

Appendix 5.1 Methodology and Results for Baseline Data Collection

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Appendix 5.1 Methodology and Results for Baseline Data Collection

5.1 Introduction

5.1.1 This appendix presents full details of the methodology and results for the field surveys undertaken for the Proposed Development, including references to best practice.

5.2 Methods of Baseline Data Collection

Desk Study

5.2.1 A desk study to collect existing baseline data about the Site and the surrounding area within 10km, such as the location of designated nature conservation sites or other natural features of potential ecological importance, was undertaken, drawing upon the following data sources:

- NatureScot (NS) Sitelink (NS, 2021);
- Scotland’s Environment carbon and peatland map (Scotland’s Environment, 2016); and
- MAGIC website (MAGIC, 2021).

5.2.2 Data sources were searched for protected or notable species records. Examples of notable species include, but are not limited to, national or local Biodiversity Action Plan (BAP) species, restricted range species, species or species groups listed for local designated sites in the area (Local Nature Reserves, Sites of Importance for Nature Conservation, Sites of Nature Conservation Interest) or key species groups such as invertebrates or non-vascular plants. These species are not considered to have the same importance as those protected by legislation; however, their inclusion allows a more holistic approach and therefore a more robust assessment in line with the Applicant’s responsibilities under Schedule 9 of the Electricity Act (UK Government, 1989). This information was used to identify the likely key species for the Site prior to field surveys. Supplementary information on the Site and its surroundings was obtained from aerial images from Google™ Earth Pro.

Field Surveys

Extended Phase 1 Habitat Survey

5.2.3 The extended Phase 1 habitat survey was undertaken by Ramboll ecologists between 24 and 28 June 2019. The surveys involved a walkover of the field study area and a preliminary assessment of key habitats, land use and ecological features, particularly focusing on areas of natural interest that could be affected by the Proposed Development. The main habitats present were recorded using standard Phase 1 Habitat survey methodology (Joint Nature Conservation Committee (JNCC), 2010).

5.2.4 Target notes were used to record habitats and features of particular interest. In addition to general habitat classification, a list was compiled of all observed plant species (using the nomenclature of Stace (2010) in each habitat type, with common and Latin names referred to in the first instance then common names used subsequently).

5.2.5 The abundance of each species was estimated for each habitat using standard 'DAFOR' codes:

- dominant;
- abundant;
- frequent;
- occasional; or
- rare.

- 5.2.6 The field study area was also inspected for signs of any invasive plant species subject to legal controls, such as Himalayan balsam (*Impatiens glandulifera*) and assessed for its potential to support protected species, in order to identify potential ecological constraints and to guide recommendations for further survey requirements for these species.

National Vegetation Classification

- 5.2.7 National Vegetation Classification (NVC) surveys (Rodwell, 2006) of the field study area were completed to identify potential Ground Water Dependant Terrestrial Ecosystems (GWDTE) (Scottish Environment Protection Agency (SEPA), 2014) and to add additional detail beyond the Phase 1 habitat survey for sensitive habitats, such as peatland. The NVC surveys followed the methodology described in best practice guidance (Rodwell, 2006), with five 2 m² quadrats surveyed within each habitat, and the species composition analysed. Surveys were undertaken by Ramboll ecologists alongside the Phase 1 habitat survey in 2019.

Peatland Condition Assessment

- 5.2.8 A peatland condition assessment was undertaken by Stagfire Ecological Surveys Limited between October 26 and October 29 2020 to assess the condition of peatland on the Site to inform the layout of the Proposed Development and the Environmental Impact Assessment (EIA) process. Information on survey methodology for the peatland condition assessment is provided in Appendix 5.5.

Protected Terrestrial Mammals

- 5.2.9 Protected species surveys were undertaken by Ramboll ecologists in the field study area concurrently with those completing the Phase 1 habitat surveys in 2019.

- 5.2.10 Water vole (*Arvicola amphibius*) survey comprised a search of riparian and loch edge habitat for characteristic signs of water vole activity. The survey assessed all watercourses and waterbodies within the field study area, in accordance with good practice guidelines (Capreolus Wildlife Consultancy, 2005 and Dean *et al.*, 2016). The signs sought were:

- burrows;
- latrines;
- feeding stations;
- runs; or
- sightings.

- 5.2.11 Otter (*Lutra lutra*) survey involved a detailed search of all watercourses within the field study area, in accordance with good practice guidelines (Chanin, 2003). The field signs sought were:

- holts;
- couches;
- spraints;
- feeding remains;
- footprints;
- slides; or
- sightings.

- 5.2.12 Pine marten (*Martes martes*) survey (Scottish Natural Heritage (SNH), 2019) involved a detailed search of the field study area for signs of:

- scats;
- footprints;

- sightings; or
 - dens.
- 5.2.13 Wildcat (*Felis silvestris grampia*) survey (SNH, 2018) involved a detailed search of the field study area for field signs of:
- droppings;
 - footprints;
 - scratch markings; or
 - dens.

Bat Species

- 5.2.14 Static bat detector surveys were undertaken in the field study area between May and October 2019 and detailed methodology is provided in Appendix 5.3.

Protected Aquatic Species

- 5.2.15 A habitat suitability assessment for fish species, such as salmonids and lampreys, and freshwater pearl mussel (*Margaritifera margaritifera*) was undertaken to inform the requirement for further surveys for these species. This survey was undertaken by Ramboll ecologists at the same time as the Phase 1 habitat survey. The fish habitat suitability survey was completed based on Environment Agency and Scottish Fisheries Co-ordination Centre (SFCC) salmonid habitat assessment protocols (Summers *et al.*, 1996, Hendry & Cragg-Hine, 1997 and SFCC, 2007). The freshwater pearl mussel habitat suitability assessment was based on the species' ecology provided in Skinner *et al.* (2003).
- 5.2.16 Subsequently, a habitat and electric-fishing survey were also undertaken by Waterside Ecology between 29 August and 1 September 2020 and the methodology used is described in Appendix 5.4.

Reptiles and Amphibians

- 5.2.17 No specific surveys were completed for reptiles and amphibians. Opportunistic records were made during other surveys within the field study area. Any incidental findings were recorded using a handheld Global Positioning System (GPS) device.

5.3 Detailed Results

- 5.3.1 The following section contains the detailed results of the desk study and field surveys undertaken for the baseline data collection.

Desk Study

Designated Nature Conservation Sites

- 5.3.2 Table 5.1.1 details the designated nature conservation sites that occur within 10km of the Proposed Development but are not considered to have connectivity with the Proposed Development. As a result, they are not considered further in this assessment. Details of designated nature conservation sites that have potential connectivity with the Proposed Development are included in Chapter 5. All designated nature conservation sites are shown on Figure 5.1.

Table 5.1.1 – Designated Sites

Site Name	Qualifying Feature(s)	Distance from Proposed Development at Closest Point	Connectivity with Proposed Development
Ness Woods Special Area of Conservation (SAC)	Otter Western acidic oak woodland Mixed woodland on base-rich soils associated with rocky slopes	6.30km to the south-east	Separated from the Proposed Development by hills, forestry and Loch Shin, therefore no direct or indirect impacts on the qualifying features are considered to be possible.
Strathglass Complex SAC	Alpine and subalpine heaths Blanket bog Bog woodland Plants in crevices on acid and base-rich rocks Caledonian forest wet and dry heaths Tall herb communities Otter Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels Montane acid grasslands Acidic scree Mountain willow (<i>Salix sp.</i>) scrub	9.22km	Separated from the Proposed Development by hills, open moorland and forestry, therefore no direct or indirect impacts on the qualifying features are considered to be possible.
Easter Ness Forest SSSI	Upland oak woodland Upland mixed ash woodland	6.30km to the south-east	Separated from the Proposed Development by hills, forestry and Loch Shin, therefore no direct or indirect impacts on the qualifying features are considered to be possible.
Loch Bran SSSI	Dragonfly assemblage	9.84km to the south-east	Separated from the Proposed Development by hills, forestry and Loch Shin, therefore no

Site Name	Qualifying Feature(s)	Distance from Proposed Development at Closest Point	Connectivity with Proposed Development
			direct or indirect impacts on the qualifying features are considered to be possible.
Glen Affric SSSI and National Nature Reserve (NNR)	Native pinewood Lichen assemblage Dragonfly assemblage	The SSSI is 9.22km and the NNR is 8.31km to the north-west	Separated from the Proposed Development by hills, open moorland and forestry, therefore no direct or indirect impacts on the qualifying features are considered to be possible.

Field Surveys

Phase 1 Habitats

5.3.3 The Phase 1 habitats recorded in the field study area are described below and shown on Figure 5.2.

A1.2.2 Coniferous Woodland Plantation

5.3.4 A single area of this habitat type occurs on the slopes of the Carn an Tuairneir and is dominated by Scots pine (*Pinus sylvestris*). The undergrowth is typically a mosaic of wet heath and smaller blanket bog areas.

A1.3.2 Mixed Woodland Plantation

5.3.5 A single area of this habitat type occurs to the south of the coniferous woodland plantation on the slopes of the Carn an Tuairneir. The habitat is dominated by Scots pine and silver birch (*Betula pendula*).

B1.1 Unimproved Acid Grassland

5.3.6 This habitat type occurs in the south-east of the field study area, typically around watercourses. Dominant species are sweet vernal grass (*Anthoxanthum odoratum*), mat grass (*Nardus stricta*) and purple moor-grass (*Molinia caerulea*). Heath bedstraw (*Galium saxatile*) is abundant, with frequent heath rush (*Juncus squarrosus*) and common heather (*Calluna vulgaris*). Meadowsweet (*Filipendula ulmaria*) and soft rush (*Juncus effusus*) occur occasionally.

B5 Marshy Grassland

5.3.7 This habitat type occurs in the south-west of the field study area in discrete areas close to existing access tracks for the Operational Development. Dominant species are purple moor-grass and glittering wood-moss (*Hylocomium splendens*). Tormentil (*Potentilla erecta*), cross-leaved heath (*Erica tetralix*) and deergrass (*Trichophorum cespitosum*) occur occasionally, with rare heath spotted-orchid (*Dactylorhiza maculata*), star sedge (*Carex echinata*), lousewort (*Pedicularis sylvatica*), wood anemone (*Anemone nemorosa*), heath bedstraw, red bog-moss (*Sphagnum capillifolium*), common cottongrass (*Eriophorum angustifolium*), common heather, bell heather (*Erica cinerea*) and devil's-bit scabious (*Succisa pratensis*).

D1.1 Dry Dwarf Shrub Heath

5.3.8 This habitat type occurs in small areas in the south-west of the field study area on steep, drained slopes. It more commonly forms a mosaic with wetter habitats, such as wet heath. The dominant species is common heather, with abundant bearberry (*Arctostaphylos uva-ursi*) and blaeberry

(*Vaccinium myrtillus*), glittering wood-moss and hard fern (*Blechnum spicant*). Heath rush, cloudberry (*Rubus chamaemorus*), little shaggy-moss (*Rhytidiadelphus loreus*), purple moor-grass, red bog-moss, deergrass, tormentil and lichen (*Cladonia sp.*) occur frequently, with occasional compact bog-moss (*Sphagnum compactum*), bell heather, red-stemmed feather-moss (*Pleurozium schreberi*), cowberry (*Vaccinium vitis-idaea*), hare's-tail cottongrass (*Eriophorum vaginatum*), common cottongrass, cross-leaved heath and common cow-wheat (*Melampyrum pratense*) and rare mat grass, bog asphodel (*Narthecium ossifragum*) and heath bedstraw.

D2 Wet Dwarf Shrub Heath

- 5.3.9 This is the most common habitat type present in the field study area and is dominated by common heather, deergrass, purple moor-grass and red bog-moss, with abundant hare's-tail cottongrass, common cottongrass, cloudberry and soft bog-moss (*Sphagnum tenellum*). Bog myrtle (*Myrica gale*), bell heather, cross-leaved heath, dwarf birch (*Betula nana*) and blaeberry occur frequently, with occasional common butterwort (*Pinguicula vulgaris*), star sedge, heath milkwort (*Polygala serpyllifolia*), tormentil, round-leaved sundew (*Drosera rotundifolia*), bog asphodel and hard fern. Carnation sedge (*Carex panicea*), compact bog-moss, heath spotted-orchid, fragrant-orchid (*Gymnadenia conopsea*), woolly fringe-moss (*Racomitrium lanuginosum*), wavy hair-grass (*Deschampsia flexuosa*), lichen (*Cladonia sp.*) and devil's-bit scabious are rare.

E1.6.1 Blanket Bog

- 5.3.10 This is the second most common habitat type present in the field study area and is dominated by hare's-tail cottongrass, red bog-moss, papillose bog-moss (*Sphagnum papillosum*), blunt-leaved bog-moss (*Sphagnum palustre*), deergrass, purple moor-grass and common heather. Bog myrtle and lichen (*Cladonia sp.*) are abundant, with frequent common cottongrass, woolly fringe-moss, compact bog-moss and cross-leaved heath. Heath milkwort, hard fern, devil's-bit scabious and blaeberry are occasional, with rare bog asphodel, dwarf birch, common juniper (*Juniperus communis*), round-leaved sundew, heath spotted-orchid, bogbean (*Menyanthes trifoliata*) and tormentil.

E1.7 Wet Modified Bog

- 5.3.11 This is the third most common habitat type present in the field study area and is dominated by purple-moor grass, deergrass and hare's-tail cottongrass. Common heather and bog myrtle are abundant, with frequent heath rush and common cottongrass and occasional common butterwort and cross-leaved heath. Tormentil, heath milkwort, marsh violet (*Viola palustris*), cow-horn bog-moss (*Sphagnum denticulatum*) and blunt-leaved bog-moss occur rarely.

E4 Bare Peat

- 5.3.12 Small areas of bare peat, including furrowed and hagged peat, occur west of Loch nam Brathain, near turbines and access tracks of the Operational Development and to the north of Loch Chrathaich, as shown by Target Notes 74-78 on Figure 5.3.

G1 Standing Water

- 5.3.13 The majority of the lochs and lochans present in the field study area are oligotrophic (G1.3), with a single dystrophic (G1.4) lochan to the south-west of Loch nam Brathain. Oligotrophic means the water is clear, the substrate tock, sand or peat. Dystrophic standing water is usually peat stained.

J4 Bare/Disturbed Ground

- 5.3.14 Areas of bare/disturbed non-peat ground occur along existing access tracks and areas previously disturbed by the Operational Development.

Habitat Extents

- 5.3.15 The extents of all potentially sensitive habitats recorded in the field study area are detailed in Chapter 5. Table 5.1.2 provides the extents of all other habitat types recorded in the field study area. The extent of bare peat areas was too small to map and are, therefore, not included in Table 5.1.2.

Table 5.1.2 – Habitat Types

Habitat Type	Area (ha)
Coniferous woodland plantation	11.24
Mixed woodland plantation	17.77
Bare/Disturbed ground	23.10
Total	52.11

National Vegetation Classification

Summary

- 5.3.16 Large parts of the field study area show signs of past drainage, with a general lowering of the water table. There is also evidence of past burning in places. Some bog areas are entirely M17b *Scirpus cespitosus-Eriophorum vaginatum* blanket mire with a *Cladonia sp.* sub-community, being a drier, more modified sub-community. Over broad areas, M15c *Erica tetralix-Scirpus cespitosus* wet heath occurs where otherwise mire might be expected due to the presence of level or gently-sloping ground. Purple moor-grass is widespread and abundant in places, indicating a tendency to shift towards marshy grassland (JNCC, 2010) rather than a functional (carbon-sequestering) mire. This species is ubiquitous throughout the wetter habitats.
- 5.3.17 The NVC habitat recorded in the field study area and the locations of quadrats are shown on Figure 5.4 and described below.

Quadrats

Quadrat 1

- 5.3.18 The first group of quadrats at Location 1 was completed in blanket bog at grid reference NH 38282 20057. The following species were recorded:
- hare’s-tail cottongrass;
 - deergrass;
 - common heather;
 - purple moor-grass;
 - round-leaved sundew;
 - red bog-moss; and
 - papillose bog-moss.
- 5.3.19 This species list indicates that the area is an M17a *Scirpus cespitosus-Eriophorum vaginatum* blanket mire with a *Drosera rotundifolia-Sphagnum sp.* sub-community. M17a is not a GWDTE.

Quadrat 2

- 5.3.20 The second group of quadrats at Location 2 was completed in blanket bog at grid reference NH 37255 20397. The following species were recorded:

- hare's-tail cottongrass;
 - deergrass;
 - cross-leaved heath;
 - common heather;
 - purple moor-grass;
 - red bog-moss; and
 - papillose bog-moss.
- 5.3.21 This species list indicates that the area is a mosaic of M17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire and M15 *Scirpus cespitosus-Erica tetralix* wet heath. M17 is not a GWDTE. M15 is a moderate GWDTE.
- Quadrat 3*
- 5.3.22 The third group of quadrats at Location 3 was completed in blanket bog at grid reference NH 37279 22277. The following species were recorded:
- hare's-tail cottongrass;
 - deergrass;
 - common heather;
 - purple moor-grass;
 - bog myrtle;
 - red bog-moss;
 - papillose bog-moss; and
 - blunt-leaved bog-moss.
- 5.3.23 This species list indicates that the area is a mosaic of M17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire, M17a *Scirpus cespitosus-Eriophorum vaginatum* blanket mire with a *Drosera rotundifolia-Sphagnum sp.* sub-community, M18a *Erica tetralix-Sphagnum papillosum* raised and blanket mire with a *Sphagnum magellanicum-Andromeda polifolia* sub-community and M19a *Calluna vulgaris-Eriophorum vaginatum* blanket mire with a *Erica tetralix* sub-community. None of these classifications are GWDTEs.
- Quadrat 4*
- 5.3.24 The fourth group of quadrats at Location 4 was completed in blanket bog at grid reference NH 38157 20517. The following species were recorded:
- hare's-tail cottongrass;
 - deergrass;
 - cross-leaved heath;
 - common heather;
 - bog myrtle;
 - bog asphodel;
 - purple moor-grass;
 - red bog-moss; and
 - papillose bog-moss.

5.3.25 This species list indicates that the area is an M17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire. M17 is not a GWDTE.

Quadrat 5

5.3.26 The fifth group of quadrats at Location 5 was completed in wet heath at grid reference NH 38371 20367. The following species were recorded:

- common heather;
- deergrass;
- hare's-tail cottongrass;
- purple moor-grass;
- dwarf birch;
- cross-leaved heath;
- red bog-moss; and
- soft bog-moss.

5.3.27 This species list indicates that the area is an M15c *Scirpus cespitosus-Erica tetralix* wet heath with a typical sub-community. M15c is a moderate GWDTE.

Quadrat 6

5.3.28 The sixth group of quadrats at Location 6 was completed in blanket bog at grid reference NH 41069 19764. The following species were recorded:

- deergrass;
- common heather;
- bog myrtle;
- lichen (*Cladonia sp.*);
- hare's-tail cottongrass;
- purple moor-grass;
- tormentil;
- heath milkwort;
- lousewort;
- cross-leaved heath;
- few-flowered sedge (*Carex pauciflora*);
- round-leaved sundew;
- red bog-moss;
- papillose bog-moss;
- red-stemmed feather-moss; and
- bog bead-moss (*Aulacomnium palustre*).

5.3.29 This species list indicates that the area is a mosaic of M17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire, M17a *Scirpus cespitosus-Eriophorum vaginatum* blanket mire with a *Drosera rotundifolia-Sphagnum sp.* sub-community, M18a *Erica tetralix-Sphagnum papillosum* raised and blanket mire with a *Sphagnum magellanicum-Andromeda polifolia* sub-community and M19a

Calluna vulgaris-Eriophorum vaginatum blanket mire with a *Erica tetralix* sub-community. None of these classifications are GWDTEs.

Quadrat 7

5.3.30 The seventh group of quadrats at Location 7 was completed in wet heath at grid reference NH 41168 19660. The following species were recorded:

- common heather;
- hare's-tail cottongrass;
- purple moor-grass;
- cross-leaved heath;
- tormentil;
- devil's-bit scabious;
- heath milkwort;
- hard fern;
- lichen (*Cladonia sp.*);
- common haircap (*Polytrichum commune*);
- red bog-moss;
- soft bog-moss; and
- red-stemmed feather-moss.

5.3.31 This species list indicates that the area is an M15c *Scirpus cespitosus-Erica tetralix* wet heath with a typical sub-community. M15c is a moderate GWDTE.

Quadrat 8

5.3.32 The eighth group of quadrats at Location 8 was completed in blanket bog at grid reference NH 41001 19872. The following species were recorded:

- bog myrtle;
- cross-leaved heath;
- deergrass;
- hare's-tail cottongrass;
- purple moor-grass;
- round-leaved sundew;
- tormentil;
- heath milkwort;
- common heather;
- devil's-bit scabious;
- few-flowered sedge;
- red bog-moss;
- soft bog-moss;
- papillose bog-moss;

- blunt-leaved bog-moss;
 - flat-topped bog-moss (*Sphagnum fallax*); and
 - Austin's bog-moss (*Sphagnum austinii*).
- 5.3.33 This species list indicates that the area is a mosaic of M17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire, M17a *Scirpus cespitosus-Eriophorum vaginatum* blanket mire with a *Drosera rotundifolia-Sphagnum sp.* sub-community, M18a *Erica tetralix-Sphagnum papillosum* raised and blanket mire with a *Sphagnum magellanicum-Andromeda polifolia* sub-community and M19a *Calluna vulgaris-Eriophorum vaginatum* blanket mire with a *Erica tetralix* sub-community. None of these classifications are GWDTEs.

Quadrat 9

- 5.3.34 The ninth group of quadrats at Location 9 was completed in wet heath at grid reference NH 40463 20283. The following species were recorded:

- Common heather;
- cross-leaved heath;
- blaeberry;
- deergrass;
- hare's-tail cottongrass;
- bog myrtle;
- lichen (*Cladonia sp.*);
- red bog-moss;
- blunt-leaved bog-moss;
- papillose bog-moss; and
- Austin's bog-moss.

- 5.3.35 This species list indicates that the area is an M15c *Scirpus cespitosus-Erica tetralix* wet heath with a typical sub-community. M15c is a moderate GWDTE.

Quadrat 10

- 5.3.36 The tenth group of quadrats at Location 10 was completed in wet modified bog at grid reference NH 39478 20352. The following species were recorded:

- common heather;
- cross-leaved heath;
- deergrass;
- marsh violet;
- devil's-bit scabious;
- tormentil;
- soft rush;
- heath bedstraw;
- heath milkwort;
- hare's-tail cottongrass;

- purple moor-grass;
- lichen (*Cladonia sp.*);
- common haircap;
- red-stemmed feather-moss;
- flat-topped bog-moss;
- papillose bog-moss;
- red bog-moss; and
- Austin's bog-moss.

5.3.37 This species list indicates that the area is an M15b *Scirpus cespitosus-Erica tetralix* wet heath with a *Cladonia sp.* sub-community. M15b is a moderate GWDTE.

Quadrat 11

5.3.38 The eleventh group of quadrats at Location 11 was completed in wet modified bog at grid reference NH 39575 20374. The following species were recorded:

- purple moor-grass;
- hare's-tail cottongrass;
- heath milkwort;
- marsh violet;
- tormentil;
- cow-horn bog-moss;
- blunt-leaved bog-moss; and
- red-stemmed feather-moss.

5.3.39 This species list indicates that the area is an H9e *Calluna vulgaris-Deschampsia flexuosa* heath with a species-poor sub-community. H9e is not a GWDTE.

Quadrat 12

5.3.40 The twelfth group of quadrats at Location 12 was completed in wet modified bog at grid reference NH 41027 21321. The following species were recorded:

- deergrass;
- heath milkwort;
- cross-leaved heath;
- common heather;
- tormentil;
- purple moor-grass;
- hare's-tail cottongrass;
- common cottongrass;
- lichen (*Cladonia sp.*);
- common juniper;
- red-stemmed feather-moss; and

- red bog-moss.
- 5.3.41 This species list indicates that the area is an M15c *Scirpus cespitosus-Erica tetralix* wet heath with a typical sub-community. M15c is a moderate GWDTE.
- Quadrat 13*
- 5.3.42 The thirteenth group of quadrats at Location 13 was completed in blanket bog at grid reference NH 39735 20643. The following species were recorded:
- common heather;
 - hare's-tail cottongrass;
 - common cottongrass;
 - tormentil;
 - purple moor-grass;
 - cross-leaved heath;
 - blaeberry;
 - cloudberry;
 - lichen (*Cladonia sp.*);
 - deergrass;
 - red-stemmed feather-moss;
 - papillose bog-moss;
 - flat-topped bog-moss; and
 - red bog-moss.
- 5.3.43 This species list indicates that the area is a mosaic of M17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire, M17a *Scirpus cespitosus-Eriophorum vaginatum* blanket mire with a *Drosera rotundifolia-Sphagnum sp.* sub-community, M18a *Erica tetralix-Sphagnum papillosum* raised and blanket mire with a *Sphagnum magellanicum-Andromeda polifolia* sub-community and M19a *Calluna vulgaris-Eriophorum vaginatum* blanket mire with a *Erica tetralix* sub-community. None of these classifications are GWDTEs.
- Quadrat 14*
- 5.3.44 The fourteenth group of quadrats at Location 14 was completed in wet heath at grid reference NH 40372 21619. The following species were recorded:
- deergrass;
 - purple moor-grass;
 - cross-leaved heath;
 - common heather;
 - lichen (*Cladonia sp.*);
 - tormentil;
 - marsh violet;
 - cranberry (*Vaccinium oxycoccus*);
 - red-stemmed feather-moss;

- little shaggy-moss;
 - red bog-moss;
 - soft bog-moss; and
 - blunt-leaved bog-moss.
- 5.3.45 This species list indicates that the area is an M15c *Scirpus cespitosus-Erica tetralix* wet heath with a typical sub-community. M15c is a moderate GWDTE.
- Quadrat 15*
- 5.3.46 The fifteenth group of quadrats at Location 15 was completed in wet heath at grid reference NH 40026 21960. The following species were recorded:
- deergrass;
 - common cottongrass;
 - purple moor-grass;
 - common heather;
 - lichen (*Cladonia sp.*);
 - red-stemmed feather-moss;
 - red bog-moss;
 - papillose bog-moss;
 - blunt-leaved bog-moss; and
 - flat-topped bog-moss.
- 5.3.47 This species list indicates that the area is M15c *Scirpus cespitosus-Erica tetralix* wet heath with a typical sub-community. M15c is a moderate GWDTE.
- Quadrat 16*
- 5.3.48 The sixteenth group of quadrats at Location 16 was completed in wet heath at grid reference NH 39385 20095. The following species were recorded:
- common heather;
 - deergrass;
 - purple moor-grass;
 - hare's-tail cottongrass;
 - tormentil;
 - dwarf birch;
 - heath rush;
 - cross-leaved heath;
 - heath milkwort;
 - devil's-bit scabious;
 - lichen (*Cladonia sp.*);
 - round-leaved sundew;
 - bog myrtle;

- red-stemmed feather-moss;
 - glittering wood-moss;
 - red bog-moss; and
 - feathery bog-moss (*Sphagnum cuspidatum*).
- 5.3.49 This species list indicates that the area is an M15c *Scirpus cespitosus-Erica tetralix* wet heath with a typical sub-community. M15c is a moderate GWDTE.
- Quadrat 17*
- 5.3.50 The seventeenth group of quadrats at Location 17 was completed in wet heath at grid reference NH 39310 21179. The following species were recorded:
- deergrass;
 - purple moor-grass;
 - lichen (*Cladonia sp.*);
 - hare's-tail cottongrass;
 - tormentil;
 - heath milkwort;
 - bog myrtle;
 - round-leaved sundew;
 - great sundew (*Drosera anglica*);
 - common heather;
 - cross-leaved heath;
 - dwarf birch;
 - red-stemmed feather-moss;
 - feathery bog-moss;
 - papillose bog-moss; and
 - red bog-moss.
- 5.3.51 This species list indicates that the area is an M15c *Scirpus cespitosus-Erica tetralix* wet heath with a typical sub-community. M15c is a moderate GWDTE.
- Quadrat 18*
- 5.3.52 The eighteenth group of quadrats at Location 18 was completed in blanket bog at grid reference NH39061 22143. The following species were recorded:
- common heather;
 - common cottongrass;
 - hare's-tail cottongrass;
 - purple moor-grass;
 - deergrass;
 - tormentil;
 - heath milkwort;

- lichen (*Cladonia sp.*);
- cross-leaved heath;
- blaeberry;
- crowberry (*Empetrum nigrum*);
- cloudberry;
- cowberry;
- dwarf birch;
- hard fern;
- common spotted-orchid (*Dactylorhiza fuschii*);
- glittering wood-moss;
- papillose bog-moss;
- red bog-moss; and
- soft bog-moss.

5.3.53 This species list indicates that the area is a mosaic of M17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire, M17a *Scirpus cespitosus-Eriophorum vaginatum* blanket mire with a *Drosera rotundifolia-Sphagnum sp.* sub-community, M18a *Erica tetralix-Sphagnum papillosum* raised and blanket mire with a *Sphagnum magellanicum-Andromeda polifolia* sub-community and M19a *Calluna vulgaris-Eriophorum vaginatum* blanket mire with a *Erica tetralix* sub-community. None of these classifications are GWDTEs.

Quadrat 19

5.3.54 The nineteenth group of quadrats at Location 19 was completed in blanket bog at grid reference NH 38715 22097. The following species were recorded:

- common cottongrass;
- hare's-tail cottongrass;
- purple moor-grass;
- deergrass;
- common heather;
- lichen (*Cladonia sp.*);
- clubmoss (*Lycopodium sp.*);
- cross-leaved heath;
- tormentil;
- heath rush;
- lousewort;
- common eyebright (*Euphrasia nemorosa*);
- common butterwort;
- blunt-leaved bog-moss;
- papillose bog-moss;

- red bog-moss; and
 - feathery bog-moss.
- 5.3.55 This species list indicates that the area is a mosaic of M17 *Scirpus cespitosus-Eriophorum vaginatum* blanket mire, M17a *Scirpus cespitosus-Eriophorum vaginatum* blanket mire with a *Drosera rotundifolia-Sphagnum sp.* sub-community, M18a *Erica tetralix-Sphagnum papillosum* raised and blanket mire with a *Sphagnum magellanicum-Andromeda polifolia* sub-community and M19a *Calluna vulgaris-Eriophorum vaginatum* blanket mire with a *Erica tetralix* sub-community. None of these classifications are GWDTEs.
- Quadrat 20*
- 5.3.56 The twentieth group of quadrats at Location 20 was completed in marshy grassland at grid reference NH 37647 19716. The following species were recorded:
- purple moor-grass;
 - tormentil;
 - deergrass;
 - common heather;
 - bell heather;
 - devil's-bit scabious; and
 - glittering wood-moss.
- 5.3.57 This species list indicates that the area is an M25a *Molinia caerulea-Potentilla erecta* mire with an *Erica tetralix* sub-community. M25a is a moderate GWDTE.
- Quadrat 21*
- 5.3.58 The twenty-first group of quadrats at Location 21 was completed in blanket bog at grid reference NH 37524 19648. The following species were recorded:
- round-leaved sundew;
 - purple moor-grass;
 - bog asphodel;
 - deergrass;
 - carnation sedge;
 - bog myrtle;
 - heath spotted-orchid;
 - fragrant-orchid;
 - compact bog-moss; and
 - woolly fringe-moss.
- 5.3.59 This species list indicates that the area is an M15a *Scirpus cespitosus-Erica tetralix* wet heath with a *Carex panicea* sub-community. M15a is a moderate GWDTE.
- Quadrat 22*
- 5.3.60 The twenty-second group of quadrats at Location 22 was completed in wet heath at grid reference NH 38463 19577. The following species were recorded:
- deergrass;

- round-leaved sundew;
 - bog myrtle;
 - bog asphodel;
 - hare's-tail cottongrass;
 - purple moor-grass;
 - star sedge;
 - carnation sedge;
 - heath milkwort;
 - red bog-moss; and
 - compact bog-moss.
- 5.3.61 This species list indicates that the area is an M15a *Scirpus cespitosus-Erica tetralix* wet heath with a *Carex panicea* sub-community. M15a is a moderate GWDTE.
- Quadrat 23*
- 5.3.62 The twenty-third group of quadrats at Location 23 was completed in wet heath at grid reference NH 37244 19432. The following species were recorded:
- common heather;
 - purple moor-grass;
 - cross-leaved heath;
 - devil's-bit scabious;
 - tormentil;
 - common butterwort;
 - red bog-moss; and
 - compact bog-moss.
- 5.3.63 This species list indicates that the area is an M15b *Scirpus cespitosus-Erica tetralix* wet heath with a *Cladonia sp.* sub-community. M15b is a moderate GWDTE.
- Quadrat 24*
- 5.3.64 The twenty-fourth group of quadrats at Location 24 was completed in wet heath at grid reference NH 37211 19483. The following species were recorded:
- deergrass;
 - common heather;
 - purple moor-grass;
 - bell heather;
 - heath rush;
 - tormentil;
 - lichen (*Cladonia sp.*);
 - woolly fringe-moss.

- 5.3.65 This species list indicates that the area is an M15c *Scirpus cespitosus-Erica tetralix* wet heath with a typical sub-community. M15c is a moderate GWDTE.
- Quadrat 25*
- 5.3.66 The twenty-fifth group of quadrats at Location 25 was completed in wet heath at grid reference NH 37749 19617. The following species were recorded:
- deergrass;
 - cross-leaved heath;
 - purple moor-grass;
 - tormentil;
 - lichen (*Cladonia sp.*); and
 - woolly fringe-moss.
- 5.3.67 This species list indicates that the area is an M15c *Scirpus cespitosus-Erica tetralix* wet heath with a typical sub-community. M15c is a moderate GWDTE.
- Quadrat 26*
- 5.3.68 The twenty-sixth group of quadrats at Location 26 was completed in wet heath at grid reference NH 39357 19748. The following species were recorded:
- purple moor-grass;
 - hare's-tail cottongrass;
 - deergrass;
 - tormentil;
 - blaeberry;
 - wavy hair-grass;
 - glittering wood-moss; and
 - red bog-moss.
- 5.3.69 This species list indicates that the area is an M15d *Scirpus cespitosus-Erica tetralix* wet heath with a *Vaccinium myrtillus* sub-community. M15d is a moderate GWDTE.
- Quadrat 27*
- 5.3.70 The twenty-seventh group of quadrats at Location 27 was completed in wet heath at grid reference NH 39883 19753. The following species were recorded:
- hare's-tail cottongrass;
 - common heather;
 - deergrass;
 - blaeberry;
 - lichen (*Cladonia sp.*);
 - glittering wood-moss; and
 - red bog-moss.
- 5.3.71 This species list indicates that the area is an M15d *Scirpus cespitosus-Erica tetralix* wet heath with a *Vaccinium myrtillus* sub-community. M15d is a moderate GWDTE.

Quadrat 28

5.3.72 The twenty-eighth group of quadrats at Location 28 was completed in wet heath at grid reference NH 38726 19595. The following species were recorded:

- hare's-tail cottongrass;
- lichen (*Cladonia sp.*);
- deergrass;
- common heather;
- heath rush;
- common cottongrass;
- round-leaved sundew;
- woolly fringe-moss; and
- red bog-moss.

5.3.73 This species list indicates that the area is an M17b *Scirpus cespitosus-Eriophorum vaginatum* blanket mire with a *Cladonia sp.* sub-community. M17b is not a GWDTE.

Target Notes

Extended Phase 1 Habitat Survey

5.3.74 Target notes recorded during the Phase 1 habitat survey are detailed in Table 5.1.3 and shown on Figure 5.3.

Table 5.1.3 – Phase 1 Target Notes

Grid Reference	Target Note Number	Note
NH 38281 20053	1	Common lizard (<i>Zootoca vivipara</i>).
NH 38304 20040	2	Common juniper.
NH 38379 19983	3	Small pearl-bordered fritillary butterfly (<i>Boloria selene</i>).
NH 38393 19966	4	Watercourse leads into smaller loch west of Loch Dubhair (from track), clear water, peaty substrate, small fish observed in stream - not common minnow (<i>Phoxinus phoxinus</i>), maybe young brown trout (<i>Salmo trutta</i>). Teeming with fish of various ages. Gentle flow, clear, some rock.
NH 38255 20244	5	Water vole burrows, cluster of four to six.
NH 38304 20255	6	Watercourse poorly suited for fish/freshwater pearl mussel, very peaty, stagnant areas. Lots of common frog (<i>Rana temporaria</i>) tadpoles.
NH 38303 20254	7	Water vole burrow. Stream gets more channelled and faster closer to Loch an Dubhair. However, stagnant - may still impede movement of fish from the loch to the west of this watercourse.
NH 38377 20345	8	Common lizard.
NH 38190 20244	9	Common lizard.
NH 38096 20471	10	Unmapped pond with pond weeds. Peaty, poor for fish or freshwater pearl mussel. Dragonfly present.
NH 38104 20509	11	Watercourse flowing from small unmapped pond, shallow, peaty, unsuitable for fish or freshwater pearl mussel.
NH 37918 20559	12	Watercourse out of Loch Righ Guidh - flows from Turbine 20. Poor/moderate suitability for fish and freshwater pearl mussel. Fish could potentially use as passage into Loch but shallow at parts. Medium-large in stream, gentle flow and gradient, not enough gravel/fine substrate for freshwater pearl mussel.
NH 37927 20554	13	Common lizard.
NH 37503 20370	14	Common lizard.
NH 37905 21167	15	Watercourse flowing from Loch Carr Tarsuinn to Loch Righ Guidh. Fish present. Young brown trout - individuals of 3-10cm. Moderate flow and gradient. Few boundaries to movement. Rocky substrate in

Grid Reference	Target Note Number	Note
		channel. Lack of gravelly substrate for freshwater pearl mussel.
NH 37924 21215	16	Water vole burrows in cluster.
NH 37819 21346	17	Watercourse flowing from Cairn Loch a Bhothain - fast flow, channel width about 50-100cm. Depth varies due to rocky substrate, overflowing peat. Rocks in stream. Potential for fish movement between lochs. Poor potential for freshwater pearl mussel due to lack of gravelly substrate.
NH 37750 21419	18	Same stream as Target Note 17. Pooling further west closer to stream mouth at loch. Fish present – young brown trout, 5-8cm. This watercourse varies from map - much more complicated with meandering channels.
NH 36997 21319	19	Common juniper.
NH 37279 22265	20	Watercourse poor for fish or freshwater pearl mussel. Dries up. Frequent channels. Lots of stagnant pools.
NH 36912 22117	21	Watercourse small, steep at parts, goes under peat in areas. Flowing into Loch a Chrathaich (northern tip). Doesn't look suitable in aiding fish movement. Too many steep/shallow parts. More channelised toward Loch - deeper sides and peatier.
NH 36582 21892	22	Watercourse with pools, lots of tadpoles and common minnow. Water level low in flowing areas - flows over rocks and under peat in parts. Various barriers to movement of larger fish i.e. areas running under peat/steep rocky channels.
NH 36482 21858	23	Watercourse with peaty channel - deep at points, slow-moderate flow, few/no rocks on stream. Palmate newt (<i>Lissotriton helveticus</i>) in stream.
NH 36428 21818	24	Fish in Loch a Chrathaich spotted from bank - young brown trout? 5-6cm. Fish jumping towards centre of Loch. Large groups of fish near banks, small at 2-4cm.
NH 36336 21667	25	Watercourse very steep, comes straight down valley side unsuited to freshwater pearl mussel or fish.
NH 36136 21308	26	Small unmapped watercourse. Flowing into Loch a Chrathaich from west. Narrow, 10-20cm. Some small stones. Peat and larger stones. Tadpoles recorded. Slow flow. Channel depth 1-50cm.

Grid Reference	Target Note Number	Note
NH 41012 19887	27	Water vole burrows, cluster of two to three.
NH 41003 19909	28	Water vole burrows, cluster of two to three.
NH 40992 19939	29	Otter spraint containing fish bones.
NH 40854 19886	30	Water vole burrow.
NH 40824 19872	31	Water vole burrow.
NH 40814 19877	32	Water vole burrows, five to six and feeding remains of dragonfly and frog (probably by otter).
NH 40809 19872	33	Water vole burrow.
NH 40763 19925	34	Water vole burrow.
NH 39679 20566	35	Common juniper sapling.
NH 40266 21019	36	Water vole burrows, cluster of two to three.
NH 40342 21965	37	Common juniper sapling.
NH 40985 21628	38	Water vole burrows, cluster of three to four.
NH 40975 21590	39	Water vole burrows, cluster of greater than five.
NH 40985 21581	40	Water vole burrow.
NH 40990 21569	41	Water vole burrow.
NH 40993 21544	42	Water vole burrow.
NH 41036 21298	43	Common juniper sapling.
NH 41110 20966	44	Small pearl-bordered fritillary butterfly x4.
NH 41074 20273	45	Common juniper sapling.
NH 39345 20804	46	Small, fast-flowing burn. Some barriers to fish movement (rocky sides). Boulders and bedrock. Probably unsuitable for fish.
NH 39334 20856	47	Common lizard.
NH 39311 21057	48	Common lizard.
NH 39317 21137	49	Common lizard x2.
NH 39369 21300	50	Common lizard.
NH 39431 21422	51	Common juniper.
NH 39482 21419	52	Fast-flowing watercourse over boulders onto deep pool. Common minnow. Adult brown trout sighting. Suitable for fish and freshwater pearl mussel. Slight barrier upstream (waterfall from rock edge).
NH 39482 21421	53	Common lizard.

Grid Reference	Target Note Number	Note
NH 39460 21488	54	Tadpoles.
NH 39400 21656	55	Fast-flowing watercourse, with cobbles and pebbles. Some boulders and bedrock possible barrier between lochs.
NH 39061 22143	56	Common lizard.
NH 38942 22131	57	Common lizard.
NH 38521 21970	58	Common lizard x2.
NH 38258 21917	59	Small burn, steep edges hidden by purple moor-grass. Substrate mostly rock/bedrock until closer to loch. Sighting of young brown trout.
NH 38268 21818	60	Water vole burrow.
NH 38256 21713	61	Common juniper.
NH 38245 21661	62	Water vole burrow.
NH 38052 21037	63	Fast-flowing watercourse, riffles, cobbles and boulder substrate. Deep pool closer to loch.
NH 38474 20747	64	Fast-flowing watercourse, riffles, cobble and boulder substrate.
NH 38502 20659	65	Common lizard.
NH 38468 20391	66	Fast-flowing watercourse. Cobble and boulders. Pile of rocks may be barrier at outflow from small loch.
NH 38615 20017	67	Fast-flowing watercourse. Boulders and cobbles.
NH 38759 19850	68	Common juniper beside track.
NH 41110 19633	69	Common juniper, one small plant.
NH 40605 19873	70	Common juniper.
NH 40643 20000	71	Areas of bare rock surrounded by bog.
NH 40299 21399	72	Small pool.
NH 39333 21644	73	Lots of bog pools with blunt-leaved bog-moss.
NH 38798 21979	74	Bare peat.
NH 38154 20041	75	Bare and disturbed peat around track and turbine.
NH 37555 21851	76	Disturbed and bare peat around track.
NH 37209 21800	77	Disturbed and bare peat.
NH 37018 22078	78	Furrowed peat.
NH 36948 19217	79	Broad area of disturbed ground beginning to re-vegetate with grasses and common herbs but still

Grid Reference	Target Note Number	Note
		very patchy and the plant community is not fully formed.
NH 36357 20479	80	Eroding with bare peat within vegetation. Probably once burned. Apparently a defunct bog now turned to wet heath.
NH 40173 19818	81	Extensive mixed plantation. Mounded plus drainage channels therefore heavily disturbed over large areas.
NH 40478 19639	82	Extensive mixed plantation. Three red deer (<i>Cervus elaphus</i>) seen within the plantation in this area.
NH 36812 20501	83	A single water vole burrow. Extent of suitable habitat very limited here.
NH 36988 19921	84	Water vole burrow with recent activity and a clear run down into the burn.
NH 36943 19877	85	Several water vole burrows, recent activity.
NH 36928 19861	86	Seven water vole burrows noted, but some could be interconnected.
NH 36426 20259	87	Several water vole burrows in a relatively small, isolated patch of suitable habitat. No droppings or conspicuous browsing to confirm recent activity, but the entrances were clear.
NH 37484 19739	88	Mountain hare (<i>Lepus timidus</i>).
NH 37687 19842	89	Dwarf juniper (<i>Juniperus communis nana</i>). Heavily browsed.
NH 38091 20100	90	Dwarf juniper ca. 60 x 50cms breadth. Heavily browsed.
NH 37896 19552	91	Yellow saxifrage (<i>Saxifraga aizoides</i>) was noted here and scattered along the roadsides in this general area.
NH 3886 2004	92	Violet coral fungus (<i>Clavaria zollingeri</i>).
NH 40547 21174	93	Active water vole colony. Burrows and latrines present.
NH 39580 21437	94	Active water vole burrows and latrines.
NH 39542 21443	95	Large active water vole colony with many burrows and latrines. Colony extends upstream almost to lochan.
NH 38495 20713	96	Water vole burrows.
NH 394 204	97	Active water vole colony on stream.

Grid Reference	Target Note Number	Note
NH 39384 20119	98	Common juniper.

GWDTE Target Notes

5.3.75 Target notes recorded during the NVC survey are detailed in Table 5.1.4 and shown on Figure 5.5.

Table 5.1.4 – GWDTE Target Notes

Grid Reference	Target Note Number	Note
NH 38899 21393	1	Small area of M11 <i>Carex demissa-Saxifraga aizoides</i> mire. Small fragment of yellow saxifrage remaining. Yellow saxifrage is a locally scarce indicator of calcareous conditions.
NH 38844 21173	2a	Start of M11 <i>Carex demissa-Saxifraga aizoides</i> mire with a scattering of yellow saxifrage.
NH 28879 21144	2b	End of M11 <i>Carex demissa-Saxifraga aizoides</i> mire stretching approximately 45m between Target Note 2a and Target Note 2b. This area contains the most yellow saxifrage.

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