Earraghail Renewable Energy Development on behalf of ScottishPower Renewables Technical Appendix 8.3: Habitats and Vegetation





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## **1** INTRODUCTION

- 1.1.1 This Technical Appendix has been prepared to accompany **Chapter 8** of ScottishPower Renewables' (SPR) Earraghail Renewable Energy Development (RED) (hereafter 'the proposed Development') Environmental Impact Assessment (EIA) Report.
- 1.1.2 This Appendix presents detailed methodologies of desk studies and field surveys completed to establish baseline habitat and vegetation conditions to inform the design and assessment of the proposed Development. It should be read with reference to the following figures, presented in Volume 3 of the EIA Report:
  - Figure 8.1 Designated Sites for Nature Conservation;
  - Figure 8.4 Phase 1 Habitat Plan; and
  - Figure 8.5 National Vegetation Classification (NVC) Plan.
- 1.1.3 The following term is used throughout this Appendix:
  - Site All lands within the redline application boundary shown in Figures 8.1, 8.4 and 8.5.

## 2 METHODOLOGY

- 2.1.1 Baseline habitat and vegetation conditions have been established through a desk study review of existing information pertaining to the Site and surrounding area, and field surveys.
- 2.1.2 The objectives of the baseline studies were to:
  - Establish the spatial distribution of habitats and vegetation communities which may be impacted by the proposed development;
  - Identify the presence and distribution of any habitat types listed on Annex 1 of the Habitats Directive<sup>1</sup> or the Scottish Biodiversity List (SBL) and/or which represent potential Groundwater Dependent Terrestrial Ecosystems (GWDTEs), to inform a subsequent hydrological assessment; and
  - Record the presence of any protected or non-native plant species listed on Schedule 8 and 9 of the Wildlife and Countryside Act 1981 (as amended) respectively.

## 2.2 Desk Study and Consultation

- 2.2.1 A review of Sitelink<sup>2</sup> and consultation with the Argyll Biological Records Centre (ABreC) via the Highland Biological Recording Group (HBRG) was undertaken to identify the proximity of the Site to any statutory or non-statutory designated sites for nature conservation with habitat or botanical qualifying interests and obtain any existing records of protected and/or notable flora within the Site and the surrounding wider area.
- 2.2.2 The following search areas were adopted:
  - Statutory designated sites for nature conservation within 10 km of the Site;

<sup>&</sup>lt;sup>1</sup> Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. <sup>2</sup> <u>https://sitelink.nature.scot/home</u> [Accessed September 2020].

- Non-statutory designated sites for nature conservation within 2 km of the Site; and
- Existing records of protected and/or non-native plant species within 2 km of the Site.

## 2.3 Field Surveys

- 2.3.1 The following field surveys have been completed:
  - Phase 1 habitat survey; and
  - National Vegetation Classification (NVC) survey.

### Key Guidance

- 2.3.2 Survey methodologies and subsequent interpretation of results have made reference to the following key pieces of guidance:
  - Handbook for Phase 1 Habitat Survey a technique for environmental audit (JNCC, 2010);
  - An Illustrated Guide to British Upland Vegetation (Averis et al., 2004);
  - National Vegetation Community Users' Handbook (Rodwell, 2006);
  - British Plant Communities. Volume 2. Mires and Heaths (Rodwell, 1993);
  - British Plant Communities. Volume 3. Grasslands and montane communities (Rodwell, 1992);
  - Land Use Planning System SEPA Guidance Note 31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (SEPA, 2014); and
  - WFD95: A Functional Wetland Typology for Scotland Field Survey Manual (SNIFFER, 2009).

## 2.4 Field Survey Methodology

## Phase 1 Habitat Survey

- 2.4.1 The original extended Phase 1 Habitat Survey was carried out by Gavia Environmental Ltd. on 16<sup>th</sup> and 17<sup>th</sup> July 2019 undertaken in accordance with the UK industry standard Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology (JNCC, 2010), as recommended in the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017) guidelines for Preliminary Ecological Appraisal (PEA).
- 2.4.2 It should be noted that the extended Phase 1 methodology does not constitute a full botanical or protected species survey but allows a professional judgement to be made as to whether or not further specialist surveys would be advisable either in relation to the planning application/design stage or subsequently.
- 2.4.3 The Phase 1 habitat survey was subsequently updated in September 2020, to ensure that baseline habitat and vegetation data has been collected within 18 months of a submission in accordance with NatureScot guidance (2020).
- 2.4.4 The updated survey comprised a walkover of broad habitat types within the study area, to validate the results of previous habitat surveys and where necessary update any marked changes in habitat composition and distributions. The survey was undertaken in accordance with the UK industry standard Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology (JNCC, 2010).

2.4.5 The study area comprised all habitats within the Site, with the exception of the eastern extreme of the Site which comprises the designated sites Tarbert Woods SAC and Tarbert to Skipness Coast SSSI.

## NVC Survey

- 2.4.6 An NVC survey was undertaken between the 21<sup>st</sup> and 25<sup>th</sup> September 2020, following the guiding principles detailed within the 'National Vegetation Classification: User's Handbook' (Rodwell, 2006).
- 2.4.7 The NVC study area comprised all noteworthy habitats within 250 m of the proposed Development footprint, concentrating on those areas where plant communities were deemed likely representative of habitat types listed on Annex 1 of the Habitats Directive and/or to represent GWDTEs. These areas were identified using both the existing phase 1 habitats identified in the 2019 survey, and an initial walkover during the 2020 survey. The buffer is in accordance with guidance from SEPA (2017) which requires an NVC survey as part of a site specific detailed quantitative and/or qualitative risk assessment for proposed infrastructure involving excavation below a depth of 1 m within 250 m of sensitive receptors.
- 2.4.8 The NVC survey followed the standard methodologies set out in Rodwell (2006). Homogenous stands of vegetation were identified which were considered to provide a representative sample of each of the relevant communities present within the NVC study area. In each stand, a sufficient number of square quadrats of 2 m by 2 m were undertaken to allow analysis to be conducted to determine which NVC community was present.
- 2.4.9 In each quadrat sample area, data was collected on the presence and abundance of vascular plant species using the Domin scale (Annex 2, table 2.1). These data were then analysed and classified to an NVC vegetation community, where possible, using the keys in Rodwell (1992 and 1993).

#### Personnel

- 2.4.10 The original Gavia Environmental Ltd Phase 1 survey in July 2019 was undertaken by suitably qualified personnel with relevant experience of surveying for comparable renewable energy proposals in Scotland.
- 2.4.11 The updated Phase 1 habitat survey and NVC survey in September 2020, together with NVC analysis, were conducted by Mr C. Davies; a highly competent botanist with considerable experience of undertaking Phase 1 Habitat and NVC surveys for proposed renewable energy developments, across numerous comparable upland and afforested sites in Scotland.

#### Limitations

- 2.4.1 The original site extent considered during habitat and vegetation surveys was more extensive than the Site, with the southern boundary extending out by approximately 1 km to include a larger area of commercial conifer plantation. The previous boundary in the north extended out to a maximum of approximately 2 km to the west from the access track, and the eastern extreme included Tarbert Wood Special Area of Conservation (SAC) and Tarbert to Skipness Coast Site of Special Scientific Interest (SSSI). The Site was subsequently reduced to the application boundary as shown in Figures 8.1, 8.4 and 8.5. Although the application boundary has altered over the course of the survey period (reduced in extent in June 2021), the study areas for all habitat and vegetation surveys were covered, given the Site was at its greatest extent when these were undertaken.
- 2.4.2 The survey is therefore considered not to be subject to any significant limitations.

## 3 **RESULTS**

## 3.1 Desk Study

- 3.1.1 A summary of statutory designated sites for nature conservation with habitat and botanical qualifying interests located within 10 km of the Site is provided in **Table 3.1** and should be read with reference to **Figure 8.1**.
- 3.1.2 Distances specified within **Table 3.1** are taken from the application boundary to the designation at its nearest point.

Designated Site	Distance and Orientation	Qualifying Interests
Tarbet Woods SAC	Adjacent to the Site	Old sessile oak woods with <i>llex</i> and <i>Blechnum</i> in the British Isles.
Tarbet to Skipness Coast SSSI	Adjacent to the Site	Bryophyte assemblage; and Upland oak woodland.
Glen Ralloch to Baravalla Woods SSSI	554 m north west	Bryophyte assemblage; Lichen assemblage; and Upland oak woodland.
Claonaig Wood SSSI	4.69 km south west	Upland oak woodland.
Artillgan and Abhainn Strathain Burns SSSI	6.18 km north	Upland oak woodland.
Ardpatrick and Dunmore Woods SSSI	6.68 km west	Upland oak woodland.
Arran Northern Mountains SSSI	9.28 km south	Upland habitats; Upland bird woodland; and Vascular plant assemblage.

#### Table 3.1: Statutory designated sites for nature conservation.

SAC: Special Area of Conservation (SAC); SSSI: Site of Special Scientific Interest.

- 3.1.3 No non-statutory sites for nature conservation are located within 2 km of the Site.
- 3.1.4 In consultation, with the ABReC (via the HBRG) no existing records of protected flora listed on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) or non-native invasive species listed on Schedule 9 were identified within 2 km of the Site.

## 3.2 Field Surveys – Phase 1

3.2.1 This section presents the results of baseline field surveys, including an overview of habitat types present within the study area and their distribution. It should be read with reference to **Figure 8.5**.

## Broadleaved woodland – semi-natural (A.1.1.1)

3.2.2 Semi-natural broadleaved woodland inhabits several small pockets along the northern edges of the Site boundary. These pockets are dominated by sessile oak *Quercus petraea* with hazel *Corylus avellana*, downy birch *Betula pubescens* and willow *Salix sp.* also present. The understory is typically wood sorrel *Oxalis acetosella*, bracken *Pteridium aquilinum* and pleurocarpous moss species. The majority of these small woodland pockets are also listed in the ancient woodland inventory.

### Coniferous woodland – plantation (A1.2.2)

3.2.3 Around half of the Site area comprises planted coniferous woodland. A range of coniferous species were noted, and a limited understorey typical of plantation was recorded.

### Recently Felled Woodland (A4)

3.2.4 Recently felled plantation is largely restricted to the southern portion of the Site and consists of a mosaic of bracken, rush species *Juncus spp.* and Yorkshire fog *Holcus lanatus*.

#### Acid grassland - semi-improved (B1.2)

3.2.5 A small area of semi-improved acid grassland exists at the southern extent of the Site. In addition, an area of acid grassland is present within a block of broad-leaved woodland within the eastern side of the Site. Species present within such grasslands include heath bedstraw *Galium saxatile*, tormentil *Potentilla erecta* and bent grass species *Agrostis spp*.

#### Acid grassland – semi-improved/ Bracken (B1.2/C1)

3.2.6 A mosaic of semi-improved acid grassland and bracken was recorded at several small areas across the Site including an area within plantation in the south of the Site.

#### Acid Grassland – semi-improved/ Wet dwarf shrub heath (B1.2/D2)

3.2.7 A small area of semi-improved acid grassland/ wet dwarf shrub heath is present in the south-west of the Site, adjacent to an area of recently felled woodland.

#### Marsh/ marshy grassland (B5)

3.2.8 A restricted area of marshy grassland was recorded within the eastern side of the Site. The majority of marshy grassland was noted as a mosaic alongside other habitats as listed below, including within rides between plantation blocks.

#### Bracken – continuous (C1.1)

3.2.9 Continuous bracken makes up a small percentage of the total Site area. Large areas of bracken were recorded to the north-east of the site and centrally within the Site.

## Bracken/ Dry dwarf shrub heath (C1/D1)

3.2.10 Mosaics of bracken and dry dwarf scrub heath were noted largely in the northern portion of the Site. Species present include bracken, common heather *Calluna vulgaris* and bell heather *Erica cinerea*.

#### Dry dwarf shrub heath (D1)

3.2.11 The majority of this habitat was recorded as large areas within the northern portion of the Site. Species typical of such habitat include heather, bell heather, crowberry *Empetrum nigrum*, blaeberry *Vaccinium myrtillus*, wavy hair-grass *Avenella flexuosa* and Yorkshire fog with some carpeting of the mosses *Rhytidiadelphus squarrosus* and *Pleurozium schreberi*.

#### Dry dwarf shrub heath/ Coniferous Woodland – semi natural (D1/A1.2.1)

3.2.12 A block of this habitat mosaic is present adjoining the Site in the north, surrounded by plantation.

## Dry dwarf shrub heath/ Marsh/ Bracken (D1/B5/C1)

3.2.13 This restricted habitat mosaic is present within the northern portion of the Site, and species present include common heather, soft rush *Juncus effusus*, Yorkshire fog, foxglove *Digitalis purpurea* and some Sitka *Picea sitchensis* regeneration.

## Dry dwarf shrub heath/ bare rock (D1/I4)

3.2.14 An area of this habitat is present within the northern portion of the Site.

## Dry dwarf shrub heath/ Bracken (D1/C1)

3.2.15 Restricted areas of dry dwarf shrub heath/bracken habitats are present largely in the northern portion of the Site.

## Dry dwarf shrub heath/ Wet dwarf shrub heath (D1/D2)

3.2.16 A combination of dry and wet dwarf shrub heath is present within the northern portion of the Site.

### Dry dwarf shrub heath, Wet dwarf shrub heath/ Bare rock (D1/D2/I4)

3.2.17 An area of dry dwarf shrub heath/wet dwarf shrub heath/bare rock mosaic habitat is present in the north of the Site.

### Wet dwarf shrub heath (D2)

3.2.18 The majority of this habitat was recorded to the north-east of the Site boundary, with an additional area to the south of the Site and small areas within the Site. Species present include purple moorgrass *Molina caerulea* and common cotton grass *Eriophorum angustifolium*.

## Wet modified bog (E1.7)

3.2.19 Wet modified bog habitat is scattered throughout the Site with larger areas concentrated in the central area. Species present include heather, cross-leaved heath *Erica tetralix*, common cotton grass, purple moor-grass, heath spotted orchid *Dactylorhiza maculata*, heath rush *Juncus squarrosus*, sharp-flowered rush *Juncus acutiflorus* and soft rush *Juncus effusus*.

## Wet modified bog/ Wet dwarf shrub heath (E1.7/D2)

3.2.20 This mosaic is largely associated with the mosaic described below, both occurring in plantation rides in the south-east of the Site.

#### Wet modified bog/ Wet dwarf shrub heath/ Dry dwarf shrub heath (E1.7/D2/D1)

3.2.21 The majority of plantation woodland rides comprise this mosaic of habitats. Species present (but not limited to) include purple moor-grass, Yorkshire fog, heather, heath spotted-orchid tormentil, bell heather, cross-leaved heath, soft rush, sheep's sorrel *Rumex acetosella*, heath bedstraw, bugle *Ajuga reptans*, heath milkwort *Polygala serpyllifolia*, bog asphodel *Narthecium ossifragum* and blunt-leaved bog-moss *Sphagnum palustre*.

## Dry modified bog (E1.8)

3.2.22 Areas of dry modified bog are largely restricted to the east of the Site. Species present include purple moor-grass, heather, blaeberry and pleurocarpous mosses.

## Flush and spring (E2)

3.2.23 Flushes and springs are associated with wet modified bog habitats within the centre of the Site and a small area in the south-east of the Site. Areas of *Sphagnum spp*. are noted within such habitats as well as marsh marigold *Caltha palustris*, rush species, saxifrage *Saxifraga* sp., common butterwort *Pinguicula vulgaris* and bog myrtle *Myrica gale*.

### Standing water (G1)

3.2.24 Two lochans are present within the Site boundary; Loch na Machrach Moire and Loch na Machrach Bige.

### Track (J5)

3.2.25 Access tracks are present at the Site serving the forestry.

## 3.3 Field Surveys - NVC

#### Blanket bog

- 3.3.1 The best community match for blanket bog within the study area is **M19b** *Calluna vulgaris-Eriophorum vaginatum* blanket mire, *Empetrum nigrum* sub-community. This community, distinguished by underlying peat depths of >0.5 m, is typically dominated by *Calluna vulgaris* and *Eriophorum vaginatum* with *Eriophorum angustifolium* and straggling shoots of *Vaccinium myrtillus* and clumps of *Empetrum nigrum*. *Sphagnum capillifolium* and *S. subnitens* are the commonest sphagnums whilst other bryophytes include a patchwork of *Hypnum jutlandicum*, *Rhytidiadelphus loreus*, *Hylocomium splendens* and *Pleurozium schreberi*.
- 3.3.2 M19b *Calluna vulgaris-Eriophorum vaginatum* blanket mire is common in the west of Scotland (Averis *et al.* 2004), with examples found within the study area considered to be in moderate health due to reduced sward diversity, likely as a result of overgrazing by deer.

#### Dry Heath

- 3.3.3 The best community match for heath within the study area is H12b Calluna vulgaris-Vaccinium myrtillus heath, Vaccinium vitis-idaea-Cladonia impexa sub-community. This comprises a dry heath community typically developed on shallow peats less than 0.5 m deep, and dominated by Calluna vulgaris and Vaccinium myrtillus with large patches of Empetrum nigrum and Vaccinium vitis-idaea. Mosses are dominated by Hypnum jutlandicum, Rhytidiadelphus loreus, Hylocomium splendens and Pleurozium schreberi, whilst the Vaccinium vitis-idaea-Cladonia impexa sub-community includes scattered Cladonia sp. lichens. Sphagnums are rare, but when they do occur the commonest is Sphagnum capillifolium. Erica cinerea occurs in this community which along with the sparsity of Erica tetralix and Trichophorum germanicum differentiate it from the wet heath communities.
- 3.3.4 H12b *Calluna vulgaris-Vaccinium myrtillus* heath forms a large proportion of the total extent of heather moorland in the British uplands. Very little of this type of heath is thought to be natural and it exists due to woodland clearance and grazing. Grazing by deer is considered to be essential in maintaining the structural and floristic diversity of the community (Averis *et. al.* 2004).

#### Flush

3.3.5 Two flush communities are represented within the study area, developed on peat depths of around 1 m or deeper:

- M23a Juncus effusus / acutiflorus-Galium palustre rush-pasture, Juncus acutiflorus subcommunity. This species poor community is greatly dominated by Juncus acutiflorus and has an understorey which typically consists of Galium palustre, Holcus lanatus, Lotus pendunculatus and Potentilla erecta.
- M25a *Molinia caerulea-Potentilla erecta* mire, *Erica tetralix* sub-community. A species poor community usually greatly dominated by *Molinia caerulea* with *Potentilla erecta* common in the understorey. *Erica tetralix* is frequent and *Calluna vulgaris* occasional as well as some *Eriophorum angustifolium*.
- 3.3.6 Both communities are common across the uplands of Scotland, as part of wider heathland expanses.

### Summary

3.3.7 Vegetation communities present within the study area and included in the NVC survey are summarised in **Table 3.2**, along with corresponding Annex 1 and SBL habitat types and GWDTE status in accordance with SNIFFER guidance (2009).

Community	Principle corresponding Habitats Directive Annex I type/s	Corresponding SBL Priority Habitat Type	Dependence of community/habitat on groundwater. 1=High, 2=Moderate, 3=Low
M19b Calluna vulgaris- Eriophorum vaginatum blanket mire, Empetrum nigrum sub-community.	Blanket bog.	Blanket bog.	3
M23a Juncus effusus / acutiflorus-Galium palustre rush-pasture, Juncus acutiflorus sub-community.	Purple Moor grass and Rush pasture.	Upland flushes, fens and swamps.	1
M25a <i>Molinia caerulea-</i> <i>Potentilla erecta</i> mire, <i>Erica</i> <i>tetralix</i> sub-community.	Purple Moor grass and Rush pasture.	Upland flushes, fens and swamps.	2
H12b Calluna vulgaris- Vaccinium myrtillus heath, Vaccinium vitis-idaea- Cladonia impexa sub- community.	Upland heathland.	Upland Heathland.	3

Table 3.2: Summary of NVC communities present within the study area.

## 4 **PROTECTED OR NOTABLE PLANT SPECIES**

4.1.1 No protected or notable plant species, or invasive non-native plant species, were recorded during the 2019 or 2020 habitat surveys.

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## ANNEX 1: PHASE 1 HABITAT SURVEY TARGET NOTES

Target Note	Easting	Northing	Description
1	187472	662482	A band of M23b by a narrow watercourse with dense soft-rush Juncus effusus with sheep's sorrel Rumex acetosella, wood sorrel Oxalis acetosella, common marsh-bedstraw Gallium palustre, tormentil Potentilla erecta and Sphagnum palustre.
2	187408	662946	Common cottongrass <i>Eriophorum angustifolium</i> hummocks. Purple moor-grass <i>Molinia caerulea</i> , heather <i>Calluna vulgaris</i> , Sphagnum spp., tormentil <i>Potentilla erecta</i> , bog asphodel <i>Narthecium ossifragum</i> , heath spotted-orchid <i>Dactylorhiza maculata</i> and bugle <i>Ajuga reptans</i> by road.
3	187391	662911	Marshy grassland/acid grassland - U4. Yorkshire-fog <i>Holcus lanatus</i> , heath bedstraw <i>Galium saxatile</i> , tormentil <i>Potentilla erecta</i> , sharp-flowered rush and <i>Juncus acutiflorus</i> . Band of dry heath to west of target note.
4	187403	662935	As for target note 3.
5	188191	662153	Purple moor-grass <i>Molinia caerulea</i> , Yorkshire-fog <i>Holcus lanatus</i> with patches of rush <i>Juncus acutiflorus</i> , <i>Vaccinium</i> sp., heath bedstraw <i>Galium</i> saxatile and heath milkwort <i>Polygala serpyllifolia</i> .
6	188102	662249	Purple moor-grass Molinia caerulea, heather Calluna vulgaris and Red-stemmed feather-moss Pleurozium schreberi.
7	188092	662245	Patch of sharp-flowered rush Juncus acutiflorus, Yorkshire-fog Holcus lanatus and tormentil Potentilla erecta.
8	188144	662261	North of road, marshy grassland with soft-rush Juncus effusus and sharp-flowered rush Juncus acutiflorus.
9	187523	663232	On side of track - deep peat present with heather <i>Calluna vulgaris</i> , purple moor-grass <i>Molinia caerulea</i> , tormentil <i>Potentilla erecta</i> and Sphagnum spp.
10	188123	662260	Bog pool.
11	188070	662243	Purple moor-grass <i>Molinia caerulea</i> , heather <i>Calluna vulgaris</i> , cross-leaved heath <i>Erica tetralix</i> and heath bedstraw <i>Galium saxatile</i> This vegetation composition continues down the ride.

23	190514	662554	Active felling.
22	190719	660795	> 0.5 m peat and hummocky with more blaeberry Vaccinium myrtillus, heather Calluna vulgaris and less purple moor-grass Molinia caerulea. Other species include common cottongrass Eriophorum angustifolium, Sphagnum capillifolium, cross-leaved heath Erica tetralix, Sorbus sp. sapling, tormentil Potentilla erecta. No rushes.
21	190852	660841	< 0.5 m peat, with an increase in heather <i>Calluna vulgaris</i> , still purple moor-grass.
20	190852	660841	Bog area peat > 0.5 m with purple moor-grass <i>Molinia caerulea</i> dominant with some soft-rush <i>Juncus effusus</i> , heath bedstraw <i>Galium saxatile</i> , common haircap <i>Polytrichum commune</i> , patches of heather <i>Calluna vulgaris</i> , <i>Sphagnum capillifolium</i> , common cottongrass <i>Eriophorum angustifolium</i> , cross-leaved heath <i>Erica tetralix</i> , tormentil <i>Potentilla erecta</i> and sharp-flowered rush <i>Juncus acutiflorus</i> .
19			Red-stemmed feathermoss <i>Pleurozium schreberi</i> , rhododendron <i>Rhododendron</i> sp. saplings, some bracken <i>Pteridium aquilinum</i> , oak <i>Quercus</i> sp. and rowan <i>Sorbus aucuparia</i> next to burn.
18	189090	661996	Wet heath area with over 1m peat depth with heather <i>Calluna vulgaris, Vaccinium</i> sp., bell heather <i>Erica cinerea</i> and <i>Sphagnum capillifolium</i> .
17	188372	661925	Deep peat area with Purple moor-grass <i>Molinia caerulea</i> , red-stemmed feathermoss <i>Pleurozium schreberi</i> hummocks, heather <i>Calluna vulgaris</i> , <i>Vaccinium</i> sp., tormentil <i>Potentilla erecta</i> and <i>Sphagnum palustre</i> .
16	188386	661960	Very wet underfoot.
15	188873	661924	Active felling site.
14	188375	661946	Marshy grassland with soft-rush Juncus effusus, sharp-flowered rush Juncus acutiflorus, purple moor-grass Molinia caerulea and Yorkshire-fog Holcus lanatus.
13	189062	661990	Marshy grassland with soft rush Juncus effusus, common-marsh bedstraw Galium palustre, Yorkshire-fog Holcus lanatus and sheep's sorrel Rumex acetosella. Foxglove Digitalis purpurea occurs in adjacent drier areas.
12	188189	662256	Heather Calluna vulgaris, purple moor-grass Molinia caerulea, Vaccinium sp., Sphagnum palustre, Sphagnum capillifolium, bell heather Erica cinerea and common cottongrass Eriophorum angustifolium.

24	190732	661736	Active felling.
25	190565	662037	Active felling.
26	190917	660881	Peat around 0.5 m deep with dense purple moor-grass <i>Molinia caerulea</i> with sharp-flowered rush <i>Juncus acutiflorus</i> and soft rush <i>Juncus effusus</i> , tormentil <i>Potentilla erecta</i> , heath spotted-orchid <i>Dactylorhiza maculata</i> and heath bedstraw <i>Galium saxatile</i> .
27	191060	660903	Sharp-flowered rush Juncus acutiflorus, Yorkshire-fog Holcus lanatus; purple moor-grass Molinia caerulea dominant.
28	191158	660315	Marshy grassland with sharp-flowered rush <i>Juncus acutiflorus</i> , Yorkshire-fog <i>Holcus lanatus</i> , thistle <i>Cirsium</i> sp., tormentil <i>Potentilla erecta</i> and heath bedstraw <i>Gallium saxatile</i> . Tortoiseshell butterfly observed.
29	191145	660208	Marsh marigold <i>Caltha palustris</i> , lots of thistle sp., still purple moor-grass <i>Molinia caerulea</i> and sharp-flowered rush <i>Juncus acutiflorus</i> and Cock's-foot <i>Dactylis glomerata</i> near hill.
30	191164	660253	Bog myrtle Myrica gale and young rowan Sorbus aucuparia.
31	191100	660135	Dry heath with heather Calluna vulgaris, Molina caerulea and tormentil Potentilla erecta.
32	190941	660804	Peat ca. 30 cm deep with sharp-flowered rush Juncus acutiflorus and Yorkshire-fog Holcus lanatus.
33	190992	660777	Peat < 20 cm with heather Calluna vulgaris, blaeberry Vaccinium myrtillus, purple moor-grass Molinia caerulea, Sphagnum capillifolium and Sphagnum palustre.
34	191139	660613	Peat < 20 cm with heather <i>Calluna vulgaris</i> , purple moor-grass <i>Molinia caerulea</i> , cross-leaved heath <i>Erica tetralix</i> , tormentil <i>Potentilla erecta</i> , sparse <i>Sphagnum</i> sp., and bog asphodel <i>Narthecium ossifragum</i> .
36	190907	660845	Peat > 0.5 m with purple moor-grass <i>Molinia caerulea</i> , sharp-flowered rush <i>Juncus acutiflorus</i> , tormentil <i>Potentilla erecta</i> , cross-leaved heath <i>Erica tetralix</i> , heather <i>Calluna vulgaris</i> , <i>Sphagnum</i> sp. and occasional heath spotted-orchid <i>Dactylorhiza maculata</i> ,
37	191157	660533	Peat > 0.5 m with sharp-flowered rush <i>Juncus acutiflorus</i> , purple moor-grass <i>Molinia caerulea</i> , Yorkshire-fog <i>Holcus lanatus</i> , tormentil <i>Potentilla erecta</i> , cross-leaved heath <i>Erica tetralix</i> and heath bedstraw <i>Galium saxatile</i> .

38	191187	660495	Peat < 0.5 m with heather <i>Calluna vulgaris</i> , purple moor-grass <i>Molinia caerulea</i> , small areas of <i>Sphagnum</i> sp., tormentil <i>Potentilla erecta</i> .
39	191187	660385	Soft rush Juncus effusus around running water - over 50cm deep, with tormentil Potentilla erecta, sharp- flowered rush Juncus acutiflorus, purple moor-grass Molina caerulea, Yorkshire-fog Holcus lanatus, Sphagnum palustre, and bent Agrostis sp
40	189689	662335	0.5 m deep peat with purple moor-grass <i>Molinia caerulea</i> , Yorkshire-fog <i>Holcus lanatus</i> , patches of heather <i>Calluna vulgaris</i> , heath spotted-orchid <i>Dactylorhiza maculata</i> , tormentil <i>Potentilla erecta</i> , patches of sharp-flowered rush <i>Juncus acutiflorus</i> , bell heather <i>Erica cinerea</i> and scattered rowan <i>Sorbus aucuparia</i> trees along the burn.
41	187723	663830	Peat > 0.5 m with purple moor-grass <i>Molinia caerulea</i> dominated with rush <i>Juncus</i> sp. closer to water/wetter areas.
42	189066	661974	Otter spraint on path. Bracken <i>Pteridium aquilinum</i> , heather <i>Calluna vulgaris</i> , blaeberry <i>Vaccinium myrtillus</i> , hare's-tail cottongrass <i>Eriophorum vaginatum</i> rowan <i>Sorbus aucuparia</i> , soft rush <i>Juncus effusus</i> , a willow <i>Salix</i> sp., saxifrage <i>Saxifrage</i> sp., common-marsh bedstraw <i>Galium palustre</i> . Roe deer tracks.
44	189173	661531	Badger dung, <i>Rhododendron</i> , thistle, bracken <i>Pteridium aquilinum</i> dominant with soft-rush <i>Juncus effusus</i> , Yorkshire-fog <i>Holcus lanatus</i> , bent <i>Agrostis</i> sp Common frog recorded.
46	188747	662492	Pine marten scat. Regular badger, pine marten scat till now.
47	188694	662949	Small mammal remains. Badger dung close, soft-rush <i>Juncus effusus</i> dominant. Species poor heading towards road. Adjacent plantation ride also poor. Blue damsel fly.
48	189073	661900	Merlin in flight, foxglove <i>Digitalis purpurea</i> , heather <i>Calluna vulgaris</i> less common. Mostly soft-rush <i>Juncus effusus</i> , pockets of bracken. bent <i>Agrostis</i> sp., Yorkshire-fog <i>Holcus lanatus</i> , more bracken heading downhill, crowberry <i>Empetrum nigrum</i> . Meadow brown butterfly.
49	188599	662993	Sika deer hind, fox and badger dung. Heather <i>Calluna vulgaris</i> grazed, saxifrage <i>Saxifrage</i> sp., orchids, bent <i>Agrostis</i> sp., heath bedstraw <i>Galium saxatile</i> , bog asphodel <i>Narthecium ossifragum</i> , Yorkshire-fog <i>Holcus lanatus</i> , soft rush <i>Juncus effusus</i> , cross-leaved heath <i>Erica tetralix</i> in places with crowberry <i>Empetrum nigrum</i> .
50	188462	662978	Lochan - off path. 2 red-throated diver present. Stone chat, meadow pipit, woodpigeon. Waterlogged

			vegetation dominated by soft rush Juncus effusus and heather Calluna vulgaris. Surrounding plantation.
51	188932	662313	Foxglove <i>Digitalis purpurea</i> and pockets of bracken <i>Pteridium aquilinum</i> , heath bedstraw <i>Galium</i> saxatile, saxifrage <i>Saxifrage</i> sp., cross-leaved heath <i>Erica tetralix</i> . Golden ringed dragonfly.
52	188741	662424	Fox scat, heather Calluna vulgaris less common, wetter, deer droppings and prints.
53	187631	663400	Badger dung old and trampled on path. Deer and hare droppings along path. Canada geese flew over. Fox glove <i>Digitalis purpurea.</i> , Yorkshire-fog <i>Holcus lanatus</i> , bent <i>Agrostis</i> sp., saxifrage <i>Saxifrage</i> sp., cross-leaved heath <i>Erica tetralix</i> , heath bedstraw <i>Galium saxatile</i> , bog asphodel <i>Narthecium ossifragum</i> , heather <i>Calluna vulgaris</i> and bracken <i>Pteridium aquilinum</i> .
54	187836	663175	Badger dung <i>fresh</i> on path, blaeberry <i>Vaccinium myrtillus</i> , soft rush <i>Juncus effusus</i> . Cotton grass <i>Eriophorum</i> sp.
55	187966	663153	Pine marten scat on path
56	188101	663205	Badger scat before bridge. Appear to be paths leading into plantation. Dominated by coniferous plantation with patches of heather <i>Calluna vulgaris, Sphagnum capillifolium</i> and bog asphodel <i>Narthecium ossifragum</i> .
57	188200	663157	Fox scat with more scat off path and nibbled fungi. Common toad young, rhododendron off path. Merlin flew over. Prey remains left by heron. Cotton grass <i>Eriophorum</i> sp., saxifrage <i>Saxifrage</i> sp.
58			Bog Asphodel Narthecium ossifragum, Sphagnum sp., heath spotted-orchid Dactylorhiza maculata, Saxifrage Saxifrage sp., bedstraw Galium sp
59			Bog asphodel Narthecium ossifragum. sika deer + 4 hinds, red deer, heather Calluna vulgaris, saxifrage Saxifrage sp., heath bedstraw Galium saxatile.
60	186916	665654	Common butterwort <i>Pinguicula vulgaris</i> on rocky areas. Saxifrage <i>Saxifrage</i> sp. Plantation where Anabat 5 is located.
61	190904	660873	Open area surrounded by Sitka plantation with blaeberry <i>Vaccinium myrtillus</i> , saxifrage <i>Saxifrage</i> sp., degraded heather <i>Calluna vulgaris</i> , common cotton grass <i>Eriophorum</i> vaginatum, <i>Sphagnum</i> sp., mostly dominated by grass and rushes. Rushes closer to road, grasses in surrounding areas. Yorkshire-fog <i>Holcus lanatus</i> , cross-leaved heath <i>Erica tetralix</i> , perennial rye-grass <i>Lolium perenne</i> , bent <i>Agrostis</i> sp. and soft-rush <i>Juncus effusus</i> . Badger dung close to fence on deer path, red squirrel sighting along edge of plantation, deer

62	187501	662493	Meadow buttercup Ranunculus acris, tormentil Potentilla erecta, bent Agrostis sp., soft rush Juncus effusus, and Sphagnum sp., dominated by bracken Pteridium aquilinum in places.
63	188197	662199	Soft-rush Juncus effusus, hard fern Blechnum sp., foxglove Digitalis purpurea, heath bedstraw Galium saxatile, bracken Pteridium aquilinum, bent Agrostis sp., Yorkshire-fog Holcus lanatus, Sphagnum sp.
64	188991	662224	Bog asphodel Narthecium ossifragum, saxifrage Saxifrage sp., heavily grazed heather Calluna vulgaris, Crowberry Empetrum nigrum, soft-rush Juncus effusus, heath milkwort Polygala serpyllifolia, Yorkshire-fog Holcus lanatus, bent Agrostis sp., Rowan Sorbus aucuparia close to road, heath bedstraw Galium saxatile, foxglove Digitalis purpurea., thistle Cirsium sp. and red-stemmed feathermoss Pleurozium schreberi.
65	188156	662270	Soft-rush Juncus effusus dominant, heather Calluna vulgaris >0.5m, bracken Pteridium aquilinum >1m, saxifrage Saxifrage sp., heath bedstraw Galium saxatile, Sphagnum sp., cross-leaved heath Erica Tetralix & Yorkshire-fog Holcus lanatus.
66	188116	662286	Pine marten scat, pixie cup <i>Cladonia asahinae</i> , Field vole/mice signs - nibbled mushroom. Grouse droppings on edge of plantation.
67	187745	662384	Quarry. Road widens, horsetail sp. Roe deer tracks, pine marten scat old.
68	189721	662301	Badger dung x 4 on road by stream.
69	189682	662287	Pine marten scat on road.
70	185565	665867	Bracken Pteridium aquilinum and heather Calluna vulgaris, small areas of marshy grassland. Soft-rush Juncus effusus, heather Calluna vulgaris, Yorkshire-fog Holcus lanatus, foxglove Digitalis purpurea, some Sitka regeneration.
71	185422	665884	Dominant bracken Pteridium aquilinum around stone ruin old building.
72	185604	666026	Silver birch <i>Betula pendula</i> along track/watercourse. Bracken <i>Pteridium aquilinum</i> dominant understory with occasional willow <i>Salix</i> sp
73	185895	666462	Mosaic of bracken, dry heath and semi-improved grassland, heather <i>Calluna vulgaris</i> , bell heather <i>Erica</i>

			cinerea, soft-rush Juncus effusus, Yorkshire-fog Holcus lanatus, bent Agrostis sp
74	186179	666207	Rocky slope with mosaic of bracken <i>Pteridium aquilinum</i> and dry heath 70%/30%.
75	186074	666312	Rocky Slope with mosaic of bracken <i>Pteridium aquilinum</i> and dry heath 90%/10%.
76	185316	664892	Dominant bracken <i>Pteridium aquilinum</i> at edge of Sitka spruce, continues through forest ride.
77	185627	665051	Felled coniferous woodland plantation; mosaic of bracken <i>Pteridium aquilinum</i> , bell heather <i>Erica cinerea</i> , soft-rush <i>Juncus effusus</i> and Yorkshire-fog <i>Holcus lanatus</i> .
78	185420	665278	Marshy grassland with soft rush Juncus effusus, sharp-flowered rush Juncus acutiflorus and Yorkshire-fog Holcus lanatus. Small patches of dry heath on raised areas.
79	185515	665383	Presence of bracken <i>Pteridium aquilinum</i> , dry heath and small areas of marshy grassland. Soft rush <i>Juncus effusus</i> , heather <i>Calluna vulgaris</i> , Yorkshire-fog <i>Holcus lanatus</i> , and foxglove <i>Digitalis purpurea</i> . Some Sitka regeneration.
80	186227	666508	Mosaic of dry heath, marshy grassland, bracken <i>Pteridium aquilinum</i> and immature trees; Scots pine <i>Pinus sylvestris</i> , Sitka, silver birch <i>Betula pendula</i> , larch <i>Larix</i> sp
81			Track sides with Salix sp., bracken <i>Pteridium aquilinum</i> understorey with soft rush <i>Juncus effusus</i> , common ragwort <i>Jacobaea vulgaris</i> , Yorkshire-fog <i>Holcus lanatus</i> , daisy <i>Bellis perennis</i> , thistle <i>Cirsium</i> sp., oak <i>Quercus</i> sp., hazel <i>Corylus avellana</i> , occasional rhododendron <i>Rhododendron</i> sp. along track.
82	185564	665717	Pond - potentially old borrow pit, no bank side vegetation. 60% aquatic plant cover, culvert under track and also connected to trackside drainage.
83	187305	667480	Dry heath 60 %, Semi-improved grassland 30% and 10% bracken Pteridium aquilinum.
84	187129	667115	Bare rock on upper areas and Dwarf Shrub Heath, heather <i>Calluna vulgaris</i> , blaeberry <i>Vaccinium myrtillus</i> , some bell heather <i>Erica cinerea</i> , and bracken <i>Pteridium aquilinum</i> in larger areas by track.
85	186897	667406	Dry heath 60%, 30% semi-improved grassland, 10% bracken <i>Pteridium aquilinum</i> .
86	186864	667182	Female hen harrier in flight.

87	186856	666964	Mosaic of bracken <i>Pteridium aquilinum</i> 60%, heath 40%.
88	186600	666814	Mosaic of bracken <i>Pteridium aquilinum</i> 80% dry heath 20% bell heather <i>Erica cinerea</i> , blaeberry <i>Vaccinium myrtillus</i> . Bare rock also present.
89	187630	667326	Banks too steep to survey properly and vegetation too thick to access water course.
90	187894	666683	Lower areas by track dominated by bracken <i>Pteridium aquilinum</i> , leading uphill to mosaic of Dwarf Shrub Heath and Semi-improved grassland 60% Dwarf Shrub Heath, 30% Semi Improved grassland, 10% bracken <i>Pteridium aquilinum</i> .
91	188303	666354	Bracken <i>Pteridium aquilinum</i> dominant, patches of Dwarf Shrub Heath and marshy grassland. Scattered broadleaf trees <i>Salix</i> sp. and <i>Betula pendula</i> .
92	188130	666065	Bracken Pteridium aquilinum by track, leading to mosaic of marsh grassland and Dwarf Shrub Heath
93	187900	664654	Rush Juncus sp. dominated grassland.
94	187876	664889	Wet Dwarf Shrub Heath with areas of marshy grassland. Heather <i>Calluna vulgaris</i> , bell heather <i>Erica cinerea</i> , purple moor-grass <i>Molinia caerulea</i> - very abundant, deergrass <i>Trichophorum cespitosum</i> , some <i>Sphagnum capillifolium</i> .
95	187541	665399	Dry modified bog, >0.5m peat. Dominated by purple moor-grass <i>Molinia caerulea</i> and heather <i>Calluna vulgaris</i> , some blaeberry <i>Vaccinium myrtillus</i> , very wet under foot. Little/no <i>Sphagnum</i> but feather mosses present.
96	187675	665550	Dry dwarf Shrub Heath at higher areas with exposed rock dominant. Heather <i>Calluna vulgaris</i> , blaeberry <i>Vaccinium myrtillus</i> , bell heather <i>Erica cinerea</i> . Cladonia lichen sp., transitions to Wet Dwarf Shrub Heath towards areas of Dry Modified Bog.
97	187610	665819	Dwarf Shrub Heath, >0.5m peat in places. Heather <i>Calluna vulgaris</i> , blaeberry <i>Vaccinium myrtillus</i> , bell heather <i>Erica cinerea</i> , tormentil <i>Potentilla erecta</i> , bog asphodel <i>Narthecium ossifragum</i> , common cotton grass <i>Eriophorum angustifolium</i> , star sedge <i>Carex echinata</i> , deergrass <i>Trichophorum cespitosum</i> small area of purple moor-grass <i>Molinia caerulea</i> , some Cladonia lichen sp.
98	187221	665803	Mosaic of Blanket Bog, Wet Dwarf Shrub heath and Wet Modified Bog in areas of bare peat. Some areas of re-

		vegetated hags, standing pools with Sphagnum sp. present at edges.

## ANNEX 2: NVC QUADRAT DATA

Tables A2.1 and A2.2 below outline DOMIN scales and scores for NVC survey results.

Code	Approximate percentage cover in quadrat
10	>90%
9	75 – 90%
8	51 – 75%
7	34 – 50%
6	26 – 33%
5	11 – 25%
4	5 – 10%
3	<5%, many individuals
2	<5%, a few individuals
1	<5%, one or two individuals

## Table A2.1: Dominance (DOMIN) scale.

#### Table A2.2 Quadrat data

Quadrat	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Habitat	M25a	H12b	H12b	M19b	M19b	M19b	M25a	H12b	H12b	M19b	M19b	M19b	H12b	H12b	H12b	H12b	H12b	M25a	H12b	H12b	H12b	H12b	H12b	M19b	M19b
Species																									
Anthoxanthum odoratum	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aulacomnium palustre	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Blechnum spicant	0	0	3	0	0	0	4	0	0	0	4	0	0	0	0	4	0	4	4	0	4	0	0	0	0
Calluna vulgaris	4	8	8	9	9	9	0	8	8	6	7	8	8	8	8	8	8	4	8	8	8	9	8	8	9
Carex panicea	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cladonia sp.	0	0	4	4	0	0	0	4	4	4	4	0	4	5	4	4	0	0	4	0	4	4	4	4	4
Cladonia uncialis	0	0	0	0	0	0	0	0	4	4	0	0	0	4	0	0	0	0	0	4	0	0	0	0	0
Deschampsia flexuosa	0	5	5	4	0	0	0	4	5	0	4	4	4	5	5	4	5	4	4	5	4	4	4	0	4
Dicranum scoparium	0	0	0	0	0	0	0	0	4	0	4	0	0	4	4	0	4	0	0	4	4	0	4	4	4
Drosera rotundifolia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Empetrum nigrum	0	0	4	4	4	5	0	4	4	0	5	4	4	5	4	4	4	0	4	5	5	0	4	5	4
Erica cinerea	0	4	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4	4	4	0	0	0
Erica tetralix	5	0	0	4	0	0	4	0	4	5	4	4	4	0	4	0	0	4	0	0	0	4	4	4	4
Eriophorum angustifolium	4	0	4	5	4	4	4	0	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eriophorum vaginatum	0	0	0	8	5	7	0	0	4	0	0	0	0	0	4	0	0	0	0	0	0	0	0	5	8
Festuca ovina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Festuca vivipara	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	4	0	0	0
Galium palustre	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Galium saxatile	0	0	3	0	0	0	0	4	0	0	0	0	4	0	0	0	4	0	0	4	0	4	4	0	0
Holcus lanatus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Huperzia selago (fir clubmoss)	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	4	0	0	0	0	4	0
Hylocomium splendens	0	0	6	0	0	0	0	5	5	0	4	0	4	5	4	0	4	0	5	5	4	4	0	4	0
Hypnum jutlandicum	6	7	6	5	6	4	5	7	7	4	5	5	6	5	7	0	7	5	4	6	5	5	5	5	5
Juncus acutiflorus	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
Juncus conglomeratus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Juncus effusus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Juncus squarrosus	0	4	4	0	0	0	0	4	0	0	0	0	5	0	4	0	4	0	4	0	0	0	0	0	0
Lotus pendunculatus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Luzula sylvatica	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Menyanthes trifoliata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Molinia caerulea	10	0	4	5	7	4	9	4	0	4	5	4	0	0	0	4	4	9	4	0	5	4	0	4	4
Nardus stricta	0	5	4	0	0	0	0	4	0	0	0	0	4	4	5	4	4	0	5	5	4	0	0	0	0
Narthecium ossifragum	4	0	0	4	0	4	4	0	4	4	4	0	0	0	0	4	0	4	0	0	0	0	0	4	4
Pleurozium schreberi	0	0	5	0	0	0	0	5	4	0	4	4	4	5	0	5	5	0	4	0	4	4	0	0	0

Quadrat	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Habitat	M25a	H12b	H12b	M19b	M19b	M19b	M25a	H12b	H12b	M19b	M19b	M19b	H12b	H12b	H12b	H12b	H12b	M25a	H12b	H12b	H12b	H12b	H12b	M19b	M19b
Species																									
Polytrichum commune	0	4	0	0	0	0	4	4	0	4	4	0	0	0	4	0	0	4	0	0	0	0	4	0	0
Potentilla erecta	4	4	4	4	4	4	4	4	4	4	4	4	5	4	4	4	4	4	5	0	4	4	4	4	4
Pseudoscleropodium purum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Racomitrium lanuginosum	0	0	4	4	0	4	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
Rhytidiadelphus loreus	0	0	0	4	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	4	4	4	4
Sphagnum capillifolium	4	4	0	7	5	9	4	4	0	8	7	7	0	4	0	0	0	0	0	0	0	0	0	5	5
Sphagnum compactum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sphagnum cuspidatum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sphagnum denticulatum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sphagnum fallax	4	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0
Sphagnum palustre	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sphagnum papillosum	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Sphagnum subnitens	0	0	0	4	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	4
Succisa pratensis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichophorum germanicum	0	0	0	4	4	5	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	0	4	0
Vaccinium myrtillus	0	4	4	4	4	4	0	5	4	4	4	4	4	4	4	5	4	4	5	5	5	5	4	5	4
Vaccinium oxycoccus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccinium vitis-idaea	0	0	0	4	0	0	0	0	0	0	0	0	0	4	4	0	4	0	4	0	0	4	0	0	0
Viola palustris	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0

Quadrat	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Habitat	M19b	H12b	M19b	M25a	M19b	H12b	H12b	M25a	M19b	M19b	M19b	M19b	H12b	M19b	H12b	M25a	M23a	M23a	M25a	M23a	M25a	M19b	M19b	H12b	H12b
Species																									
Anthoxanthum odoratum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
Aulacomnium palustre	4	0	0	0	5	0	0	0	4	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
Blechnum spicant	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Calluna vulgaris	9	7	9	4	8	8	8	4	9	8	7	7	7	8	7	0	0	0	0	0	0	8	9	7	7
Carex panicea	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cladonia sp.	4	4	4	0	0	4	0	0	4	5	6	4	0	4	4	0	0	0	0	0	0	5	4	0	4
Cladonia uncialis	4	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4	0
Deschampsia flexuosa	4	5	0	4	4	4	5	0	0	0	0	0	5	4	4	0	0	0	0	0	0	0	0	4	4
Dicranum scoparium	0	4	0	0	0	4	0	0	0	0	0	4	4	4	4	0	0	0	0	0	0	0	0	0	4
Drosera rotundifolia	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Empetrum nigrum	4	0	4	0	0	4	5	0	8	4	0	4	5	0	5	0	0	0	0	0	0	4	7	5	5
Erica cinerea	0	0	0	0	0	0	0	0	0	0	4	0	4	0	4	0	0	0	0	0	0	0	0	4	4

Quadrat	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Habitat	M19b	H12b	M19b	M25a	M19b	H12b	H12b	M25a	M19b	M19b	M19b	M19b	H12b	M19b	H12b	M25a	M23a	M23a	M25a	M23a	M25a	M19b	M19b	H12b	H12b
Species																									
Erica tetralix	4	4	4	4	4	0	4	0	4	4	4	0	0	4	0	5	0	0	4	0	5	4	4	4	4
Eriophorum angustifolium	5	0	4	0	4	0	0	0	4	8	5	5	0	4	0	4	0	0	0	0	4	4	6	0	4
Eriophorum vaginatum	5	0	5	0	0	0	4	0	5	5	5	4	0	4	0	0	0	0	0	0	0	4	4	0	0
Festuca ovina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Festuca vivipara	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Galium palustre	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	6	0	6	0	0	0	0	0
Galium saxatile	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Holcus lanatus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	4	0	4	4	0	0	0	0
Huperzia selago (fir clubmoss)	0	0	0	0	0	0	0	0	0	0	2	0	0	4	0	0	0	0	0	0	0	0	4	0	0
Hylocomium splendens	0	4	0	0	0	0	0	0	0	4	0	4	0	5	4	0	0	0	0	0	0	4	4	4	4
Hypnum jutlandicum	4	6	0	6	4	5	6	4	6	4	0	4	0	4	5	5	0	0	5	0	4	4	5	6	6
Juncus acutiflorus	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	8	9	0	9	4	0	0	0	0
Juncus conglomeratus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Juncus effusus	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4	4	0	4	0	0	0	0	0
Juncus squarrosus	0	5	0	0	0	4	4	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	5	5
Lotus pendunculatus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0
Luzula sylvatica	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Menyanthes trifoliata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Molinia caerulea	4	4	4	9	4	0	4	10	4	7	4	5	4	4	4	9	0	0	9	0	9	4	4	4	4
Nardus stricta	0	0	0	0	0	0	4	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	5	0
Narthecium ossifragum	4	0	4	0	0	0	0	0	0	5	8	4	4	4	0	0	0	0	4	0	0	4	4	0	4
Pleurozium schreberi	0	0	0	0	0	0	4	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4	0	4	0
Polytrichum commune	0	0	0	6	0	0	4	4	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	4
Potentilla erecta	4	4	4	5	4	4	4	4	5	4	0	4	4	4	5	4	4	5	4	4	4	4	4	4	4
Pseudoscleropodium purum	0	0	0	4	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	4
Racomitrium lanuginosum	0	0	0	0	4	0	0	0	0	0	0	7	5	0	0	0	0	0	0	0	0	4	5	0	0
Rhytidiadelphus loreus	0	0	0	0	0	0	0	0	0	4	4	0	0	0	4	0	0	0	0	0	0	0	4	0	5
Sphagnum capillifolium	5	0	8	0	7	4	0	0	5	5	8	5	4	9	0	0	0	0	4	0	4	8	8	0	4
Sphagnum compactum	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4	0	0
Sphagnum cuspidatum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
Sphagnum denticulatum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
Sphagnum fallax	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	4	0	0	5	0	5	0	0	0	0
Sphagnum palustre	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sphagnum papillosum	4	0	0	0	0	0	0	4	5	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0
Sphagnum subnitens	4	0	0	0	5	0	0	0	5	5	4	4	0	0	0	0	0	0	0	0	0	5	0	0	0

Quadrat	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Habitat	M19b	H12b	M19b	M25a	M19b	H12b	H12b	M25a	M19b	M19b	M19b	M19b	H12b	M19b	H12b	M25a	M23a	M23a	M25a	M23a	M25a	M19b	M19b	H12b	H12b
Species																									
Succisa pratensis	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichophorum germanicum	5	0	0	0	0	0	0	0	8	0	0	5	0	6	0	0	0	0	0	0	0	6	4	0	0
Vaccinium myrtillus	4	5	4	4	4	4	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4	4
Vaccinium oxycoccus	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0
Vaccinium vitis-idaea	0	0	4	0	0	0	0	0	0	4	4	0	0	4	0	0	0	0	0	0	0	0	4	0	0
Viola palustris	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0

Quadrat	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
Habitat	M19b	M19b	M19b	H12b	H12b	M25a	M19b	M25a	M25a	M19b	H12b	H12b	M19b							
Species																				
Anthoxanthum odoratum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aulacomnium palustre	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Blechnum spicant	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	0	0	2	2
Calluna vulgaris	7	8	7	8	0	4	8	4	0	8	8	8	7	8	8	8	7	7	8	8
Carex panicea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0
Cladonia sp.	0	0	4	4	0	0	4	0	0	4	5	0	4	4	5	4	0	4	4	0
Cladonia uncialis	0	4	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
Deschampsia flexuosa	0	0	4	0	0	0	4	0	0	0	0	0	4	0	5	4	4	0	4	4
Dicranum scoparium	4	0	0	4	0	0	0	0	0	4	0	4	0	0	4	4	0	0	4	0
Drosera rotundifolia	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Empetrum nigrum	4	5	0	4	0	0	7	0	0	0	4	5	5	5	4	4	0	4	7	0
Erica cinerea	0	0	0	4	0	0	4	0	0	4	0	4	4	0	0	0	4	4	4	0
Erica tetralix	5	4	4	0	0	5	4	5	0	0	4	4	4	5	4	4	4	4	4	4
Eriophorum angustifolium	4	0	7	4	0	4	4	5	0	4	0	4	4	0	0	4	0	0	4	0
Eriophorum vaginatum	7	7	5	0	0	0	4	0	0	4	4	4	8	8	0	0	0	7	8	0
Festuca ovina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
Festuca vivipara	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Galium palustre	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Galium saxatile	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Holcus lanatus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Huperzia selago	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
Hylocomium splendens	0	0	4	5	0	0	0	0	0	4	4	4	0	4	4	0	0	5	0	0
Hypnum jutlandicum	4	0	4	7	0	4	4	6	0	4	5	4	5	5	6	5	5	7	5	5
Juncus acutiflorus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Juncus conglomeratus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4

Quadrat	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
Habitat	M19b	M19b	M19b	H12b	H12b	M25a	M19b	M25a	M25a	M19b	H12b	H12b	M19b							
Species																				
Juncus effusus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Juncus squarrosus	0	0	0	4	0	0	0	0	0	4	0	0	0	0	0	0	4	0	4	0
Lotus pendunculatus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Luzula sylvatica	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0
Menyanthes trifoliata	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0
Molinia caerulea	4	4	4	4	0	10	5	9	0	5	4	4	5	5	6	6	6	5	4	5
Nardus stricta	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
Narthecium ossifragum	4	4	4	0	0	4	0	0	0	4	0	4	4	4	0	0	4	4	4	0
Pleurozium schreberi	5	0	4	0	0	0	4	0	0	4	4	4	0	0	0	4	0	4	4	0
Polytrichum commune	0	0	0	0	0	4	0	4	4	0	0	0	0	0	0	0	0	4	2	4
Potentilla erecta	4	4	4	4	4	4	4	4	4	4	4	4	0	4	5	4	4	4	4	0
Pseudoscleropodium purum	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0
Racomitrium lanuginosum	0	6	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0
Rhytidiadelphus loreus	4	4	4	0	0	0	0	0	0	5	0	4	0	4	4	0	0	4	4	0
Sphagnum capillifolium	7	6	7	0	4	0	0	0	4	5	4	4	8	8	0	5	4	6	7	4
Sphagnum compactum	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
Sphagnum cuspidatum	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sphagnum denticulatum	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0
Sphagnum fallax	0	0	0	0	0	6	0	4	5	0	0	0	0	0	0	0	0	0	0	0
Sphagnum palustre	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
Sphagnum papillosum	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	4	0
Sphagnum subnitens	4	5	0	0	0	0	5	0	0	0	4	0	0	4	0	0	0	0	0	0
Succisa pratensis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichophorum germanicum	0	5	6	0	0	0	6	0	0	5	0	5	4	0	0	0	0	4	4	0
Vaccinium myrtillus	0	0	0	4	4	0	0	0	0	0	0	0	4	4	4	0	4	4	5	4
Vaccinium oxycoccus	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vaccinium vitis-idaea	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4	5	0
Viola palustris	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0

#### Table 2.3 Quadrat Details

Quadrat	Easting	Northing	Soil Depth (m)	NVC habitat
1	187634	663343	>1	M25a
2	187823	663243	0.3	H12b
3	188147	663381	0.3	H12b
4	187948	663560	0.6	M19b
5	187902	663538	0.6	M19b
6	187853	663512	0.6	M19b
7	187938	663787	>1	M25a
8	187962	663916	0.4	H12b
9	187977	664093	0.4	H12b
10	188331	664055	0.75	M19b
11	188393	664226	0.75	M19b
12	188178	664297	0.75	M19b
13	188137	664545	0.2	H12b
14	188325	664534	0.3	H12b
15	188466	664503	0.2	H12b
16	188744	664470	0.2	H12b
17	188831	664431	0.3	H12b
18	188971	664558	0.8	M25a
19	188910	664706	0.3	H12b
20	189062	664640	0.3	H12b
21	189066	664592	0.3	H12b
22	188959	664845	0.4	H12b
23	188981	664797	0.4	H12b
24	188666	664998	>1	M19b
25	188540	665093	>1	M19b
26	188385	665177	0.8	M19b
27	188276	665261	0.2	H12b
28	188285	664932	0.8	M19b
29	187930	664716	>1	M25a

Quadrat	Easting	Northing	Soil Depth (m)	NVC habitat
30	187963	664291	0.7	M19b
31	187859	664185	0.2	H12b
32	187671	663713	0.3	H12b
33	187007	662995	>1	M25a
34	187502	663480	0.6	M19b
35	187366	663467	>1	M19b
36	187265	663553	>1	M19b
37	187290	663628	>1	M19b
38	187317	663670	0.2	H12b
39	187206	663754	>1	M19b
40	187087	663796	0.3	H12b
41	187149	664004	>1	M25a
42	187194	664094	>1	M23a
43	187265	664062	>1	M23a
44	187272	664019	>1	M25a
45	187414	663990	>1	M23a
46	187460	664059	>1	M25a
47	187054	664155	0.8	M19b
48	187185	664344	0.7	M19b
49	187247	664283	0.3	H12b
50	187292	664419	0.3	H12b
51	187401	664406	0.8	M19b
52	187372	664275	0.7	M19b
53	187427	664278	>1	M19b
54	187532	664227	0.3	H12b
55	187626	664376	0.3	H12b
56	187599	664153	>1	M25a
57	187737	664317	>1	M19b
58	187754	664140	>1	M25a
59	187648	663934	>1	M25a

Quadrat	Easting	Northing	Soil Depth (m)	NVC habitat
60	187616	663885	0.8	M19b
61	187531	663780	0.8	M19b
62	187579	663716	0.8	M19b
63	190581	660225	0.7	M19b
64	190477	660210	0.7	M19b
65	189004	662167	0.5	M19b
66	187873	662504	0.5	M19b
67	187405	662817	0.6	M19b
68	187825	663245	0.4	H12b
69	187868	664238	0.2	H12b
70	188125	666037	0.7	M19b

## **ANNEX 3: PHOTOGRAPHIC PLATES**







