APPENDIX 9.2: PROTECTED SPECIES BASELINE

1. INTRODUCTION

1.1 Scope of Report

1.1.1 WSP UK Limited (WSP UK) was commissioned to undertake ecological studies to identify the baseline of the Site and surrounding area, which has been used to inform **Volume 2, Chapter 9: Ecology, Nature Conservation and Ornithology** of the EIA Report.

1.1.2 This report presents methods and baseline findings of studies relating to protected and priority species, excluding badgers, birds, fish and dedicated bat roost surveys which are reported on separately (see **Volume 5, Appendix 9.3: Confidential Badger Baseline** and **Appendix 9.4: Ornithology Baseline** and **Volume 4, Appendix 9.5: Aquatics Baseline** and **Appendix 9.6: Bat Report**).

2. METHODS

2.1 Desk Study

2.1.1 A desk study was undertaken to review existing ecological baseline information available in the public domain. The objective was to identify records of protected or notable species within 2-5 km of the Site between 2014-2024 (i.e. relatively recent records).

2.1.2 This included a review of data available on National Biodiversity Network (NBN) Atlas[1] up to 2 km from the Site, extended to 5 km for bats[2]. Only datasets that are freely available for commercial use were searched which includes those with Open Government Licence (OGL), Creative Commons No rights reserved (CCO) and Creative Commons licence with attribution (CC-BY)[3].

2.1.3 Sightings reported to Saving Scotland's Red Squirrels[4] between 2014-2024 were also reviewed from up to 2 km from the Site.

2.2 Field Surveys

Habitat suitability

2.2.1 During site selection stage of the Proposed Development, an initial habitat suitability assessment was undertaken for the following species / groups on 22 November 2022 in combination with the UK Habitat (UKHab) Classification surveys. These species / groups were reviewed due to their conservation status, as either a legally protected species or a conservation priority under the Scottish Biodiversity List (SBL)[5],[6] and North East Scotland Biodiversity Partnership[7] (NESBiP) Locally Important Species. The species / groups highlighted are as follows:

- bats;
- pine marten *Martes martes*;
- red squirrel *Sciurus vulgaris*;
- otter *Lutra lutra*;
- water vole *Arvicola amphibius*;
- reptiles;
- great crested newt (GCN) *Triturus cristatus* and other amphibians;
- terrestrial invertebrates;
- hedgehog *Erinaceus europaeus*;
- brown hare *Lepus europaeus*;
- water shrew *Neomys fodiens*;
- fish; and
- freshwater pearl mussel *Margaritifera margaritifera*.

Targeted surveys

2.2.2 Targeted surveys for protected species were undertaken within the Site and surrounding area based on the results of the habitat suitability assessment. Survey dates are detailed within the specific species methodologies below. Surveys covered the area within the Site and survey buffers for each targeted species (see below and **Volume 3, Figure 9.2.1 Survey Areas and Access Limitations**).

[1] NBN Atlas (online). Available: https://nbnatlas.org/ [Accessed: April 2024].
[2] Due to the high mobility of bat species
[3] NBN Atlas (online). Available: https://docs.nbnatlas.org/data-licenses/ [Accessed: April 2024].
[4] Saving Scotland's Red Squirrels (online). Available: https://scottishsquirrels.org.uk/squirrel-sightings/
[5] Scottish Government (2012). Available: https://www.nature.scot/doc/scottish-biodiversity-list [Accessed: April 2024].
[6] Note that the Scottish Biodiversity Strategy 2022-2045 now supersedes the SBL, however the SBL is used as a tool for identifying priority species.
[7] NESBiP (Online). Available: https://www.nesbiodiversity.org.uk/ [Accessed: April 2024].

2.2.3 The boundary of the Site was extended after the initial surveys, therefore additional surveys were undertaken 7 - 9 May 2024 to cover new ground within the Site for a complete baseline dataset.

2.2.4 All surveys were undertaken by members of the Chartered Institute of Ecology and Environmental Management (CIEEM), with the lead surveyor at least 'capable' of species survey design, planning and field work per the CIEEM Competency Framework[8].

2.2.5 Incidental sightings of protected and notable species recorded during other environmental surveys at the Site were collated and are included within the findings of this report. This also included incidental sightings of invasive and non-native faunal species.

2.2.6 Survey methodology for each protected species specifically searched for (due to habitat suitability) within the Survey Area is outlined below.

2.2.7 Evidence of species were recorded by geo-referenced target notes, with photos.

2.2.8 As per **Section 1.2**, although suitable habitats were recorded for badger, fish and birds, these are reported separately (see **Volume 5, Appendix 9.3: Confidential Badger Baseline** and **Appendix 9.4: Confidential Ornithology Baseline** and **Volume 4, Appendix: 9.5 Aquatics Baseline**). Furthermore, only preliminary ground-based roost assessments and hibernation surveys for bats are detailed within this report. Detailed roost surveys (activity surveys and aerial roost inspections) are reported in **Volume 4, Appendix 9.6: Bat Report**.

Bat

Preliminary Roost Assessment (Structures)

2.2.9 A Preliminary Roost Assessment (PRA) of all structures within the Site and 30 m buffer (hereafter the 'Bat Survey Area') was undertaken 16 – 17 October 2023 to determine the presence / absence of Potential Roost Features (PRFs). PRAs can be undertaken at any time of the year and provide baseline results that will inform recommendation for further bat surveys during the active bat season (May to September inclusive).

2.2.10 The initial PRA was undertaken by a NatureScot licensed bat surveyor. The surveys were completed in accordance with the Bat Conservation Trust (BCT) 2023 guidelines[9].

2.2.11 A ground-level PRA of structures within the Bat Survey Area was undertaken using binoculars and a high-powered torch. Where PRFs were found, they were inspected for definitive and indicative evidence of roosting bats. Notes on each feature type, location and evidence of bats were recorded. Example PRFs in structures include gaps in the stonework, beneath lifted slates and tiles and under facias (**Table 2-1**). Definitive evidence of bat presence includes live sightings and droppings. Scratch marks and urine staining may also indicate their presence.

[8] CIEEM (2021). Competency Framework. Available at: https://cieem.net/wp-content/uploads/2022/01/Competency-Framework-2022-Web.pdf
[9] Collins, J. (ed) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.

Table 2-1: Example Potential Roost Features in Structures Identified Within the Site

PRF Type	Image
Gaps beneath slates and in gaps in the stonework.	
Gaps around the door frame.	

2.2.12 Structures were categorised by their suitability to support roosts in line with the descriptions as shown in **Table 2-2**. This includes looking at the habitat surrounding the structure to help determine its suitability. These descriptions are in accordance with the definitions outlined within the guidelines.

Table 2-2 Roost Suitability Categorisation

Suitability	Description of Roosting Features	Commuting 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 complete absence of crevices / suitable shelter at all ground / underground levels).	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitat that provide continuous lines of shade / protection for flight-lines or generate / shelter insect populations available to foraging bats).
Negligible (a)	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 flight-paths 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 numbers 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 flight-paths such as a gappy hedgerow or unvegetated steam, 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 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, conditionsb, and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation – the 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 flight-paths 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 period of time due to their size, shelter, protection, conditions (b), and 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 flight-paths 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-lines watercourses and grazed parkland. Site is close to and connected to known roosts.
Confirmed	A structure confirmed to be in use by roosting bats either via definitive field sign evidence or bat(s) recorded in-situ.	

Suitability	Description of Roosting Features	Commuting and Foraging Habitats
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 would actually (due to another attribute). b. For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.		

Preliminary Roost Assessment (Trees)

2.2.13 A ground-level tree assessment (GLTA) of all trees within the Site and Bat Survey Area was undertaken 16 – 17 October 2023 to determine the presence / absence of PRFs and potential for PRFs to be present. GLTAs can be undertaken at any time of the year and provide baseline results that will inform any recommendation for further bat surveys during the active bat season (May to September inclusive).

2.2.14 The GLTA was undertaken by a NatureScot licensed bat surveyor. The surveys were completed in accordance with the Bat Conservation Trust (BCT) 2023 Guidelines[9].

2.2.15 A GLTA within the Bat Survey Area was undertaken using binoculars and a high-powered torch. Where trees were found, they were assessed based on **Table 2-3** where they were categorised as either PRF, Further Assessment Required (FAR) or None in line with the guidance. Only trees with FAR or PRF were recorded. Where PRFs were identified, notes on each feature type, location and evidence of bats were recorded. Example PRFs in trees include cracks, crevices, and hazard beams (**Table 2-4**). Definitive evidence of bat presence includes live sightings and droppings. Scratch marks and urine staining may also indicate their presence.

Table 2-3: Suitability of Trees for Supporting Roosting Bats

Suitability	Description
None	Either no PRFs in the tree or highly unlikely to be any
FAR	Further assessment required to establish if PRFs are present in the tree
PRF	A tree with at least one PRF present

Table 2-4: Examples of PRFs in Trees Identified Within the Site

PRF Type	Image
Knot hole in limb on sycamore tree	
Weld in limbs in beech tree	

2.2.16 It is assumed that all trees with PRFs also have the potential to support hibernating bats over the winter period[10].

Automated Static Bat Detector Hibernation Surveys

2.2.17 Only structures considered to be of moderate hibernation suitability or higher were subject to hibernation surveys. Automated static bat detectors (Song Meter Mini or Song Meter 4) were deployed within four buildings (A-1, A-2, A-5 and C-1) within the Site from 20 November 2023 to 13 March 2024. This was undertaken in line with BCT 2023 Guidelines[9]. The locations of the detectors deployed are shown in **Annex A: Table A-1.**

2.2.18 The bat calls recorded were analysed manually using bat sound analysis software (Kaleidoscope). A quality check assessment was undertaken of 10% of the calls recorded by a NatureScot-licensed bat ecologist.

2.2.19 The hibernation survey effort can inform the general level of activity at, and which species may be using a given roosting resource but is not able to determine the number of bats utilising said resource.

[10] Middleton, N. (2019) Assessing Sites for Hibernation Potential. A Practical Approach, including a Proposed Method & Supporting Notes.

Otter

2.2.20 An otter survey was undertaken between 16 – 17 October 2023 and 7 – 9 May 2024 across watercourses and waterbodies within and up to 200 m beyond the Site where access was permitted (hereafter 'Otter Survey Area').

2.2.21 The survey comprised a search for signs of otters following standard methodology described in Monitoring the Otter[11] and NatureScot standing advice[12]. Otter presence can be identified from field signs such as spraints, anal jelly, prints, feeding remains, slipways and worn pathways. Additionally, a search for resting places was undertaken, and where suitable features for resting sites were identified, these were classed in line with the following definitions:

- Holt: underground features proving shelter for otters. Holts can be tunnels within bank sides, underneath root-plates or boulder piles, and man-made structures such as disused drains. Holts are used by otters to rest up during the day and are usually used as natal or breeding sites. Otters may use holts permanently or temporarily.
- Natal den: typically a holt, used exclusively by females giving birth. Often located away from potential disturbance; on small tributaries away from a main river or waterbody but remaining in proximity to feeding resources. Natal dens are typically unmarked so as to remain inconspicuous from other otters.
- Hover: a bolt hole or ledge that will provide an otter temporary cover or a place to feed. The back of a hover can usually be seen. If active there may be field evidence present, such as footprints, spraints, or feeding remains.
- Couch: above ground resting sites. Couches may be partially sheltered or fully exposed. They may be regularly used, especially in reed beds and on in-stream islands and 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.

Water vole

2.2.22 Watercourses and waterbodies within the Site and 100 m of the Site, where access was possible, were included within the water vole presence / likely absence survey (hereafter "Water Vole Survey Area") between 16 – 17 October 2023 and 7 – 9 May 2024.

2.2.23 Two separate survey visits should be undertaken for water vole over the species' breeding season. The optimal periods to undertake these surveys in Scotland are May to June and July to September. As the first water vole survey was undertaken outwith the optimal survey and suitable habitat was identified, a further survey was completed 6 July 2024 along Burn of Greens concurrent with electrofishing surveys.

2.2.24 The water vole surveys included a search for signs of water voles a minimum of 2 m from the water's edge. In some habitats, e.g. upland blanket bog and rush-dominated marshy grassland, water voles may occur well away from the riparian zone; where this habitat was present, the survey was extended further away from the waterside into the adjoining habitat, the distance was determined by considering local circumstances and using professional judgement. The potential presence of fossorial[13] water voles was also considered, and the survey adapted if they were potentially present away from water features.

2.2.25 The surveys incorporated three elements:

- a walked survey of the entire length of the watercourses within the Water Vole Survey Area to conduct a thorough visual inspection of the banks and immediate vicinity for water voles or their field signs (field signs include faeces, latrines, feeding stations, burrows, 'lawns', nests, footprints and runways in vegetation);

[11] Chanin, P. (2003). Monitoring the Otter Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.
[12] NatureScot (online). Standing advice for planning consultations – Otters. Available: https://www.nature.scot/doc/standing-advice-planning-consultations-otters Accessed: February 2023].
[13] Fossorial water voles are water voles identified to utilise habitats not directly connected to watercourses, such as rough grassland.

- the recording of habitat variables and features relevant to water voles (for example general habitat type, shore / bank substrate, bordering land use, vegetation, disturbance level, bank profile, water depth); and
- the recording of any field signs or evidence relating to other relevant wildlife (for example otter, mink *Neovision vison* or brown rat *Rattus novegicus*).

Pine marten

2.2.26 The pine marten survey was undertaken 16 – 17 October 2023 and 7 – 9 May 2024 and involved a systematic search for signs of pine marten presence and potential den sites with reference to survey guidance from UK Biodiversity Action Plan (BAP) Mammals[14] and NatureScot standing advice[15]. The search covered all habitats up to 250 m beyond the Site where safe access permitted (hereafter 'Pine Marten Survey Area').

2.2.27 This search involved looking for the following field signs:

- Den sites: such as elevated tree cavities, roof voids of buildings or barns, owl boxes, large raptor or corvid nests, squirrel dreys and rocky outcrops with elevated crevices. Current use may be indicated by the presence of scats beneath the entrance.
- Scats: variable size and shape depending on their contents, but structure and smell often distinctive. Typically found on pathways, rides and tracks through woodland or rocky habitat. Scats are most abundant during the period of June to August.
- Prints: more likely to be present in snow as pine marten generally avoid mud.
- Visual sightings: most likely possible as incidental records gathered during dusk or dawn surveys for other species (e.g., breeding birds or bats).

Red squirrel

2.2.28 A walkover survey for red squirrel was undertaken between 16 – 17 October 2023 and 7 – 9 May 2024 following guidance outlined by Forestry Commission[16] and in accordance with survey guidance for initial non-intrusive visual surveys[17] and NatureScot standing advice[18]. The search covered: woodlands up to 50 m beyond the Site where safe access permitted (hereafter" Red Squirrel Survey Area").

2.2.29 The woodland habitat was systematically searched for evidence of red squirrel, with field signs including:

- Visual sightings.
- Prints.
- Foraging signs: including chewed or stripped cones with top section remaining untouched, which are often discarded on prominent features at feeding stations.
- Dreys: nest sites visible within trees (can be conifer or broadleaf species) and comprising of spherical collections (c. 0.3 m) of twigs and leaves and usually located at least 3 m up, in the fork of branches closes to the trunk.

Great Crested Newt

Habitat Suitability Index Assessment

2.2.30 All waterbodies within the Site boundary plus a 250 m radius (hereafter" GCN Survey Area") where access was possible, were assessed for their suitability to support GCN between 16 – 17 October 2023 and 7 – 9 May 2024,

[14] Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trewhella, W.J., Wells, D. and Wray, S. (2012). UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation. The Mammal Society, Southampton.
[15] NatureScot (online). Standing advice for planning consultations – Pine martens. Available: https://www.nature.scot/doc/standing-advice-planning-consultations-pine-martens [Accessed February 2023]
[16] Gurnell, J., Lurz, P., McDonald, R., and Pepper, H. (2009). Practical techniques for surveying and monitoring squirrels. Forest Research, Surrey.
[17] Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trewhella, W.J., Wells, D. & Wray, S. (2012). UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation. Southampton, UK: The Mammal Society
[18] NatureScot (online). Standing advice for planning consultations – Red squirrels. https://www.nature.scot/doc/standing-advice-planning-consultations-red-squirrels [Accessed: February 2023].

using the standard Habitat Suitability Index (HSI) assessment method[19]. Waterbodies were identified using 1:25,000 OS mapping; this was cross referenced against aerial photography.

2.2.31 Waterbodies were assessed and scored on ten key variables which are known to influence breeding populations of GCN, in accordance with standard methods[19]. These variables are:

- geographic location;
- water body area;
- water body permanence;
- water quality;
- water body shading;
- impact of waterfowl;
- fish stocks;
- number of water bodies within 1 km;
- terrestrial habitat around the water body; and
- macrophyte cover of the water body.

2.2.32 Scores for each of the above variables were used to calculate an overall HSI value for each waterbody. This was then cross referenced with the guidelines to assign the pond to one of five categories; poor, below average, average, good or excellent. Index calculation is not a failsafe method of identifying whether a waterbody supports GCN or not; therefore, professional judgement and availability of records of GCN in the locality has also been used to inform the requirement for further survey. It is considered appropriate to review ponds identified as 'below average' and higher for further survey effort.

2.3 Assumptions and Limitations

Amphibians

2.3.1 A number of ponds were subject to a HSI assessment which were categorised as 'poor' except one pond located at grid reference NJ 82770 47559 which was assessed as 'below average'. Although it is considered appropriate to review ponds recorded as 'below average' and above for further survey effort (for example through environmental DNA sampling), access to this pond was not granted. However, due to the location of the pond[20] combined with the poor condition of surrounding ponds and terrestrial habitat, it is highly unlikely that this pond supports a breeding population of GCN and thus the absence of further detailed surveys is unlikely to conclude an alternative result.

Bats

2.3.2 Building A-1 was occupied however not connected to mains supply and was not heated throughout the winter months. As it was an occupied property and the homeowner at time of survey was unavailable, detectors were fitted to the external of the building at the gable ends. This would give indication of how bats are using the area surrounding the building during the hibernation period but cannot be used to determine if bats are / hibernating within.

2.3.3 The bat detector deployed on the east gable did not function properly between 20 November 2023 – 14 December. Due to the number of detectors present in the immediate area, this detector being on the external of the building, and the detector on the west gable functioning normally, this has not been considered a limitation to this survey effort.

2.3.4 No access was possible to deploy a static bat detector or associated microphone into the loft space of building A-5 however a detector was deployed into the main space of the building and the chimney stack. It is possible that bats may have been using the loft space for hibernating and were undetected due to this limitation.

2.3.5 No detailed PRA was undertaken on structures F-1, G-1 or H-1 during the survey efforts detailed within this report however assessment of their assumed suitability has been undertaken using aerial imagery. It is therefore

[19] ARG (2010). ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. ARG UK, UK

[20] Aberdeenshire is located in 'Zone C' which is generally considered as unsuitable to support GCN as per the HSI assessment method.

unknown how many and what potential roost features are present on these structures. Further detail relating to these structures is provided in (**Volume 4, Appendix 9.6: Bat Report**). This is not considered to be a significant limitation as further detailed survey will be undertaken on these structures to establish the presence/absence of roosting bats.

General limitations and assumptions

2.3.6 A section of a minor watercourse was not visible due to dense vegetation including gorse obscuring the bankside (**Volume 3, Figure 9.2.1 Protected Species Survey Areas and Access Limitations**). This has not been considered to have impacted upon the results of the surveys undertaken due to the following:

- it is unlikely that water vole would utilise this habitat for burrowing due to the shading and density of the shrub roots; and
- otter field signs were only recorded within the Burn of Greens and not within any of the other watercourse on site.

2.3.7 Faunal species are transient and can move between favoured habitats regularly throughout and between years. This survey provides a baseline using a snapshot of field signs and habitat suitability observed in the Survey Area on the dates of survey. Pre-construction surveys are recommended where necessary to account for this.

2.3.8 Ecological survey data for mobile species is typically valid for 18 months unless otherwise specified, for example, if conditions are likely to change more quickly due to ecological processes or anticipated changes in land management[21].

[21] CIEEM (2019). Advice note on the lifespan of ecological reports and surveys. Available: https://cieem.net/resource/advice-note-on-the-lifespan-of-ecological-reports-and-surveys/ [Accessed: February 2023].

3. RESULTS

3.1 Overview

3.1.1 Any evidence of, or potential for, protected or priority species from the above studies is detailed below. Their legal protection and listing on the SBL and as Locally Important Species identified by the NESBiP is also noted. Specific target notes gathered during the surveys are provided in **Annex A: Table A-2** and their locations are shown on **Volume 3, Figure 9.2.2 Protected Species Results**. Information related to the preliminary bat surveys and hibernation surveys are detailed in **Volume 3, Figure 9.2.3a Bat Preliminary Roost Assessment – Buildings – Summer, Figure 9.2.3b Bat Preliminary Roost Assessment – Buildings – Winter, Figure 9.2.3c Bat PRA Tree Locations** and **Annex A: Table A-1** and **Tables A-3 – A-5**.

3.2 Bats

3.2.1 As a European protected species, bats are fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). Nine species of bat are listed within the SBL, this includes common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *P.pygmaeus* which have been recorded within the Bat Survey Area.

3.2.2 No commercially available records of bats were identified up to 5 km from the Site on NBN Atlas.

Preliminary Roost Assessment

Structures

3.2.3 A total of 14 structures were identified within the Bat Survey Area as having suitability to support roosting bats, this includes eleven of moderate and three of low for bats during the active bat season (May – September) and five of moderate, seven of low and two of negligible for bats during the hibernation season (November to March). **Annex A: Table A-3** contains full details of the PRA results of structures within the Bat Survey Area, however, a summary of each building / cluster of buildings is found below and **Volume 3, Figure 9.2.3a Bat Preliminary Roost Assessment – Buildings – Summer** and **Figure 9.2.3b Bat Preliminary Roost Assessment – Buildings – Winter** show the locations of buildings which have been assessed and their suitability for summer and winter roosting bats.

Point A:

3.2.4 Point A consists of seven buildings (A-1, A-2, A-3, A-4, A-5, A-6, and A-7):

- A-1: Stone block residential property with moderate suitability for bats during the active season and hibernation season;
- A-2: Stone walled barn with corrugated pitched roof with moderate suitability for bats during the active season and hibernation season;
- A-3: Is a mixed construction barn partially collapsed with moderate suitability for bats during the active season and low suitability for bats during the hibernation season;
- A-4: Is a barn complex of primarily corrugated metal construction with low suitability for bats during the active season and hibernation season;
- A-5: Stone walled out building associated with A-1 in disuse with moderate suitability for bats during the active season and hibernation season;
- A-6: Is a primarily metal construction barn with low suitability for bats during the active season and negligible suitability during the hibernation season; and
- A-7: Is a residential property with moderate suitability for bats during the active season and low suitability for bats during the hibernation season.

Point B:

3.2.5 Point B consist of one building (B-1). B-1 is a stone walled barn ruin with moderate suitability for bats during the active season and low suitability for bats during the hibernation season.

Point C:

3.2.6 Point C contains a single building (C-1). C-1 is a small water pumphouse building associated with a private water supply with moderate suitability for bats during the active season and hibernation season.

Point D:

3.2.7 Point D contains a single building (D-1). D-1 is a residential property with moderate suitability for bats during the active season and low suitability for bats during the hibernation season.

Point E:

3.2.8 Point E contains a single building (E-1). E-1 is a modern construction barn with low suitability for bats during the active season and negligible for bats during the hibernation season.

Point F:

3.2.9 Point F contains a single building (F-1): F-1 is a residential property with moderate suitability for bats during the active season and low suitability for bats during the hibernation season.

Point G:

3.2.10 Point G contains a contains a barn complex and farmhouse with only one of the barns (G-1) falling within the Bat Survey Area. G-1 has a pitched slate roof and appears to have open gable ends to the barn it is unclear from aerial imagery what the wall structure is on this building. It is assumed that G-1 is of moderate suitability for bats during the active season and low suitability for bats during the hibernation season.

Point H:

3.2.11 Point H contains a barn complex and associated farmhouse with a single building (H-1) falling within the Bat Survey Area. H-1 is a farmhouse with moderate suitability for bats during the active season and low suitability for bats during the hibernation season.

Trees

3.2.12 A total of seven trees were identified within the Bat Survey Area as having PRFs therefore suitable for use by roosting bats. **Annex A: Table A-4**,contains the results of the tree PRA. **Volume 3, Figure 9.2.3c Bat PRA Tree Locations** shows the locations of the trees identified as having suitability for bats.

Automated Static Bat Detector Hibernation Survey

3.2.13 In total, 339 bat calls were recorded over the hibernation survey effort with 149 calls being recorded within / around building A-1, 47 calls within building A-2, 116 calls within/around building A-5 and 27 calls within / around building C-1. These calls recorded primarily common pipistrelle and soprano pipistrelle. It is therefore likely that these buildings are being used by bats during the hibernation season. **Table 3-1** below displays the number of calls recorded at each building throughout the survey effort. A breakdown of the calls recorded at each building across each month during the survey effort can be found in **Annex A: Table A-5**

Table 3-1: Bat Calls Recorded at Each Building Each Month

Detector Location	November	December	January	February	March	Total
A-1 (East Gable End)	-	110	2	-	-	112
A-1 (West Gable End)	5	23	9	-	-	37
A-2 (Placed on Central East Window)	9	5	-	33	-	47
A-5 (Central Space via South Window)	7	23	2	33	3	68
A-5 (North Chimney Stack)	18	15	10	5	-	48
C-1 (Pump house)	-	2	25	-	-	27

3.2.14 The hibernation survey effort is not able to determine the number of bats utilising the buildings. However, based on the presence of two bat species calls recorded, it can be assumed that the three buildings (A-2, A-5 and C-1) are utilised for hibernation purposes by at least two species of bat. Hibernation use cannot be assumed for building A-1 as the detectors were deployed on the external of the building (see limitations).

3.3 Otter

3.3.1 As a European protected species, the otter is fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). It is an SBL priority species.

3.3.2 No commercially available records of otter were available on NBN atlas within 2 km of the Site.

3.3.3 One otter spraint was recorded on top of a small bridge over the Burn of Greens northeast of the Site during surveys undertaken in May 2024. No other evidence was recorded within the Otter Survey Area.

3.3.4 The Burn of Greens contains suitable prey species for otters such as fish. Therefore, the burn and its associated watercourses, ditches and the nearby watercourses throughout the Site were deemed suitable habitat for otters to commute and forage along. However, habitat within the Site provided limited suitability for resting sites due to the lack of cover and likely disturbance from nearby agricultural activities.

3.4 Water vole

3.4.1 The water vole receives partial protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). In Scotland, this legal protection is currently restricted to the water vole's places of shelter or protection and does not extend to the animal itself. Full protection, to also cover the animal, is proposed. Water vole is an SBL priority species.

3.4.2 No commercially available records of water vole are available on NBN within 2 km of the Site however through WSP UK's local knowledge of the area, water vole are known to be present within the wider catchment area.

3.4.3 The majority of ditches within the Water Vole Survey Area were considered to be of limited suitability for water vole, based on the intensive agriculture practices to the edge of these features and their potential to dry out (i.e., extreme fluctuations). The bank compositions, flow speed and bankside and instream vegetation were generally suitable to support water vole on the Burn of Greens, with burrows being present of a shape and size suitable for this species being identified in clusters of 3-4 in four locations along the bankside. Clear evidence of foraging around the burrow entrances was recorded although no recent feeding evidence, droppings or prints were recorded to indicate current use by water vole. Habitat was unsuitable to support this species outwith the immediate bankside vegetation (approximately 2 m each side of the watercourse), however, water vole may be able to migrate between suitable areas along the water course both upstream and downstream.

3.4.4 Water voles in North East Scotland have been documented to live as metapopulations, which comprise a network of fragmented colonies with low numbers of individuals[22]. The species is able to retain genetic diversity through dispersal and movement between sites and new suitable habitat within a metapopulation[23].

3.5 Pine marten

3.5.1 The pine marten receives full protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Certain methods of killing or taking pine martens are illegal under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). It is an SBL priority species.

3.5.2 No recent records are available for pine marten on NBN atlas within 2 km of the Site.

3.5.3 Buildings within the Pine Marten Survey Area contain gaps and opportunities for denning pine marten, however, the surrounding habitat to these buildings was not considered suitable for this species due to a lack of mature woodland and the structures were not well connected to further suitable habitat. As of this and no field signs of pine marten being recorded, these buildings were not considered further.

3.6 Red squirrel

3.6.1 Red squirrels and their dreys (resting places) receive full protection under Schedules 5 and 6 of the Wildlife and Countryside Act 1981 (as amended). They are an SBL priority species.

3.6.2 No recent records of red squirrel are available on NBN atlas within 2 km of the Site.

3.6.3 No records of red squirrels were reported[4] between 2014-2024 within the 2 km search area with the closest records being located in Wood of Hatton (c. 4.5 km southwest).

3.6.4 The Site and Red Squirrel Survey Area are suboptimal for use by red squirrel with a lack of continuous large woodland, the woodland present being young (<30 year old) plantation coniferous woodland, and little connectivity to suitable woodland habitat in the wider area. No field signs of red squirrel were recorded during the survey efforts undertaken.

3.7 Reptiles

3.7.1 Native reptiles in Scotland are given limited protection under the Wildlife and Countryside Act 1981 (as amended). All native reptiles are SBL priority species.

3.7.2 No recent, commercially available records of common lizard *Zootoca viviparia,* slow worm *Anguis fragilis* or adder *Vipera berus* were identified on NBN Atlas within 2 km of the Site

3.7.3 Rock piles were recorded east of the site between two crop fields during the protected species survey as providing suitable habitat to support reptiles.

3.7.4 Reptiles prefer successional habitats with a degree of heterogeneity. Optimal habitat includes vegetated and / or rocky areas for shelter, and open areas for basking[24]. The Site comprised primarily modified habitats including short grazed pastoral farmland and arable fields with limited cover for reptiles amongst plantation woodland blocks and limited basking / hibernacula sites present. Therefore, the Site is unlikely to qualify as a Key Reptile Site with reference to criteria in the Froglife advice note[25].

[22] Stewart, W. A., Dallas, J. F., and Piertney, S.B. (1999). Metapopulation Genetic Structure in the Water Vole, Arvicola terrestris, in NE Scotland, Biological Journal of the Linnean Society , 68: 159 – 171.

[23] Aars, J., Lambin, X., Denny, R. and Griffin, A. (2001). Water Vole in the Scottish Uplands: Distribution Patterns of Disturbed and Pristine Populations Ahead and Behind the American Mink Invasion Front. Animal Conservation 4, 187 – 194.

[24] Froglife (1999). Froglife Advice Sheet 10. Reptile Survey: An introduction to planning, conducting and interpreting survey for snake and lizard conservation. Available: https://cieem.net/resource/froglife-advice-sheet-10-reptile-survey/ [Accessed: February 2023].

[25] Froglife (2015) Surveying for Reptiles. Tips, techniques and skills to help you survey for reptiles. 1st Edition available: https://www.froglife.org/wp-content/uploads/2013/06/Reptile-survey-booklet-3mm-bleed.pdf

3.8 Great crested newt and other amphibians

3.8.1 GCN has full protection under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). It is an SBL priority species.

3.8.2 No commercially available records of GCN are available on NBN atlas within 2 km of the Site.

3.8.3 Four ponds were identified for HSI assessment within the GCN Survey Area. The expanse of grazing pasture / arable fields which dominate the Site was considered broadly unsuitable for newts. Ponds located within the survey area resulted in 'poor' and 'below average' HSI scores (**Annex A: Table A-2**). The Site is located in a geographical region which is considered broadly unsuitable for breeding great crested newts[26]. As such, the Site is unlikely to support GCN.

3.8.4 Other native amphibians receive limited protection under the Wildlife and Countryside Act 1981 (as amended), including common toad *Bufo bufo*. Common toad is also an SBL priority species. The watercourses and ditches in slower stretches are considered suitable for breeding and foraging common frog *Rana temporaria* and common toads.

3.9 Terrestrial invertebrates

3.9.1 The woodland blocks, field margins, ditches and pastoral grassland provide suitable habitat for a range of terrestrial invertebrates. No notable invertebrate species were recorded during field surveys conducted over the Site.

3.9.2 The vast majority of the grazed grassland and arable fields covering the Site does not offer suitable habitat for a diverse range of invertebrates.

3.10 Other species

3.10.1 Brown hare (SBL priority species) was incidentally recorded across the Site during surveys, with suitable habitat for this species present throughout the Site. Roe deer *Capreolus capreolus* was also recorded during the surveys.

3.10.2 There were no incidental sightings of hedgehog (an SBL priority species) during surveys, however farmland, grassland, woodland and hedgerow edge habitats could support foraging and sheltering activities.

3.10.3 Water shrew (NESBiP Locally Important Species) was not incidentally recorded during surveys however the ditches and watercourses across the Site could be suitable to support this species.

[26] 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.

4. CONCLUSION

4.1.1 The ecological baseline of the Site and surrounding area has been established through desk-based studies and field surveys. This information will be used to inform **Volume 2, Chapter 9: Ecology, Nature Conservation and Ornithology** of the EIA Report. In relation to protected and priority faunal species, the following has been concluded.

4.1.2 Definitive or potential evidence (excluding those outlined in **Section 1.2.2**) of the following protected species has been recorded during field surveys of the collective (widest) Survey Area:

- Bat (hibernation roost); and
- Otter (spraint).

4.1.3 No signs were recorded of the following protected and priority species, but suitable habitat exists within the collective (widest) Survey Area:

- Water vole;
- Reptiles;
- Common toad;
- Terrestrial invertebrates;
- Brown hare; and
- Hedgehog.

4.1.4 The following protected species are considered likely absent from the collective (widest) Survey Area:

- Great crested newt;
- Pine marten; and
- Red squirrel.

ANNEX A: TARGET NOTES, SURVEY RESULTS AND PHOTOS

Table A-1 Static Bat Detector Location

Detector Location (Structure Reference)	Building Image	Detector Position
1 (A-1)		

Detector Location (Structure Reference)	Building Image	Detector Position
2 (A-1)		

Detector Location (Structure Reference)	Building Image	Detector Position
3 (A-2)		

Detector Location (Structure Reference)	Building Image	Detector Position
4 (A-5)		

Detector Location (Structure Reference)	Building Image	Detector Position
5 (A-5)		

Detector Location (Structure Reference)	Building Image	Detector Position
6 (C-1)		

Table A-2 Target Notes

Ref.	Species	Comment	Photo
O.01	Otter	Spraint on rock on top of bridge over the Burn of Greens	
HSI.1	GCN	'Below Average' score	

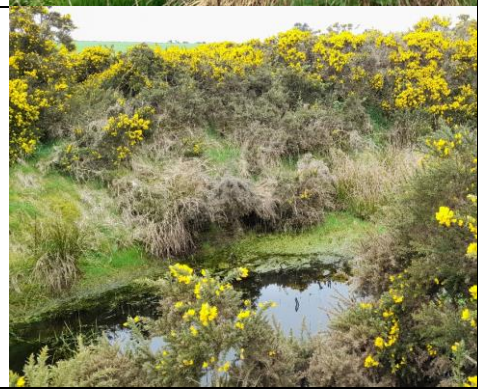
Ref.	Species	Comment	Photo
HSI.2	GCN	'Poor' score	
HSI.3	GCN	'Poor' score	
HSI.4	GCN	'Poor' score	

Table A-3 Building PRA Results

Building Reference	Building Type	Building Construction	PRFs	Roost Suitability (Summer)	Roost Suitability (Winter)
A-1	Farmhouse	Stone block wall with complex slate roof.	PRFs present across the roof beneath lifted and missing slates, around the roofline and in the stonework at the wall head.	Moderate	Moderate
A-2	Disused Stone Barn	Stone walls with pitched corrugated metal roof.	Gaps in stonework and likely internal with missing windows and gaps along roofline.	Moderate	Moderate
A-3	Disused Stone Barn	Stone wall with wooden frame, metal corrugated pitched roof. Collapsed roof across some aspect.	Gaps in stonework and across wooden frame internal.	Moderate	Low
A-4	Disused Stone Barn	Mixed construction barn complex with predominatly metal corrugated walls and roof with some stone wall sections.	Gaps in stonework.	Low	Low
A-5	Stone Barn	Pitched slate roof building with stone walls.	Gaps in stonework and chimney and beneath slates notably along the roofline.	Moderate	Moderate
A-6	Disused Stone Barn	Metal walled barn with pitched roof. Blocked lower section of wall (<3 m)	Gaps where metal sheet overlaps blocked section of wall and gaps in the stonework.	Low	Negligible
A-7	Residential Property	Stone wall with wooden cladding and pitched slate roof.	Gaps along roofline, possibly beneath cladding and beneath slates.	Moderate	Low
B-1	Disused Stone Barn	Stone wall with partially collasped slate pitch roof.	Gaps in stonework, internal within wooden frame and beneath slates.	Moderate	Low
C-1	Water Pump House	Concrete cast wall and flat roof with roughcast exterior.	Gaps present leading into internal space around doorframe.	Moderate	Moderate
D-1	Residential Property	Complex tile roof with brick walls rough casted.	Gaps around roofline, beneath lead flashing.	Moderate	Low

Building Reference	Building Type	Building Construction	PRFs	Roost Suitability (Summer)	Roost Suitability (Winter)
E-1	Modern Barn	Block wall (<4 m) and metal panel wall and pitched metal roof.	Gaps between block wall and metal panels.	Low	Negligible
F-1	Residential Property	Multi-pitched tile roof with roughcast exterior walls	No detailed PRA undertaken	Moderate	Low
G-1	Slate Roofed Barn	Unknown wall structure with slate pitched roof	No detailed PRA undertaken	Moderate	Low
H-1	Farmhouse	Complex slate roof with stone walls	No detailed PRA undertaken	Moderate	Low

Table A-4 Tree PRA and Aerial Inspection Results

Target Note / Tree No.	Tree Species	Features	Photographs
0116	Ash	Decay hollow in main stem in fork	

Target Note / Tree No.	Tree Species	Features	Photographs
0115	Sitka spruce	Snapped limb with desiccation and decay	

Target Note / Tree No.	Tree Species	Features	Photographs
0124	Sycamore	3 m east weld and fluting	

Target Note / Tree No.	Tree Species	Features	Photographs
0123	Sycamore	Knothole at 2 and 4 m south and dead wood at 4.5 m	

Target Note / Tree No.	Tree Species	Features	Photographs
0126	Sycamore	Knothole at 5 m east	
0113	Willow	Various hazard beams, tear outs, dead wood and failed hazard beams between 0-5 m	No image

Target Note / Tree No.	Tree Species	Features	Photographs
0110	Sycamore	Basal cavity	

Table A-5 Bat Hibernation Static Bat Detector Results

Detector Location	Species	November	December	January	February	March	Total
1 (A-1 east)	Pipistrellus spp.	-	0	0	0	0	0
	Common pipistrelle	-	104	2	0	0	106
	Soprano pipistrelle	-	6	0	0	0	6
2 (A-1 west)	Pipistrellus spp.	0	0	0	0	0	0
	Common pipistrelle	5	19	5	0	0	29
	Soprano pipistrelle	0	4	4	0	0	8
3 (A-2)	Pipistrellus spp.	0	0	-	0	0	0
	Common pipistrelle	9	5	-	31	0	45
	Soprano pipistrelle	0	0	-	2	0	2
4 (A-5 Chimney)	Pipistrellus spp.	0	0	0	0	0	0
	Common pipistrelle	17	12	10	4	0	43
	Soprano pipistrelle	1	2	0	1	0	4
5 (A-5 front)	Pipistrellus spp.	0	0	0	0	0	0
	Common pipistrelle	4	16	2	30	3	55
	Soprano pipistrelle	3	7	0	3	0	13
6 (C-1)	Pipistrellus spp.	0	0	0	0	0	0
	Common pipistrelle	0	0	0	0	0	0
	Soprano pipistrelle	0	2	25	0	0	27