Blair Hill Wind Farm

Protected Species Survey Report

Technical Appendix 8.2

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1 INTRODUCTION

MacArthur Green was commissioned by the Applicant to carry out protected species surveys at Blair Hill Wind Farm (hereafter referred to as the 'Proposed Development').

These surveys primarily focussed on otter (*Lutra lutra*), water vole (*Arvicola amphibius*), badger (*Meles meles*), red squirrel (*Sciurus vulgaris*) and pine marten (*Martes martes*). Habitat Suitability Index (HSI) assessments were also carried out to determine the suitability of waterbodies for great crested newt (GCN) (*Triturus cristatus*).

A watching brief was also kept throughout these surveys, and during all ecological surveys for the Proposed Development, and signs recorded for other protected species potentially inhabiting the Site and survey area such as adder (*Vipera berus*), common or viviparous lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*).

Surveys for bat species and fish were carried out and are reported separately in **Technical Appendices 8.3** and **8.4**.

These protected species surveys were undertaken to aid and inform the design and ecological assessment for the Blair Hill Wind Farm Environmental Impact Assessment Report (EIAR).

2 THE SITE AND SURVEY AREA

The Site is located approximately 2.7 km north of Newton Stewart within the Dumfries and Galloway Council area.

The Site comprises an area of approximately 661.7 hectares (ha). The Proposed Development is set within grazed open moorland and areas of commercial forestry. The elevation varies from 100 m Above Ordnance Datum (AOD) to 404 m AOD. There are several minor watercourses on and around the Site. The Proposed Development is fully described within **Chapter 2: Project Description** of the EIAR.

The 'survey area' in which protected species surveys were undertaken for the Proposed Development exceeds the Site boundary, as shown on **Figure 8.9**. Species-specific buffers were also applied to surveys around the access route (**Figure 8.9**).

3 LEGAL PROTECTION

Details of the legal protection of the protected species surveyed for are given in **Annex A** of this Technical Appendix.

4 METHODS

4.1 Desk Study

A desk-based study was undertaken to inform the field surveys and assessment with regards to the presence of designated sites and species of interest within the Site and study area.

This study consisted of consultation of various online resources, such as the National Biodiversity Network (NBN) Atlas[1], NatureScot Sitelink[2], Saving Scotland's Red Squirrels (SSRS) website[3], Red Squirrel Stronghold Areas[4], the British Deer Society Deer Distribution Survey (2023)[5], Scottish Wildcat Priority Areas[6] and a data search request to South West of Scotland Environmental Information Centre (SWSEIC).

4.2 Field Surveys

Surveys were predominately undertaken in June 2023, with smaller additional areas and the access track surveyed in October and November 2023 and May 2024 to record the presence or likely absence of otter, water vole, badger, red squirrel and pine marten, with all habitats suitable for protected species surveyed within the survey area (as shown on **Figure 8.9**). The respective survey areas included the Site boundary at the time of survey (which is notably larger than the finalised Site boundary) and species-specific buffers as required along the access track, as per NatureScot guidance[7].

A watching brief for any protected species signs was also undertaken during other survey visits (e.g., ornithology/habitats/other ecology surveys) throughout 2022 - 2024.

The signs found indicate type and intensity of activity and consequently help in the assessment of the importance of a particular area for the protected species. The survey methods used are described below and are in line with NatureScot guidance[8].

Due to access restrictions, some small sections of the access route survey buffers were not surveyed (see Section 5 below).

4.2.1 Badger

Land with the potential to support badger within the survey area was searched for field signs with particular attention given to areas around woodland and areas underlain by mineral soils. Field

[1] NBN Atlas Scotland (2024). Available online: https://nbnatlas.org/ [Accessed January 2024].
[2] NatureScot (2024). SiteLink. Available online: https://sitelink.nature.scot/home [Accessed January 2024].
[3] Scottish Squirrels (2024). Saving Scotland's Red Squirrels. Available online: https://scottishsquirrels.org.uk/ [Accessed January 2024].
[4] Scottish Forestry (2024). Map of Red Squirrel Stronghold Areas. Available online: https://forestry.gov.scot/publications/21-map-of-red-squirrel-stronghold-areas [Accessed January 2024].
[5] The British Deer Society (2023). Deer Distribution Survey Results. Available online: https://bds.org.uk/science-research/deer-surveys/deer-distribution-survey/ [Accessed January 2024].
[6] NatureScot (2023). Wildcat Priority Areas. Available online: ://www.data.gov.uk/dataset/3491a9b0-1dd5-4f86-904f-55ca833e9aef/wildcat-priority-areas [Accessed January 2024].
[7] NatureScot (2024). Planning and Development: Protected Species. Available online: https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-protected-species [Accessed January 2024].
[8] NatureScot (2024). Standing Advice for Planning Consultations. Available online: https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-standing-advice-and-guidance-documents [Accessed February 2024].

signs of badger are described in Neal and Cheeseman (1996)[9], Bang and Dahlstrøm (2001)[10] and Scottish Badgers (2018)[11]. Field evidence searched for included:

- **setts:** single and/or groups of holes (refer to **Table 4-1** for categories);
- **prints:** badgers have characteristic footprints that can be found in soft ground and muddy areas;
- **latrines and dung pits:** these are small excavated pits in which droppings are deposited. Latrines are a collection of dung pits used as territorial markers;
- **hairs:** tufts of hair can often be found on fences, or in the entrances to setts;
- **feeding signs:** small scrapes, also known as snuffle holes, where badgers have searched for 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 search for food; and
- **paths:** these are routes that badgers take when moving between setts and foraging areas.

Where setts were recorded, their sett type and sett entrance classification were noted in line with the definitions outlined in Scottish Badgers (2018)[11], which are reproduced below in Error! Reference source not found. and **Table 4-1** below.

Table 4-1 Sett Entrance Classifications and Associated Descriptions[11]

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 4-2 Categories of Sett and Associated Description[11]

Category	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. Although normally the breeding sett and in continuous use, it is possible to find a main sett that has some disused or dormant entrances.

[9] Neal, E., and Cheeseman, C.L. (1996). Badgers. Poyser Natural History, London.
[10] Bang, P., and Dahlstrøm, P. (2001). Animal Tracks and Signs. Oxford University Press, Oxford.
[11] Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1.

Category	Description
Annexe	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	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 continuously active. The average number of holes per subsidiary sett in the British survey was four.
Outlier	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 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	In some cases, it can be difficult to assess the status of a sett, and it is open to interpretation. It is therefore recommended that if there is uncertainty as to the type of sett present, setts should be referred to as 'Other'.

4.2.2 Otter

All accessible watercourses within the survey area were surveyed for otter field signs. Otter field signs and survey methods are described in Bang & Dahlstrøm (2001)[12], Sargent & Morris (2003)[13] and Chanin (2003)[14], and include:

- **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 up during the day and are the usual location of natal or breeding sites. Otters may use holts permanently or temporarily;
- **couches:** these are above-ground resting-up sites. They may be partially sheltered, or fully exposed. Couches may be regularly used, especially in reed beds and on in-stream islands. They have been known to be used as natal and breeding sites. 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*;
- **prints:** otters have characteristic footprints that can be found in soft ground and muddy areas;
- **spraints:** otter faeces may be used to mark territories, often on in-stream boulders. They can be present within or outside the entrances of holts and couches. Spraints have a characteristic smell and often contain fish remains;

[12] Bang, P., and Dahlstrøm, P. (2001). Animal Tracks and Signs. Oxford University Press, Oxford.
[13] Sargent, G., and Morris, P. (2003). How to Find and Identify Mammals. The Mammal Society, London.
[14] Chanin, P. (2003). Monitoring the Otter (*Lutra lutra*). Conserving Natura 2000 Rivers Monitoring Series No.10 English Nature, Peterborough.

- **feeding signs:** the remains of prey items may be found at preferred feeding stations. Remains of fish, crabs or skinned amphibians can indicate the presence of otter;
- **paths:** these are terrestrial routes that otters take when moving between resting-up 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 evident by trampled vegetation and the presence of slides. These are often positioned in sheltered areas adjacent to the natal holt.

Any of the above signs (apart from paths) are diagnostic of the presence of otter. However, it is often not possible to identify couches with confidence unless other field signs are also present. Spraints are the most reliably identifiable evidence of the presence of this species.

4.2.3 Water Vole

All watercourses within the survey area were surveyed for water vole field signs following the methodology prescribed in Dean *et al.* (2016)[15]. This involved searching for the following field signs:

- **faeces:** recognisable by their size, shape, and content. If not too dried-out these are also distinguishable from rat droppings by their smell;
- **latrines:** faeces, often deposited at discrete locations;
- **feeding stations:** food items are often brought to feeding stations along pathways and hauled onto platforms. Recognisable as neat piles of chewed vegetation up to 10 cm long;
- **burrows:** appear as a series of holes along the water's edge distinguishable from rat burrows by size and position;
- **lawns:** may appear as grazed areas around land holes;
- **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.

Dean *et al.* (2016)[15] states that water vole droppings are the only field sign that can be used to determine water vole presence reliably on their own. Experience is required to distinguish feeding signs, burrows and footprints of water voles from those of other species. A collection of these field signs found in close proximity can indicate water vole presence.

[15] Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds. Fiona Mathews and Paul Chanin. The Mammal Society, London.

4.2.4 Pine Marten

Signs of pine marten were searched for within the survey area following guidance from O'Mahony *et al.* (2006)[16]. Survey methods included:

- **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
- **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.

4.2.5 Red Squirrel

Areas of woodland that have the potential to support red squirrel were surveyed for squirrels, following guidance from Gurnell *et al.* (2009)[17]. Survey methods included:

- **sightings**: visual sightings of red squirrels;
- **dreys**: dreys are usually built close to the main stem of a tree, over 3 m from ground level and over 50 x 30 cm in size; and
- **feeding signs**: predated cone (cone cores) searches in areas of woodland.

4.2.6 Great Crested Newt (GCN) – Habitat Suitability Index (HSI) Assessment

Ponds or waterbodies identified from Ordnance Survey (OS) maps within the respective survey area and where access permissions allowed were surveyed and subject to a GCN HSI assessment following standard guidance by Oldham *et al.* (2000)[18] and taking cognisance of O'Brien *et al.* (2017)[19] which proposes modifications to the geographical range factor in Scotland.

The HSI allows for an evaluation to be made of the potential for waterbodies to support GCN. It considers the following ten habitat criteria, which influence the likely presence or likely absence of GCN, and scores them according to their suitability:

- geographic location;
- pond size/area[20];
- pond permanence;

[16] O'Mahony D., O'Reilly, C. & Turner, P. (2006). National Pine Marten Survey of Ireland 2005. COFORD, Dublin.
[17] Gurnell, J., Lurz, P. McDonald, R. & Pepper, H. (2009). Practical Techniques for Surveying and Monitoring Squirrels. Forestry Commission Practice Note.
[18] Oldham, R.S., Keeble, J., Swan. M.J.S. and Jeffcote, M. (2000). Evaluating the Suitability of Habitat for the Great Crested Newt (Triturus cristatus). Herpetological Journal, Vol. 10 pp.143-155.
[19] O'Brien, D., Hall, J., Miró, A., Wilkinson, J. (2017). Testing the validity of a commonly-used habitat suitability index at the edge of a species' range: great crested newt *Triturus cristatus* in Scotland. Amphibia-Reptilia 38: 265-273.
[20] Score omitted from calculation if pond over 2,000 m^2 (Oldham *et al.*, 2000).

- water quality;
- pond shading;
- presence of fish;
- presence of waterfowl;
- presence of other ponds within a 500 m radius;
- availability of suitable terrestrial habitat; and
- availability of suitable aquatic vegetation on which newts can lay their eggs.

HSI scores are calculated as the geometric mean of the ten individual habitat suitability scores using the formula HSI = $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \times SI_9 \times SI_{10})^{1/10}$. HSI scores, which range between 0 and 1, can provide an indication of the likelihood of their potential to support GCN. Ponds with high scores are more likely to support GCN than those with low scores. **Table 4-2** details the HSI score bands that have been developed to provide a rough guide as to likelihood of ponds supporting GCN based on their HSI scores[18].

Table 4-2 GCN Habitat Suitability Index Scoring

HSI score	Pond suitability
<0.5	Poor
0.5-0.59	Below average
0.6-0.69	Average
0.7-0.79	Good
>0.8	Excellent

4.2.7 Reptiles

Targeted reptile surveys were not undertaken, however, incidental records of reptile sightings, or signs such as shed skins, and features of particular importance (i.e., potential hibernacula) were recorded.

4.2.8 Other Species

A watching brief was maintained for all other protected, notable, and/or invasive species during surveys and presence or field signs recorded as appropriate (e.g., hares (*Lepus* spp.) and American mink (*Neovison vison*)).

4.2.9 Species Scoped Out

Surveys for beaver (*Castor fiber*) and wildcat (*Felis silvestris*) were scoped out of field surveys due to the absence of suitable habitat or the survey area being located outwith their known range or distribution of these species.

5 SURVEY DETAILS & LIMITATIONS/CONSTRAINTS

Surveys for protected species were undertaken between 5 June 2023 and 8 June 2023 for the Proposed Development (excluding the access route). Surveys for the access route were

undertaken between 31 October 2023 and 2 November 2023. A further survey focussing on data gaps was later undertaken on 7 May 2024.

The weather conditions during the June 2023 surveys were generally warm and dry with sunny spells, and watercourses were recorded as being in low flow conditions. In October and November 2023, it was generally cool and overcast, with watercourses being relatively high. In May 2024, weather conditions were warm and dry with sunny spells, with watercourses recorded as normal.

A small area around Auchinleck was not surveyed due to no access permission, as shown on **Figure 8.9**. Surveyors were also unable to access a small section of the 200 m survey buffer by Glenshalloch (**Figure 8.9**). These small survey gaps are not regarded as significant constraints as all are outwith the Site boundary and no waterbodies or watercourses are present within the areas. Following a late amendment to the Site boundary, a section of conifer planation woodland by the Site entrance falls outwith the area covered in protected species surveys (see **Figure 8.9**). However, no proposed infrastructure is planned in this area, and pre-construction surveys as part of the Species Protection Plan (see **Technical Appendix 8.5**) would be undertaken here, as required. Therefore, this small survey gap is not regarded as a notable limitation.

Meg's Linn runs through a tree-lined rocky gorge, thus posing an access restriction and health and safety concern, therefore could not be thoroughly surveyed. There is potential for foraging in pools and resting places amongst tree roots and rocks for otters in this area.

The estimates of two factors within the GCN HSI assessment of ponds (levels of shade and macrophyte coverage) are recommended to be undertaken between May and the end of September[18] to allow for an accurate assessment of vegetation cover during the main GCN active period. Although one of the HSI assessments (see **Annex D**) was undertaken in October/November 2023, submerged vegetation from the main 2023 flowering season was still apparent. It was also possible to accurately estimate levels of shading due to the pond being located within a young conifer plantation area with limited shade from the surrounding trees.

There is 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. DNA analysis is often used as a method to increase reliability of identification, although it's 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)[21]. The scats recorded within survey area that were undeterminable between pine marten and fox were therefore considered as 'potential pine marten' and a precautionary approach is applied when discussing their presence and utilisation of the Site and the habitats within the wider area.

Due to protected species' mobile natures, it is possible that new features may be created in the period between surveys and the commencement of construction. It is therefore recommended that re-fresh surveys are undertaken in advance of construction activities progressing across the Site.

[21] Croose, E., Birks, J.D.S., Schofield, H.W., and O'Reilly, C. (2014). Distribution of the pine marten (Martes martes) in southern Scotland in 2013. Scottish Natural Heritage Commissioned Report No. 740.

6 RESULTS

6.1 Desk Study Results

6.1.1 Designated Sites

There are no designated sites within the Site boundary.

Table 6-1 below details the designated sites within 5 km of the Site boundary with protected species as a qualifying feature.

Table 6-1 Ecologically Designated Sites within 5 km of the Site

Designated site	Distance from Site	Qualifying interests	Last assessed condition & date
Merrick Kells SSSI[22]	4.02 km	Beetle assemblage	Favourable Maintained (3 September 2015)
		Blue aeshna dragonfly	Favourable Maintained (25 October 2017)

Giving consideration to the protected features of the Merrick Kells SSSI and distance from the Site boundary, it is not considered to be connected or in the zone of influence with the Proposed Development.

6.1.2 Online Resources/Data Searches

A search of the NBN Atlas Scotland[1] within 5 km of the Site returned records of the following protected, invasive or notable species (excluding bats, discussed in **Technical Appendix 8.3**):

- brown hare (*Lepus europaeus*);
- common lizard;
- fallow deer (*Dama dama*);
- grey squirrel (*Sciurus carolinensis*);
- palmate newt (*Lissotriton helveticus*);
- pine marten;
- red deer (*Cervus elaphus*);
- red squirrel;
- roe deer (*Capreolus capreolus*); and
- slow worm.

Details regarding licences and data providers for the above records are included in **Annex B**.

Sightings of red squirrels have been recorded by Saving Scotland's Red Squirrels (SSRS) within 5 km of the Site each year since 2003[3]. The Cree-Machars SSRS Priority Area for Red Squirrel

[22] The Metrick Kells Site of Special Scientific Interest (SSSI) is concurrent with the Merrick Kells Special Area of Conservation (SAC), however the SAC is not designated for protected species.

Conservation (PARC) sightly overlaps with the Site boundary in the south and south-west[23]. The Cree-Machars PARC was introduced in 2019 to control grey squirrels within this area[24].

Results of the Deer Distribution Survey[5] suggest that the following deer species are likely to be present or have been previously recorded in the wider area of the Site:

- Roe deer;
- Red deer;
- Sika deer (*Cervus nippon*); and
- Fallow deer.

A data request from SWSEIC[25] within 5 km of the Site returned records of the following protected, invasive or notable species (excluding bats, discussed in **Technical Appendix 8.3**):

- Adder;
- American mink;
- American skunk-cabbage (*Lysichiton americanus*);
- Atlantic salmon (*Salmo salar*);
- Badger;
- Brown hare;
- Brown trout (*Salmo trutta*);
- Common lizard;
- European Eel (*Anguilla anguilla*);
- Grey squirrel;
- Himalayan balsam (*Impatiens glandulifera*);
- Japanese knotweed (*Reynoutria japonica*);
- Otter;
- Palmate newt;
- Pine marten;
- Red squirrel;
- Sika deer;
- Slow worm;

[23] Scotland's Environment Web. Available online: https://map.environment.gov.scot/sewebmap/ [Accessed January 2024].
[24] https://scottishsquirrels.org.uk/wp-content/uploads/2020/07/SSRS-Priority-Areas-for-Red-Squirrel-Conservation-in-South-Scotland.pdf [Accessed January 2024].
[25] https://swseic.org.uk/ [Accessed August 2024]

- Smooth newt (*Lissotriton vulgaris*); and
- Water vole.

6.2 Field Survey Results

The survey results are summarised in **Table 6-2** below, with full detailed results provided within **Annex C**; survey results are displayed on **Figure 8.9**. Confidential results are presented in **Confidential Annex E** and **Figure 8.9C**.

Table 6-2 Protected Species Survey Results Summary

Species	Survey Results Summary	General Habitat Suitability
Badger	Various badger signs (feeding signs, snuffle holes, dung and latrines) were recorded across the Site and wider survey area. Seven setts were recorded during protected species surveys. Full details are contained within **Confidential Annex E** and **Figure 8.9C**.	Areas of peat and deep peat were relatively limited across the Site, with shallow peaty soils and mineral soils underlying many areas, providing suitability for sett building and foraging.
GCN	Two ponds were recorded in the survey area during protected species surveys.	The HSI assessments classify pond 1 as 'Below Average' and Pond 2 as 'Poor'. Full HSI results are provided in **Annex D** and photos provided at **Photo 1** and **Photo 2**.
Otter	Three records of otter spraints were recorded; two along Meg's Linn watercourse and one along Castle Burn. The ages of the spraints were recorded as old, indicating the area is not frequently used by otters. One sighting of an otter was incidentally recorded during an ornithology survey along Cordorcan Burn (north-west of the Site) on 23 May 2023.	The watercourses within the wider area of the Site provide suitable foraging and commuting habitat for otter, providing connectivity between the Site and the River Cree. Watercourses within the Site have limited opportunities for resting places for otter, with limited riparian woodland presence and heavily occluded streams.
Pine marten	Four potential pine marten scats were recorded; two recorded within plantation in the south central part of the Site and two within young plantation to the west and outwith the Site. The scats ranged from fresh to old.	The Site contains large areas of conifer plantation which is suitable foraging and hunting habitat for pine marten.
Red squirrel	Six potential red squirrel feeding signs (all chewed or stripped cones) were recorded within the main plantation area of the Site. This sign alone cannot distinguish between grey or red squirrels.	The Site contains large areas of conifer plantation which is suitable foraging and nesting habitat for red squirrel.
Reptiles	Two common lizard and one slow worm were sighted within the north of the Site. Twelve features with the potential to act as reptile hibernacula were recorded, mainly in the north-west of the Site and survey area. Collapsed drystone sections of wall and dilapidated stone structures and stone piles accounted for the majority of features recorded, offering hibernation opportunities.	This area of the Site and survey area is open ground with upland vegetation, providing suitable foraging habitat for reptiles.

Species	Survey Results Summary	General Habitat Suitability
Water vole	No water vole signs were recorded.	Many of the watercourses are fast flowing and rocky, or with shallow banks, with limited potential for water vole burrows.
General	Two mammal holes, one of a size to be suitable for use by water vole and another potentially used by a fox, were recorded within the north of the Site. However, no field signs that could be attributed to any protected species were found.	n/a

ANNEX A. LEGAL PROTECTION

A full list of protected species and the associated legislation can be found on the NatureScot website[26]. The following provides a summary of protected species' legal protection, however the specific legislation should be consulted for the true terminology.

Bats, Otter and GCN

All bat species, otter and **GCN** receive protection in Scotland under the Conservation (Natural Habitats, &c.) Regulations (1994) (as amended) (the 'Habitats Regulations'), being classified as European protected species of animals[27].

For European protected species, NatureScot guidance[28] sets out that it is an offence to deliberately or recklessly:

- capture, injure or kill an animal;
- harass an animal or group of animals;
- disturb an animal while it is occupying a structure or place used for shelter or protection;
- disturb an animal while it is rearing or otherwise caring for its young;
- obstruct access to a breeding site or resting place, or otherwise deny an animal use of a breeding site or resting place;
- disturb an animal in a manner or in circumstances likely to significantly affect the local distribution or abundance of the species;
- disturb an animal in a manner or in circumstances likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young;
- disturb an animal while it is migrating or hibernating;
- take or destroy an animal's eggs (GCN); or
- damage or destroy a breeding site or resting place of such an animal (these sites and places are protected even when the animal is not present)[29].

Regulation 44(2)(e) of the Habitats Regulations allows a licence to be granted for activities ordinarily prohibited, where that purpose is:

> "Preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment."

[26] NatureScot (2022). Table of all of Scotland's Protected Species. Available online: https://www.nature.scot/doc/table-all-scotlands-protected-species [Accessed January 2024].
[27] Schedule 2.
[28] NatureScot (2023). European protected species. Available online: https://www.nature.scot/professional-advice/protected-areas-and-species/protected-species/legal-framework/habitats-directive-and-habitats-regulations/european-protected [Accessed January 2024].
[29] Note that this is a summary of offences. Refer to Regulations 39 and 40 of the Habitats Regulations for legislative context.

Otter is also listed on Appendix I of the Convention of International Trade in Endangered Species (CITES), Appendix II of the Bern Convention, and Annexes II and IV of the Habitats Directive[30]. It is also listed as globally threatened on the IUCN/WCMC Red Data List.

Mountain Hare, Pine Marten and Red Squirrel

Mountain hare, pine marten and **red squirrel** and are protected in Scotland under the Wildlife and Countryside Act 1981[31] (the '1981 Act').

Under Sections 9(1) and 9(2) of the 1981 Act, it is an offence to intentionally or recklessly kill, injure or take such an animal, or be in possession or control of such an animal (whether live or dead)[32].

Under Section 9(4)(a) and (b), it is an offence to intentionally or recklessly:

- damage or destroy, or obstruct access to, any structure or place which any wild animal included in Schedule 5[33] uses for shelter or protection; or
- disturb any such animal while it is occupying a structure or place which it uses for that purpose.

Further, Section 9(5) sets out that it is an offence to:

- sell, offer or expose for sale, or possess or transport for the purpose of sale, any live or dead wild animal included in Schedule 5, or any part of, or anything derived from, such an animal; or
- publish or cause to be published any advertisement likely to be understood as conveying that he buys or sells, or intends to buy or sell, any of those things.

Water Vole

Water vole is protected in Scotland under Sections 9(4) and 10 of the 1981 Act[34].

Under Section 9(4)(a) and (b) of the 1981 Act, it is an offence to intentionally or recklessly:

- damage or destroy, or obstruct access to, any structure or place which any wild animal included in Schedule 5[35] uses for shelter or protection; or
- disturb any such animal while it is occupying a structure or place which it uses for that purpose.

Section 10(3)(c) provides for exceptions under Section 9, such that a person shall not be guilty of an offence where that person shows:

[30] European Union Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora.
[31] Schedule 5.
[32] See exceptions under Section 9(3).
[33] Animals which are protected under Section 9 of the 1981 Act.
[34] as amended by the Nature Conservation (Scotland) Act 2004.
[35] Animals which are protected under Section 9 of the 1981 Act.

- that each of the conditions specified in subsection (3A) was satisfied in relation to the carrying out of the unlawful act; or
- that the unlawful act was carried out in relation to an animal bred and, at the time the act was carried out, lawfully held in captivity.

Subsection (3A) states those conditions referred to in Section 10(3)(c) are:

a) That the unlawful act was the incidental result of a lawful operation or other activity;

b) That the person who carried out the lawful operation or other activity:

   i. took reasonable precautions for the purpose of avoiding carrying out the unlawful act; or

   ii. did not foresee, and could not reasonably have foreseen, that the unlawful act would be an incidental result of the carrying out of the lawful operation or other activity; and

c) That the person who carried out the unlawful act took, immediately upon the consequence of that act becoming apparent to the person, such steps as were reasonably practicable in the circumstances to minimise the damage or disturbance to the wild animal, or the damage or obstruction to the structure or place, in relation to which the unlawful act was carried out.

Badger

Badger are protected in Scotland under the Protection of Badgers Act 1992 (the 'Badgers Act')[36].

Under Section 1(1) of the Badgers Act, "a person is guilty of an offence if, except as permitted by or under this Act, he wilfully kills, injures or takes, or attempts to kill, injure or take, a badger."

Where it can reasonably be concluded that a person had been attempting to kill, injure or take a badger, then it will be presumed that that person had been attempting to do so, unless it can be proven otherwise[37].

Under Section 1(3), unless authorised under the Badgers Act, a person is guilty of an offence where "he has in his possession or under his control any dead badger or any part of, or anything derived from, a dead badger."

Under Section 3(1), unless authorised under the Badgers Act, it is an offence to interfere with a badger set[38]. The following actions are described as interference:

- damaging a badger sett or any part of it;
- destroying a badger sett;
- obstructing access to, or any entrance of, a badger sett;
- causing a dog to enter a badger sett; or

[36] As amended by the Nature Conservation (Scotland) Act 2004 (as amended).
[37] Section 1(2) of the Badgers Act.
[38] Note: A badger sett is defined under the Badgers Act as any structure or place which displays signs of current use by a badger (refer to Section 14).

- disturbing a badger when it is occupying a badger sett,

intending to do any of those things or being reckless as to whether his actions would have any of those consequences.

It is also an offence if a person knowingly causes or permits any of the above actions to be carried out[39].

Reptiles

The three native species of reptile to Scotland, **adder** (*Vipera berus*), **slow worm** and **viviparous lizard**, are protected under Section 9(1) (insofar as the action relates to killing or injuring the animal), and Section 9(5) of the 1981 Act.

Under Section 9(5), it is an offence to:

- sell, offer or expose for sale, or possess or transport for the purpose of sale, any live or dead wild animal included in Schedule 5, or any part of, or anything derived from, such an animal.
- publish or cause to be published any advertisement likely to be understood as conveying that he buys or sells, or intends to buy or sell, any of those things.

Section 10(3)(c) provides for exceptions under Section 9, such that a person shall not be guilty of an offence where that person shows:

- that each of the conditions specified in subsection (3A) was satisfied in relation to the carrying out of the unlawful act; or
- that the unlawful act was carried out in relation to an animal bred and, at the time the act was carried out, lawfully held in captivity.

Subsection (3A) states those conditions referred to in Section 10(3)(c) are:

a) That the unlawful act was the incidental result of a lawful operation or other activity;

b) That the person who carried out the lawful operation or other activity:

   i. took reasonable precautions for the purpose of avoiding carrying out the unlawful act; or;

   ii. did not foresee, and could not reasonably have foreseen, that the unlawful act would be an incidental result of the carrying out of the lawful operation or other activity; and

c) That the person who carried out the unlawful act took, immediately upon the consequence of that act becoming apparent to the person, such steps as were reasonably practicable in the circumstances to minimise the damage or disturbance to the wild animal, or the damage or obstruction to the structure or place, in relation to which the unlawful act was carried out.

[39] Section 3(2).

Other Protected Species

Freshwater pearl mussel (*Margaritifera margaritifera*) is protected by the 1981 Act and by the Nature Conservation Act 2004. They are also listed as endangered on the IUCN/WCMC Red Data List. Offences relevant to development works include to intentionally or recklessly:

a) kill, injure, take or disturb a freshwater pearl mussel; or

b) damage, destroy or obstruct access to a riverbed supporting freshwater pearl mussels.

Some freshwater pearl mussel populations are qualifying features of Special Areas of Conservation (SACs), and therefore receive further legal protection under the Habitats Regulations.

ANNEX B. NBN ATLAS SCOTLAND DATA PROVIDERS AND LICENCES

Table B-1 Data Providers and Licence Details for NBN Atlas Scotland Records Used

Species	Reason for Inclusion	Data Provider (Recorder)	Licence
Brown hare	Protected species (1981 Act)	The Mammal Society and Biological Records Centre (K. Peace)	CC-BY[41] OGL[40]
Common lizard	Protected species (1981 Act)	Biological Records Centre (I. H. Leach, G. Chambers, J. Martin, J. Noad)	CC-BY[41]
Fallow deer	Welfare and impacts of deer on habitats and on neighbouring land and interests (inc. public roads)	The Mammal Society and Biological Records Centre (K. Peace); British Trust of Ornithology (BTO) (Withheld)	CC-BY[41] OGL[40]
Grey squirrel	Invasive species	Scottish Wildlife Trust (A. Lockhart, A. Johnson, D. Butchart, C. Vincent, V. Carpenter, D. Spruce, D. Currie, D. Kain, G. Copeland, G. Parker, G. Dinsmore, I. Martin, I. Dunbar, J. McHarg, J. Ferries, J. McCleary, J. Cadman-Goodwin, J. Kirby, J. Dobson, L. Hetheridge, L. McKain, J. McCleary, R. McCutcheon, McGuire, M. Ansell, Ashworth, N. McGeoch, P. Horsell, P. Robinson (CVCWT), P. Taylor, P. Sutherland, R. McHarg, R. Shaw, T. Coy, Y. Williams)	CC-BY[41]
Japanese knotweed	Invasive species	Botanical Society of Britain and Ireland and Biological Records Centre (D. Gaffrey and M. Pollitt)	CC-BY[41]
Palmate newt	Protected species (1981 Act)	Biological Records Centre (G. Chambers, J. Logan, J. Martin)	CC-BY[41]
Pine marten	Protected species (1981 Act, Habitats Regulations)	The Mammal Society and Biological Records Centre (K. Peace)	CC-BY[41]
Red deer	Welfare and impacts of deer on habitats and on neighbouring land and interests (inc. public roads)	The Mammal Society and Biological Records Centre (C. Milligan)	CC-BY[41]
Red squirrel	Protected species (1981 Act, Nature Conservation (Scotland) Act 2004)	Scottish Wildlife Trust (A. Whamond, A. Drysdale, A. Moore, A. Cloy, A. Bowly, A. Robbins, A. Aston, A. Batley, A. Yate, A. Johnston, Anne Snell, A. Gregory, A. Johnson, B. Cumming, C. Belford, D. Butchart, B. Clarke, C. Brough, Ca. Hawley, C. Cunningham, C. Plunkett, C.	CC-BY[41]

[40] Open Government Licence (OGL). Available online: https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/ [Accessed January 2024].
[41] Creative Commons with Attribution 4.0 (CC-BY). Available online: https://creativecommons.org/licenses/by/4.0/ [Accessed January 2024].

Species	Reason for Inclusion	Data Provider (Recorder)	Licence
		Healey, C. Smyth, C. Bowly, C. Moore, D. Baird, D. Cooksey, D. Leslie, D. Snell, E. Robinson, E. Adair, E. McKain, E. Urquhart, E. McNally, E. Keenan, E. Peaston, E. McLaughlin, E. Barr, M. Freeman, F. Powell, A. Powell, G. Taylor, T. Taylor, G. Ventress, G. Muir, G. Stewart, G. A. Rodger, G. Forsyth, H. McCormick, H. Ward, H. Moncrieff, I. Brown, J. Harris, E. Janis, J. Whannel, J. Barclay, J. Crosbie, J. McCleary, J. Allan, J. Kirby, J. Stewart, J. Jolly, J. Hudson, K. Hannay, K. Hyslop, K. Shaw, K. Morland, K. Hagmann, K. Nizette, K. Ramsey, K. Barlow, K. Campbell, K. Peace, K. McCubbin, L. Hunter, L. Robbins, L. Moorhouse, L. Cowen, L. McKain, L. Cannon, L. Gurling, L. Moore, L. Wheatley, L. Hardman, M. A. Moore, M. Allan, M. Cameron, M. Acheson, M. McShane, H. Mattison, J. McCleary, M. Brown, M. Thompson-Ross, M. Ansell, N. Walker, N. Leslie, N. Jolly-Vanderheyden, N. Willits, P. Boult, P. Robinson (CVCWT), P. Taylor, P. Greenhow, P. Garson, P. Horsell, R. Playdon, R. Bridgeman, R. McCutcheon, R. Leaver, R. Munro, R. Evans, S. Coy, S. Williams, S. Hird, S. Mclaughlin, S. Denwood, A. Somerville, S. Davie, S. Jackson, S. Coy, S. Bell, S. Priestley, T. Coy, T. Sutton, T. Cessford, V. Wells, C. Victoria, W. Stewart); The Mammal Society and Biological Records Centre (D. Doolan, D. Crawley, K. Peace)	
Roe deer	Welfare and impacts of deer on habitats and on neighbouring land and interests (inc. public roads)	The Mammal Society and Biological Records Centre (K. Peace); BTO (Withheld)	CC-BY[41] OGL[40]
Slow worm	Protected species (1981 Act)	Biological Records Centre (J. Noad)	CC-BY[41]

ANNEX C. SURVEY RESULTS

Table C-1 below details the relevant data collected for protected species during surveys for the Proposed Development, sorted by species, then survey date (see also **Figure 8.9**). Confidential information relating to badger setts is contained within **Confidential Annex E** and shown on **Figure 8.9C**.

Table C-1 Protected Species Survey Results

Species	Sign	Easting	Northing	Survey date	Notes
Badger	Dung	242674	574021	11/10/2022	Two fresh dung pits recorded during National Vegetation Classification (NVC) survey.
Badger	Feeding Signs/Snuffle Holes	241835	571763	07/06/2023	Digging signs. Multiple signs of digging near mammal path in forestry. No other features.
Badger	Feeding Signs/Snuffle Holes	241363	571457	07/06/2023	Signs of digging seen close to a further scrape seen in moss. Attempt at digging likely to be historical and not in use.
Badger	Feeding Signs/Snuffle Holes	241445	571193	07/06/2023	Potential digging signs. Small area dug out underneath spruce.
Badger	Feeding Signs/Snuffle Holes	240685	573004	08/06/2023	Signs of digging in a mound in grass. Both signs have spoil outside. No other signs present.
Badger	Latrine	244867	570398	01/11/2023	Large latrine along well-used trackway along riverbank. At least nine dung pits containing fresh dung.
Badger	Feeding Signs/Snuffle Holes	244862	570373	01/11/2023	Snuffle holes along trackway by river.
Badger	Latrine	244850	570553	01/11/2023	Latrine with at least seven dung pits containing fresh dung, along well-used trackway.
Badger	Feeding Signs/Snuffle Holes	244905	570484	01/11/2023	Large patch of snuffle holes along mammal trackway.
Badger	Latrine	244694	570052	07/05/2024	Latrine along a fenceline but older dung.
Badger	Dung	245130	570173	07/05/2024	Old dropping in dung pit along a rough mammal trackway in birch woodland.

Species	Sign	Easting	Northing	Survey date	Notes
Badger	Latrine	245134	570155	07/05/2024	Latrine with around six dung pits containing fresh droppings.
Badger	Latrine	245098	570168	07/05/2024	Several dung pits with large, fresh droppings along a well-used pathway along a drystone wall.
Badger	Latrine	245054	570296	07/05/2024	Cluster of three fresh dung pits along well-used pathway along drystone wall (unable to follow pathway further as it entered a No Survey Area (NSA) area of woodland).
Badger	Feeding Signs/Snuffle Holes	245082	570207	07/05/2024	Potential badger snuffle holes in field along drystone wall.
General	Dung	241288	571296	07/06/2023	Single scat, relatively fresh - potential badger. No other signs or scat and not in a dung pit.
General	Squirrel Feeding Sign	241451	570856	07/06/2023	Multiple chewed cones in the same clearing. Probable feeding station.
General	Squirrel Feeding Sign	241483	570849	07/06/2023	Multiple chewed cones in the same clearing. Probable feeding station.
General	Squirrel Feeding Sign	242639	572547	08/06/2023	Multiple chewed cones on a series of boulders. Multiple cones found in surrounding areas. Probably feeding station.
General	Mammal Hole	242004	572964	05/06/2023	Probable fox. Entrance approximately 20 cm in diameter. No obvious signs of badger activity.
General	Squirrel Feeding Sign	241394	570946	06/06/2023	Partially stripped pinecone.
General	Squirrel Feeding Sign	241571	571204	07/06/2023	Stripped pinecone.
General	Squirrel Feeding Sign	241561	571048	07/06/2023	Stripped pinecone.
General	Mammal Hole	242224	574058	05/06/2023	Potential water vole burrow. Larger hole, slightly bigger than a pringles tube, with feeding signs inside. No sign of latrine or other feeding signs.
Otter	Sighting	241700	573800	23/05/2023	Grid reference is approximate. Incidental sighting during ornithology surveys.
Otter	Spraint	241795	569245	06/06/2023	Very old otter spraint, no other signs nearby.
Otter	Spraint	242935	570424	31/10/2023	Relatively small, old spraint on log under rock under willow by Meg's Linn.

Species	Sign	Easting	Northing	Survey date	Notes
Otter	Spraint	243244	570152	31/10/2023	Relatively old spraint on rock within Meg's Linn.
Pine Marten	Potential Scat	240335	572071	06/06/2023	Fresh scat found on track within young forestry.
Pine Marten	Potential Scat	239374	571515	06/06/2023	Old scat found in forestry on side of stump.
Pine Marten	Potential Scat	241473	570944	06/06/2023	Dark twisted scat around 10 cm in length. Probably pine marten/fox.
Pine Marten	Potential Scat	241527	571212	07/06/2023	Old, dried out scat. Approximately 10 cm long. Twisted, black and contains a lot of hair.
Reptile	Potential Hibernaculum	241755	573415	05/06/2023	Dilapidated stone structure with interior walls with lots of gaps.
Reptile	Potential Hibernaculum	239184	571045	06/06/2023	Stone structure on top of small hill with wall surrounding it. Wall is poorly maintained and has plenty of gaps.
Reptile	Potential Hibernaculum	239128	570300	06/06/2023	Poorly maintained stone structure with walls mostly intact. Lots of gaps throughout.
Reptile	Potential Hibernaculum	241408	571536	07/06/2023	Multiple fallen stones in a stacked formation. Plenty of crevices present.
Reptile	Potential Hibernaculum	241036	572510	08/06/2023	Series of rocks in a cluster. Some overlap, offering shade.
Reptile	Potential Hibernaculum	240867	572437	08/06/2023	Stone structure connected to wall. Lots of gaps along its length.
Reptile	Potential Hibernaculum	240405	572841	08/06/2023	Wall with stones loosened and falling out. Lots of gaps for shelter.
Reptile	Potential Hibernaculum	240599	572354	08/06/2023	Stone structure with lots of gaps along its length.
Reptile	Potential Hibernaculum	241179	572672	05/06/2023	Series of rocks in the same area which could provide cover/basking opportunities for reptiles.
Reptile	Common Lizard Sighting	242596	573608	05/06/2023	Seen in long grass.
Reptile	Potential Hibernaculum	240989	572681	05/06/2023	Wall stretching along to site border containing gaps along its length.
Reptile	Potential Hibernaculum	241500	571248	07/06/2023	Rocks at Threave Cainn.
Reptile	Potential Hibernaculum	240742	572640	05/06/2023	Fallen wall leaving row of stones which overlap to provide cover.
Reptile	Slow Worm Sighting	241637	573531	05/06/2023	Individual seen moving through grass.

Species	Sign	Easting	Northing	Survey date	Notes
Reptile	Common Lizard Sighting	242197	573475	05/06/2023	Individual seen in grass.

ANNEX D. GCN HSI ASSESSMENT RESULTS

The results of the GCN HSI surveys are presented below. Ponds/waterbody locations can be cross-referenced to **Figure 8.9**.

D.1 HSI Results

Table D-1 Pond 1

Pond/waterbody ref. no. 1 NGR: NX 44585 70414		
HSI Factor	**Comment**	**Score**
1. Geographic Location	Zone B – marginal.	0.5
2. Surface Area (m^2)	Approximately 1900 m^2 (irregular shaped).	0.81
3. Pond Drying/ Permanence	Never dries.	0.9
4. Water Quality	Moderate invertebrate diversity.	0.67
5. Shade (%)	96 – 100% shade 1 m from shore. Entire pond surrounded by willow/birch woodland.	0.2
6. Waterfowl	Absent. No evidence of waterfowl impact (moorhens may be present).	1.0
7. Fish	Possible. No evidence of fish, but local conditions suggest that they may be present.	0.7
8. Pond Count	No ponds within 1 km.	0.0
9. Terrestrial Habitat	Good terrestrial habitat within 250 m of shore. Presence of grassland and woodland suitable for foraging and sheltering.	1.0
10. Macrophyte Cover (%)	Approximately 51 – 55% cover.	0.85
HSI Score	**0.56**	
HSI Result	**Below Average**	

Table D-2 Pond 2

Pond/waterbody ref. no. 2 NGR: NX 41752 71591		
HSI Factor	**Comment**	**Score**
1. Geographic Location	Zone B – marginal.	0.5
2. Surface Area (m^2)	Approximately 3211 m^2 (irregular shaped).	0.8
3. Pond Drying/ Permanence	Never dries.	0.9
4. Water Quality	Moderate invertebrate diversity.	0.67
5. Shade (%)	0 – 60% shade from surrounding mature conifer trees dependent on sun location.	1.0
6. Waterfowl	Minor. Good habitat for fowl, but no signs of impact.	0.67
7. Fish	Major. Many fish observed coming to surface.	0.01
8. Pond Count	No ponds within 1 km.	0.0
9. Terrestrial Habitat	Poor. Surrounding habitat dominated by mature plantation and clearfell.	0.33
10. Macrophyte Cover (%)	Approximately 16 – 20% cover.	0.5
HSI Score	**0.35**	
HSI Result	**Poor**	

D.2 Photographs

Photo 1 Pond 1

Photo 2 Pond 2