Scottish & Southern Electricity Networks

TRANSMISSION

# LT325 Loch na Cathrach Pumped Hydro Storage Scheme Grid Connection

## Habitat and Protected Species Survey Report

## February 2025

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# ANNEXES

Scottish & Southern Electricity Networks
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## GLOSSARY

| | |
|---|---|
| 275kV | 275 kilo-volt capacity of an electricity power substation |
| BCT | Bat Conservation Trust |
| CC | Cloud Cover |
| CIEEM | The Chartered Institute of Ecology and Environmental Management |
| EA | Environmental Appraisal |
| GWDTE | Ground Water Dependant Terrestrial Ecosystems |
| Ha | Hectares |
| JNCC | Joint Nature Conservation Committee |
| Kilovolt (kV) | One thousand volts of electricity |
| Km | Kilometre |
| Megawatt (MW) | One million watts of electricity |
| NVC | National Vegetation Classification |
| OHL | Overhead Line |
| Phase 1 | Phase 1 habitat classification |
| SSEN | Scottish and Southern Electricity Networks |
| Temp | Temperature |
| UGC | Underground Cable |
| UKHab | The UK Habitat Classification |
| WS | Wind Speed |

# 1. INTRODUCTION

## 1.1 Background of the Project

Scottish and Southern Electricity Networks (SSEN Transmission), operating under licence held by Scottish Hydro Electric Transmission plc , owns, operates and develops the high voltage electricity transmission system in the north of Scotland and remote islands.

SSEN Transmission has a statutory duty under Schedule 9 of the Electricity Act 1989 to develop and maintain an efficient, coordinated and economical electrical transmission system in its licensed areas.

The Loch na Cathrach 275kV Switching Station will be connected to the existing Knocknagael 275kV Substation by a single circuit 275kV underground cable (UGC). The proposed UGC alignment and substation is hereafter referred to as the 'Proposed Development'.

## 1.2 Scope

Environmental Resources Management Ltd (ERM) was commissioned by SSEN Transmission to undertake a habitat and protected species survey in April 2022 (Visit 1) and June 2022 (Visit 2) of the preferred alignment option and substation site options (as shown in **Appendix A, Figure 1**) as part of the alignment and environmental appraisal (EA) process.

The survey area comprised of the preferred UGC alignment option (plus a 250 m buffer) and substation (as shown in **Appendix A, Figure 1**). The habitats were coded using UK Habitat Classification (UKHab) methodology, Phase 1 habitat survey methodology, National Vegetation Classification survey (NVC) methodology, and habitats were recorded where relevant to be a potential groundwater dependent terrestrial ecosystem (GWDTE). A protected species walkover was also conducted within the same survey area, with priority species recorded (**Section 2.3**).

This report presents the findings of the habitat and protected species surveys undertaken by ERM across Visit 1 and 2 within the survey area. Where applicable, this report also makes reference to bat tree and NVC survey data gathered by an ERM ecologist in May 2023 on land adjacent to Knocknagael Substation, following a request from SSEN (**LT 325 Red John Bat Tree Assessment and Woodland NVC Survey Report**[1]).

## 1.3 Site Location and Description

The survey area is located in the north of Scotland approximately 6 km south of Inverness city centre near Essich and stretches approximately 8 km south-west to approximately Dores. The survey area is approximately 300 m east of Loch Ness at its closest point and incorporates part (approximately 30 ha) of Loch Ashie.

Overall, the habitats were dominated by native pine woodland as well as other coniferous woodlands, both plantation and semi-natural, modified grassland, upland heathland and blanket bog.

[1] ERM, 2024. LT 325 Red John Bat Tree Assessment and Woodland NVC Survey Report.

# 2. METHODOLOGY

## 2.1 UKHab and Phase 1 Habitat Survey

UKHab and Phase 1 habitat surveys were undertaken by ERM within the survey area in April and June 2022, as described in **Section 1.2**. Surveys were based on the methods described in the UK Habitat Classification User Manual (2020)[2] and the Joint Nature Conservation Committee (JNCC) Handbook for Phase 1 Habitat Survey (2016)[3] as extended for use in Environmental Assessment[4]. The alphanumeric UKHab and Phase 1 habitat codes have been reported in the findings and maps (**Appendix A, Figure 2** and **3**).

This report describes in detail the UKHab Habitat Classification results of the survey (**Section 3.1**) and makes reference to the Phase 1 results in **Appendix A, Figure 3**. Target notes of features of interest were recorded with a geographic reference and accompanying photograph(s) (**Appendix B, Target Notes**). Plants and their frequency of occurrence were recorded using the subjective DAFOR scale (dominant, abundant, frequent, occasional, or rare)[5]. The nomenclature of vascular plants occurring within the defined survey area follows Stace (2019)[6].

Aerial imagery dating from June 2022, October 2022, March 2023, and May 2023[(7)], available via Google Earth, was reviewed in January 2025 to confirm any significant changes in habitat or land management since the surveys. Observations are detailed in **Section 3.1** and **Section 4**.

## 2.2 NVC for GWDTE Survey

An NVC survey of habitats with the potential to support GWDTE was undertaken by ERM within the survey area in April and June 2022. The survey was based on the methods described in Joint Nature Conservation Committee (JNCC) National Vegetation Classification: Users' handbook[8] with communities identified by eye. Target notes of features of interest were recorded with a geographic reference and photograph taken (**Appendix B, Target Notes**).

## 2.3 Protected Species Surveys

A walkover survey for protected and priority species was undertaken during the habitat surveys, which included a search for signs/sightings of species likely to occur within the survey area and in the habitats present. This survey is undertaken to inform any more detailed future surveys, deemed necessary in light of findings, these are presented within the recommendations section (**Section 4.2**) as appropriate. Protected species are those that are deemed 'sensitive' and especially vulnerable to persecution or over-exploitation and are protected under legislation such as the Conservation (Natural Habitats, &c.)

[2] UK Habitat Classification Working Group (2020). UK Habitat Classification User Manual, Version 1.1. Available at: http://ecountability.co.uk/ukhabworkinggroup-ukhab.
[3] Joint Nature Conservation Committee (2016) Handbook for Phase 1 Habitat Survey - A Technique for Environmental Audit, Joint Nature Conservation Committee (JNCC), Peterborough.
[4] Institute of Environmental Assessment (1995) Guidelines for Baseline Ecological Assessment, Spon, London.
[5] The DAFOR scale is used for semi-quantitative sampling, to provide a quick estimate of the relative abundance of species (generally plants) in a given area. Abundance (number of individuals) and cover (area coverage) are often used interchangeably in this type of surveying, although in fact they may have very different meanings.
[6] Stace, C. (2019). New Flora of the British Isles. 4th edition. UK. Cambridge University Press

[8] Joint Nature Conservation Committee National Vegetation Classification: Users' handbook (2006), Peterborough.

Regulations 1994 (as amended)[9] , Wildlife and Countryside Act 1981[10] and Protection of Badgers Act 1992[11]. Other notable species of priority, such as those included on the Scottish Biodiversity List (SBL)[12] which are of particular importance for the conservation of biodiversity in Scotland, were also recorded if present. The survey method for each species is detailed in **Sections 2.3.1** to **2.3.9** and any limitations to surveys are detailed in **Section 2.5**.

### 2.3.1 Bats

Habitats suitable for bats were identified and an assessment undertaken of their likely suitability to support foraging / commuting bats and bat roosts, taking account of guidance from the Bat Conservation Trust (BCT)[13] (**Table 1**). The assessment of the potential for bat roosts in the habitats was made based on ground observations throughout the survey area. High level assessments of both trees and buildings to support roosting bats were undertaken. In areas of more mature dense conifers it was restricted largely to the edges of the plantations along tracks / rides, as access into the plantation was not possible. Detailed inspections and climbing were not undertaken.

[9] UK Government Legislation (1994). The Conservation (Natural Habitats, &c.) Regulations 1994. Available at: https://www.legislation.gov.uk/ukpga/1981/69/contents.
[10] UK Government Legislation (1981). Wildlife and Countryside Act 1981. Available at: https://www.legislation.gov.uk/ukpga/1981/69/contents.
[11] UK Government Legislation (1992). Protection of Badgers Act 1992. Available at: https://www.legislation.gov.uk/ukpga/1992/51/contents.
[12] Scottish Biodiversity List (2005). Available at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.nature.scot%2Fsites%2Fdefault%2Ffiles%2F2022-04%2FScottish%2520Biodiversity%2520List.xls&wdOrigin=BROWSELINK.
[13] Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines.3rd edition. The Bat Conservation Trust, London.

**Table 1: BCT Categories of Roosting Habitats and Commuting and Foraging Habitats**

| Suitability Category | Roosting Habitats | Commuting and Foraging Habitats |
|---|---|---|
| Negligible | Negligible habitat features on site likely to be used by roosting bats. | Negligible habitat features on site likely to be used by commuting or foraging bats. |
| Low | A structure with one or more potential roost sites that could be used by the individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).<br><br>A tree of sufficient size and age to contain potential roost features (PRFs) but with none seen from the ground or features seen with only very limited roosting potential. | Habitat that could be used by small numbers of commuting bats such as fragmented hedgerows or an unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat.<br><br>Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub. |
| Moderate | A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are 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 commuting, such as lines of trees and scrub or linked back gardens.<br><br>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 or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. | Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.<br><br>High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland.<br><br>Site is close to and connected to known roosts. |

### 2.3.2 Otter (*Lutra lutra*)

Accessible areas of habitat deemed suitable to support otters, within the survey area were surveyed for evidence of otter activity. Otter field signs include spraints, slides, holts, couches, tracks, and resting up sites[14].

[14] Chanin and Smith (2003). Monitoring the otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No 10. Peterborough, English Nature.

### 2.3.3 Water Vole (*Arvicola amphibious*)

Accessible areas of habitat deemed suitable to support water voles, within the survey area were surveyed for evidence of water vole activity. Water vole field signs include droppings, latrines, feeding remains, nests, and burrows[15].

### 2.3.4 Badger (*Meles meles*)

Accessible areas of habitat deemed suitable to support badgers within the survey area were surveyed for evidence of badger activity. Badger field signs include setts, bedding, scratch marks, paths, prints, guard hairs, dung pits/latrines and signs of foraging ("snuffle holes")[16].

### 2.3.5 Pine Marten (*Martes martes*)

Accessible areas of habitat deemed suitable to support pine marten within the survey area were surveyed for evidence of pine marten activity. Pine marten field signs include dens, feeding signs and scat[17].

### 2.3.6 Red Squirrel (*Sciurus vulgaris*)

Accessible areas of habitat deemed suitable to support red squirrel within the survey area were surveyed for evidence of red squirrel activity. Red squirrel field signs include dreys, feeding signs and droppings.

### 2.3.7 Wildcat (*Felis silvestris*)

Accessible areas of habitat suitable for wildcat within the survey area were surveyed for evidence of wildcat activity in the form of dens, feeding signs and scat[18].

### 2.3.8 Birds

An assessment was made of the suitability of the habitats for nesting and foraging birds and any birds seen or heard were recorded during the survey. As there were focused breeding bird surveys being conducted within the survey area by Direct Ecology (DE)[19], only incidental records of bird species seen and heard during the protected species walkover survey were recorded to supplement their findings.

### 2.3.9 Other Fauna

The presence, or potential presence, of any other species of note (e.g. Scottish Biodiversity List species, Local Biodiversity Action Plan species, reptiles, amphibians) was recorded.

## 2.4 Survey Personnel and Timing

The UKHab, Phase 1, NVC, GWDTE and protected species walkover surveys on the first site visit (25/05 - 28/05) were carried out by Amelia Hodnett (ERM senior ecologist and ACIEEM) who has 11 years' experience and supported by Aaron Nugent (ERM ecologist and qualifying CIEEM member). Surveys conducted on the second site visit (13/06 - 15/06) were conducted by Amelia Hodnett and Callum Gilhooley (ERM senior ecologist and ACIEEM) who has 11 years' experience.

[15] Strachan, R. Moorhouse, T. and Gelling, M. (2011). Water Vole Conservation Handbook. Third Edition. Wildlife Conservation Research Unit (WildCRU), Oxon.
[16] Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1.
[17] The Vincent Wildlife Trust (2020). A Guide to Identifying Evidence of Pine Martens. Available at: https://www.vwt.org.uk/wp-content/uploads/2020/07/Evidence-of-Pine-MartensJune2020Webversion.pdf.
[18] NatureScot. (n.d.). Wildcat Survey Methods. Available at: https://www.nature.scot/sites/default/files/2018-04/Guidance-Wildcat-Survey-Methods.pdf.
[19] Direct Ecology Ltd (2023) Red John Breeding Bird & Black Grous Lek Location Surveys Report. DEL, Dunblane, Scotland.

Survey timing and conditions are detailed in **Table 2**.

**Table 2: Weather Conditions and Survey Timings**

| Date | Approximate start/end time | Weather | | | |
|---|---|---|---|---|---|
| | | Rain | Temp. | Wind [20] | Cloud cover [21] |
| 25 April 2022 | 1300/1800 | 0% | 9°C | 2 | 4/8 |
| 26 April 2022 | 0900/1800 | 0% | 8°C | 2 | 4/8 |
| 27 April 2022 | 0900/1830 | 0% | 10°C | 2 | 3/8 |
| 28 April 2022 | 0900/1400 | 0% | 11°C | 1 | 6/8 |
| 13 June 2022 | 1300/1800 | 20% | 16°C | 4 | 5/8 |
| 14 June 2022 | 0900/1800 | 50% | 16°C | 4 | 6/8 |
| 15 June 2022 | 0900/1400 | 10% | 20°C | 5 | 2/8 |

## 2.5 Limitations

Areas of the coniferous woodland plantations were densely planted, making access unsafe and impractical. Protected species surveys were therefore unable to take place within some areas of this habitat.

Wet, boggy ground conditions and tall-grown grassland made it difficult to spot potential scat and old/inactive badger sets. It is possible field signs for badgers, red squirrel, pine marten and wildcat could be present within the survey area but were not recorded as they had been covered over by the environment.

There is an area in the north-west of the survey area which ERM did not have access to, as shown in **Figure 2** and **Figure 3** in **Appendix A**. From review of aerial imagery on Google Earth, the habitats appear to be a mix of gorse scrub, heathland, neutral and modified grassland, however this would need to be confirmed through a survey visit and to understand if any protected species occupy the area.

The majority of surveys were completed, in June 2022. Good practice guidance recommends that surveys that are between 18 months and three years old may require further survey by a suitably qualified ecologist [22]. Review of the latest aerial imagery available via Google Earth [23], did not identify any significant changes in habitat or land management other than one area of plantation woodland (NH 64380 38442), which was clear felled between October 2022 and March 2023. A survey visit prior to construction will be required to confirm no significant changes to habitats which will be impacted by the Proposed Development (see **Section 4**).

[20] Met Office Beaufort wind force scale. Available at https://www.metoffice.gov.uk/weather/guides/coast-and-sea/beaufort-scale
[21] Royal Meteorological Society Weather Symbols and Synoptic Charts. Available at https://www.metlink.org/resource/student-charts/
[22] Chartered Institute for Ecology and Environmental Management (CIEEM), 2019. Advice Note; On The Lifespan of Ecological Reports & Surveys. Available at: https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf
[23] Dated June 2022, October 2022, March 2023, and May 2023. Accessed: 18 January 2024: https://earth.google.com/web/..

# 3. SURVEY RESULTS

## 3.1 UKHab Habitat Survey

UKHab classifications recorded within the survey area are presented in **Table 3**. They are listed by classification grouping order as set out in the UK Habitat Classification User Manual (2020), not in order of ecological value:

**Table 3: UKHab Habitat Classifications Recorded Within the Survey Area**

| Broad Habitat Type | UKHab code | Habitat classification |
|---|---|---|
| Grassland | g1b | Upland acid grassland |
| | g1c | Bracken |
| | g3b | (Upland hay meadows) |
| | g3c | Other neutral grassland |
| | g3c6 | *Lolium-Cynosurus* neutral grassland |
| | g3c8 | *Holcus-Juncus* neutral grassland |
| | g4 | Modified grassland |
| Woodland and forest | w1e | Upland birchwoods |
| | w1g | Other woodland; broadleaved |
| | w1g6 | Line of trees |
| | w1h | Other woodland; mixed |
| | w1h5 | Other woodland; mixed; mainly broadleaved |
| | w1h6 | Other woodland; mixed; mainly conifer |
| | w2a | Native pine woodlands |
| | w2b | Other Scot's Pine woodland |
| | w2c | Other coniferous woodland |
| Heathland and shrub | h1b | Upland heathland |
| | h3e | Gorse scrub |
| | h3h | Mixed scrub |
| Wetland | f1a | Blanket bog |
| | f2c | Upland flushes, fens and swamps |
| Cropland | c1c | Cereal crops |
| Urban | u1b | Developed land; sealed surface |
| | u1b5 | Buildings |
| | u1c | Artificial unvegetated, unsealed surface |
| | u1d | Suburban/mosaic of developed/natural surface |
| | u1e | Built linear features |
| Rivers and lakes | r1c | Oligotrophic and dystrophic lakes |
| | r2 | Rivers and streams |

These habitats are described below in **Sections 3.1.1** to **3.1.29**. The mapped findings of the UKHab survey are presented in **Appendix A**, **Figure 2**. Target Notes are presented in **Appendix B**.

A visit to Knocknagael Substation in May 2023 by an ERM ecologist (**LT 325 Red John Bat Tree Assessment and Woodland NVC Survey Report**[24]) did not identify any

[24] ERM, 2024. LT 325 Red John Bat Tree Assessment and Woodland NVC Survey Report.

significant changes to habitats within the survey area immediately surrounding the substation.

In addition, review of aerial imagery[25] identified one area of coniferous woodland which had been clear-felled between October 2022 and March 2023, as discussed in **Section 3.1.16**. No other significant changes in habitat or management were identified.

### *3.1.1* ***Grassland - (g1b) Upland acid grassland***

Two large areas of upland acid grassland were present in the western centre of the survey area. Both areas were dominated by fescue spp.; one had abundant matgrass (*Nardus stricta*) and Yorkshire fog (*Holcus lanatus*) whilst the other had abundant soft rush (*Juncus effusus*). Other species present included common heather (*Calluna vulgaris*), crested dog's-tail (*Cynosurus cristatus*), heath rush (*Juncus squarrosus*), heath wood-rush (*Luzula multiflora*) and gorse (*Ulex europaeus*).

There was another smaller area of upland acid grassland situated further south of the survey area which was dominated by purple moor-grass (*Molinia caerulea*) with frequent common heather and cross-leaved heath (*Erica tetralix*), occasional Scot's Pine (*Pinus sylvestris*) saplings, juniper (*Juniperus communis*) and *Sphagnum* spp. on hummocks.

### *3.1.2* ***Grassland - (g1c) Bracken***

Bracken (*Pteridium aquilinum*) occurred in continuous and scattered form in small areas throughout the survey area, with the largest area being a scattered bracken habitat in the south which contained abundant Yorkshire fog as well as occasional birch (*Betula*) spp., bilberry (*Vaccinium myrtillus*), juniper, blackthorn (*Prunus spinosa*), common heather and soft rush between it. Primrose (*Primula vulgaris*) and crested dog's-tail occurred rarely and *hypnum* moss spp. occurred throughout.

### *3.1.3* ***Grassland - (g3b) (Upland hay meadows)***

An area of upland hay meadow habitat was located to the north of the survey area and was adjacent to areas of modified grassland and gorse scrub. Within this habitat, cock's-foot (*Dactylis glomerata*) was dominant and pignut (*Conopodium majus*) was abundant. Frequent species included bentgrass (*Agrostis*) spp., meadow buttercup (*Ranunculus acris*), white clover (*Trifolium repens*), sorrel (*Rumex*) spp., oxeye daisy (*Leucanthemum vulgare*) and lady's bedstraw (*Galium verum*), whilst red fescue (*Festuca rubera*) was occasional-frequent and hogweed (*Heracleum sphondylium*) and speedwell (*Veronica*) spp. were occasional.

### *3.1.4* ***Grassland - (g3c) Other neutral grassland***

The largest areas of this habitat were present in the far north of the survey area and two smaller areas were situated to the south. Northern areas tended to be dominated by sweet vernal grass (*Anthoxanthum odoratum*) and contained frequent-abundant meadow buttercup, cock's-foot, meadow-grass (*Poa*) spp., Yorkshire fog, sorrel spp., speedwell spp. and rare-occasional mouse-ear chickweed (*Cerastium fontanum*), red fescue, eyebright (*Euphrasia*) spp., plantain (*Plantago*) spp., crested dog's-tail, silver birch (*Betula pendula*), field wood-rush (*Luzula campestris*), pignut and bird's-foot trefoil (*Lotus corniculatus*). Southern areas appeared dominated by creeping bentgrass (*Agrostis stolonifera*) and

[25] Dated June 2022, October 2022, March 2023, and May 2023. Accessed: 18 January 2024: https://earth.google.com/web/

contained frequent Yorkshire fog and other bentgrass spp., as well as occasional gorse, soft rush, heath bedstraw (*Galium saxatile*) and *Polytrichum commune*.

### 3.1.5 *Grassland - (g3c6) Lolium-Cynosurus neutral grassland*

Two areas of this habitat were located within the survey area. One in the north of the survey area was surrounded by fields of grassland, gorse scrub and broadleaved woodland. This area of grassland was dominated by crested dog's-tail, frequent perennial rye-grass (*Lolium perenne*), red fescue and white clover and occasional cock's-foot, soft rush and silver birch. The area in the south was surrounded by upland heathland, gorse scrub and acid grassland. This grassland supported abundant perennial rye-grass and crested dog's-tail, frequent mouse-ear chickweed, and occasional soft rush, white clover, sorrel spp., forget-me-not (*Myosotis*) spp., meadow buttercup, Yorkshire fog, bentgrass spp., ribwort plantain (*Plantago lanceolata*), creeping buttercup (*Ranunculus repens*), and rare yarrow (*Achillea millefolium*) and silver birch.

### 3.1.6 *Grassland – (g3c8) Holcus-Juncus neutral grassland*

Three small patches of *Holcus-Juncus* neutral grassland were present within a large area of modified grassland in the middle of the survey area. These areas were comprised of abundant Yorkshire fog and soft rush. There was also a small area of this habitat in the north of the survey area, adjacent to the substation complex (**Appendix B, Target Note 41**). Additional species in this location included frequent bentgrass spp., dock (*Rumex*) spp., creeping buttercup, forget-me-not spp., occasional ragged robin (*Silene flos-cuculi*), wavy hair-grass, silverweed (*Potentilla anserine*), sorrel spp. and rare meadow foxtail (*Alopecurus pratensis*), common yellow sedge (*Carex demissa*) and mouse-ear chickweed.

### 3.1.7 *Grassland – (g4) Modified grassland*

Modified grassland occurred in large areas within the majority of the northern half of the survey area. Perennial rye-grass tended to dominate these areas and crested dog's-tail, cock's-foot, white clover, meadow buttercup, soft rush and mouse-ear chickweed occurred frequently-abundantly. Silver birch, daisy (*Bellis*) spp., speedwell spp., gorse, bentgrass spp., pignut, sweet vernal grass, creeping thistle (*Cirsium arvense*), common nettle (*Urtica dioica*), dock, meadow-grass (*Poa*) spp. and sorrel spp. were occasional or locally frequent. Some of the modified grassland was also occupied by livestock and experienced grazing from sheep or cattle.

### 3.1.8 *Woodland and forest – (w1e) Upland birchwoods*

There were two areas of semi-natural upland birchwood habitat towards the south of the survey area. One of the areas was dominated by silver birch and the other by downy birch (*Betula pubescens*). The silver birch dominated habitat had an understory consisting of locally abundant bracken, bilberry mixed with heath bedstraw and occasional gorse and juniper. The downy birch dominated woodland also contained frequent rowan (*Sorbus aucuparia*) and bracken, as well as sweet vernal grass and abundant creeping soft-grass (*Holcus mollis*).

### 3.1.9 *Woodland and forest - (w1g) Other woodland; broadleaved*

There were areas of broadleaved woodland habitat to the northern and southern ends of the survey area, the majority of which were semi-natural but there is one area of broadleaved plantation. The area of broadleaved plantation borders the substation complex in the north and contains a mix of hawthorn (*Crataegus monogyna*), rowan, oak (*Quercus robur*), birch spp., cherry (*Prunus*) spp. and some individuals of coniferous species such as Scots pine. All other semi-natural broadleaved woodlands predominantly contained

abundant-dominant birch spp. and occasional-frequent rowan, oak, willow (*Salix*) spp., apple (*Malus*) spp. and elder (*Sambucus nigra*). Understory species included gorse, bracken, Yorkshire fog, creeping soft-grass, heath wood-rush, sweet vernal grass, speedwell spp., wood sorrel (*Oxalis acetosella*), heath spotted-orchid (*Dactylorhiza maculate*), common bluebell (*Hyacinthoides non-scripta*), crested dog's-tail, tormentil (*Potentila erecta*) and *Rhytidiadelphus loreus*.

As mentioned in **Section 1.2**, one area of the semi-natural w2g broadleaved woodland habitat in the north of the survey area and adjacent to the existing Knocknagael Substation was subject to a detailed NVC survey by an ERM ecologist in May 2023 to determine whether it meets the definition of ancient woodland. This area was flagged as the trees, dominated by rowan, were determined of an age considered to be ancient. The survey concluded that the woodland is not categorised as Ancient Woodland, however ancient woodland indicator species were recorded. If the woodland is retained and current management practices continued, the woodland would eventually return to bracken and/or gorse dominated habitat. .See the **LT 325 Red John Bat Tree Assessment and Woodland NVC Survey Report**[26] for further details.

### *3.1.10 Woodland and forest - (w1g6) Line of trees*

In the north of the survey area there were four small lines of trees which ran adjacent to either roads or field margins. Species included larch (*Larix decidua*), ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), elder, birch spp., plum spp. and willow spp.

### *3.1.11 Woodland and forest - (w1h) Other woodland; mixed*

Semi-natural mixed woodland was present in two locations within and adjacent to the coniferous woodland of Drumashie plantation to the north-west of the survey area. One of the areas was dominated by both Norway spruce (*Picea abies*) and birch spp. and contained occasional Scots pine and rare Sitka spruce (*Picea sitchensis*), rowan and oak and bracken occurred within its understory. The other area had an equal mix of Scots pine, birch spp., rowan and larch.

### *3.1.12 Woodland and forest - (w1h5) Other woodland; mixed; mainly broadleaved*

The largest area of semi-natural mixed woodland that primarily consisted of broadleaved species was located to the south of the survey area and was approximately 125 ha in size. This area was dominated by birch spp. but there was abundant Sitka spruce and frequent juniper. Bracken and bentgrass species were abundant within the understory, Yorkshire fog was frequent and wood anemone (*Anemone nemorosa*) was occasional.

The other areas of this habitat are located within and adjacent to the Drumashie plantation in the centre of the survey area. Again, birch spp. were dominant here but Scots pine was occasional-frequent. Bracken dominated the understory but gorse, juniper and broom (*Cytisus scoparius*) were also present.

### *3.1.13 Woodland and forest - (w1h6) Other woodland; mixed; mainly conifer*

Areas of mixed woodland which primarily consisted of coniferous species were present in separate locations within the survey area and took both plantation and semi-natural form. The semi-natural area of this habitat occurred adjacent to Drumashie plantation and was dominated by Scots pine with abundant birch spp. and an understory dominated by bracken. One of the areas of this habitat which was plantation was present within the large strip of upland heathland habitat on the east of the survey area and was dominated by

[26] ERM, 2024. LT 325 Red John Bat Tree Assessment and Woodland NVC Survey Report.

Scots pine with birch spp., willow spp., hazel, rowan, juniper and plum spp also present. The other area of this habitat in plantation form was present further north in the survey area and adjacent to modified grassland habitat and an area of two residential buildings and their associated gardens.

### *3.1.14* ***Woodland and forest - (w2a) Native pine woodlands***

Native, Scots pine dominant, semi-natural and self-sown woodlands occurred predominantly in areas to the south and the north-east of the survey area and generally consisted of the same proportion of plant species as that of the Scots pine plantations (**Section 3.1.15**); abundant bilberry, occasional-frequent common heather and bracken as well as occasional gorse, juniper, primrose and *hypnum* moss spp. However, the understory also contained species such as Norway spruce saplings, larch, tufted hair-grass (*Deschampsia cespitosa*), Yorkshire fog, heath bedstraw, soft rush, compact rush (*Juncus conglomeratus*), birch spp. and hard fern (*Blechnum spicant*) in places. Lower plant species present in addition to *hypnum* moss spp. could include *Polytrichum commune*, *Rhytidiadelphus loreus* and *Hypericum* spp.

### *3.1.15* ***Woodland and forest - (w2b) Other Scot's Pine woodland***

Scots pine plantations, like the semi-natural habitats in which they were adjacent to (**Section 3.1.14**), were located predominantly in areas to the south and the north-east of the survey area. The understory tended to contain abundant bilberry, occasional-frequent common heather and bracken, as well as occasional gorse, juniper, primrose and *hypnum* moss spp. and purple moor-grass in one location.

There were also areas of habitat where Scots pine plantation has been felled, such as in the south-east of the survey area. However, most felled plantation areas tended to have a mix of other coniferous species (**Section 3.1.16**).

### *3.1.16* ***Woodland and forest - (w2c) Other coniferous woodland***

Other coniferous woodland not dominated by Scots pine were also present throughout the survey area. Coniferous plantation was present predominantly in the south of the survey area mostly dominated by Sitka spruce, Norway spruce, larch or lodgepole (*Pinus contorta*). Other species that were present throughout the plantations were a similar composition to that of the Scots pine woodlands, including bracken, bilberry, common heather and *hypnum* moss spp. and additional species such as occasional birch spp., rowan, broom, alder (*Alnus glutinosa*), oak and Scots pine. In addition, there were areas of young plantations with Sitka, Scots pine, lodepole and Norway saplings located to the south-east and north-east of the survey area.

Semi-natural coniferous woodlands supported a similar species make up to that of the plantations, with Scots pine and larch mixing slightly more. Areas of Scots pine and larch, and Scots pine and Norway spruce have also been felled in the south and north-west of the survey area. It should be noted that these areas of plantation woodland blocks, particularly those consisting of spruce species, is likely temporary and subject to rotation, due to commercial forestry rotation.

Following the surveys in April and June 2022, a review of aerial imagery from June 2022, October 2022, March 2023 and May 2023 in Google Earth identified that one of the coniferous plantation blocks in the north of the survey area, adjacent to the proposed alignment (NH 64380 38442), was clear felled by March 2023.

### 3.1.17 *Heathland and shrub - (h1b) Upland heathland*

Upland heathland habitat occupied large sections of the central edges of the survey area. These areas were all dominated by common heather and contained frequent-abundant bilberry. Scots pine and birch spp. saplings, gorse, cross-leaved heath, heath bedstraw, tormentil, green-ribbed sedge (*Carex binervis*), sheep's fescue (*Festuca ovina*), bentgrass spp. and purple moor-grass were present occasionally-frequently across this habitat and soft rush and tufted hair-grass occurred rarely. Much of this habitat on the eastern side of the survey area was exposed to grazing pressure by sheep and cattle.

### 3.1.18 *Heathland and shrub (h3e) Gorse scrub*

Similarly to bracken (**Section 3.1.2**), gorse scrub habitat was present in continuous and scattered form within the survey area, primarily in the north and the south. Other scrub and tree species that rarely-occasionally occurred throughout the scattered gorse habitat included birch spp., elder, broom, juniper, ash (*Fraxinus excelsior*), rowan, Scots pine, goat willow (*Salix caprea*) and oak.

### 3.1.19 *Heathland and shrub (h3h) Mixed scrub*

An area of scattered mixed scrub was located adjacent to one of the access tracks in the south of the survey area which runs through areas of upland heathland. Although the habitat was dominated by gorse, juniper is occasional and oak, ash, birch spp. and Scots pine were also present rarely. Common heather was also frequent and soft rush occurred occasionally.

### 3.1.20 *Wetland - (f1a) Blanket bog*

Although there were small areas to the north, blanket bog was present in larger areas towards the south of the survey area. Areas of blanket bog were predominantly dominated by or contained abundant common heather, cross-leaved heath and hare's-tail cotton-grass (*Eriophorum vaginatum*). Deergrass (*Trichophorum germanicum*) and soft rush appeared occasional-frequent and other species that were rare-occasional include bilberry, purple moor-grass, wavy hair-grass (*Avenella flexuosa*), common sedge (*Carex nigra*), heath spotted-orchid, tormentil, sundew (*Drossera*) spp., pondweed (*Potamogeton*) spp., bog asphodel (*Narthecium ossifragum*) and tree saplings such as Sitka spruce, Norway spruce and Scots pine. Lower plant species present included *Sphagnum capillifolium, Sphagnum fallax, Sphagnum papillosum, Sphagnum denticulatum, Sphagnum tenellum, Sphagnum palustre* and *Polytrichum commune*.

### 3.1.21 *Wetland - (f2c) Upland flushes, fens and swamps*

There was a small area of this habitat located to the north of the survey area and adjacent to grassland habitat and coniferous plantation. Bottle sedge (*Carex rostrata*) was dominant here and pale sedge (*Carex pallescens*) and *Sphagnum fallax* were frequent whilst sweet vernal grass, hare's-tail cotton-grass, common cotton-grass (*Eriophorum angustifolium*) and common sedge were all occasional.

### 3.1.22 *Cropland - (c1c) Cereal crops*

There were four arable fields adjacent to one another in the north of the survey area, one of which had recently been ploughed. At the time of survey it was not possible to identify the crop type but based on commonly found crops within the area it is thought that these were likely common cereal crops.

### *3.1.23* ***Urban - (u1b) Developed land; sealed surface***

Developed land with a sealed surface areas comprised two small industrial areas in the north of the survey area; one where associated infrastructure (with no roof) from the substation complex stands, and the other was the drive-way/concrete outside what appeared to be metal barn-like buildings associated with farming.

### *3.1.24* ***Urban - (u1b5) Buildings***

Throughout the survey area but primarily to the north, there were industrial buildings such as those associated with the substation complex and farmland. There were also residential buildings, some of which were associated with industrial sites also e.g. farm houses.

### *3.1.25* ***Urban - (u1c) Artificial unvegetated, unsealed surface***

There were two small areas of artificial unvegetated, unsealed surface habitat in the middle of the survey area and within a large area of modified grassland. The surface is soil.

### *3.1.26* ***Urban (u1d) - Suburban/mosaic of developed/natural surface***

There were residential buildings with gardens which were located adjacent to the northernmost area of mixed woodland that consisted of mainly conifers (**Section 3.1.13**). The buildings and gardens formed a suburban/mosaic of developed/natural surface. The area also contained developed land with a sealed surface which appeared to be used as a track and then formed a drive-way. Gardens associated with the residential buildings appeared to have small sections of modified grassland and trees/scrubs in places.

### *3.1.27* ***Urban - (u1e) Built linear features***

Essich road runs through the survey area and has other roads and subsequent tracks that stem from it. These are mainly for access to industrial facilities e.g. the substation complex and farmland, as well as access to the residential buildings within the survey area.

### *3.1.28* ***Rivers and lakes - (r1c) Oligotrophic and dystrophic lakes***

Throughout the survey area, particularly within the larger areas of upland heathland and modified grassland, there were relatively small (approx. 0.3 ha) oligotrophic bodies of water. Soft rush and bottle sedge were present occasionally around the water edge and the adjacent surroundings. Approximately 30 ha of Loch Ashie also occurs within the survey area, on the south-eastern edge.

### *3.1.29* ***Rivers and lakes - (r2) Rivers and streams***

There was a ditch that appeared to be man-made which runs through an area of upland acid grassland in the centre of the survey area. The water was clear and the ditch was dominated by submerged and floating plants. It is subject to livestock trampling from adjacent agricultural land. Moreover, burns, streams and rivers are located within both coniferous and broadleaved woodlands (e.g. **Appendix B Target Notes 11** and **19**).

## 3.2 NVC With GWDTE Survey

No NVC habitats with potential GWDTE were recorded within the survey area during the habitat surveys. Therefore, there are no mapped figures of the NVC habitats with GWDTE, nor are there any GWDTE related Target Notes presented in **Appendix B**

## 3.3 Protected Species Survey Findings

### *3.3.1* ***Bats***

*Bat Roost Potential*

10 buildings were present within the survey area. The majority of buildings that could be accessed appeared well sealed and of negligible bat roost potential. Those residential and farm buildings which could not be fully assessed were further than 30 m from the Proposed Development and therefore were scoped out.

Feeding remains and droppings of *Plecotus* spp. or *Myotis* spp. bats were found within the existing control building within the substation to the north of the survey area and therefore there is a confirmed feeding perch/roost here, 100 m north-east of the proposed alignment (**Appendix B, Target Note 45**). The building also had breeze block walls which provides a potential hibernation space for bats between the joints and structures within the building.

In line with BCT guidelines, moderate roosting potential was determined at an old stone bridge going over a river close to the middle of the survey area, Allt Garbh, which runs through a mixed, scattered scrub habitat, approximately 0.9 km from the proposed alignment. The gaps between the bricks offer enough space for a bat to enter and exit and stone bridges are likely locations for roosts to operate (**Appendix B, Target Note 13**).

Trees offering bat roosting potential were recorded during the survey and suggest roosting bats could be supported within the areas of woodland habitat. Decaying Scots pine and silver birch trees located within the Scots pine coniferous woodland to the south of the survey area offered roosting features through cavities, knotholes, cracks and holes in trunks and branches (**Appendix B, Target Notes 2** – 40 m north of the proposed alignment**, 3** – **60 m** south-west of the proposed alignment**, 4** – 45 m south-west of the proposed alignment and **6** – 150 m south-west of the proposed alignment).

Bat roost potential was also identified in the area of broadleaved woodland consisting of decaying silver birch and/or European beech trees to the south of the survey area, approximately 1 km north-west of the proposed switching station (**Appendix B, Target Note 9**). Roosting potential was also identified in an ash tree containing a small knot hole to the north of the survey area within a modified grassland habitat and rowan trees within broadleaved woodland in the north of the survey area, approximately 80 m west of the confirmed Knocknagael substation roost and proposed alignment, which had basal cavities (**Appendix B, Target Notes 22, 42** and **43**). In line with BCT guidelines these trees are assessed as having moderate-high roost potential.

Following the diagnosis of trees with bat roost potential in close proximity to the existing Knocknagael Substation, a subsequent focused bat tree survey using an endoscope was conducted alongside an NVC survey by an ERM ecologist (**Section 3.1.9**) within this area of broadleaved woodland in May 2023, as mentioned in **Section 1.2**. In this more focused survey, eight trees were checked for bat potential of which four were classified as high potential, two as moderate potential, one as low potential, and one as negligible potential. No bat roosts were recorded at the time of the survey, however most trees with roosting potential offer potential for over wintering and single seasonal occupancy for individual bats. See the **LT 325 Red John Bat Tree Assessment and Woodland NVC Survey Report**[27] for further details.

[27] ERM, 2024. LT 325 Red John Bat Tree Assessment and Woodland NVC Survey Report.

Much of the survey area is dominated by woodland; coniferous, broadleaved and mixed. The smaller areas of sitka and/or Norway spruce dominated coniferous plantation in the survey area and areas of immature coniferous woodland are considered to be less favoured by foraging bats. However, on occasion these areas of woodland contain burns which offer enough space for commuting bats (**Appendix B, Target Note 19** – 190 m west of the proposed alignment) and are assessed to have low commuting and foraging habitat potential as per the BCT guidelines.

Areas of preferred habitats for foraging occur in the more mature coniferous woodlands and broadleaved habitat to the south of the survey area. For example, the Scots pine and larch woodlands in the survey area, some of which contain burns and streams offer enough space for commuting bats, provide enough understory for insects and are well connected with other areas of woodland and trees with roosting potential (**Appendix B, Target Note 11** – 280 m north-west of the proposed alignment). Additionally, areas of broadleaved woodland offer foraging and commuting opportunity for bats, for example the area of broadleaved woodland containing silver birch and European beech also had a river that runs between it. These habitats are assessed to have high commuting and foraging habitat potential.

### *3.3.2 **Otter***

Field signs of otter were identified during the protected species walkover in the form of spraint and a footprint under a stone bridge going over a river close to the middle of the survey area and running through a mixed, scattered scrub habitat, approximately 0.9 km from the proposed alignment (**Appendix B, Target Note 13**).

Other suitable habitat to support otters (including commuting, foraging and resting up sites) identified during the survey are located throughout the survey area with burns, streams and rivers located within both coniferous and broadleaved woodlands (**Appendix B, Target Notes 11** and **19** – 280 m north-west and 190 m west of the proposed alignment, respectively). However, it is more likely that the majority of these water bodies will be used as commuting corridors as due to their shallow depth and small width, it is unlikely the burn will support holts or be important for foraging.

Moreover, the survey area is located approx. 0.4 m from Loch Ness, 1.6 km from Loch Duntelchaig and incorporates part of Loch Aishie. Being surrounded by these three lochs may mean that water features within the survey area could be utilised frequently by otters commuting to and from each loch and Loch Aishie may offer suitable habitat for holts. In addition, there are other smaller, standing waterbodies throughout the survey area which may further aid in commuting and foraging (**Section 3.1.28**).

### *3.3.3 **Water Vole***

No field signs of water vole were identified during the protected species walkover survey within the survey area. No suitable habitat to support water vole was identified along the watercourses in the project area. The small burns and streams across the area and within the woodlands were deemed unsuitable to support water vole due to their shallow/lack of bankside, shallow water depth, likely variation in water flows, and small width (**Appendix B, Target Notes 11** and **19** – 280 m north-west and 190 m west of the proposed alignment, respectively).

### 3.3.4 *Badger*

Evidence of badger activity was recorded during the protected species walkover survey. Latrines were found in open patches between coniferous plantation forests and upland hay meadow habitat to the north of the survey area (**Appendix B, Target Notes 15** – 103 m west of the proposed alignment**, 16** – 116 m north-west of the proposed alignment**, 17** – 106 m north-west of the proposed alignment and **52** – 5 m north of the proposed alignment). Tracks, hair, footprints, and foraging signs were also observed throughout the survey area (**Appendix B Target Notes 31 –** 540 m north-west of the proposed alignment**, 32** – 430 m north-west of the proposed alignment and **53 –** 20 m north-west of the proposed alignment). However, it is suspected that these badgers were only foraging within this habitat and no evidence of occupancy was found.

Whilst coniferous plantations can support badgers, the underlying habitat in areas likely to be directly affected and in the immediate surrounds was either too compact and flat beneath the trees or boggy in the open patches between the trees, and therefore unlikely to be used by badgers for the creation of setts.

### 3.3.5 *Pine Marten*

A suspected pine marten footprint was found within the survey area in an area of Scots pine and larch dominant coniferous woodland which borders an area of broadleaved woodland in the south of the survey area, approximately 1 km north-west of the proposed switching station (**Appendix B, Target Note 8**).

The footprint was found in close proximity to potential pine marten scat as well as an under fence mammal track. No dens were identified. Pine martens favour native woodlands and therefore the survey area proposes large areas of habitat in which they can live.

### 3.3.6 *Red Squirrel*

Accessible areas were searched for signs of red squirrel activity, including dreys and feeding signs. No field signs of red squirrel were identified during the protected species walkover but the survey area does pose suitable native, coniferous habitat as well as broadleaved and mixed woodland for the species.

### 3.3.7 *Wildcat*

No field signs of wildcat were identified during the protected species walkover. However, wildcat are native to Scotland and are known to be present within the county of Inverness-shire[28]. Wildcat has a preference for woodland edges, uplands with rough grazing and moorlands with limited pastures which the survey area provides. Extensive areas of coniferous woodland, as well as areas of broadleaved and mixed woodland in and around the survey area are suitable habitat for wildcat.

### 3.3.8 *Birds*

Two birds with special protection under Schedule 1[29] of the Wildlife and Countryside Act 1981 were recorded during the protected species walkover surveys, red kite (*Milvus milvus*) and osprey (*Pandion haliaetus*).

[28] Breitenmoser, U., Lanz, T. and Breitenmoser-Würsten, C., 2019. Conservation of the wildcat (*Felis silvestris*) in Scotland: review of the conservation status and assessment of conservation activities. IUCN SSC Cat Specialist Group.
[29] RSPB The Schedules. Available at: https://www.rspb.org.uk/birds-and-wildlife/advice/wildlife-and-the-law/wildlife-and-countryside-act/schedules/

Suitable habitat to support other breeding birds was identified during the survey and a number of common and widespread bird species (listed below) were recorded during the protected species walkover surveys.

- UK Red Status Birds of Conservation Concern (BoCC)[30] including, tree pipit (*Anthus trivialis*), common cuckoo (*Cuculus canorus*), skylark (*Alauda arvensis*), herring gull (*Larus argentatus*), Eurasian curlew (*Numenius 18rquata*) and black grouse (*Lyrurus tetrix*).
- UK Amber Status BoCC including, osprey, sparrowhawk (*Accipiter nisus*), song thrush (*Turdus philomelos*), meadow pipit (*Anthus pratensis*), woodpigeon (*Columba palumbus*), mallard (*Anas platyrhynchos*), common whitethroat (*Sylvia communis*), snipe (*Gallinago gallinago*) and wren (*Troglodytes troglodytes*).
- UK Green Status BoCC including great spotted woodpecker (*Dendrocopos major*), blackbird (*Turdus merula*), carrion crow (*Corvus corone corone*), hooded crow (*Corvus cornix*), chaffinch (*Fringilla coelebs*), coal tit (*Parus ater*), pied wagtail (*Motacilla alba*), robin (*Erithacus ruhecula*), common buzzard (*Buteo buteo*), red kite, great tit (*Parus major*), chiffchaff (*Phylloscopus collybita*), willow warbler (*Phylloscopus trochilus*), long-tailed tit (*Aegithalos caudatus*), blue tit (*Cyanistes caeruleus*) and treecreeper (*Certhia familiaris*).
- SBL species recorded during protected species walkover survey: song thrush, skylark, tree pipit, hooded crow, cuckoo, herring gull, red kite, curlew, osprey and black grouse.

Additional, more focused bird surveys were conducted by DE[31] in the survey area at the time of the habitat and protected species surveys and therefore no further bird surveys are required.

### *3.3.9* ***Other Fauna***

There are some small waterbodies present within the survey area suitable for breeding amphibian species. A common toad (*Bufo bufo*) was observed travelling through a ride in an area of Scots pine woodland to the south of the survey area.

The areas of recently felled coniferous woodland and continuous bracken offer good foraging and basking habitat for reptile species. Three common lizard (*Zootoca vivipara*) individuals were observed in an area of blanket bog surrounded by gorse scrub, bracken, upland heathland and grassland habitat areas – all suitable habitat for reptiles.

Three deer species were observed during the protected species walkover; red (*Cervus elaphus*), roe (*Capreolus capreolus*) and Sika (*Cervus Nippon*) and their droppings as well as red foxes (*Vulpes vulpes*) scat were present throughout the survey area.

Additionally, an individual European hare (*Lepus europaeus*) was observed coming out of a gorse bush in the north of the survey area, approximately 380 m north-west of the proposed alignment (**Appendix B, Target Note 20**).

[30] Birds of Conservation Concern 5. Available at https://www.bto.org/sites/default/files/publications/bocc-5-a5-4pp-single-pages.pdf

[31] Direct Ecology Ltd (2023) Red John Breeding Bird & Black Grouse Lek Location Surveys Report. DEL, Dunblane, Scotland. Report submitted as part of the planning application.

# 4. SUMMARY AND RECOMMENDATIONS

## 4.1 Summary

Scots pine woodland, other coniferous woodlands, both plantation and semi-natural, as well as modified grassland, upland heathland and blanket bog, were the main habitat types recorded in the survey area.

Eight SBL habitats were recorded within the survey area. These include;

- Upland hay meadows;
- Upland birchwoods;
- Native pine woodlands;
- Upland heathland;
- Blanket bog;
- Upland flushes, fens and swamps;
- Oligotrophic and dystrophic lakes, and;
- Rivers and streams.

No habitats with the potential to be GWDTE were recorded within the survey area.

No frequent-dominant invasive non-native flora species were recorded within the survey area, however as the climate continues to warm, bracken is likely to become more invasive within the survey area.

No significant changes of any habitats immediately surrounding the existing Knocknagael substation were identified during a visit by an ERM ecologist in May 2023 [32].

Review of aerial imagery from Google Earth [33] identified one area of plantation w2c other coniferous woodland which had been clear felled since the surveys in April and June 2022. The proposed alignment is not located within this woodland. No other significant changes of habitat or land management were identified within the survey area.

One bat roost belonging to *Plecotus* or *Myotis* spp. was found within the existing substation building in the north of the survey area. Bats will only use the substation complex building that they are roosting in at night as it was identified as a feeding perch/roost. Feeding roosts are places where a small number of bats rest or feed during the night but are rarely present during the day[34]. This differs to other roosts such as day roosts, maternity roosts, or hibernation roosts but all roosts are afforded the same legal protection.

In addition, there were trees which offered bat roost potential, mainly within both Scots pine and broadleaved woodland habitats as well as a brick-built bridge over Allt Garbh. Additional surveys conducted by an ERM ecologist in May 2023 on trees in broadleaved woodland habitat immediately west of Knocknagael Substation identified seven trees with bat roost potential – four of which were classified as high potential, two as moderate potential, one as low potential.

[32] ERM, 2024. LT 325 Red John Bat Tree Assessment and Woodland NVC Survey Report.
[33] Dated June 2022, October 2022, March 2023, and May 2023. Accessed: 18 January 2024: https://earth.google.com/web/
[34] Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines.3rd edition. The Bat Conservation Trust, London.

Otter spraint and a footprint was identified under the same brick-built bridge over Allt Garbh within the survey area and it was determined the survey area offered suitable commuting habitat.

A suspected pine marten footprint was observed within an area of coniferous woodland and the habitat present within the survey area was also deemed suitable for pine marten, red squirrel and potentially wildcat.

The areas of recently felled woodland, blanket bog, bracken, gorse scrub, upland heathland and grassland offer suitable habitat for foraging, basking and commuting reptiles.

The damper areas within the areas of Scots pine woodland as well as the small waterbodies present across the area offer suitable habitat for amphibian species, such as SBL listed, common toad which was observed within the survey area.

Two Schedule 1 listed birds; red kite and osprey, were recorded within the survey area. The moorland and woodland habitats, as well as the waterbodies, offer an abundance of suitable nesting habitat for both ground and tree nesting bird species.

## 4.2 Additional Survey Recommendations

The majority of surveys were completed, in June 2022. Good practice guidance recommends that surveys that are between 18 months and three years old may require further survey by a suitably qualified ecologist [35]. Review of the latest aerial imagery available via Google Earth (dated May 2023) [36], did not identify any significant changes in habitat or land management other than one area of plantation woodland (NH 64380 38442), which was clear felled between October 2022 and March 2023. Prior to construction and in advance of any enabling works, a site visit should be carried out to identify any significant changes in habitat or land management that may change the assessment of or required mitigation for ecological receptors. Survey for protected species, which are mobile and may change their habitat use or distribution should also be carried out, as further detailed below.

The pre-construction surveys for protected species are recommended to be undertaken by a suitably qualified Ecological Clerk of Works (ECoW) using best practice methods agreed with NatureScot under Survey Licences where required and in line with SSEN Transmission Species Protection Plans (SPPs).

Pre-construction surveys should be carried out no sooner than 48 hours prior to construction works commencing to establish if any protected species are present, or there are non-native species. Pre-construction surveys should cover all suitable habitat for protected species previously identified within this report as well as recommended survey buffer distances stated within the SPPs. It is also advised that relevant local recorders/field workers are contacted at the pre-construction phase for recent records of protected and sensitive species that might be affected by the Proposed Development. If any potential breeding or resting sites are identified it is advised that the appropriate protection zone is applied to minimise disturbance, and works are ideally conducted out-with the respective breeding season, as per the SPPs.

These general surveys and practices are recommended for all protected species prior to construction and will provide more insight into species abundance and distribution within these habitats to understand any mitigation that may be required before construction can

[35] Chartered Institute for Ecology and Environmental Management (CIEEM), 2019. Advice Note; On The Lifespan of Ecological Reports & Surveys. Available at: https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf
[36] Accessed 18 January 2024.

commence. However, based on survey results and suitable habitat outlined from surveys in April and June 2022, in line with the standing planning advice from NatureScot and SSEN's SPPs[37,38] specific pre-construction surveys are recommended for the following protected and priority species:

- As mentioned in **Section 3.1.1**, trees identified within Visit 1 and 2 (in addition to others) in the broadleaved woodland to the west of the existing Knocknagael Substation had a detailed bat tree assessment conducted on them, using an endoscope in May 2023. Although no roosts were recorded at the time of this survey, it was emphasised that the trees had moderate-high roosting potential. It is therefore recommended that prior to felling, the seven potential roost trees are rechecked by a bat licenced ECoW. If it is found that at any time during the works torpid or hibernating bats are uncovered, the works must cease immediately, and further advice should be sought. It is further recommended that additional bat tree roost surveys are required of the other potential trees recorded within the target notes which did not have this endoscope assessment, and any other potential roost feature within 30 m of the Proposed Development.
- Pre-construction surveys should be conducted of all suitable otter habitat within 200 m of the Proposed Development, including a systematic search for spraints, paw prints, otter paths, slides, food remains, holts and places used for shelter. Suitable watercourses within 200 m of the Proposed Development should be surveyed 200 m up and downstream, with camera traps set-up to monitor potential holt entrances.
- Prior to any ground works or vegetation clearance, pre-construction surveys for breeding sites or new places of shelter are recommended in suitable habitat within 30 m (badger), 50 m (red squirrel), 100 m (pine marten) or 200 m (wildcat) of construction works. For pine marten and wildcat, any scats found should be collected and sent for eDNA analyses to confirm the species.
- It is recommended that focused pre-construction bird surveys are conducted within areas affected by construction works. Surveys should be appropriate to birds at risk of disturbance at the onset of proposed works which may include; through the breeding bird season (March - August Inclusive) and wintering season where species such as roosting geese maybe affected.

[37] NatureScot, n.d. Planning and development: standing advice and guidance documents. Available at: https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-standing-advice-and-guidance-documents.
[38] Scottish & Southern Electricity Network. n.d. Species Protection Plans for badgers, bats, otters, pine marten, red squirrels, wildcat and birds.

# APPENDIX A. FIGURES

**Figure 1. Red John Preferred Alignment and Habitat Survey Area**

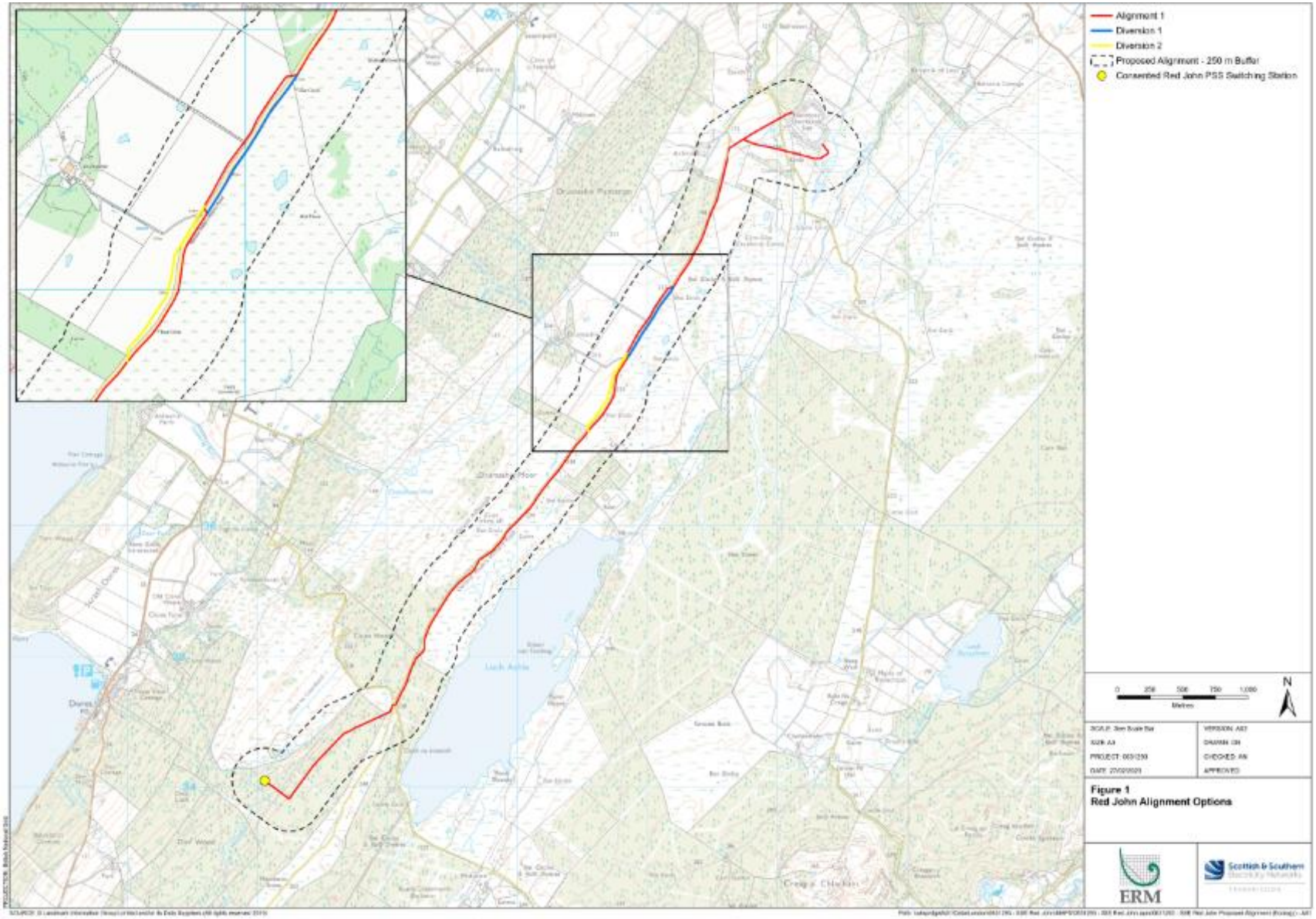


**Figure 2. UKHab Habitat Classification of the Preferred Red John Alignment**

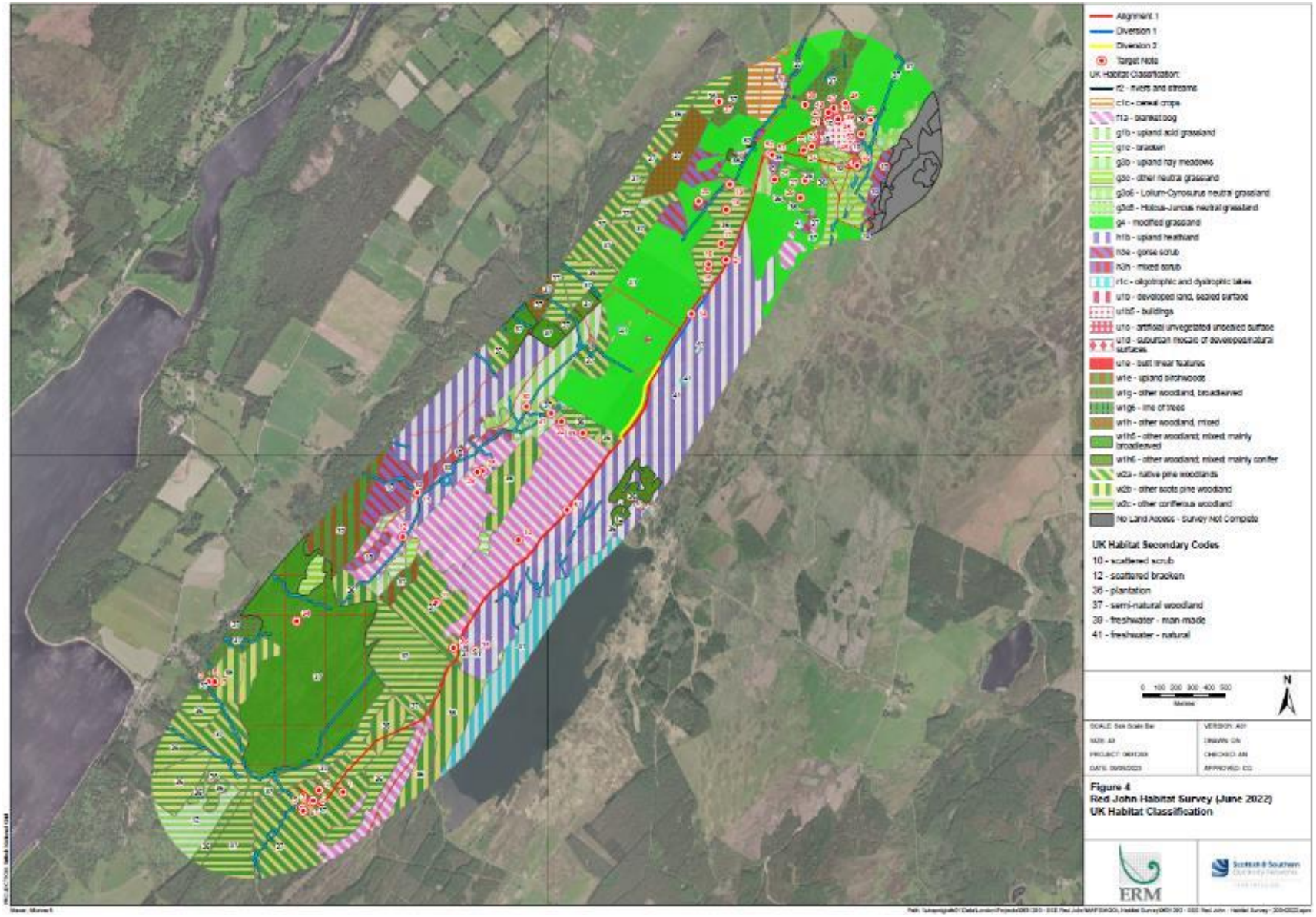
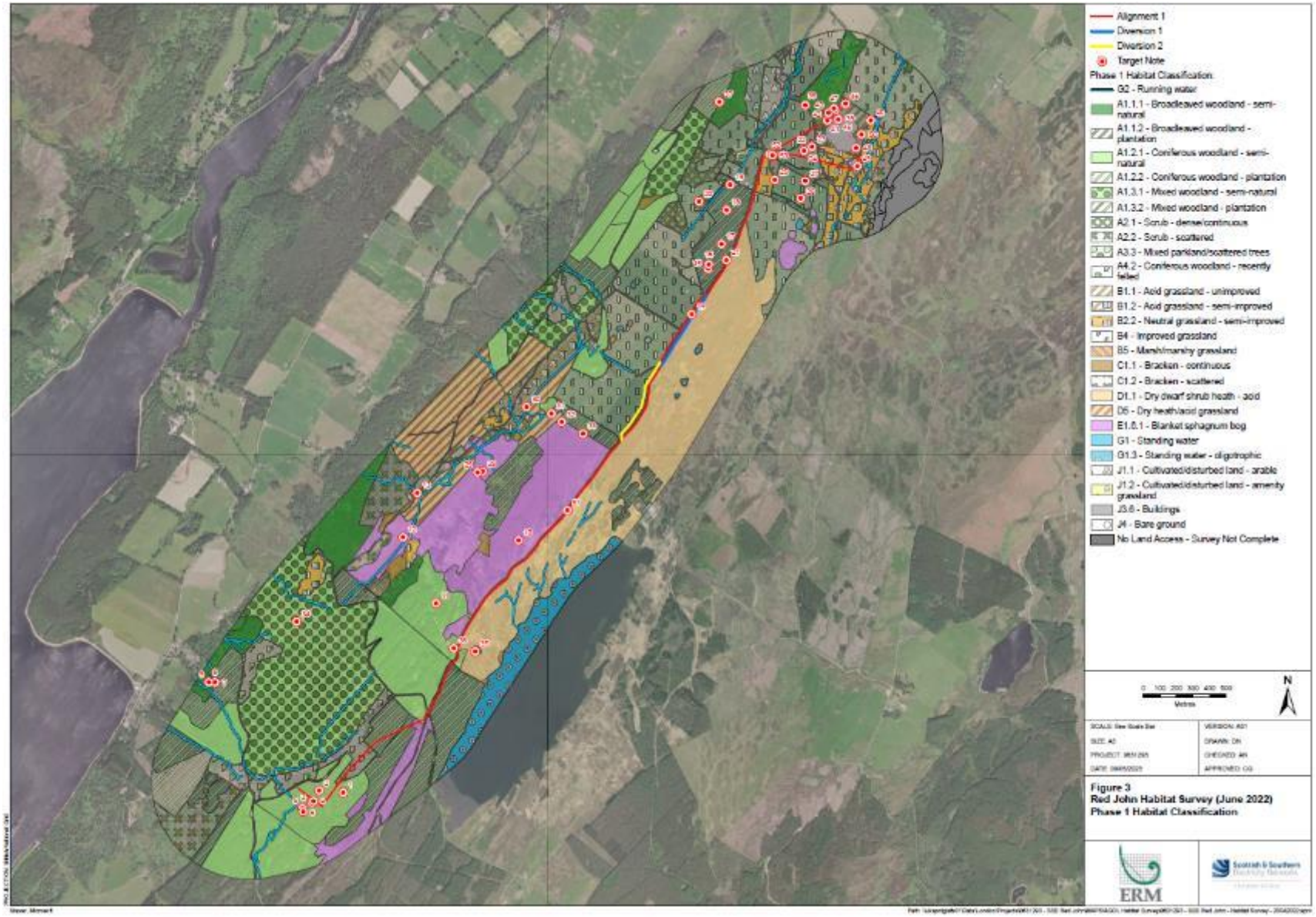


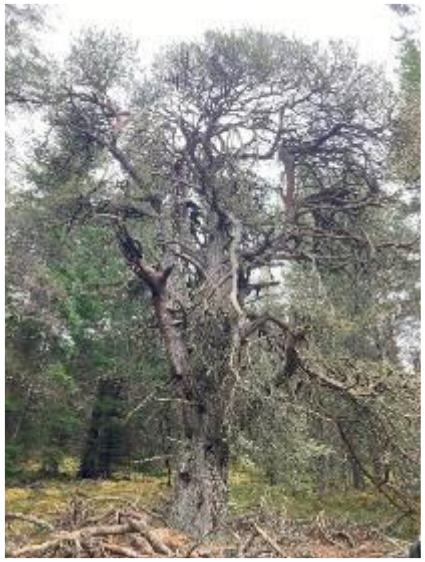
**Figure 3. Phase 1 Habitat Classification of the Preferred Red John Alignment**



Scottish & Southern Electricity Networks
TRANSMISSION

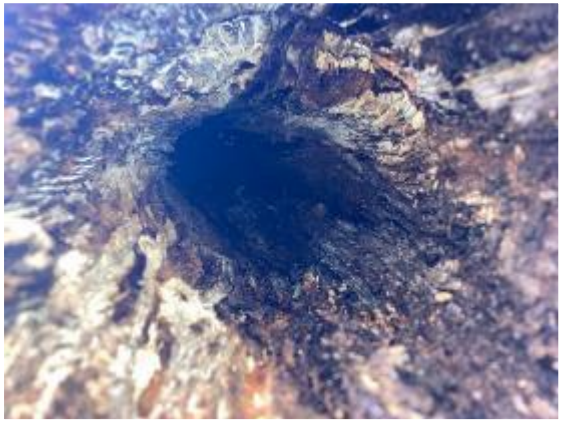
# APPENDIX B. TARGET NOTES

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 1 | NH6140634013 | **Amphibian Target Note**: Common toad, probable female on ride within woodland. | N/A |
| 2 | NH6122134028 | **Bird/mammal Target Note**: Eurasian tree creeper nest with an adult female witnessed flying out of tree cavity. The same tree also has bat roost potential. |   |
| 3 | NH6116633935 | **Mammal Target Note**: Tree with bat roost potential. No obvious knotholes from our (surveyors) height level but it appears to have potential further up the tree. |  |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 4 | NH6117733947 | **Mammal Target Note**: Another tree with bat roost potential, approx. 10 m from previous tree (TN 3). Many trees nearby also have bat roost potential with cracks and holes in trunks and branches. |  |
| 5 | NH6109333891 | **Bird Target Note**: Potential bird nest within the tree. Species unidentified and no eggs observed. |  |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 6 | NH6109833867 | **Mammal Target Note**: Trees with bat roost and tree nesting bird potential along the ride/track. |     |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| | | |    |
| 7 | NH6042134858 | **Bird Target Note**: Great spotted woodpecker and common cuckoo calls. | N/a |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 8 | NH6042034860 | **Mammal Target Note**: Mammal track. Potential pine marten footprint and scat nearby. |   |
| 9 | NH6037334860 | **Mammal Target Note**: Bat roost potential trees - silver birch and European beech. |   |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 10 | NH6275335951 | **Bird Target Note**: Likely black grouse droppings due to size. |   |
| 11 | NH6211935467 | **Habitat Target Note**: Stream between Scots pine woodland. |  |
| 12 | NH6186535975 | **Reptile Target Note**: Common lizard observed - another two also observed within 10 m of this location. | N/a |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 13 | NH6197536314 | **Mammal Target Note**: Otter spraint and footprint as well as bat roost potential under bridge. Bridge goes over relatively large stream. |  |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 14 | NH6408337688 | **Bird Target Note**: Red kite observed circling farm fields with lambs. Two individuals were observed the previous day doing this over the same field. Osprey circling field and eventually flying over it also. |   |
| 15 | NH6421038037 | **Mammal Target Note:** Badger latrine. |   |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 16 | NH6421538070 | **Mammal Target Note**: More probable badger latrines. |    |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 17 | NH6431238227 | **Mammal Target Note**: Badger scat and path. |    |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 18 | NH6435238488 | **Mammal Target Note**: Potential mammal den under fence. Pine cones have been stripped - probable wood mouse (*Apodemus sylvaticus*). |    |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 19 | NH6437938682 | **Habitat Target Note**: Burn between Norway spruce plantation. |   |
| 20 | NH6414038554 | **Mammal Target Note**: European hare observed coming out of common gorse habitat. Collapsed rowan tree has bat roost potential. |  |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 21 | NH 64350 38103 | **Habitat Target Note**: Section of forestry felled. |  |
| 22 | NH 64998 38969 | **Habitat Target Note**: Ash tree with small knot hole of approx. 4 m up. |   |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 23 | NH 65008 38974 | **Habitat Target Note**: Lime tree (*Tilia x europaea*), saparytic growth, 1.5 m dbh, 15 m height. |    |

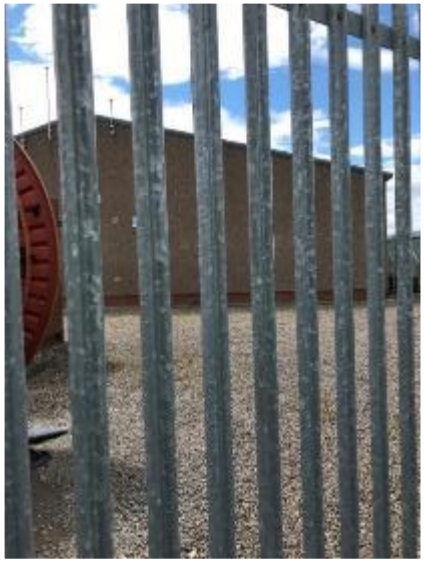
| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 24 | NH 64946 38944 | **Habitat Target Note**: Sycamore tree, approx. 15 m high, 1 dbh, 4m in height, tear out. |   |
| 25 | NH 64722 38720 | **Habitat Target Note**: White beam (*Tilia x europaea*) tree. |  |
| 26 | NH 64921 38579 | **Bird Target Note**: Snipe (*Gallinago gallinago*) heard calling. | N/A |
| 27 | NH 64956 38711 | **Mammal Target Note**: Roe deer observed. | N/A |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 28 | NH 62477 36482 | **Habitat Target Note**: f1a Blanket bog. Bogbean (*Menyanthes trifoliata*). |  |
| 29 | NH 62438 36472 | **Habitat Target Note**: UKHab; f1a Blanket bog. Tufted hair-grass (d), cross-leaved heath (f), cuckoo flower (*Menyanthes trifoliate*) (o), marsh violet (*Viola palustris*) (o), tormentil (f), common cotton-grass (o), marsh horsetail (*Equisetum palustre*) (f), meadow buttercup (f), marsh thistle (*Cirsium palustre*) (r), glaucous sedge (*Carex flacca*) (o), heath bedstraw (o), soft rush (f). |   |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 30 | NH 62815 36975 | **Habitat Target Note**: UKHab; g1b Upland acid grassland. Heath spotted-orchid. |   |
| 31 | NH 63006 36924 | **Mammal Target Note**: Mammal track with badger hair on the fence. |  |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 32 | NH 63085 36860 | **Mammal Target Note**: Badger footprints. |  |
| 33 | NH 63248 36770 | **Habitat Target Note**: UKHab; f1a Blanket bog. Black bog-rush (*Schoenus nigricans*). |  |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 34 | NH 61048 35327 | **Mammal Target Note**: Deer track access path. |  |
| 35 | NH 62421 35097 | **Bird Target Note**: Wigeon and mallard observed. | N/A |
| 36 | NH 62254 35122 | **Habitat Target Note**: Standing water with *Sphagnum* edge and aquatic vegetation. Two mallards swimming on the waterbody also. |  |
| 37 | NH 64296 39319 | **Bird Target Note**: Great spotted woodpecker heard. | N/A |
| 38 | NH 64956 39295 | **Bird Target Note**: Whitethroat observed. | N/A |

| | | | |
|---|---|---|---|
| 39 | NH 65213 39194 | **Habitat Target Note**: Single storey brick construction building within the Knocknagael Substation complex. The building is finished with pebble dash and with a symmetrical patched roof and corrugated sheeting.<br><br>Soffit box and fascia board with metal construction, no signs of dropping surveyed from outside the fence.<br><br>Access into loft space granted. Direct flight access above the wall plate. Small amount of *Plecotus/ Myotis* droppings recorded with feeding remains. Substation building feeding roost. Building unlikely to be a maternity/ summer roost due to thermal properties within the loft space, too open and good breeze. |     |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| | | |  |
| 40 | NH 65460 39176 | **Habitat Target Note**: UKHab; w1g Other woodland; broadleaved. Northern marsh orchid (*Dactylorhiza purpurella*). |  |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 41 | NH 65126 39176 | **Habitat Target Note**: UKHab; w1g Other woodland; broadleaved. Ground flora; *Holcus-juncus* neutral grassland; ragged robin (o), wavy hair-grass (o), meadow foxtail (r), agrostis (f), yellow sedge (r), dock (f), creeping buttercup (f), myosotis (f), silverweed (o), chickweed (r), sorrel (o). |  |
| 42 | NH 65131 39223 | **Habitat Target Note**: Rowan tree with bat roost potential. Low basal cavity approx 0.5 m in length. |  |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 43 | NH 65134 39234 | **Habitat Target Note**: Rowan tree with low bat roost potential – basal cavity approx. 0.5 m up the trunk. |    |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 44 | NH 65188 39257 | **Habitat Target Note**: UKHab; w1g Other woodland; broadleaved. Ground flora; Bottle sedge. |   |
| 45 | NH6521039184 | **Mammal Target Note**: Inside the substation the roof has corrugated sheeting and a lot of space is present. Bat feeding remains and droppings on the ladder.<br><br>Kingspan insulation on gable ends with glass wool insulation in the loft. Breeze block wall with potential for hibernation between the joints. Feeding perch/roost for *Plecotus* or *Myotis* species. |   |

| | | | |
|---|---|---|---|
| | | |     |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| | | |  |
| 46 | NH6526639305 | **Habitat Target Note**: Suds pond. |  |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 47 | NH6517739269 | **Habitat Target Note**: Water approx 0.25 m deep. |  |
| 48 | NH6534738965 | **Habitat Target Note**: UKHab; h3e Gorse scrub. Gorse and broom. |  |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 49 | NH6535738825 | **Habitat Target Note**: Small blanket bog section within larger UKHab; g3c5 *Arrhenatherum* neutral grassland habitat. |  |
| 50 | NH6538939069 | **Mammal Target Note**: Badger attempt of digging bank vole burrow. |  |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 51 | NH6312836182 | **Habitat Target Note**: UKHab; h1b Upland heathland. Montbretia (*Crocosmia x crocosmiiflora*). |  |
| 52 | NH6468338916 | **Mammal Target Note**: Badger latrine |  |

| No. | OS Grid Reference | Description of evidence/feature | Photograph |
|---|---|---|---|
| 53 | NH6470438908 | **Mammal Target Note**: Badger track. |  |

# APPENDIX C. SPECIES LIST

| Common Name | Scientific name |
|---|---|
| Alder | *Alnus glutinosa* |
| Apple spp. | *Malus* spp. |
| Ash | *Fraxinus excelsior* |
| Beech | *Fagus sylvatica* |
| Bentgrass spp. | *Agrostis* spp. |
| Bilberry | *Vaccinium myrtillus* |
| Bird's-foot trefoil | *Lotus corniculatus* |
| Blackthorn | *Prunus spinosa* |
| Bog asphodel | *Narthecium ossifragum* |
| Bogbean | *Menyanthes trifoliata* |
| Bottle sedge | *Carex rostrata* |
| Bracken | *Pteridium aquilinum* |
| Broad-leaved dock | *Rumex obtusifolius* |
| Chickweed | *Stellaria media* |
| Cock's foot | *Dactylis glomerata* |
| Common bluebell | *Hyacinthoides non-scripta* |
| Common broom | *Cytisus scoparius* |
| Common cotton-grass | *Eriophorum angustifolium* |
| Common gorse | *Ulex europaeus* |
| Common heather | *Calluna vulgaris* |
| Common juniper | *Juniperus communis* |
| Common nettle | *Urtica dioica* |
| Common sedge | *Carex nigra* |
| Common sorrel | *Rumex acetosa* |
| Common whitebeam | *Sorbus aria* |
| Common yellow-sedge | *Carex demissa* |
| Compact rush | *Juncus conglomeratus* |
| Creeping bentgrass | *Agrostis stolonifera* |
| Creeping buttercup | *Ranunculus repens* |
| Creeping soft-grass | *Holcus mollis* |
| Creeping thistle | *Cirsium arvense* |
| Crested dog's-tail | *Cynosurus cristatus* |
| Cross-leaved heath | *Erica tetralix* |
| Daisy spp. | *Bellis* spp. |
| Deergrass | *Trichophorum germanicum* |
| Dock spp. | *Rumex* spp. |
| Downy birch | *Betula pubescens* |
| Elder | *Sambucus nigra* |
| European larch | *Larix decidua* |
| European oak | *Quercus robur* |
| Eyebright spp. | *Euphrasia* spp. |
| Field wood-rush | *Luzula campestris* |
| Forget-me-not spp. | *Myosotis* spp. |
| Glaucous sedge | *Carex flacca* |
| Goat willow | *Salix caprea* |
| Green-ribbed sedge | *Carex binervis* |
| Hard fern | *Blechnum spicant* |
| Hare's-tail cotton-grass | *Eriophorum vaginatum* |
| Hawthorn | *Crataegus monogyna* |
| Heath bedstraw | *Galium saxatile* |
| Heath rush | *Juncus squarrosus* |
| Heath spotted-orchid | *Dactylorhiza maculate* |

| Common Name | Scientific name |
|---|---|
| Heath wood-rush | *Luzula multiflora* |
| Hogweed | *Heracleum sphondylium* |
| Lady's bedstraw | *Galium verum* |
| Lime tree | *Tilia x europaea* |
| Lodgepole pine | *Pinus contorta* |
| Marsh horsetail | *Equisetum palustre* |
| Marsh thistle | *Cirsium palustre* |
| Matgrass | *Nardus stricta* |
| Meadow buttercup | *Ranunculus acris* |
| Meadow foxtail | *Alopecurus pratensis* |
| Meadow-grass spp. | *Poa* spp. |
| Montbretia | *Crocosmia x crocosmiiflora* |
| Northern marsh orchid | *Dactylorhiza purpurella* |
| Norway spruce | *Picea abies* |
| Oxeye daisy | *Leucanthemum vulgare* |
| Pale sedge | *Carex pallescens* |
| Perennial rye-grass | *Lolium perenne* |
| Pignut | *Conopodium majus* |
| Plantain spp. | *Plantago* spp. |
| Plum spp. | *Prunus* spp. |
| Pondweed spp. | *Potamogeton* spp. |
| Primrose | *Primula vulgaris* |
| Purple moor-grass | *Molinia caerulea* |
| Ragged robin | *Silene flos-cuculi* |
| Red fescue | *Festuca rubera* |
| Ribwort plantain | *Plantago lanceolata* |
| Rowan | *Sorbus aucuparia* |
| Scots pine | *Pinus sylvestris* |
| Sheep's fescue | *Festuca ovina* |
| Silver birch | *Betula pendula* |
| Silverweed | *Argentina anserina* |
| Sitka spruce | *Picea sitchensis* |
| Soft rush | *Juncus effusus* |
| Sorrel spp. | *Rumex* spp. |
| Speedwell spp. | *Veronica* spp. |
| Sundew spp. | *Drossera* spp. |
| Sycamore | *Acer pseudoplatanus* |
| Tormentil | *Potentilla erecta* |
| Tufted hair-grass | *Deschampsia cespitosa* |
| Wavy hair-grass | *Avenella flexuosa* |
| White clover | *Trifolium repens* |
| Willow spp. | *Salix* spp. |
| Wood anemone | *Anemone nemorosa* |
| Wood sorrel | *Oxalis acetosella* |
| Yarrow | *Achillea millefolium* |
| Yorkshire Fog | *Holcus lanatus* |

| **Lower Plants** |
|---|
| *Hypericum* spp. |
| *Hypnum* spp. |
| *Polytrichum commune* |
| *Rhytidiadelphus loreus* |

| **Lower Plants** |
| --- |
| *Rhytidiadelphus triquetrus* |
| *Sphagnum denticulatum* |
| *Sphagnum fallax* |
| *Sphagnum palustre* |
| *Sphagnum papillosum* |
| *Sphagnum tenellum* |