested newt (*Triturus cristatus*) (GCN) surveys undertaken within 500 m of the proposed Route Options D1 and E1 in an area with historical records of GCN presence at Strathpeffer and Muir of Fairburn in the north of Scotland, hereby referred to as the 'Survey Area', in 2024.

2. METHODS

A range of surveys were undertaken in 2024 to determine presence and population sizes of Great crested newts in the Survey Area. Results from eDNA surveys undertaken in 2023 (detailed in ERM, 2023), including those ponds with positive results, were used to inform survey locations for population assessment surveys in 2024. Some additional ponds were found during walk over surveys in 2024. These ponds had samples taken for eDNA and population assessments were undertaken on those that returned positive results.

2.1 SURVEY PERSONNEL AND TIMING

Surveys were undertaken in accordance with NatureScot (NS) survey guidelines[1]. The guidelines recommend that four survey events be carried out between mid-March and mid-June, with at least two of the visits occurring between mid-April and mid-May. All surveys were carried out between the 25th of March and the 28th of June 2024, in suitable weather conditions. Six survey events were completed for those ponds which returned a positive eDNA result.

Surveys were led by Alex Marsden, (NatureScot Licence 259931), with over 6 years' experience as an ecological consultant and Richard Moore, (NatureScot Licence 146231), with over 10 years of experience as an ecological consultant. Surveys were assisted by Max Canning who has 4 years of ecological consultancy experience; Rebecca Ward who has 2 years of ecological consultancy experience; and Anna Domaradzka with 4 years of ecological consultancy experience.

Surveys also adhered to ARG-UK guidance on minimising the risk of spreading disease (particularly Chytridiomycosis) among amphibian populations.

2.2 PRESENCE/ABSENCE AND POPULATION SURVEYS

Water samples were taken from each pond found in order to conduct eDNA sample testing. Each survey visit used a minimum of three of the five methods suggested by NS – bottle trapping, egg searching, torching, netting and refugia searching. Those methods most suited to weather and general site conditions are chosen at the time of survey. The numbers of smooth (*Lissotriton vulgaris*) and palmate (*Lissotriton helveticus*) newts observed were also recorded as per standard practice. The method for each survey technique is outlined below.

[1] NatureScot (2020). Species Planning Advice: Great Crested Newt [Online]. Available at: https://www.nature.scot/doc/standing-advice-planning-consultations-great-crested-newts#:~:text=Alter%20vegetation%20types%20to%20displace,they%20will%20be%20at%20risk

2.2.1 EDNA

Water samples were used to test for the presence of GCN using environmental DNA (eDNA) within the Main Cable Route. eDNA survey methodology was carried out in accordance with NS standing advice[1], and Biggs et al. (2014)[2]. Samples were collected and stored in line with NS guidelines, and sent to NatureMetrics for analysis.

2.2.2 BOTTLE TRAPPING

Bottle trapping (also known as 'funnel trapping') comprises setting bottle traps around the margins of the pond, which are left overnight. The traps typically comprise 2-litre plastic bottles with the wide end cut off and inverted, attached to a cane. These are inserted into the sediment/substrate of the pond at approximately 2 m intervals (to a maximum of 50 traps per pond), with the narrow, open end (funnels) inserted into the water and the wide end clear of the water surface, with an air bubble trapped to enable the newts to breath. Newts swim into the entrance of the bottle but cannot escape. Traps are then checked the following morning between 0600 and 1100. Any newts caught are identified to species level, sexed, counted and released.

This method is particularly useful when surveying turbid and/or weedy ponds. It should only be used when the night-time air temperature is >5°C and if not undertaken correctly can be harmful to newts within the traps. It is also unsuitable to use this method during periods of hot weather and where water levels are low or if there is a risk of vandalism.

2.2.3 EGG SEARCHES

Egg searches involve the searching of all submerged vegetation (live and dead) within the pond for great crested newt eggs. All UK native newts fold a leaf over the top of an egg to protect it from predation. Once discovered, a licensed surveyor can identify the species of newt which laid the egg based on its size and colour. Once great crested newts have been reliably identified, the egg search will stop. This method can only assess a pond for presence/absence and not population size.

2.2.4 TORCHING

Torching is undertaking at night, ideally when there is little or no wind, no rain and a night-time air temperature >5°C. Surveys involve walking slowly around the edge of the pond and using high powered torches (minimum 50,000 candlepower) to shine into the water and search for great crested newts, which may seek the cover of vegetation to escape the bright light, making them easy to detect. Any newts observed are identified to species level, sexed (if possible) and counted.

This survey method is best suited for use in clear ponds, with limited suitability in heavily vegetated and/or turbid ponds.

[2] Biggs, J. et al (2014) Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice notes for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.

2.2.5 NETTING

Netting is undertaken using a long-handled dip-net. It can be conducted either during the day or in the evening, but evening surveys may produce better results as adult newts are more likely to be in open water and can be combined with other methods of survey, as required by the guidelines. A perimeter walk of the pond is undertaken and at least 15 minutes of netting is undertaken for every 50m of shoreline. Any newts caught are identified to species level, sexed, counted and released.

The method is less effective than bottle trapping, egg searching and torching when searching for adult great crested newts but is particularly useful in finding larvae during late summer. This method can only assess a pond for presence/absence and not population size.

2.2.6 REFUGIA SEARCHING

On land, newts take refuge beneath objects such as rocks, logs, moss, and discarded debris, particularly if they are flat and retain moisture. Looking underneath such objects, especially in the vicinity of ponds, can sometimes reveal newts. Juvenile and adult newts may be found under refuges from March to October. However, refuge searching is often not very reliable; newts may be present at a site, but simply not found under refuges. This method is best used as an additional technique when undertaking other survey methods. Anything moved during a refuge search should be replaced in its original position.

2.3 POPULATION CLASS SIZE

The maximum adult count recorded from a waterbody on a single night using a single survey technique is used to estimate the population size class as Small (≤10 individuals), Medium (11–100 individuals) or Large (>100 individuals). The populations of GCN in waterbodies within 500 m of each other can be considered together to form an effective meta-population if there are no significant barriers to dispersal and migration among the waterbodies[3].

2.4 LIMITATIONS

Ponds 17, 18, 19, 20 and 24 were located in an area previously used as a military training area and mortar range. Due to the Risk of unexploded ordinance (UXO) bottle trapping was ruled out on health and safety grounds. Pond 17 was deemed safe due to the artificial nature of the pond, any ground works during its expansion of were likely to have found any UXO in the vicinity.

The weather at the start of the survey season was also too cold to bottle trap some ponds. Weather conditions and survey constraints during the survey period are detailed in Table 1.

[3] JNCC (2003) Herpetofauna Workers' Manual. Peterborough: JNCC

TABLE 1 WEATHER CONDITIONS AND SURVEY CONSTRAINTS

Date	Surveyor(s)	Weather Conditions	Cloud Cover[1]	Wind Speed[2]	Precip[3]	Air Temp (°C)[4]	Survey Constraints
25/03/2024	Alex Marsden & Max Canning	Cloudy, overcast, rain forecast <1°C overnight	8	3	1	4	Too cold to bottle trap over night
26/03/2024	Alex Marsden & Max Canning	Cloudy, overcast, rain forecast	6	2	0	4	Too cold to bottle trap over night
27/03/2024	Alex Marsden & Max Canning	Chilly, overcast, flurries of rain and snow	8	3	2	2	Too cold to bottle trap overnight
15/04/2024	Alex Marsden & Rebecca Ward	Intermittent wintery showers	2	2	0	3	Too cold to bottle trap over night
16/04/2024	Alex Marsden & Rebecca Ward	Intermittent wintery showers	2	2	0	3	Temp below 5°C overnight so too cold to bottle trap
17/04/2024	Alex Marsden & Rebecca Ward	Cold, clear night	2	1	0	6	Temp below 5°C overnight so too cold to bottle trap
28/04/2024	Alex Marsden & Anna Domaradzka	Clear night	1	2	0	6	Temp below 5°C overnight so too cold to bottle trap
29/04/2024	Alex Marsden & Anna Domaradzka	Clear night	1	3	0	6	Temp below 5°C overnight so too cold to bottle trap
30/04/2024	Alex Marsden & Anna Domaradzka	Clear night	1	2	0	6	Temp below 5°C overnight so too cold to bottle trap
07/05/2024	Richard Moore & Anna Domaradzka	Drizzle, mostly cloudy. Wind NE 10mph, sunset 2120hrs	8	4	1	12	None
08/05/2024	Richard Moore & Anna Domaradzka	Drizzle, mostly cloudy. Wind NE, 10mph, sunset 2120hrs	8	4	1	12	None
09/05/2024	Richard Moore & Anna Domaradzka	Mostly cloudy, 3mph wind northeast, sunset 2121hrs	8	2	0	12	None
10/06/2024	Alex Marsden & Max Canning	Clear/dry	1	2	0	6	None

Date	Surveyor(s)	Weather Conditions	Cloud Cover[1]	Wind Speed[2]	Precip[3]	Air Temp (°C)[4]	Survey Constraints
11/06/2024	Alex Marsden & Max Canning	Calm/dry	8	1	0	6	None
12/06/2024	Alex Marsden & Max Canning	Slight rain	8	2	1	6	None
13/06/2024	Alex Marsden & Max Canning	Slight rain	8	1	1	9	None
24/06/2024	Richard Moore & Rebecca Ward	Clouds, warm, dry	8	1	0	16	None
25/06/2024	Richard Moore & Rebecca Ward	Dry, cloudy	7	1	0	13	None
26/06/2024	Richard Moore & Rebecca Ward	Dry, cloudy	8	1	0	10	None

[1] Unit of measurement used was okta
[2] Unit of measurement used was Beaufort wind force scale
[3] Precipitation intensity estimated on a scale of 0-5 where 0 = Dry, 1 = Light drizzle, 2 = Light rain, 3 = Moderate rain, 4 = Heavy rain, 5 = Torrential rain
[4] Air temperature was measured in-situ using a xxx

3. RESULTS

The ponds surveyed were located in the southern end of Section D and the central area of Section E, as displayed in Figure 1. The survey results for all ponds in the Survey Area that returned a positive eDNA result for great crested newts are summarised in Table 2. Some ponds were only partially surveyed due to negative eDNA results or incidental sightings. These results are presented in Table 3.

3.1 EDNA

eDNA surveys were undertaken for all new ponds found during the 2024 walk over surveys. Traditional population surveys were conducted for those ponds that were found early in the season, until eDNA results were returned (Table 3). All surveys were ceased for those ponds that returned negative eDNA results. One pond (202) returned a positive eDNA result but was discovered too late in the season for population assessments to be completed. As no surveys were conducted for this pond, it has not been included in Table 2. All those ponds surveyed in the 2024 survey period are mapped in Figure 1.

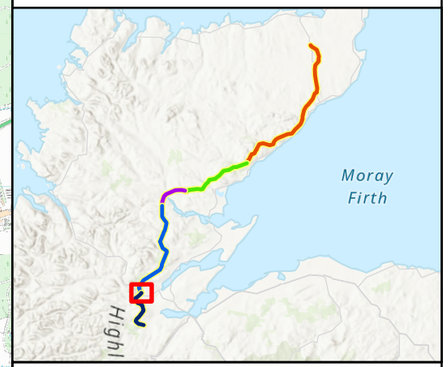
3.2 POPULATION ASSESSMENT

Population sizes were assessed, with three ponds determined to have a low population (17, 20, 24), and on with a medium population size (18) (Table 2). Five ponds (17, 18, 19, 20 and 24) were found to be within a distance of 500 m each other, forming a meta-population, as displayed in Figure 2.

Tower Location
Alignment Section E
Special Arrangement
Temporary Tower Compound Area
Equipotential Zone (EPZ) (Pulling Position)
Temporary Access Track - Trackway Panel
Temporary Access Track - Cut/Fill
Temporary Access Track - Floating
Permanent Access Track - Cut/Fill
Permanent Access Track - Floating
Survey Area

Survey Status
Full Population Survey
Partially Surveyed
eDNA Survey
HSI Survey

GCN presence
Great Crested Newts Not Present
Great Crested Newts Present



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DATE: 06/08/2025	APPROVED: KG

Figure 8.7
Spittal - Loch Buidhe - Beauly 400 kV OHL Connection
Great Crested Newt (GCN) Surveyed Ponds

ERM

Scottish & Southern Electricity Networks TRANSMISSION

PROJECTION: British National Grid

Path: \\uksprdgisfs01\Data\London\Projects\0652629 - SSE Beauly to Loch Buidhe\Maps\0720281 - SLBB - Ecology.aprx / 0720281 - SLBB - EIA - Ecology - Figure 8.7 - GCN Surveyed Ponds - A03

TABLE 2 RESULTS OF GREAT CRESTED NEWT POULATION SURVEYS

Pond Number	Visit Number	Date	Vegetation Cover (0-5)	Turbidity	Survey Type	Total Great crested newt count	Total Smooth Count	Total Palmate Count	Total Smooth/ Palmate Count
17	1	27/03/2024	3	Clear	Torching	4	2	0	0
					Netting	0	0	1	0
					Egg Searching	0	0	0	0
	2	15/04/2024	3	Clear	Netting	1	0	0	0
					Torching	3	1	0	1
					Egg Searching	1	0	0	0
	3	09/05/2024	4	Turbid	Torching	1	0	3	1
					Netting	0	0	0	0
					Refuge Searching	0	0	0	0
	4	21/05/2024	4	Clear	Torching	0	0	0	0
					Bottle Trapping	3	1	2	0
					Refuge Searching	0	0	0	0
	5	11/06/2024	4	Clear	Torching	0	0	0	0
					Bottle Trapping	0	0	0	0
					Netting	0	0	0	0
	6	25/06/2024	4	Clear	Refuge Searching	0	0	0	0
					Torching	0	0	0	0
					Netting	0	0	0	0
Pond 17: The highest count for GCN in pond 17 was 4; this is considered a **low** population.									
18	1	26/03/2024	2	Clear	Egg Searching	1	0	0	6
					Netting	0	0	0	0
					Torching	1	0	0	0

Pond Number	Visit Number	Date	Vegetation Cover (0-5)	Turbidity	Survey Type	Total Great crested newt count	Total Smooth Count	Total Palmate Count	Total Smooth/ Palmate Count
	2	30/04/2024	2	Clear	Torching	32	0	0	6
					Netting	0	0	0	0
					Refuge Searching	0	0	0	0
	3	08/05/2024	2	Clear	Torching	2	10	5	0
					Netting	0	0	0	0
					Refuge Searching	0	0	0	0
	4	10/06/2024	3	Clear	Torching	13	1	0	1
					Netting	0	0	0	0
					Refuge Searching	0	0	0	0
	5	13/06/2024	3	Clear	Torching	22	0	3	3
					Netting	0	0	0	0
					Refuge Searching	0	0	0	0
	6	25/06/2024	1	Clear	Torching	10	0	0	0
					Netting	0	0	0	0
					Refuge Searching	0	0	0	0
Pond 18: The highest count for GCN in pond 18 was 32; this is considered a **medium** population.									
20	1	27/03/2024	3	Clear	Egg Searching	1	0	0	0
					Torching	6	1	0	7
					Netting	1	0	0	0
	2	30/04/2024	3	Clear	Torching	6	0	0	2

Pond Number	Visit Number	Date	Vegetation Cover (0-5)	Turbidity	Survey Type	Total Great crested newt count	Total Smooth Count	Total Palmate Count	Total Smooth/ Palmate Count
					Netting	3	0	0	0
					Refuge Searching	0	0	0	0
	3	07/05/2024	4	Clear	Torching	1	2	4	0
					Netting	0	0	0	0
					Refuge Searching	0	0	0	0
	4	21/05/2024	4	Clear	Torching	9	0	2	0
					Netting	0	0	0	0
					Refuge Searching	0	0	0	0
	5	10/06/2024	4	Clear	Torching	3	0	1	2
					Netting	0	0	0	0
					Refuge Searching	0	0	0	0
	6	25/06/2024	4	Turbid	Torching	4	0	0	0
					Netting	0	0	0	0
					Refuge Searching	0	0	0	0
Pond 20: The highest count for GCN in pond 20 was 9; this is considered a **low** population.									
24	1	26/03/2024	1	Clear	Netting	0	0	0	0
					Torching	2	1	0	11
					Egg Searching	0	0	0	0
	2	16/04/2024	1	Clear	Torching	0	0	4	5
					Netting	0	0	0	0
					Egg Searching	0	0	0	0

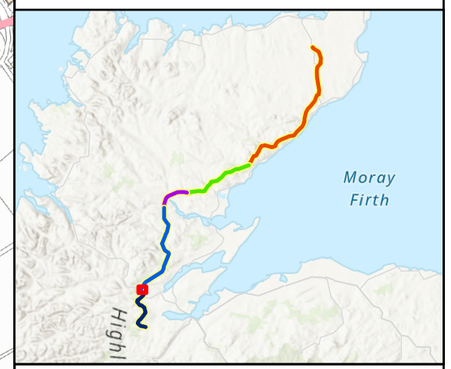
Pond Number	Visit Number	Date	Vegetation Cover (0-5)	Turbidity	Survey Type	Total Great crested newt count	Total Smooth Count	Total Palmate Count	Total Smooth/ Palmate Count
	3	08/05/2024	1	Clear	Torching	0	8	9	0
					Netting	0	0	0	0
					Egg Searching	0	0	0	0
	4	09/06/2024	4	Clear	Torching	0	0	0	0
					Netting	0	0	0	0
					Egg Searching	0	0	0	0
	5	12/06/2024	4	Clear	Torching	3	0	0	0
					Netting	0	0	0	0
					Refuge Searching	0	0	0	0
	6	24/06/2024	4	Clear	Egg Searching	0	0	0	0
					Netting	0	0	0	0
					Torching	1	0	0	0

Pond 24: The highest count for GCN in pond 24 was 3; this is considered a **low** population.

TABLE 3 RESULTS FOR PARTIALY SURVEYED PONDS

Pond Number	Visit Number	Date	Vegetation Cover (0-5)	Turbidity	Survey Type	Total Great crested newt count	Total Smooth Count	Total Palmate Count	Total Smooth/Palmate Count	Notes
19	6	25/06/2024	1	Clear	Egg Searching	0	0	0	0	Pond was ruled out with negative eDNA survey. During Visit number 6 on neighbouring ponds GCN were found in pond 19
					Torching	5	0	1	0	
					Netting	0	0	0	0	
26	1	25/03/2024	4	Clear	Egg Searching	0	0	0	0	Surveys stopped after negative eDNA results
					Refuge Searching	0	0	0	0	
					Torching	0	0	0	0	
	2	15/04/2024	4	Clear	Torching	0	1	0	0	
					Egg Searching	0	0	0	0	
					Netting	0	0	0	0	
102	1	26/03/2024	2	Clear	Egg Searching	0	0	0	0	Surveys stopped after negative eDNA results
					Netting	0	0	0	0	
					Torching	0	0	1	1	
	2	30/04/2024	2	Clear	Egg Searching	0	0	0	0	
					Netting	0	0	0	0	
					Torching	0	0	0	0	
	3	16/04/2024	2	Clear	Egg Searching	0	0	0	0	
					Netting	0	0	0	0	
					Torching	0	0	2	1	

Tower Location
Alignment Section E
GNC Data
GCN Meta Population Ponds
GCN Surveyed Ponds within 500 m
Meta Population Ponds 500 m Buffer



0 100 200 300 400 500
Metres
N

SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: CI
PROJECT: 0720281	CHECKED: CG
DATE: 06/08/2025	APPROVED: KG

Figure 8.8
Spittal - Loch Buidhe - Beauly 400 kV OHL Connection
Great Crested Newt (GCN) Meta Population

ERM

Scottish & Southern Electricity Networks
TRANSMISSION

PROJECTION: British National Grid

Path: \\uksprdgisfs01\Data\London\Projects\0652629 - SSE Beauly to Loch Buidhe\Maps\0720281 - SLBB - Ecology.aprx / 0720281 - SLBB - EIA - Ecology - Figure 8.8 - GCN Metapopulation Ponds - A03

4. SUMMARY

Great crested newt populations were fully assessed in four ponds. Pond 18 was found to have a medium population size and ponds 17, 20 and 24 were found to have low populations in line with JNCC Herpetofauna workers manual[3] guidance (Table 2).

Three ponds were also partially assessed (26, 101 and 102), with GCN presence ruled out due to negative eDNA results in 2024. Pond 19 was previously ruled out in eDNA surveys in 2023 however GCN were incidentally found in the pond during the last surveys of the GCN season in 2024.

Two additional ponds were discovered during habitat walkover surveys and eDNA surveys were undertaken. Of these, pond 202 returned a positive result (Figure 1). Any works to be undertaken within 250 m of this pond this will need a licence or further survey in the future.

The northern ponds around Strathpeffer that returned positive eDNA results for GCN (17, 18, 19, 20 and 24) are all within 500 m of each other. These should be considered a meta-population. Due to the abundance of suitable terrestrial habitat in the area it is possible that ponds with negative eDNA results within 500 m of confirmed GCN breeding ponds could host GCN in the future[4].

If proposed development works are required within 500 m of a pond with confirmed GCN presence, licensing, or a non-licensed method statement, are likely to be required in conjunction with consultation with NatureScot regarding mitigation/licensing requirements.

Further, a Species Protection Plan (SPP) may be required, detailing measures to prevent GCN moving into the works area (e.g. newt fencing) as well as a contingency plan in the unlikely event that GCN are encountered during works.

[4] Great crested Newt Survey and mitigation guidelines 2025 (unpublished) GCN Mitigation Guidelines | GCN Training

5. REFERENCES

Biggs, J., et al (2014) Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice notes for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.

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JNCC (2003) Herpetofauna Workers' Manual. Peterborough: JNCC

NatureScot (2020). Species Planning Advice: Great Crested Newt [Online]. Available at: https://www.nature.scot/doc/standing-advice-planning-consultations-great-crested-newts#:~:text=Alter%20vegetation%20types%20to%20displace,they%20will%20be%20at%20risk

APPENDIX A POND PHOTOS AND LOCATIONS

Pond Number	Grid reference	Photo
17	NH 46764 57373	
18	NH 46688 57835	
19	NH 46657 57890	

Pond Number	Grid reference	Photo
20	NH 47022 57933	
24	NH 46480 58562	

Pond Number	Grid reference	Photo
26	NH 47249 53532	
102	NH 46425 58681	

Pond Number	Grid reference	Photo
202 (pond number changed originally 102 in eDNA survey	NH 47750 52606	

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