Millennium East Wind Farm

Environmental Impact Assessment (EIA) Report

Technical Appendix 6.1: Habitats and Vegetation

avianecology

CONTENTS

1 INTRODUCTION

1.1.1 This Appendix has been prepared to accompany **Chapter 6: Ecology** of the Millennium East Wind Farm Environmental Impact Assessment (EIA) Report. Figures referred to within this appendix are provided in Volume 2a of the EIA Report. It presents the baseline habitat data collected to inform the design and assessment of the Proposed Development.

1.1.2 The objectives of this Appendix are 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 Annex I habitat types[1], habitats that are listed on the Scottish Biodiversity List[2], and/or which represent potential Groundwater Dependent Terrestrial Ecosystems[3] or priority peatland[4]; and
- Record the presence of any protected and/or non-native invasive plant species.

1.1.3 Survey methodologies and the subsequent interpretation of results in this Appendix refer to key pieces of guidance, which are listed in **Section 8: References**.

1.1.4 Common species names are used throughout the text of this Appendix. The only exception is where species are stated in the name of National Vegetation Classification (NVC) communities and the NVC data (bryophytes and lichens) in **Annex 2**. The corresponding scientific names for all listed species are supplied in **Annex 5.**

1.2 Terminology

1.2.1 The 'Site' is defined as everything within the application red line boundary shown in **Figure 2.1**.

1.2.2 The initial Study Area adopted for baseline habitat surveys was based upon an earlier layout of the Proposed Development and a preliminary development boundary at that time. The Study Area has been updated over the course of the survey as appropriate to account for evolution of the scheme design.

1.2.3 Survey areas are defined by the Study Area and a 250m buffer of the Proposed Development infrastructure, in accordance with relevant guidance. Details of the Study Area and survey area given in each of the specific survey methods sections below.

1.3 Site Overview

1.3.1 The Proposed Development is located within the administrative area of The Highland Council Local Planning Authority (hereafter referred to as 'the Council'). The Site's centre point is at National Grid Reference: E228745, N809613). The Site is located approximately 5.2 km west of Fort Augustus, southwest of Invermoriston, and north of Invergarry.

[1] The Habitats Directive (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora). As per guidance JNCC (2019).
[2] Habitats of principal importance for biodiversity conservation in Scotland (NatureScot, 2020).
[3] As per guidance from Scottish Environment Protection Agency (2017).
[4] As per guidance from NatureScot (2023).

1.3.2 The Site sits within broadly undulating upland moorland, gently sloping downwards from southwest to northeast. The elevations of the Site range from 670 m Above ordnance datum (AOD) at the mid-western section of the Site, to the Site access junction by A887 at 129 m AOD.

1.3.3 The twenty-six wind turbines of the operational Millennium Wind Farm lie immediately to the southwest. The operational wind turbines are arranged in three arrays, at elevations ranging from 460 m AOD to 700 m AOD.

2 METHODOLOGY

2.1 Desk Study

2.1.1 A desk study was undertaken to identify the proximity of the Site to any statutory or non-statutory designated site for nature conservation with habitat or botanical qualifying interest. This used publicly available data as well as consultation with the regional biological recording group (**Table 2.1**).

Table 2.1. Key desk study sources and the information obtained.

Key Source	Date of Most Recent Consultation	Information Sought	Study Area
Sitelink (NatureScot, 2024)	7th November 2024	Proximity to statutory designated sites.	Within 10 km of the Site
Highland Biological Recording Group (HBRG)	3rd October 2023	Proximity to non-statutory designated sites. Records of protected species (bryophytes and lichens)	Within 2 km of the Study Area

Limitations

2.1.2 The records held by the HBRG do not include lists of vascular plants.

2.2 Field Surveys

2.2.1 Field surveys were carried out over 11 days during May, June, and July 2024 in accordance with standard methodologies (see **Table 2.2**):

- A Phase 1 and NVC survey was conducted which covered all land within the Study Area plus a 250m buffer zone extending beyond the Site boundary in the south of the Site.
- Small areas and features of interest were mapped using target notes as per Phase 1 survey methodology. Particular attention was paid to mapping obvious groundwater features (springheads) and surface water features (e.g. watercourses, swamps). The surface water features were investigated further to see whether they were also connected to groundwater sources.
- A peatland condition assessment survey was conducted which covered all areas of blanket bog identified within 250m of proposed infrastructure. These areas were split up into 109 polygons (as mapped for the NVC survey) and each polygon was separately assessed using the criteria specified in the methodology in **Table 2.2**. Where blanket bog occurred as a mosaic

with other peatland communities (e.g. wet heath), the condition of the whole mosaic was assessed as a single polygon.

2.2.2 All field surveys and results reporting were conducted by R. Whytock, a highly competent ecologist and botanist with considerable experience of undertaking these methodologies across numerous comparable sites in Scotland.

2.2.3 The NVC data were reviewed and collated herein by C. Dean *PhD*; a competent botanist with experience of undertaking and analysing NVC surveys.

Table 2.2. Descriptions of the survey methodologies used for this report.

Survey Type	Brief Description	Key Outcomes	Guidance
Phase 1	Habitat types are classified based on vegetation, observable hydrology, topography, and land use. Small features of interest are recorded and mapped using 'target notes'. The survey can be extended to also record signs of the presence, or potential presence, of protected species (e.g. birds, mammals) including the presence of habitat features that might provide suitable breeding or refuge areas.	A broad overview of the habitat types occurring within an area and their extent. Corresponding to priority habitats listed on the Scottish Biodiversity List. Identify the presence or potential presence of species listed on Schedules 8 and 9 of the Wildlife and Countryside Act (1981) and/or the Scottish Biodiversity List.	Handbook for Phase 1 habitat survey – a technique for environmental audit (JNCC, 2016).
NVC	Data are collected on the identity and abundance of all plant species present within quadrats, which are distributed throughout homogenous stands. These data are then analysed, and each homogenous stand is classified to an NVC vegetation community.	Providing a finer level of detail than provided by Phase 1. Specific NVC communities signify possible Annex 1 habitats, Priority Peatland, and/or Groundwater Dependent Terrestrial Ecosystems (GWDTE).	National Vegetation Community Users' Handbook (Rodwell, 2006). British Plant Communities (JNCC, 1991 - 92).
Peatland Condition Assessment	Bog communities signifying priority peatland are assessed on whether they have features that are indicators of being high quality and in a near-natural condition (indicator species, lack of disturbance etc.). The survey is restricted to plant communities that are classed as blanket bog, or than can be classed as blanket bog when occurring on deep peat.	To assess whether the identified priority peatland habitats are of possible national interest.	Advising on peatland, carbon-rich soils and priority peatland habitats in development management (NatureScot, 2023). Guidelines for the selection of biological SSSIs – 8 Bogs (JNCC, 1994).

Limitations

2.2.4 The iterative approach to Site design and associated changes to the Application Boundary means that there are some limited areas within the Site for which no habitats data are available. However, no infrastructure is proposed within these areas (only mitigation and enhancement measures), and survey data have been collected from within appropriate buffers of all proposed infrastructure and so it is not considered that this represents a constraint to identification and assessment of impacts relating to construction and operation of the proposed development.

2.2.5 Some of the areas for which no habitats survey data are available are targeted for potential enhancement measures under the outline Biodiversity Enhancement Management Plan (oBEMP; see **Technical Appendix 6.7**). It is considered that where required to provide further context for the baseline stage, habitat identification in these areas can be carried out via review of aerial photography and extrapolation of adjacent habitats. Further survey work carried out to refine oBEMP proposals for future revisions will include all areas subject to proposals and ensure oBEMP enhancements are located appropriately in the context of underlying and surrounding habitats.

2.2.6 Bog pool communities occurring within larger tracts of blanket bog were not individually included as features in the peatland condition assessment due to their small size.

2.2.7 The altitude of the Site also added complexity to the peatland condition assessment survey. This is because blanket bog sitting higher than 600m is classed as montane blanket bog (NatureScot, 2023). Species such as Austin's bog-moss and rusty bog-moss, which generally indicate less disturbed peatlands, can persist on heavily modified peatlands in sub-montane and montane areas for many years (R. Whytock, 2024). Thus, in polygons above 600m professional judgement (in addition to the standard guidance) was required to assess whether the presence of certain indicator species signified near natural peatland or not.

3 RESULTS: DESK STUDY

3.1 Statutory Designated Sites for Nature Conservation

3.1.1 In review of Sitelink, the Site does not form a part of any internationally or nationally designated site for nature conservation. There are however five designated sites within 10km of the Site that are designated for relevant habitat and/or botanical features. See **Table 3.1** and **Figure 6.1**.

Table 3.1. Statutory designated sites with habitat and/or botanical qualifying features located within 10km of the Site.

Site	Designation(s)	Distance from Site	Area	Reason for Designation (habitat / botanical)
Ness Woods	SAC	5.52km (east)	841.38 ha	• 9180 Tilio-Acerion forests of slopes, screes and ravines • 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
Strathglass Complex	SAC	8.34km (north)	23591.92 ha	• Alpine and subalpine heaths; • Blanket bog; • Bog woodland; • Plants in crevices on base-rich rocks; • Caledonian forest; • Dry heaths; • Tall herb communities; • Otter; • Wet heathland with cross-leaved heath; • Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels; • Montane acid grasslands; • Plants in crevices on acid rocks; • Acidic scree; and, • Mountain willow scrub.
Garry Falls	SSSI	4.83km (south)	1.83 ha	• Upland mixed ash woodland; and, • Bryophyte assemblage.
Glen Tarff	SSSI	5.52km (southeast)	272.58 ha	• Upland mixed ash woodland.
Easter Ness Forest	SSSI	7.42km (northeast)	475.18 ha	• Upland oak woodland; and, • Upland mixed ash woodland.
South Laggan Fen	SSSI	8.05km (south)	11.04 ha	• Transition open fen.
Glen Affric	SSSI	8.34km (north)		• Native pinewood; and, • Lichen assemblage.
Levishie Wood	SSSI	9.75km (northeast)	180.56 ha	• Upland birch woodland.

Key: SAC = Special Area of Conservation, SSSI = Site of Special Scientific Interest, SPA = Special Protection Area.

3.2 Non-Statutory Designated Sites for Nature Conservation

3.2.1 The data returned by HBRG indicated that there are a number on non-designated sites within the region (RSPB, Scottish Wildlife Trust, and National Trust Scotland reserves), however further investigation showed that these are not located within 2km of the Site boundary. See **Table 3.2**.

3.3 Botanical Records

3.3.1 The data returned by HBRG did not include any bryophyte or lichen species that are listed as having protected status on Schedule 8 of the Wildlife and Countryside Act or the Scottish Biodiversity List.

4 RESULTS: HABITATS AND VEGETATION COMMUNITIES

4.1 Overview

4.1.1 These results should be read with reference to **Figure 6.2 (a – e): Habitat Survey** and **Figure 6.3: Peatland Condition Survey**.

4.1.2 Phase 1 Target Notes are detailed in **Annex 1**, full NVC survey data are presented in **Annex 2**, and corresponding photographs are presented in **Annex 4**.

4.1.3 The survey recorded 30 NVC communities, that can be grouped under 14 broader Phase 1 habitats. These are:

- B1.1 Acid grassland – unimproved: U4
- B4 Improved grassland: MG6
- B5 Marshy grassland: M23, MG10
- C1 Bracken: U20
- D1.1 Dry heath: H10, H12, H16, H18, H21, H22
- D2 Wet heath: M15, M16
- D3 Lichen and bryophyte heath: H14, H17
- D6 Wet heath and acid grassland: U6
- E1.6.1 Blanket bog: M1, M2, M3, M17, M19
- E1.7 Wet modified bog: M20
- E1.7 Wet modified bog / B5 Marshy grassland: M25
- E2.1 Flush and spring – acid: M4, M6
- E2.2 Flush and spring – basic: M10, M11
- E2.3 Flush and spring – bryophyte dominated spring: M31, M32
- F1 Swamp: S9.

4.1.4 Where possible, these NVC communities were further separated out into sub-communities, which are included in the detailed community descriptions listed below.

4.1.5 In addition, seven habitats did not fit into any of the NVC communities and so have been recorded only as Phase 1 habitat categories. These are:

- A1.2.2 Coniferous plantation woodland
- A1.3.2 Mixed plantation woodland
- E4 Bare peat
- G1.3 Standing water - oligotrophic
- G2 Running water
- I2.1 Quarry
- J4 Bare ground and infrastructure such as tracks / roads.

4.2 Acid Grassland

U4 Festuca ovina - Agrostis capillaris - Galium saxatile grassland

4.2.1 This habitat is thinly spread throughout the Site, predominantly in the west, often occupying very small areas on free draining, slightly acidic soils. The sward of the grassland is short, maintained by frequent grazing. Common bent, heath bedstraw, sheep's fescue, tormentil, and sweet vernal-grass are the most frequent and abundant species in the community.

4.2.2 The survey found two sub-communities of U4 grassland. The U4a typical sub-community is the most frequent of the two sub-communities within the Site. It has no real distinguishing vegetative features other apart from the main dominant species described above. The U4d *Luzula multiflora - Rhytidiadelphus loreus* sub-community occurs in one small area in the south of the Site. It contains a thick sward of common bryophytes such as glittering wood-moss, red-stemmed feather-moss, and neat feather-moss.

4.3 Improved Grassland

MG6 Lolium perenne – Cynosurus cristatus grassland

4.3.1 This grassland community occurs bordering the A887 in the west of the Site. It is indicative of agricultural improvement and contains more by nutrient demanding species like perennial ryegrass, crested dog's-tail, daisy, and white clover. Common bent, sweet vernal-grass, and Yorkshire fog are also prominent within the sward. This most closely matches the MG6b *Anthoxanthum odoratum* sub-community.

4.4 Marshy Grassland

M23 Juncus effusus/acutiflorus – Galium palustre rush pasture

4.4.1 This community is found in valley bottoms and low slopes with slow but constant water movement. The M23a *Juncus acutiflorus* sub-community is dominated by sharp-flowered rush, only occurring in patches in the far west of the Site. The M23b *Juncus effusus* sub-community, dominated by soft rush, is slightly more widespread, occurring in low lying areas in the north and west of the Site. Both sub-communities are species-poor but there is slightly more diversity in the M23a. Besides the dominating rushes, the species recorded included marsh violet, cuckoo flower, marsh bedstraw, Yorkshire fog and creeping buttercup, growing where the density of rushes is lower.

MG10 Holcus lanatus – Juncus effusus rush pasture

4.4.2 This community occurs in a few small areas, predominantly on the northern periphery of the Site. is scarcely distributed within the survey area. Soft rush tussocks are the most obvious feature, between which is a species poor sward of Yorkshire fog, rough meadowgrass, and purple moorgrass. Forb species include creeping buttercup, cuckoo flower, tormentil, and common sorrel. This has been assigned to the MG10a typical sub-community.

4.5 Bracken - Continuous and Scattered

U20 Pteridium aquilinum – Galium saxatile community

4.5.1 This community is abundant in the far west of the Site. Bracken is the overwhelmingly dominant species within this community. It carpets much of the ground and smothers the growth of most other species. As such, species diversity is low throughout. Where the bracken grows in looser clumps a grassy assemblage can persist, composed of common bent, sweet vernal-grass and sheep's fescue, with forbs such heath bedstraw and tormentil. Pleurocarpous mosses form conspicuous patches on the ground beneath the fronds, including the species springy turf-moss, broom fork-moss, and neat feather-moss.

4.5.2 Two sub-communities occur. The U20a *Pteridium aquilinum – Galium saxatile* sub-community contains a grassier assemblage, whereas the U20b *Vaccinium myrtillus – Dicranum scoparium* sub-communities occur on well drained, steep slopes set within peatland communities, and as such contain some heath and bog vegetation like common heather and wavy hairgrass.

4.6 Dry Heath

H10 Calluna vulgaris – Erica cinerea heath

4.6.1 This community occurs alongside the U20 bracken community in the far west of the Site. It is dominated by dwarf shrubs including common heather and bell heather, which are characteristically short due to constant browsing from herbivores and muir-burning (in some locations). Other species recorded within the community include green-ribbed sedge, bilberry, heath bedstraw, and tormentil. Robust pleurocarpous bryophytes are common including little shaggy-moss, glittering wood-moss, red-stemmed feather-moss, and heath plait-moss.

4.6.2 Two sub-communities occur on the Site. The H10a typical sub-community has no real distinguishing features other than a lack of species listed as notable within other sub-communities. The H10c *Festuca ovina – Anthoxanthum odoratum* sub-community occurs in areas where the soil has a mineral component, allowing grasses to be more prominent within the heathland. Species recorded include sweet vernal-grass, sheep's fescue, velvet bent, heath bedstraw, tormentil, and small amounts of mat-grass.

H12 Calluna vulgaris - Vaccinium myrtillus heath

4.6.3 This dry heath community is scattered widely across the Site, on a range of shallow peat substrates and on areas of deeper peat that appear to have dried as a result of long term muirburn regimes.

4.6.4 The community is fairly uniform in its composition. Common heather is overwhelmingly dominant, with bilberry as a constant but occurring at much lower abundances. Growing through the thick dwarf shrubs are grasses such as wavy hairgrass and sheep's fescue, and forbs such as tormentil and heath bedstraw. There is a robust bryophyte layer which includes a familiar common assemblage of species such as red-stemmed feather-moss, glittering wood-moss, little shaggy-moss, and large white-moss. This corresponds to the H12a *Calluna vulgaris* sub-community.

H16 Calluna vulgaris - Arctostaphylos uva-ursi heath

4.6.5 This dry heath community occupies well drained slopes and hill tops, predominantly scattered throughout the west of the Site. It is a community where common heather is dominant alongside abundant bearberry but also with frequent cowberry, crowberry (ssp. *Hermaphroditum*), bilberry, and bell heather. Mosses include glittering wood-moss, red-stemmed feather-moss, and heath plait-moss. Some areas have a grassier assemblage with wavy hairgrass, purple moorgrass, heath rush, and tormentil.

4.6.6 The community most resembles the H16b *Vaccinium myrtillus - Vaccinium vitis-idaea* sub-community.

H18 Vaccinium myrtillus - Avenella flexuosa heath

4.6.7 This community occurs in a few small locations in the west of the Site, tending towards well drained, predominantly north facing slopes where there is some shelter from the prevailing winds. Bilberry is the dominant sub-shrub in this community, with wavy hairgrass as a co-dominant species. Pleurocarpous mosses are frequent to abundant within this community and include the species common of acid grassland and heath communities including red-stemmed feather-moss, glittering wood-moss, heath plait-moss, little shaggy-moss, and some acute-leaved bog-moss. This corresponds to the H18a *Hylocomnium splendens – Rhytidiadelphus loreus* sub-community.

H21 Calluna vulgaris - Vaccinium myrtillus - Sphagnum capillifolium heath

4.6.8 This community occurs in several areas in the west of the Site. It has many similarities to blanket bog vegetation but occurs on shallow peat (as opposed to deep peat). Common heather is frequent to abundant in the community alongside a mixture of wavy hairgrass and bilberry. Acute-leaved bog-moss is frequent, often forming low humps or hummocks, though lustrous bog-moss is occasional to frequent in some areas. Robust pleurocarpous mosses such as glittering wood-moss, red-stemmed feather-moss, heath plait-moss, and little shaggy-moss were frequent to abundant.

H22 Vaccinium myrtillus - Rubus chamaemorus heath

4.6.9 This community is also found in the west of the Site, occurring as a mosaic with H21 heath in some areas. Dwarf shrubs are abundant with common heather, cowberry, crowberry, and bilberry all found to be frequent. There is a deep carpet of robust mosses including little shaggy-moss, springy turf-moss, glittering wood-moss, red-stemmed feather-moss, and irregular but conspicuous acute-leaved bog-moss hummocks. Cloudberry also occurs, which distinguishes this community from the H21 heath described above. Other species recorded include sheep's fescue, wavy hairgrass, heath bedstraw, and tormentil. The liverworts common pawwort and tumid notchwort were also recorded but were restricted to very small areas in distribution.

4.6.10 Common heather is co-dominant alongside bilberry in this community, and so most resembles H22b *Plagiothecium undulatum - Anastrepta orcadensis* sub-community.

4.7 Wet Heath

M15 Trichophorum germanicum – Erica tetralix wet heath

4.7.1 This community is abundant and widely distributed across the Site. It is characterised by high frequencies of deergrass, cross-leaved heath, and common heather.

4.7.2 Two sub-communities were recorded. The M15b typical sub-community has frequent cross-leaved heath and common heather and was often found on shallow, sloping peat soils. The M15c *Cladonia* spp. sub-community has a higher abundance of reindeer lichen. It also occurs on thin soils but in a variety of areas including those with flatter topography.

M16 Erica tetralix - Sphagnum compactum wet heath

4.7.3 This community is fairly widespread in the west of the Site, on sloping ground at high altitude. It is a wet heath which occupies shallow peat soils. Compact bog-moss is conspicuous but otherwise the assemblage is varied with a mix of species such as cross-leaved heath, common heather, devil's-bit scabious, and deergrass. This is most similar to the M16b *Succisa pratensis - Carex panicea* sub-community.

4.8 Lichen and Bryophyte Heath

H14 Calluna vulgaris - Racomitrium lanuginosum heath

4.8.1 There is a small area of H14 heath on high ground in the centre of the Site. Woolly fringe-moss forms a lush, soft carpet and is co-dominant with common heather. It is a rather species poor community but reindeer lichens, fir and alpine clubmosses, and crowberry (ssp. *hermaphroditum*) are frequent.

H17 Calluna vulgaris - Arctostaphylos alpinus heath

4.8.2 This community occurs in the south of the Site, sometimes as a mosaic with M15 wet heath. In composition, H17 is similar to H16 dry heath (described above) but is distinguished by the presence of

alpine bearberry. Low growing sub-shrubs are a feature of this the community and common heather, crowberry (ssp. *hermaphroditum*), cowberry, bearberry, and bilberry all occur alongside the alpine bearberry. The ground layer is composed of reindeer lichens, woolly fringe-moss, and common pleurocarpous mosses such as red-stemmed feather-moss and glittering wood-moss

4.8.3 This community most closely resembles the H17b Empetrum nigrum ssp. nigrum sub-community.

4.9 Wet Heath and Acid Grassland

U6 Juncus squarrosus – Festuca ovina grassland

4.9.1 This community is located on mineral deficient, peaty substrates, and is most frequent along the edges of reinstated tracks. The dark green basal rosettes of heath rush are the most prominent feature. These are mixed with other grasses and small forbs including sheep's fescue, mat-grass, heath bedstraw, heath woodrush, wavy hairgrass, and tormentil. This grassy sward resembles the U6d *Agrostis capillaris - Luzula multiflora* sub-community. Bryophytes are relatively scarce but include common species such as glittering wood-moss and red-stemmed feather-moss, and species with higher moisture demands such as common haircap and soft bog-moss.

4.10 Blanket Bog

M1 Sphagnum auriculatum bog pool community

4.10.1 This bog pool community occurs in a few locations within tracts of M17 and M19 blanket bog in the centre of the Site, generally as a mosaic with other bog pool communities. M1 is dominated by cow-horn bog-moss, but it is rich in other bryophytes too due to the moderately base rich conditions which include rusty hook-moss, hooked scorpion-moss, and the nationally scarce three-ranked spear-moss (TN7, **Annex 1**). Glaucous sedge, bog sedge, and the aquatic plant bladderwort also occur. See **Photo 1**, **Annex 4**.

M2 Sphagnum cuspidatum / fallax bog pool community

4.10.2 This bog pool community is widely distributed within tracts of M17 and M19 blanket bog on the Site (see TNs, **Annex 1** and **Figure 6.2 (a – e)**). Large floating mats of feathery and flat-topped bog-mosses dominate the pools, and around the margins is an assemblage of species including magellanic bog-moss, round-leaved sundew, and papillose bog-moss.

M3 Eriophorum angustifolium bog pool community

4.10.3 This bog pool community occurs in waterlogged depressions on relatively undisturbed ground, most frequently in a mosaic with M2 bog pool communities (see TNs, **Annex 1**). The M3 community is predominantly composed of common cottongrass, but flat-topped, papillose, and magellanic bog-mosses do occur in various amounts.

M17 Trichophorum germanicum - Eriophorum vaginatum blanket mire

4.10.4 This blanket bog community occurs widely across the Site, particularly in central and eastern parts, on waterlogged peat. The community contains a significant bog-moss layer which dominates under tussocks of deergrass, cross-leaved heath, and common heather. The bog-moss layer includes many important peat-forming species such as magellanic, papillose, and acute-leaved bog-mosses.

4.10.5 Two sub-communities were recorded. The M17a *Drosera rotundifolia – Sphagnum* sub-community occurs where the water table is near surface level. The M17b *Cladonia* spp. sub-community occurs in slightly drier conditions. Reindeer lichens are conspicuous, along with large hummocks of woolly

fringe-moss in less disturbed areas. Other plants frequent within the community include sundews and crowberry. Austin's and rusty bog-mosses are present but sporadic in their occurrence.

M19 Calluna vulgaris - Eriophorum vaginatum blanket mire

4.10.6 This blanket bog community also occurs across the central and eastern parts of the Site, sometimes in a mosaic with M17 blanket bog or M15 wet heath. It is dominated by large swathes of common heather and hare's-tail cottongrass, with regular shoots of common cottongrass. The bryophyte layer is dominated by common pleurocarpous mosses including glittering wood-moss, red-stemmed feather-moss, little shaggy-moss, and heath plait-moss. Bog-mosses are much less prominent than in the M17, however acute-leaved bog-moss is still conspicuous.

4.10.7 The M19a *Erica tetralix* sub-community is located mostly on flat, deep peat. The community contains (in addition to the above-mentioned constants) occasional deergrass, purple moorgrass and crowberry, and in the wetter areas bog asphodel and round-leaved sundew. The M19b *Empetrum nigrum ssp. nigrum* sub-community occurs predominantly on gently to moderate sloping ground.

4.11 Wet Modified Bog

M20 Eriophorum vaginatum blanket mire

4.11.1 This bog community occupies a tiny area in the centre of the Site between T4 and T5. M20 is generally derived from M19 blanket bog and has a similar species composition but contains little to no common heather. This community resembles the M20a species-poor sub-community.

4.12 Wet Modified Bog or Marshy Grassland

M25 Molinia caerulea – Potentilla erecta mire

4.12.1 This community occurs on moderately wet peat and is abundantly distributed across the whole Site, including occurring in mosaics with mixed plantation woodland. Purple moorgrass is the most dominant species and can form large conspicuous tussocks.

4.12.2 The community represents the M25a *Erica tetralix* sub-community which is derived from blanket bog and contains species typical of those communities such as crowberry, common heather, and cross-leaved heath. Bryophyte diversity is poor and restricted to robust common pleurocarpous mosses such as glittering wood-moss and heath plait-moss. Generalist bog-mosses such as flat-topped bog-moss can be present but are occasional.

4.12.3 Using Phase 1 methodology, this community is classed as wet modified bog where it occurs on deep peat (>50cm) and as marshy grassland where it occurs on shallower peat (JNCC, 2016).

4.13 Flush and Spring – Acid

*M4 Carex rostrata - Sphagnum fallax mire**

4.13.1 This community primarily occurs within the centre of the Site, restricted to permanently wet depressions and gullies where water moves slowly through the vegetation, and sometimes in a mosaic with M17 blanket bog. M4 mire is ordinarily dominated by bottle sedge, however the stands recorded in this survey are dominated by slender sedge (see TNs, **Annex 1**), and so M4* has been used as the closest fit for this community within the NVC classification system[5]. It is mentioned in *British Plant Communities* (JNCC, 1991) that slender sedge can be "locally prominent" within M4.

[5] A slender sedge dominated mire community is recognised within the EUNIS system as D2.31 - *Carex lasiocarpa* swards (EEA, 2019).

4.13.2 The community is moderately species rich, though variable in composition. Flat-topped and cow-horn bog-mosses are the dominant component of the bryophyte assemblage, along with mosses more suited to base-rich conditions such as pointed spear-moss. Other species recorded include common sedge, soft rush, marsh violet, and purple moorgrass.

M6 Carex echinata - Sphagnum fallax mire

4.13.3 This community only occurs in a few valley bottoms, sloping valley sides, and channels in the north of the Site. It is defined by the dominance of flat-topped bog-moss with tall rushes, sedges, and grasses. Three sub-communities were recorded in the survey. The M6a *Carex echinata* sub-community is scarce within the Site, dominated by star sedge but otherwise species poor. The M6b *Carex nigra - Nardus stricta* sub-community is largely dominated by common sedge, with star sedge and carnation sedge also recorded. The M6c *Juncus effusus* sub-community is species poor throughout and dominated by soft rush, with flat-topped bog-moss, cuckooflower, devil's-bit scabious, and marsh violet.

4.14 Flush and Spring - Basic

M10 Carex dioica – Pinguicula vulgaris mire

4.14.1 This community is located in numerous small areas within the Site (see TNs, **Annex 1**) where base-rich water flushes the surface vegetation. This has created suitable conditions for species such as common butterwort, and a diverse assemblage of bryophytes including rusty hook-moss, hooked scorpion-moss, greasewort, yellow stary feather-moss, and rock pocket-moss. Sedges were also abundant including dioecious, glaucous, common yellow, and carnation sedge. Some species more suited to acidic conditions were also recorded within this community, likely due to encroachment from the surrounding (more acidic) landscape.

4.14.2 This community has been assigned to the M10a *Carex demissa - Juncus bulbosus* sub-community.

M11 Carex demissa - Saxifraga aizoides mire

4.14.3 This community is found in just a couple of locations in the west of the Site (see TNs, **Annex 1**), where springs or flushes create a permanently wet habitat, with base rich water flowing over stony ground. The water here is more basic than where the M10 mire occurs, providing conditions for species such as yellow saxifrage, alpine meadow-rue, and Scottish asphodel. Bryophytes are abundant and include yellow starry feather-moss, greasewort, fountain apple-moss, and rusty hook-moss.

4.14.4 These stands most resemble the M11a *Thalictrum alpinum - Juncus triglumis* sub-community.

4.15 Flush and Spring – Bryophyte Dominated Spring

M31 Anthelia julacea - Sphagnum auriculatum spring

4.15.1 This community is limited in distribution on the Site, only recorded surrounding springheads (see TNs, **Annex 1**). The dominant species are alpine silverwort and cow-horn bog-moss. A variety of other species were also present however including water earwort, notched rustwort, bog asphodel, common yellow sedge, and bristly swan-neck moss. This is a moderately species-rich community that is groundwater dependent due to its connection to the springhead.

M32 Philonotis fontana – Micranthes stellaris spring

4.15.2 This is another community recorded to be occurring around springheads (see TNs, **Annex 1**). As with other spring communities the vegetation relies on groundwater arising from the sub-surface which keeps the ground conditions permanently wet, and M32 in particular is indicative of land at moderate to high altitudes (JNCC, 1991).

4.15.3 The community has a rich bryophyte assemblage including fountain apple-moss, water earwort, marsh forklet-moss, marsh bryum and ringless hook-moss, with cow-horn bog-moss being dominant and thus corresponding to the M32a *Sphagnum auriculatum* sub-community. Vascular plants are equally as varied as the bryophytes, including species such as starry saxifrage, opposite-leaved golden saxifrage, lesser spearwort, blinks, and creeping forget-me-not.

4.16 Swamp

S9 Carex rostrata swamp

4.16.1 There is a large area of this community located in the southeast of the Site. This is a swamp dominated by bottle sedge, with a diverse range of other plants that were locally frequent including water horsetail, bogbean, cuckoo flower, marsh lousewort, marsh marigold, marsh cinquefoil, and common sedge. This resembles the S9b *Menyanthes trifoliata - Equisetum fluviatile* sub-community.

5 RESULTS: NOTABLE SPECIES

Protected Species

5.1.1 Two species recorded on the Site are listed as 'near threatened' on the IUCN Red List (BSBI, 2009):

- Great sundew, in an area of M10 flush (TN64)
- Alpine bearberry, occurring as a constant in H17 lichen and bryophyte heath and in scattered locations on M15 and M16 wet heath (TNs 18, 46, 87).

5.1.2 Two species recorded on the Site are listed as 'nationally scarce' in Great Britain based on lists compiled by the Botanical Society of Britain & Ireland and the British Bryological Society respectively (BSBI, 2009; Pescott, 2016):

- Dwarf birch, found sparsely scattered across a range of bog and wet heath communities (TNs 16, 25, 48, 61, 66, 79, 103)
- Three-ranked spear-moss, found in an M1 bog pool (TN7).

5.1.3 The grid references for these listed notable species are detailed in the Target Notes in **Annex 1**.

5.1.4 No species recorded on the Site are listed on Schedule 8 of the Wildlife and Countryside Act, or on the Scottish Biodiversity List as having special protected status.

Non-Native Invasive Species

5.1.5 During the survey no species were recorded that are listed on Schedule 9 of the Wildlife and Countryside Act as being invasive non-native plant species.

6 RESULTS: PEATLAND CONDITION ASSESSMENT

6.1.1 These results should be read with reference to **Figure 6.3: Peatland Condition Assessment.**

6.1.2 The blanket bog assessed on the Site was composed of M17 and M19 communities (or mosaics containing these communities). The survey found Austin's bog-moss and rusty bog-moss in several locations across the blanket bog, and large areas where bog pools were abundantly scattered across

the blanket bog surface, both features seen in blanket bog in a near natural condition (JNCC, 1994). Conversely, erosion was significant in some areas, indicated by peat hags, erosion channels and bare peat. See TNs, **Annex 1** and Photos 4 and 7, **Annex 4**.

6.1.3 Of the 109 polygons of blanket bog that were assessed in the survey, 28 polygons were classed as good (near natural), 34 were moderate (modified), and the remaining 47 polygons were classed as being in poor (highly modified) condition. See **Annex 3** for the list of assessment outcomes for each individual polygon.

6.1.4 Most of the polygons that were classed as moderate are capable of actively forming peat but show some sign of modification, either from erosion or drainage (or both). Polygons that were classed as poor condition are highly modified (often from erosion), peat forming vegetation is still present, though only locally frequent.

6.1.5 Following the assessment process, 61 polygons were considered to be of potential national interest. Some polygons have been included due to the peatland occurring at or above 600m asl and therefore being classed as montane blanket bog. Most other polygons were classed as being of potential national interest due to a combination of factors including the presence of peat forming vegetation, the degree of modification (or relative lack of), size and connectivity with other peatlands. The remaining 48 compartments are not considered to be of possible national interest.

7 DISCUSSION

7.1.1 **Table 7.1** shows the NVC communities identified on the Site that have any designations relating to habitat status or groundwater dependence.

7.2 Annex I Habitats

7.2.1 The heathland communities on the Site correspond to habitat types described in Annex I of the Habitats Directive. The dry heath communities H10, H12, H16, H18, and H212 generally come under '4030 European dry heaths', however some areas of H12 and H21 can also come under '4060 Alpine and Boreal heaths' due to the altitude at which they occur in the southern part of the Site (above 600m). The H14 and H17 lichen and bryophyte heath communities are also classified as '4060 Alpine and Boreal heaths'. The M15 and M16 wet heath communities are classed as '4010 Northern Atlantic wet heaths with *Erica tetralix*'.

7.2.2 The M17 and M19 blanket bog communities on the Site come under '7130 blanket bogs'. To qualify for this habitat type the blanket bog must be active (peat forming), which is indicated by an abundance of peat-forming species particularly bog-mosses. Based on the quadrat data collected from these communities (see **Annex 2**) there is a large diversity of bog-mosses present in the M17 community. The M19 community had a lower abundance of bog-moss, mainly restricted to acute-leaved bog-moss, however that is characteristic of M19, which tends to be slightly drier than other blanket bog communities (JNCC, 1991). Furthermore, hare's-tail cottongrass occurs as a co-dominant with heather within the M19, matching the description of 'State 5 (Active)' in guidance published by Moors for the Future (2017).

7.2.3 The M1, M2, and M3 bog pool communities have also been classed as '7130 blanket bogs', recognising that these pools form an integral part of the surface patterning of the blanket bog on the Site. These bog pool communities can in some cases indicate the presence of the habitat type '7150 depressions on peat substrates of the Rhynchosporion'. However, this is not thought to be the case on the Site due to the absence of the key indicator species of this habitat type (white beak-sedge).

7.2.4 The M10 flush community has been classed as '7230 alkaline fens' and it is considered that the M11 flush community qualifies as '7240 Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*' due to the recorded presence on the Site of several indicator species mentioned in the habitat type description (JNCC, 2019).

7.2.5 M4 mire can correspond to '7140 transition mires and quaking bogs', however it is not thought that the non-typical M4* community on the Site qualifies as it is not an example of quaking bog.

7.3 Scottish Biodiversity List

7.3.1 The above-mentioned Annex I qualifying communities also have corresponding habitats on the Scottish Biodiversity List. The dry heath communities correspond to 'upland heathland' and the lichen and bryophyte heaths as 'mountain heaths and willow scrub'. The bog pool and blanket bog communities correspond to 'blanket bog' and in addition the M20 and M25 modified bog communities are also included in 'blanket bog' as for this designation the active status is not a prerequisite, but rather that blanket bog indicator species must still be present within the species assemblage (JNCC, 2024).

7.3.2 The M10 and M11 flush communities correspond to 'upland flushes, fens and swamps' and the M4*, M6, M31, M32, and S9 communities also qualify for this broad habitat category. The M23a rush pasture sub-community qualifies for 'upland flushes, fens and swamps' as well but the M23b sub-community does not as this is a particularly species-poor example of the community.

7.3.3 The U6 wet heath and acid grassland community is included on the Scottish Biodiversity List as '*Juncus squarrosus* - *Festuca ovina* grassland', currently only as a watching brief, and the larger areas of open standing water (excluding the bog pools) correspond to 'oligotrophic and dystrophic lakes'.

7.4 Priority Peatland

7.4.1 A number of communities found on the Site are classed as priority peatland based on guidance from NatureScot (2023). This guidance states that M1, M2, and M3 bog pools are priority peatland communities that should be completely avoided by any development activities. Indeed, extensive bog pools across tracts of blanket bog can be indicators of blanket bog in a near natural condition (JNCC, 1994).

7.4.2 The M17 and M19 blanket bog communities are classed as priority peatland where impacts from development have the potential to raise issues of national interest, as these communities also can be representative of blanket bog in a near natural condition. In addition, some of the M17 and M19 blanket bog on the Site occurs at above 600m, meaning that it can be classed as montane bog and so particularly sensitive to damage. Montane bogs should be completely avoided by any development activities.

7.4.3 In agreement with these NatureScot (2023) guidelines, the peatland condition assessment survey found that 61 of the 109 assessed polygons of blanket bog are of possible national interest – these represent both M17 and M19 including some areas of blanket bog occurring at over 600m (see **Annex 3**).

7.4.4 The NatureScot (2023) guidelines also include M15, M16, M20 and M25 communities as priority peatland where development activities are unlikely to raise issues of national interest (but where measures should still be taken to mitigate impacts). Indeed, on the Site the M15 and M16 wet heath communities were described as occurring on shallow peat, and the M20 and M25 bog communities as being a degraded version of blanket bog (therefore not near natural).

7.5 Groundwater Dependent Terrestrial Ecosystems

7.5.1 Many of the flush and spring features which are scattered across the Site can signify groundwater dependent terrestrial ecosystems. Guidance from SEPA (2017) indicates that the M23, M16, M6, M10, M11, M31, and M32 communities all have possible high groundwater dependence, and the MG10, M15, and U6 communities have possible moderate groundwater dependence.

7.5.2 These classifications are preliminary and further detailed hydrological assessment is required to determine which of the communities in the context of the Site actually rely on groundwater. However, the field observations from the survey noted in particular that the M31 and M32 communities arose from springheads, and that areas of M10 flush and M16 wet heath are fed by springhead (see TNs, **Annex 1**). These observations provide strong evidence that several communities on the Site are indeed groundwater dependent.

Table 7.1. Summary of the recorded plant communities and sub-communities with relevant conservation designations and/or potential groundwater dependence.

Phase 1 Habitat	NVC Community	NVC Sub-Community	Annex I Habitat	Scottish Biodiversity List Habitat	Priority Peatland Status*	Potential Groundwater Dependence**
B5 Marshy grassland	M23 *Juncus effusus/acutiflorus – Galium palustre* rush pasture	M23a *Juncus acutiflorus* sub-community	-	Upland flushes, fens and swamps	-	High
		M23b *Juncus effusus* sub-community	-	-	-	High
	MG10 *Holcus lanatus – Juncus effusus* rush pasture	MG10a typical sub-community	-	-	-	Moderate
D1.1 Dry heath	H10 *Calluna vulgaris – Erica cinerea* heath	H10a typical sub-community	4030 European dry heaths	Upland heathland	-	-
		H10c *Festuca ovina – Anthoxanthum odoratum* sub-community	4030 European dry heaths	Upland heathland	-	-
	H12 *Calluna vulgaris - Vaccinium myrtillus* heath	H12a *Calluna vulgaris* sub-community	4030 European dry heaths / 4060 Alpine and Boreal heaths	Upland heathland	-	-
	H16 *Calluna vulgaris - Arctostaphylos uva-ursi* heath	H16b *Vaccinium myrtillus - Vaccinium vitis-idaea* sub-community	4030 European dry heaths	Upland heathland	-	-
	H18 *Vaccinium myrtillus - Avenella flexuosa* heath	H18a *Hylocomnium splendens – Rhytidiadelphus loreus* sub-community	4030 European dry heaths	Upland heathland	-	-
	H21 Calluna vulgaris - Vaccinium myrtillus - Sphagnum capillifolium heath	-	4030 European dry heaths / 4060 Alpine and Boreal heaths	Upland heathland	-	-
	H22 *Vaccinium myrtillus - Rubus chamaemorus* heath	H22b *Plagiothecium undulatum - Anastrepta orcadensis* sub-community	4060 Alpine and Boreal heaths	Upland heathland	-	-

Phase 1 Habitat	NVC Community	NVC Sub-Community	Annex I Habitat	Scottish Biodiversity List Habitat	Priority Peatland Status*	Potential Groundwater Dependence**
D2 Wet heath	M15 *Trichophorum germanicum – Erica tetralix* wet heath	M15b typical sub-community	4010 Northern Atlantic wet heaths with *Erica tetralix*	Upland heathland	Unlikely to raise issues of national interest	Moderate
		M15c *Cladonia spp.* sub-community	4010 Northern Atlantic wet heaths with *Erica tetralix*	Upland heathland	Unlikely to raise issues of national interest	Moderate
	M16 *Erica tetralix - Sphagnum compactum* wet heath	M16b *Succisa pratensis - Carex panicea* sub-community	4010 Northern Atlantic wet heaths *with Erica tetralix*	Upland heathland	Unlikely to raise issues of national interest	High
D3 Lichen and bryophyte heath	H14 *Calluna vulgaris - Racomitrium lanuginosum* heath	-	4060 Alpine and Boreal heaths	Mountain heaths and willow scrub	-	-
	H17 *Calluna vulgaris - Arctostaphylos alpinus* heath	H17b *Empetrum nigrum ssp. nigrum* sub-community	4060 Alpine and Boreal heaths	Mountain heaths and willow scrub	-	-
D6 Wet heath and acid grassland	U6 *Juncus squarrosus – Festuca ovina* grassland	U6d *Agrostis capillaris-Luzula multiflora* sub-community	-	*Juncus squarrosus - Festuca ovina* grassland [watching brief]	-	Moderate
E1.6.1 Blanket bog	M1 *Sphagnum auriculatum* bog pool community	-	7130 Blanket bogs	Blanket bog	Should be completely avoided	-
	M2 *Sphagnum cuspidatum/fallax* bog pool community	-	7130 Blanket bogs	Blanket bog	Should be completely avoided	-
	M3 *Eriophorum angustifolium* bog pool community	-	7130 Blanket bogs	Blanket bog	Should be completely avoided	-
	M17 Trichophorum germanicum - Eriophorum vaginatum blanket mire	M17a *Drosera rotundifolia - Sphagnum spp.* sub-community	7130 Blanket bogs	Blanket bog	Impacts have the potential to raise issues of national interest	-
		M17b *Cladonia spp.* sub-community	7130 Blanket bogs	Blanket bog	Impacts have the potential to raise issues of national interest	-

Phase 1 Habitat	NVC Community	NVC Sub-Community	Annex I Habitat	Scottish Biodiversity List Habitat	Priority Peatland Status*	Potential Groundwater Dependence**
	M19 *Calluna vulgaris - Eriophorum vaginatum* blanket mire	M19a *Erica tetralix* sub-community	7130 Blanket bogs	Blanket bog	Impacts have the potential to raise issues of national interest	-
		M19b *Empetrum nigrum ssp. nigrum* sub-community	7130 Blanket bogs	Blanket bog	Impacts have the potential to raise issues of national interest	-
E1.7 Wet modified bog	M20 *Eriophorum vaginatum* blanket mire	M20a species poor sub-community	-	Blanket bog	Unlikely to raise issues of national interest	-
E1.7 Wet modified bog / B5 Marshy grassland	M25 *Molinia caerulea – Potentilla erecta* mire	M25a *Erica tetralix* sub-community	-	Blanket bog	Unlikely to raise issues of national interest	-
E2.1 Flush and spring – acid	M4 *Carex rostrata - Sphagnum fallax* mire*	-	-	Upland flushes, fens and swamps	-	-
	M6 *Carex echinata - Sphagnum fallax/ auriculatum* mire	M6a *Carex echinata* sub-community	-	Upland flushes, fens and swamps	-	High
		M6b *Carex nigra - Nardus stricta* sub-community	-	Upland flushes, fens and swamps	-	High
		M6c *Juncus effusus* sub-community	-	Upland flushes, fens and swamps	-	High
E2.2 Flush and spring – basic	M10 *Carex dioica – Pinguicula vulgaris* mire	M10a *Carex demissa - Juncus bulbosus* sub-community	7230 Alkaline fens	Upland flushes, fens and swamps	-	High
	M11 *Carex demissa - Saxifraga aizoides* mire	M11a *Thalictrum alpinum - Juncus triglumis* sub-community	7240 Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*	Upland flushes, fens and swamps	-	High
E2.3 Flush and spring – bryophyte dominated spring	M31 *Anthelia julacea- Sphagnum auriculatum* spring	-	-	Upland flushes, fens and swamps	-	High
	M32 *Philonotis fontana – Micranthes stellaris* spring	M32a *Sphagnum auriculatum* sub-community	-	Upland flushes, fens and swamps	-	High

Phase 1 Habitat	NVC Community	NVC Sub-Community	Annex I Habitat	Scottish Biodiversity List Habitat	Priority Peatland Status*	Potential Groundwater Dependence**
F1 Swamp	S9 *Carex rostrata* swamp	S9b *Menyanthes trifoliata - Equisetum fluviatile* sub-community	-	Upland flushes, fens and swamps	-	-
G1.3 Standing water - oligotrophic	-	-	-	Oligotrophic and dystrophic lakes	-	-

* As per guidance from NatureScot (2023). Based on vegetation communities present and further informed by the results of the peatland condition assessment survey.

** As listed in Appendix 4 of SEPA (2017) LUPS Guidance Note 31. The categorisation of groundwater dependent terrestrial ecosystems is preliminary and is based on vegetation communities present. Confirmed categorisation is based on subsequent formal hydrological assessment.

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9 ANNEXES

9.1 Annex 1 – Target Notes

Table 9.1. Target Notes relating to the habitat survey reported in Section 4.

Target Note	Grid Reference	Description
1	NH 25897 09994	Purple spoonwort
2	NH 25967 10011	Small M10 mire
3	NH2592910012	M10 mire with marsh arrowgrass frequent
4	NH2824408335	Austin's bog-moss
5	NH2835908330	Bog sedge and bladderwort sp.
6	NH2827208875	Erosion pools
7	NH2837008317	Three-ranked spear-moss
8	NH2825108334	Rusty bog-moss
9	NH2543311374	Yellow rattle
10	NH2808808924	M32 springhead
11	NH2806808444	Significant erosion
12	NH2815408433	Significant erosion
13	NH2541411418	M25 with bog myrtle
14	NH2860309015	Rusty bog-moss
15	NH2549711167	Mountain everlasting
16	NH2851408997	Dwarf birch
17	NH2952809645	Slender sedge dominated mire
18	NH2947408142	Alpine bearberry
19	NH2844308493	Drainage /reinstated wet hollow
20	NH2815108913	Significant erosion
21	NH2964609357	Rusty bog-moss
22	NH2953208332	M17b - eroded
23	NH2945908260	Rusty bog-moss in M19b mire
24	NH2973308496	Significant erosion
25	NH2907508285	Dwarf birch
26	NH3019208659	Slender sedge dominated mire
27	NH3021708718	Slender sedge dominated mire
28	NH3042708800	Slender sedge dominated mire
29	NH3060708812	Round-fruited collar-moss
30	NH2965408135	Springhead into M16/M31
31	NH2957608086	Eroded M17b
32	NH2986608373	Significant erosion
33	NH3004408722	Slender sedge dominated mire
34	NH2685110284	M17b - badly eroded
35	NH2978308378	M2/M3 in erosion system

Target Note	Grid Reference	Description
36	NH2989608929	Austin's bog-moss
37	NH3015508638	Slender sedge dominated mire
38	NH2854008619	Rusty bog-moss
39	NH3011308716	Slender sedge dominated mire
40	NH2537111355	M25 with bog myrtle
41	NH3013008681	Slender sedge dominated mire (see **Photo 6**)
42	NH2852608592	M4/M2 with some bog sedge
43	NH2581511159	Moonwort on trackside verge
44	NH2600910272	Melancholy thistle
45	NH2578111164	Heath fragrant orchid on track side
46	NH2857808631	Alpine bearberry
47	NH3094009958	Starry saxifrage
48	NH2715709829	Dwarf birch
49	NH2877808506	M2 Pool in erosion system
50	NH3085909891	Spreading-leaved grimmia
51	NH2874008544	Eroded
52	NH3057408833	Rusty bog-moss
53	NH3054608841	Rusty bog-moss
54	NH3069508706	Lesser bladderwort
55	NH2696910086	Badly poached/burnt/eroded area (**Photo 7**)
56	NH2706910165	M17b/M25 badly eroded
57	NH3053108856	M17 with dwarf birch
58	NH2880308746	Bog sedge dominant
59	NH3049808884	Rusty bog-moss
60	NH2689709519	M32a
61	NH2863108710	Dwarf birch
62	NH2706009591	Springhead into M10
63	NH2678409479	Springhead into M10
64	NH2676909496	Great sundew
65	NH3111910132	Mature aspen
66	NH2873008726	Dwarf birch
67	NH2681009491	Badly poached M16 mire
68	NH3099710032	Oak fern
69	NH2713509573	Springhead with thick-nerved apple-moss into M10 mire
70	NH3101110090	Small M32a springhead (**Photo 8**)
71	NH3122110222	Common wintergreen (**Photo 9**)
72	NH2712609573	Springhead into M16
73	NH2715909617	Common cow-wheat
74	NH2925508708	Eroded
75	NH3117910174	Bird's-foot trefoil

Target Note	Grid Reference	Description
76	NH2713709594	M10 mire
77	NH3120010214	Pendulous wing-moss (**Photos 10** and **11**)
78	NH2707709582	Springhead into M10
79	NH2940810388	Dwarf birch
80	NH2916008653	Eroded
81	NH2709709584	Small M11 with Alpine meadow-rue and Scottish asphodel
82	NH2919708690	M2/M3 in erosion system
83	NH2645209845	Bearberry
84	NH2643609853	Springhead into M16
85	NH2971510324	Springhead
86	NH2646709845	Springhead into M16
87	NH2645309843	Alpine bearberry
88	NH2985610205	M17b with purple spoonwort
89	NH2666709454	M16 mire with few-flowered sedge
90	NH2670609555	Alpine bearberry
91	NH2676109482	M10 mire
92	NH2672409458	Small M31 springhead
93	NH2664009648	Blushing bog-moss
94	NH2667809571	M32a springhead
95	NH2708510173	Springhead into long M10
96	NH2709110174	Springhead into long M10
97	NH2845208210	Significant erosion
98	NH2705010279	Springhead into degraded M10
99	NH2912208496	Eroded M17b
100	NH2705210258	Cruet collar-moss and broad-leaved cottongrass populations
101	NH2602309950	2 x springheads
102	NH2910008476	Eroded peatland mire
103	NH2901310253	Dwarf birch
104	NH2902010240	Species rich M16 mire
105	NH2635310011	Few-flowered sedge
106	NH2913508326	Eroded peatland mire
107	NH2624310035	M10 mire
108	NH2618510020	Scottish asphodel and yellow saxifrage in M11 mire (**Photo 12**)
109	NH2859109066	Significant erosion
110	NH2585311152	Heath fragrant orchid on track side

9.2 Annex 2 – NVC Survey Full Results

9.2.1 The data in **Tables 9.3 – 9.23** below show all data recorded in the NVC survey, with each table representing a specific NVC community. For each quadrat surveyed, a full plant species inventory is included in which the abundance of each species is represented using the DOMIN scale as shown in **Table 8.2** below.

Table 9.2. The DOMIN scale, used to classify the abundance of plants in the NVC surveys.

DOMIN code	Approximate percentage cover in quadrat
10	91 - 100%
9	76 – 90%
8	51 – 75%
7	34 – 50%
6	26 – 33%
5	11 – 25%
4	4 – 10%
3	<4% many individuals
2	<4% a few individuals
1	<4% one or two individuals

Table 9.3.

Phase 1 habitat type	B1.1 Acid grassland – unimproved			
NVC Community	U4 *Festuca ovina - Agrostis capillaris - Galium saxatile* grassland			
Surveyor	R. Whytock	R. Whytock	R. Whytock	R. Whytock
Grid reference	NH 25404 11450	NH 25418 11394	NH 25488 11328	NH 25943 11460
Quadrat no.	Q1	Q2	Q3	Q4
Species	**Cover (DOMIN)**			
Bird's-foot trefoil	2	2		
Common mouse-ear	1		2	1
Harebell	2	2	1	2
Heath bedstraw	4	5	6	5
Heath speedwell	1	2		2
Pignut	2	3	2	
Sticky mouse-ear	1	2		1
Tormentil	4	5	5	5
Yarrow	3	2	3	2
Annual meadowgrass		2	2	
Common bent	7	8	8	7
Dense-headed heath woodrush				2
Field woodrush	3	2	2	3
Heath-grass	2		3	
Mat-grass	3		2	2
Sheep's fescue	6	6	5	6
Sweet vernal-grass	5	6	6	6
Velvet bent			2	
Wavy hairgrass			2	
Yorkshire fog		2	2	
Dicranum scoparium			3	2
Hypnum jutlandicum	2		2	4
Pleurozium schreberi		2	2	3
Pseudoscleropodium purum	2	2		2
Rhytidiadelphus loreus				4
Rhytidiadelphus squarrosus	3	4	3	2

Table 9.4.

Phase 1 habitat type	B4 Improved grassland	
NVC Community	MG6 *Lolium perenne – Cynosurus cristatus* grassland	
Surveyor	R. Whytock	R. Whytock
Grid reference	NH 25859 11833	NH 25905 11859
Quadrat no.	Q1	Q2
Species	**Cover (DOMIN)**	
Creeping buttercup	3	4
Daisy	3	2
Ribwort plantain	2	2
White clover	4	5
Common bent	7	6
Creeping bent		3
Crested dog's-tail	5	4
Perennial ryegrass	7	6
Rough meadowgrass	2	3
Sheep's fescue	2	
Soft rush		2
Sweet vernal-grass	4	4
Yorkshire fog	5	5
Calliergonella cuspidata	3	2
Kindbergia praelonga	3	4
Lophocolea bicuspidata	2	2
Rhytidiadelphus squarrosus	4	5

Table 9.5.

Phase 1 habitat type	B5 Marshy grassland		
NVC Community	M23 *Juncus effusus/acutiflorus – Galium palustre* rush pasture		
Surveyor	R. Whytock	R. Whytock	R. Whytock
Grid reference	NH 29332 10315	NH 25876 11286	NH 25783 11382
Quadrat no.	Q1	Q2	Q3
Species	**Cover (DOMIN)**		
Common sorrel	1	2	2
Creeping buttercup	3	4	4
Cuckoo flower	2	3	4
Fen bedstraw		3	2
Marsh bedstraw	2	3	2
Marsh thistle		1	
Marsh violet	2	4	3
Marsh willowherb			2
Tormentil	2	2	2
Water Forget-me-not	1	2	2
Common sedge			2
Purple moorgrass	3		
Sharp-flowered rush		7	8
Soft rush	9	4	5
Tufted hairgrass	3		2
Yorkshire fog	2	2	1
Brachythecium rivulare	2	5	4
Calliergon cordifolium		2	
Calliergonella cuspidata	4	3	3
Kindbergia praelonga	2	5	4
Lophocolea bicuspidata			3
Pellia epiphylla		2	
Polytrichum commune	4	3	4

Table 9.6.

Phase 1 habitat type	B5 Marshy grassland	
NVC Community	MG10 *Holcus lanatus* – *Juncus effusus* rush pasture	
Surveyor	R. Whytock	R. Whytock
Grid reference	NH 28998 10154	NH 28780 10141
Quadrat no.	Q1	Q2
Species	**Cover (DOMIN)**	
Common sorrel	4	3
Creeping buttercup	5	4
Cuckoo flower	2	3
Meadow buttercup		2
Tormentil	2	2
Purple moorgrass	2	3
Rough meadow grass	4	5
Soft rush	7	8
Yorkshire fog	3	4
Brachythecium rivulare	2	
Calliergon cordifolium		2
Calliergonella cuspidata	4	3
Kindbergia praelonga	3	4
Lophocolea bicuspidata	2	2

Table 9.7.

Phase 1 habitat type	C1.1 Continuous bracken	
NVC Community	U20 *Pteridium aquilinum – Galium saxatile* community	
Surveyor	R. Whytock	R. Whytock
Grid reference	NH 25825 11328	NH 25785 11613
Quadrat no.	Q1	Q2
Species	**Cover (DOMIN)**	
Creeping pearlwort		1
Heath bedstraw	5	5
Tormentil	3	4
Common bent	5	4
Field woodrush	2	
Sheep's fescue	3	4
Sweet vernal-grass	4	4
Wavy hairgrass	2	
Common heather	3	2
Bracken	10	10
Dicranum scoparium	3	3
Hard fern		1
Pleurozium schreberi	3	
Pseudoscleropodium purum	4	2
Rhytidiadelphus squarrosus	3	4

Table 9.8.

Phase 1 habitat type	D1.1 Dry heath				
NVC Community	H10 *Calluna vulgaris – Erica cinerea* heath				
Surveyor	R. Whytock	R. Whytock	R. Whytock	R. Whytock	R. Whytock
Grid reference		NH 25948 11798	NH 25999 11883	NH 26057 11928	NH 26074 11880
Quadrat no.	Q1	Q2	Q3	Q4	Q5
Species	**Cover (DOMIN)**				
Common dog violet		2			2
Devil's-bit scabious				1	1
Heath bedstraw	4	3	4	3	3
Tormentil	3	5	4	3	5
Green-ribbed sedge	3	4	2	1	
Heath rush		2	1	3	
Purple moorgrass		2		1	
Sheep's fescue		4	3	3	3
Sweet vernal-grass			2		1
Velvet bent				2	
Wavy hairgrass	4	3	4	3	3
Bell heather	7	8	7	7	7
Common heather	8	7	8	7	8
Hard fern	1			2	2
Dicranum scoparium	1	3			
Hylocomium splendens	3	3	2	3	5
Hypnum jutlandicum			3		4
Pleurozium schreberi	4	3	4	3	4
Pseudoscleropodium purum		2		3	

Table 9.9.

Phase 1 habitat type	D1.1 Dry heath				
NVC Community	H12 *Calluna vulgaris - Vaccinium myrtillus* heath				
Surveyor	R. Whytock	R. Whytock	R. Whytock	R. Whytock	R. Whytock
Grid reference	NH 27870 08619	NH 27865 08626	NH 28320 08945	NH 28381 08903	NH 27926 08314
Quadrat no.	Q1	Q2	Q3	Q4	Q5
Species	**Cover (DOMIN)**				
Devil's-bit scabious		1		1	
Heath bedstraw	2	3	3	3	3
Tormentil	4	3	3	2	3
Heath rush	1		2		3
Purple moorgrass	2			2	1
Sheep's fescue	3		3	2	
Sweet vernal-grass			2		
Velvet bent		2		2	
Wavy hairgrass	4	2	3	2	3
Bilberry	5	3	3	2	3
Common heather	10	9	9	9	10
Dicranum scoparium	2	2		3	
Hylocomium splendens	4	2	4	3	4
Pleurozium schreberi	4	3	2	3	2
Pseudoscleropodium purum		2			2
Rhytidiadelphus loreus			3	4	2

Table 9.10.

Phase 1 habitat type	D1.1 Dry heath		
NVC Community	H16 *Calluna vulgaris - Arctostaphylos uva-ursi* heath		
Surveyor	R. Whytock	R. Whytock	R. Whytock
Grid reference	NH 26219 09650	NH 26209 09639	NH 27046 09826
Quadrat no.	Q1	Q2	Q3
Species	**Cover (DOMIN)**		
Tormentil	2	3	3
Carnation sedge			2
Heath rush			2
Purple moorgrass			3
Wavy hairgrass	4	5	3
Bearberry	3	4	4
Bell heather		3	2
Bilberry	2	3	4
Common heather	7	8	6
Cowberry	1	2	4
Crowberry (subsp. *hemaphroditum*)		2	3
Dicranum scoparium		2	
Huperzia selago		1	
Hylocomium splendens	3	3	3
Hypnum jutlandicum	2	3	3
Pleurozium schreberi	4	3	3
Rhytidiadelphus loreus		2	2

Table 9.11.

Phase 1 habitat type	D1.1 Dry heath		
NVC Community	H18 *Vaccinium myrtillus - Avenella flexuosa* heath		
Surveyor	R. Whytock	R. Whytock	R. Whytock
Grid reference	NH 26970 09657	NH 27007 09641	NH 27090 09709
Quadrat no.	Q1	Q2	Q3
Species	**Cover (DOMIN)**		
Common dog violet	1		2
Tormentil	4	3	3
Wood anemone		2	
Common bent		3	
Great wood-rush	3		
Green-ribbed sedge	2		2
Heath woodrush	2		1
Sheep's fescue	3	2	
Wavy hairgrass	7	6	7
Bilberry	8	9	9
Common heather	4	3	4
Broad buckler-fern			1
Dicranum scoparium	*3*		*3*
Hard fern	2		1
Hylocomium splendens	4	5	4
Hypnum jutlandicum	3	2	3
Lophocolea bidentata	2	2	
Plagiothecium undulatum		2	3
Pleurozium schreberi	3	5	4
Rhytidiadelphus loreus		3	3
Sphagnum capillifolium			4
Thuidium tamariscinum		3	

Table 9.12.

Phase 1 habitat type	D3 Lichen and bryophyte heath
NVC Community	H14 *Calluna vulgaris - Racomitrium lanuginosum* heath
Surveyor	R. Whytock
Grid reference	NH 28150 08840
Quadrat no.	Q1
Species	**Cover (DOMIN)**
Heath rush	4
Wavy hairgrass	3
Bilberry	3
Common heather	8
Cowberry	1
Crowberry (subsp. *hemaphroditum*)	4
Cetraria islandica	4
Cladonia arbuscula	4
Cladonia uncialis	2
Diplophyllum albicans	2
Huperzia selago	1
Hylocomnium splendens	3
Hypnum jutlandicum	2
Racomitrium lanuginosum	7

Table 9.13.

Phase 1 habitat type	D3 Lichen and bryophyte heath		
NVC Community	H17 *Calluna vulgaris - Arctostaphylos alpinus* heath		
Surveyor	R. Whytock	R. Whytock	R. Whytock
Grid reference	NH 27894 08919	NH 27902 08913	NH 27842 08866
Quadrat no.	Q1	Q2	Q3
Species	**Cover (DOMIN)**		
Tormentil	2		3
Heath rush	3		
Wavy hairgrass	3	3	3
Alpine bearberry	3	5	4
Bearberry	3	2	3
Bilberry		2	2
Common heather	6	7	6
Cowberry	3	2	2
Crowberry (subsp. *hemaphroditum*)	2	3	4
Cladonia arbuscula	3		2
Cladonia portentosa		4	4
Dicranum fuscescens	3		2
Diphasiastrum alpinum		1	
Huperzia selago		2	1
Hylocomium splendens	3	3	3
Hypnum jutlandicum	3		2
Pleurozium schreberi	4	5	5
Racomitrium lanuginosum	5	3	4
Rhytidiadelphus loreus	2		2

Table 9.14.

Phase 1 habitat type	D6 Wet heath and acid grassland		
NVC Community	U6 *Juncus squarrosus – Festuca ovina* grassland		
Surveyor	R. Whytock	R. Whytock	R. Whytock
Grid reference	NH 28526 09248	NH 28395 09093	NH 28806 09719
Quadrat no.	Q1	Q2	Q3
Species	**Cover (DOMIN)**		
Heath bedstraw	4	5	4
Tormentil	2	2	2
Common sedge		2	
Dense-headed heath woodrush	2	3	2
Heath rush	8	9	10
Mat-grass	5	4	5
Sheep's fescue	5	6	5
Soft rush	3	4	3
Wavy hairgrass	4	3	4
Common heather	2	2	3
Huperzia selago	1		2
Hylocomium splendens			2
Pleurozium schreberi	3	4	2
Polytrichum commune	2		3
Sphagnum tenellum	3	3	

Table 9.15.

Phase 1 habitat type	D2 Wet heath				
NVC Community	M15 *Trichophorum germanicum – Erica tetralix* wet heath				
Surveyor	R. Whytock	R. Whytock	R. Whytock	R. Whytock	R. Whytock
Grid reference	NH 26906 08317	NH 27034 08497	NH 27934 08727	NH 28572 09539	NH 28459 09386
Quadrat no.	Q1	Q2	Q3	Q4	Q5
Species	**Cover (DOMIN)**				
Bog asphodel	1		2	1	3
Devil's-bit scabious		3		2	3
Heath milkwort		2		2	
Marsh violet					2
Tormentil	4	4	5	6	3
Carnation sedge		3			2
Common cottongrass	3	3	4	2	4
Common sedge	2			3	2
Deergrass	5	6	5	6	7
Mat grass			3	3	
Purple moorgrass	3	3	4	6	3
Star sedge					2
Wavy hairgrass				2	2
Bilberry	3		2		2
Common heather	5	6	4	5	7
Cross-leaved heath	3	4	4	5	4
Empetrum nigrum subsp. hemaphroditum	1		1		2
Campylopus atrovirons			3		
Cladonia portentosa	3	3		3	2
Cladonia uncialis	3		2		3
Hylocomium splendens	2	2	3		
Hypnum jutlandicum		2	3	4	
Pleurozium schreberi		3	3	2	4
Sphagnum capillifolium		3		5	2
Sphagnum rubellum	3	4	3	2	3
Sphagnum tenellum		3	2		2

Table 9.16.

Phase 1 habitat type	D2 Wet heath		
NVC Community	M16 *Erica tetralix* - *Sphagnum compactum* wet heath		
Surveyor	R. Whytock	R. Whytock	R. Whytock
Grid reference	NH 26623 09602	NH 26634 09631	NH 26658 09466
Quadrat no.	Q1	Q2	Q3
Species	**Cover (DOMIN)**		
Bog asphodel	2	3	2
Devil's-bit scabious		2	1
Round-leaved sundew		2	1
Tormentil	3	3	3
Common cottongrass	3	3	
Common sedge	2	2	
Deergrass	3	4	3
Heath rush		2	3
Heath woodrush	2		3
Purple moorgrass	5	4	4
Wavy hairgrass		3	
Bilberry	2		2
Common heather	7	8	7
Cross-leaved heath	8	8	8
Breutelia chrysocoma	4	3	
Campylopus atrovirens	3		2
Gymnocolea inflata	4		2
Hypnum jutlandicum		2	2
Pleurozium schreberi		3	
Sphagnum auriculatum	4	3	
Sphagnum compactum	6	7	6
Sphagnum fallax	2		3
Sphagnum rubellum	3		3
Sphagnum tenellum	4	5	5

Table 9.17.

Phase 1 habitat type	E1.6.1 Blanket bog				
NVC Community	M17 *Trichophorum germanicum - Eriophorum vaginatum* blanket mire				
Surveyor	R. Whytock	R. Whytock	R. Whytock	R. Whytock	R. Whytock
Grid reference	NH 28944 08651	NH 29033 08685	NH 29213 08877	NH 29333 08847	NH 29664 08433
Quadrat no.	Q1	Q2	Q3	Q4	Q5
Species	**Cover (DOMIN)**				
Bog asphodel	3	4	5	3	4
Round-leaved sundew			2		2
Tormentil	4	3	3	4	3
Sundew (hybrid)	3		2		3
Common cottongrass	4		5	6	2
Deergrass	9	8	8	9	9
Hare's-tail cottongrass	4	5	5	4	4
Purple moorgrass	4	2		2	1
Common heather	8	9	8	8	9
Cross-leaved heath	6	5	6	5	6
Campylopus introflexus			3		2
Cladonia portentosa	3		3	2	3
Cladonia uncialis		2	3		3
Hylocomium splendens		3	2		3
Hypnum jutlandicum			4		2
Mylia anomala				2	
Odontoschisma sphagnii	2	2			3
Pleurozium schreberi		2			2
Racomitrium lanuginosum	5	4	5	3	4
Sphagnum capillifolium	4	5	4	4	5
Sphagnum fallax	3			2	
Sphagnum medium				3	
Sphagnum papillosum	4	4	5	5	4
Sphagnum rubellum	2	3	4	3	4
Sphagnum tenellum		3		3	

Table 9.18.

Phase 1 habitat type	E1.6.1 Blanket bog		
NVC Community	M19 *Calluna vulgaris - Eriophorum vaginatum* blanket mire		
Surveyor	R. Whytock	R. Whytock	R. Whytock
Grid reference	NH 28471 08971	NH 28496 09005	NH 28700 09057
Quadrat no.	Q1	Q2	Q3
Species	**Cover (DOMIN)**		
Bog asphodel		2	
Tormentil	3	4	3
Common cottongrass	5	5	5
Deergrass	4	3	4
Hare's-tail cottongrass	8	8	8
Purple moorgrass	3		3
Wavy hairgrass	2		2
Bilberry	2		3
Common heather	8	7	8
Cross-leaved heath	4	3	4
Crowberry	2	2	2
Aulacomnium palustre		3	4
Dicranum scoparium			2
Hylocomium splendens	5	5	5
Hypnum jutlandicum	3	4	4
Odontoschisma sphagnii	2		3
Pleurozium schreberi	6	5	7
Polytrichum commune			2
Polytrichum strictum	3	3	2
Rhytidiadelphus loreus		2	
Sphagnum capillifolium	4	3	3
Sphagnum tenellum	3	3	

Table 9.19.

Phase 1 habitat type	E2.1 Flush and spring – acid		
NVC Community	M4 *Carex rostrata - Sphagnum fallax* mire		
Surveyor	R. Whytock	R. Whytock	R. Whytock
Grid reference	NH 30037 08725	NH 30117 08720	NH 30131 08682
Quadrat no.	Q1	Q2	Q3
Species	**Cover (DOMIN)**		
Blinks			2
Bog asphodel	3	4	3
Bog stitchwort		2	3
Cuckoo flower	2	2	3
Devil's-bit scabious	2		3
Marsh bedstraw		3	4
Marsh violet		3	3
Round-leaved sundew		2	1
Common cottongrass	3	2	3
Common sedge	3	4	3
Purple moorgrass	3	4	4
Sharp-flowered rush	3	2	3
Slender sedge	9	9	9
Soft rush	4	5	4
Star sedge	2	3	2
Calliergonella cuspidata	4	3	4
Sphagnum auriculatum	4	5	3
Sphagnum fallax	4	4	4
Sphagnum subnitens		3	

Table 9.20.

Phase 1 habitat type	E2.1 Flush and spring – acid	
NVC Community	M6 *Carex echinata - Sphagnum fallax* mire	
Surveyor	R. Whytock	R. Whytock
Grid reference	NH 29305 10337	NH 30023 10308
Quadrat no.	Q1	Q2
Species	**Cover (DOMIN)**	
Common sorrel	4	2
Marsh bedstraw	3	4
Marsh thistle	1	2
Marsh violet	3	2
Tormentil	2	3
Common sedge	2	8
Glaucous sedge		2
Purple moorgrass		2
Sharp-flowered rush	2	3
Soft rush	9	4
Star sedge	4	3
Calliergonella cuspidata	4	3
Lophocolea bidentata		2
Polytrichum commune	5	7
Sphagnum auriculatum		3
Sphagnum fallax	8	8
Sphagnum palustre		4
Stramineum straminergon		2

Table 9.21.

Phase 1 habitat type	E2.2 Flush and spring – basic		
NVC Community	M10 *Carex dioica – Pinguicula vulgaris* mire		
Surveyor	R. Whytock	R. Whytock	R. Whytock
Grid reference	NH 27062 09592	NH 26759 09481	NH 26782 09479
Quadrat no.	Q1	Q2	Q3
Species	**Cover (DOMIN)**		
Bog asphodel	2	1	2
Butterwort	3	2	3
Devil's-bit scabious		2	2
Carnation sedge	2	1	2
Common cottongrass			2
Common sedge	2	3	2
Common yellow sedge	2	3	3
Dioecious sedge	4	3	4
Glaucous sedge	5	5	5
Jointed rush	2	5	2
Mat grass		2	3
Purple moorgrass		2	
Star sedge	2	3	2
Tawny sedge	3		3
Aneura pinguis	3	2	3
Campylium stellatum	4	3	5
Fissidens adianthoides	2	4	3
Lesser clubmoss	1	2	
Sarmentypnum sarmentosum		3	2
Scorpidium revolovens	3	3	4
Scorpidium scorpioides	2		3

Table 9.22.

Phase 1 habitat type	E2.2 Flush and spring – basic
NVC Community	M11 *Carex demissa - Saxifraga aizoides* mire
Surveyor	R. Whytock
Grid reference	NH 27062 09592
Quadrat no.	Q1
Species	**Cover (DOMIN)**
Alpine meadow-rue	3
Bog asphodel	2
Butterwort	3
Scottish asphodel	3
Yellow saxifrage	4
Carnation sedge	3
Common yellow sedge	2
Dioecious sedge	3
Glaucous sedge	3
Jointed rush	2
Tawny sedge	3
Aneura pinguis	2
Campylium stellatum	4
Fissidens adianthoides	2
Fissidens dubius	2
Lesser clubmoss	1
Philonotis calcarea	3
Sarmentypum exanumllatum	2
Scorpidium revolovens	4
Scorpidium scorpioides	2

Table 9.23.

Phase 1 habitat type	E2.3 Flush and spring – bryophyte dominated spring	
NVC Community	M32 *Philonotis fontana – Micranthes stellaris* spring	
Surveyor	R. Whytock	R. Whytock
Grid reference	NH 26674 09571	NH 26888 09519
Quadrat no.	Q1	Q2
Species	**Cover (DOMIN)**	
Lesser spearwort	2	2
Opposite-leaved golden saxifrage		2
Starry saxifrage		1
Carnation sedge	2	2
Common sedge	2	2
Glaucous sedge	1	
Soft rush	2	
Bryum pseudotriquetrum	3	
Calliergonella cuspidata	4	3
Dichodontium palustre	5	4
Lesser clubmoss	2	1
Philonotis fontana	9	9
Polytrichum commune		2
Rhizomnium punctatum	2	3
Sarmentypnum exanulatum	3	3
Scapania undulata	4	5
Sphagnum auriculatum	7	8

9.3 Annex 3 – Peatland Condition Assessment Full Results

Table 9.24. Outcome for each polygon of blanket bog assessed in the survey.

Polygon ID	NVC Community	Condition	Possible National Interest?	Notes
1	M17b	Poor	Not a National Interest	
2	**M15b (50%) /M19b (50%)**	**Good**	**Possible National Interest**	
3	M17b	Poor	Not a National Interest	
4	M17b (50%) /M19b (50%)	Poor	Not a National Interest	
5	**M17b**	**Good**	**Possible National Interest**	
6	**M17b (50%) /M19b (50%)**	**Moderate**	**Possible National Interest**	
7	**M17a (50%) /M4 (50%)**	**Good**	**Possible National Interest**	
8	M17b	Poor	Not a National Interest	
9	M19a	Poor	Not a National Interest	
10	M19a	Poor	Not a National Interest	
11	M19a	Poor	Not a National Interest	
12	M19b	Poor	Not a National Interest	
13	**M19a**	**Good**	**Possible National Interest**	
14	M19a	Poor	Not a National Interest	
15	M17b	Poor	Not a National Interest	
16	**M17b (50%) /M19b (50%)**	**Moderate**	**Possible National Interest**	
17	M15b (70%) /M17b (30%)	Poor	Not a National Interest	
18	**M17b**	**Good**	**Possible National Interest**	
19	M19a	Poor	Not a National Interest	
20	M19b	Poor	Not a National Interest	
21	M19b	Poor	Not a National Interest	

Polygon ID	NVC Community	Condition	Possible National Interest?	Notes
22	M19b	Poor	Not a National Interest	
23	M19b	Poor	Not a National Interest	
24	**M17b (60%) M2 (20%)/ M3 (20%)**	**Good**	**Possible National Interest**	
25	**M17b (50%) /M19b (50%)**	**Good**	**Possible National Interest**	
26	**M19b**	**Good**	**Possible National Interest**	
27	**M19b**	**Good**	**Possible National Interest**	
28	**M17a (50%) /M4 (50%)**	**Moderate**	**Possible National Interest**	
29	**M17b**	**Good**	**Possible National Interest**	
30	**M17b**	**Moderate**	**Possible National Interest**	
31	**M17b**	**Moderate**	**Possible National Interest**	
32	M17b	Poor	Not a National Interest	
33	M17b (50%) /M19a (50%)	Poor	Not a National Interest	
34	M17b (50%) /M19b (50%)	Poor	Not a National Interest	
35	M15c (70%) /M17b (30%)	Poor	Not a National Interest	
36	M17b	Poor	Not a National Interest	
37	M17b (50%) /M19b (50%)	Poor	Not a National Interest	
38	M19b	Poor	Not a National Interest	
39	M17a (50%) /M4 (50%)	Poor	Not a National Interest	
40	M17b (70%) /M15c (30%)	Poor	Not a National Interest	
41	M15c (50%) /M17b (50%)	Poor	Not a National Interest	

Polygon ID	NVC Community	Condition	Possible National Interest?	Notes
42	M19b	Poor	Not a National Interest	
43	M19b	Poor	Not a National Interest	
44	**M19b**	**Good**	**Possible National Interest**	
45	**M19b (70%) /M15c (30%)**	**Moderate**	**Possible National Interest**	**Above 600m asl**
46	**M19b**	**Moderate**	**Possible National Interest**	**Above 600m asl**
47	**M19b**	**Good**	**Possible National Interest**	
48	M17b	Poor	Not a National Interest	
49	**M17b**	**Moderate**	**Possible National Interest**	
50	M17b (50%) /M19b (50%)	Poor	Not a National Interest	
51	M17b	Poor	Not a National Interest	
52	**M17a (80%) /M4 (20%)**	**Moderate**	**Possible National Interest**	
53	M17a (70%) /M4 (30%)	Poor	Not a National Interest	
54	M17b	Moderate	Not a National Interest	
55	**M17b**	**Good**	**Possible National Interest**	
56	**M17b**	**Poor**	**Possible National Interest**	
57	M17b	Moderate	Not a National Interest	Above 600m asl
58	**M19b (60%) /M17b (20%) /M15b (20%)**	**Poor**	**Possible National Interest**	
59	M17a	Good	Not a National Interest	
60	**M19b**	**Moderate**	**Possible National Interest**	
61	**M15b (50%) /M19b (50%)**	**Moderate**	**Possible National Interest**	**Above 600m asl**
62	**M19b**	**Good**	**Possible National Interest**	

Polygon ID	NVC Community	Condition	Possible National Interest?	Notes
63	M17b	Poor	Not a National Interest	
64	M19b	Poor	Not a National Interest	
65	**M17b (50%) /M15c (50%)**	**Moderate**	**Possible National Interest**	**Above 600m asl**
66	M17b	Poor	Not a National Interest	
67	**M17b (60%) /M2 (20%) /M3 (20%)**	**Good**	**Possible National Interest**	
68	M17b	Poor	Not a National Interest	
69	**M17b**	**Good**	**Possible National Interest**	
70	**M19b**	**Good**	**Possible National Interest**	
71	M17b	Poor	Not a National Interest	
72	**M17b**	**Moderate**	**Possible National Interest**	**Extensive peat hags throughout but still good peat forming vegetation.**
73	**M17b (50%) /M15c (50%)**	**Moderate**	**Possible National Interest**	
74	M17a/b	Poor	Not a National Interest	
75	**M17b**	**Moderate**	**Possible National Interest**	**Extensive peat hags throughout but still good peat forming vegetation.**
76	**M19b**	**Good**	**Possible National Interest**	
77	**M19b (50%) /M17b (50%)**	**Moderate**	**Possible National Interest**	
78	**M17b**	**Moderate**	**Possible National Interest**	
79	**M17b**	**Moderate**	**Possible National Interest**	**Extensive peat hags throughout but still good peat forming vegetation**
80	M17b	Poor	Not a National Interest	
81	**M19b**	**Good**	**Possible National Interest**	
82	**M17b**	**Moderate**	**Possible National Interest**	**Above 600m asl**

Polygon ID	NVC Community	Condition	Possible National Interest?	Notes
83	**M17b (50%) /M19b (50%)**	**Moderate**	**Possible National Interest**	**Above 600m asl**
84	**M19b**	**Moderate**	**Possible National Interest**	**Some peat hags but also dome peat forming vegetation throughout.**
85	M19b (80%) /M2 (10%) /M3 (10%)	Poor	Not a National Interest	
86	**M17b (45%) /M19b (45%) /M2 (5%) /M3 (5%)**	**Moderate**	**Possible National Interest**	**Extensive peat hags throughout but still good peat forming vegetation.**
87	**M17b**	**Moderate**	**Possible National Interest**	**Extensive peat hags throughout but still good peat forming vegetation.**
88	**M17b (50%) /M19b (50%)**	**Good**	**Possible National Interest**	
89	M17b	Poor	Not a National Interest	
90	**M17b**	**Moderate**	**Possible National Interest**	**Extensive peat hags throughout but still good peat forming vegetation.**
91	**M17b (60%) /M2 (20%) /M3 (20%)**	**Good**	**Possible National Interest**	
92	**M17b**	**Good**	**Possible National Interest**	
93	**M17b (50%) /M4 (50%)**	**Moderate**	**Possible National Interest**	
94	**M17b (70%) /M2 (15%) /M3 (15%)**	**Good**	**Possible National Interest**	
95	**M17b (60%) /M2 (20%) /M3 (20%)**	**Good**	**Possible National Interest**	
96	**M19b**	**Good**	**Possible National Interest**	
97	**M17b**	**Moderate**	**Possible National Interest**	**Extensive peat hags in some areas but still good peat forming vegetation.**
98	**M19b**	**Good**	**Possible National Interest**	
99	**M19b (50%) /M15b (50%)**	**Moderate**	**Possible National Interest**	

Polygon ID	NVC Community	Condition	Possible National Interest?	Notes
100	M19b (70%) /M17b (30%)	Poor	Not a National Interest	
101	**M19b (70%) /M17b (30%)**	**Moderate**	**Possible National Interest**	**Some peat hags but also dome peat forming vegetation throughout.**
102	**M15b (50%) /M19b (50%)**	**Good**	**Possible National Interest**	
103	**M19a (30%) /M17b (30%)/M15c (30%)/M6a (10%)**	**Moderate**	**Possible National Interest**	**Molinia caerulea frequent throughout, highly modified but peat forming vegetation in some localised areas.**
104	M17b	Poor	Not a National Interest	
105	**M17b**	**Moderate**	**Possible National Interest**	
106	M17b	Poor	Not a National Interest	
107	M19a	Poor	Not a National Interest	Above 600m asl
108	**M19a (30%)/ M17b (30%)/ M15c (30%)**	**Moderate**	**Possible National Interest**	**Molinia caerulea frequent throughout, highly modified but peat forming vegetation in some localised areas. Apparently rather thin peat depth in many areas. Small section encroaches 600m asl contour.**
109	**M17b (50%)/ M15c (50%)**	**Moderate**	**Possible National Interest**	**Molinia caerulea frequent throughout, highly modified but peat forming vegetation in some localised areas.**

9.4 Annex 4 – Photographs

Habitat Survey Photographs	
	
Photo 1. Bog pool communities.	**Photo 2.** Loch nam Faoileag.
	
Photo 3. M3 bog pool community and open water.	**Photo 4.** Peat hags in M17b blanket bog.

Habitat Survey Photographs	
	
Photo 5. Small valley around upper Allt Phocaichain.	**Photo 6.** TN41.
	
Photo 7. TN55.	**Photo 8.** TN70.

Habitat Survey Photographs		
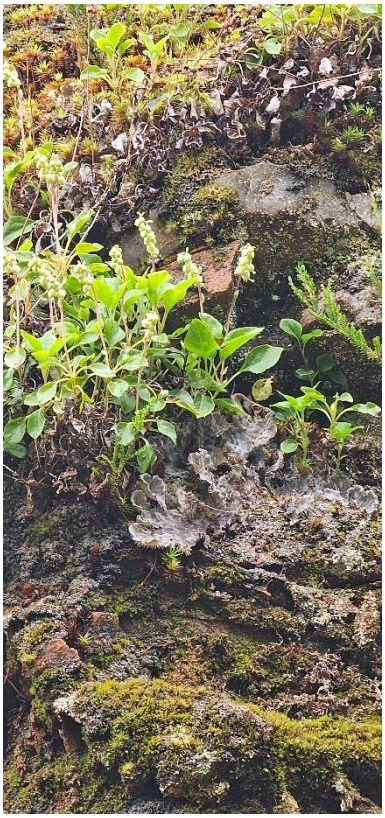	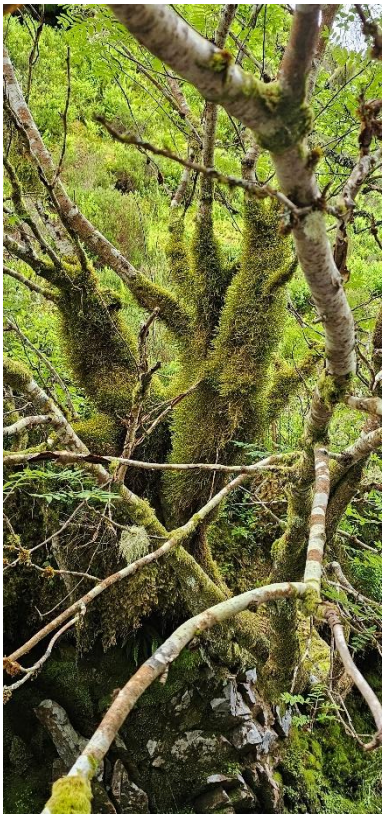	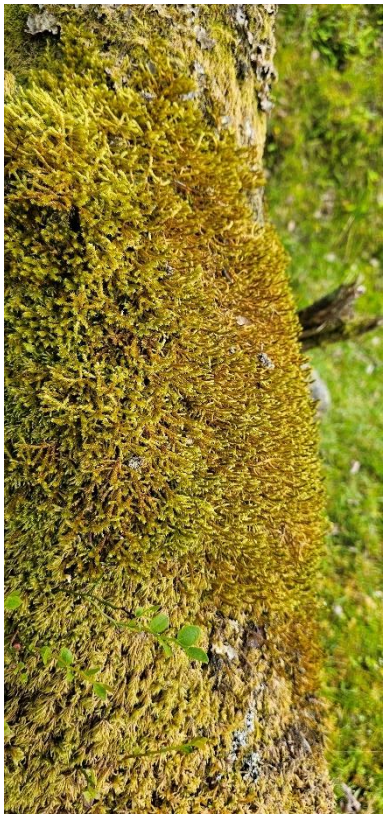
Photo 9. TN71.	**Photo 10.** TN77.	**Photo 11.** TN77.
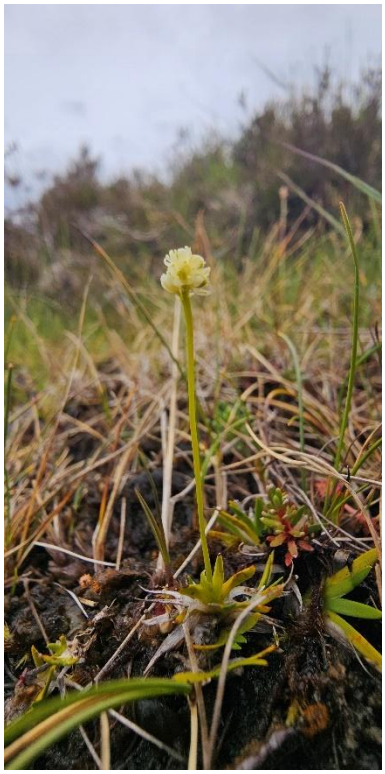		
Photo 12. TN108.		

9.5 Annex 5 – Scientific Names

Table 9.25. The common and scientific names of plant species included in this Appendix.

Common Name	Scientific Name
Aquatic plants	
Bladderwort	*Utricularia sp.*
Lesser bladderwort	*Utricularia minor*
Forbs	
Alpine meadow-rue	*Thalictrum alpinum*
Bird's-foot trefoil	*Lotus corniculatus*
Blinks	*Montia fontana*
Bog asphodel	*Narthecium ossifragum*
Bog stitchwort	*Stellaria alsine*
Bogbean	*Menyanthes trifoliata*
Common butterwort	*Pinguicula vulgaris*
Common cow-wheat	*Melampyrum pratense*
Common dog violet	*Viola riviniana*
Common mouse-ear	*Cerastium fontanum*
Common sorrel	*Rumex acetosa*
Common wintergreen	*Pyrola minor*
Creeping buttercup	*Ranunculus repens*
Creeping forget-me-not	*Myosotis secunda*
Creeping pearlwort	*Sagina decumbens*
Creeping thistle	*Cirsium arvense*
Cuckoo flower	*Cardamine pratensis*
Daisy	*Bellis perennis*
Devil's-bit scabious	*Succisa pratensis*
Fen bedstraw	*Galium uliginosum*
Great sundew	*Drosera anglica*
Harebell	*Campanula rotundifolia*
Heath bedstraw	*Galium saxatile*
Heath fragrant-orchid	*Gymnadenia borealis*
Heath milkwort	*Polygala serpyllifolia*
Heath speedwell	*Veronica offianalis*

Common Name	Scientific Name
Lesser spearwort	*Ranunculus flammula*
Marsh arrowgrass	*Triglochin palustris*
Marsh bedstraw	*Galium palustre*
Marsh cinquefoil	*Potentilla palustris*
Marsh lousewort	*Pedicularis palustris*
Marsh marigold	*Caltha palustris*
Marsh thistle	*Cirsium palustre*
Marsh violet	*Viola palustris*
Meadow buttercup	*Ranunculus acris*
Melancholy thistle	*Cirsium heterophyllum*
Mountain everlasting	*Antennaria dioica*
Opposite-leaved golden saxifrage	*Chrysosplenium oppositifolium*
Pignut	*Conopodium majus*
Ribwort plantain	*Plantago lanceolata*
Round-leaved sundew	*Drosera rotundifolia*
Scottish asphodel	*Tofieldia pusilla*
Starry saxifrage	*Micranthes stellaris*
Sticky mouse-ear	*Cerastium glomeratum*
Sundew (hybrid)	*Drosera x obovata*
Tormentil	*Potentilla erecta*
Water forget-me-not	*Myosotis scorpioides*
White clover	*Trifolium repens*
Wood sorrel	*Oxalis acetosella*
Yarrow	*Achillea millefolium*
Yellow saxifrage	*Saxifraga aizoides*
Grasses, sedges, and rushes	
Annual meadowgrass	*Poa annua*
Bog sedge	*Carex limosa*
Bottle sedge	*Carex rostrata*
Broad-leaved cottongrass	*Eriophorum latifolium*
Carnation sedge	*Carex panacea*
Common bent	*Agrostis capillaris*

Common Name	Scientific Name
Common cottongrass	*Eriophorum angustifolium*
Common sedge	*Carex nigra*
Common yellow sedge	*Carex demissa*
Creeping bent	*Agrostis stolonifera*
Crested dog's-tail	*Cynosurus cristatus*
Deergrass	*Trichophorum germanicum*
Dense-headed heath wood-rush	*Luzula multiflora subsp.*
Dioecious sedge	*Carex dioica*
Few-flowered sedge	*Carex pauciflora*
Field wood-rush	*Luzula campestris*
Glaucous sedge	*Carex flacca*
Great wood-rush	*Luzula sylvatica*
Green-ribbed sedge	*Carex binervis*
Hare's-tail cottongrass	*Eriophorum vaginatum*
Heath rush	*Juncus squarrosus*
Heath wood-rush	*Luzula multiflora*
Heath-grass	*Danthonia decumbens*
Jointed rush	*Juncus articulatus*
Long-stalked yellow-sedge	*Carex lepidocarpa*
Mat-grass	*Nardus stricta*
Perennial ryegrass	*Lolium perenne*
Purple moor grass	*Molinia caerulea*
Rough meadow grass	*Poa trivialis*
Sharp-flowered rush	*Juncus acutiflorus*
Sheep's fescue	*Festuca ovina*
Slender sedge	*Carex lasiocarpa*
Soft rush	*Juncus effusus*
Star sedge	*Carex echinata*
Sweet vernal-grass	*Anthoxanthum odoratum*
Tawny sedge	*Carex hostiana*
Tufted hairgrass	*Deschampsia cespitosa*
Velvet bent	*Agrostis canina*

Common Name	Scientific Name
Water horsetail	*Equisetum fluviatile*
Wavy hairgrass	*Avenella flexuosa*
White beak-sedge	*Rhynchospora alba*
Yorkshire fog	*Holcus lanatus*
Mosses, ferns, and lichens	
Acute-leaved bog-moss	*Sphagnum capillifolium*
Alpine clubmoss	*Diphasiastrum alpinum*
Alpine silverwort	*Anthelia julacea*
Anomalous flapwort	*Mylia anomala*
Austin's bog-moss	*Sphagnum austinii*
Bifid crestwort	*Lophocolea bidentata*
Blunt-leaved bog-moss	*Sphagnum palustre*
Blushing bog-moss	*Sphagnum molle*
Bog bead-moss	*Aulacomnium palustre*
Bog moss	*Sphagnum sp.*
Bog-moss flapwort	*Odontoschisma sphagni*
Bracken	*Pteridium aquilinum*
Bristly swan-neck moss	*Campylopus atrovirens*
Broad buckler-fern	*Dryopteris dilatata*
Broom fork-moss	*Dicranum scoparium*
Common feather-moss	*Kindbergia praelonga*
Common haircap	*Polytrichum commune*
Common pawwort	*Barbilophozia floerkei*
Common tamarisk-moss	*Thuidium tamariscinum*
Compact bog-moss	*Sphagnum compactum*
Cow-horn bog-moss	*Sphagnum auriculatum*
Cruet collar-moss	*Splachnum ampullaceum*
Dusky fork-moss	*Dicranum fuscescens*
Feathery bog-moss	*Sphagnum cuspidatum*
Fir clubmoss	*Huperzia selago*
Flat-topped bog-moss	*Sphagnum fallax*
Fountain apple-moss	*Philonotis fontana*

Common Name	Scientific Name
Glittering wood-moss	*Hylocomium splendens*
Golden-head moss	*Breutelia chrysocoma*
Greasewort	*Aneura pinguis*
Hard fern	*Blechnum spicant*
Heart-leaved spear-moss	*Calliergon cordifolium*
Heath plait-moss	*Hypnum jutlandicum*
Heath star-moss	*Campylopus introflexus*
Hooked scorpion-moss	*Scorpidium scorpioides*
Inflated notchwort	*Gymnocolea inflata*
Large white-moss	*Leucobryum glaucum*
Lesser clubmoss	*Selaginella selaginoides*
Little shaggy-moss	*Rhytidiadelphus loreus*
Lustrous bog-moss	*Sphagnum subnitens*
Magellanic bog-moss	*Sphagnum medium*
Maidenhair pocket-moss	*Fissidens adianthoides*
Marsh bryum	*Bryum pseudotriquetrum*
Marsh forklet-moss	*Dichodontium palustre*
Moonwort	*Botrychium lunaria*
Neat feather-moss	*Pseudoscleropodium purum*
Notched rustwort	*Marsupella emarginata*
Oak fern	*Gymnocarpium dryopteris*
Overleaf pellia	*Pellia epiphylla*
Papillose bog-moss	*Sphagnum papillosum*
Pendulous wing-moss	*Antitrichia curtipendula*
Pointed spear-moss	*Calliergonella cuspitada*
Purple spoonwort	*Pleurozia purpurea*
Red bog-moss	*Sphagnum rubellum*
Red-stemmed feather-moss	*Pleurozium schreberi*
Reindeer lichen	*Cladonia arbuscula*
Reindeer lichen	*Cladonia portentosa*
Reindeer lichen	*Cladonia uncialis*
Reindeer lichens	*Cladonia sp.*

Common Name	Scientific Name
Ringless hook-moss	*Sarmentypnum exannulatum*
River feather-moss	*Brachythecium rivulare*
Rock pocket-moss	*Fissidens dubius*
Round-fruited collar-moss	*Splachnum sphaericum*
Rusty bog-moss	*Sphagnum fuscum*
Rusty hook-moss	*Scorpidium revolvens*
Soft bog-moss	*Sphagnum tenellum*
Spreading-leaved grimmia	*Grimmia ramondii*
Springy turf-moss	*Rhytidiadelphus squarrosus*
Straw spear-moss	*Straminergon stramineum*
Strict haircap	*Polytrichum strictum*
Thick-nerved apple-moss	*Philonotis calcarea*
Three-ranked spear-moss	*Drepanocladus trifarius*
Tumid notchwort	*Lophozia ventricosa*
Twiggy spear-moss	*Sarmentypnum sarmentosum*
Water earwort	*Scapania undulata*
Waved silk-moss	*Plagiothecium undulatum*
Woolly fringe-moss	*Racomitrium lanuginosum*
Yellow stary feather-moss	*Campylium stellatum*
Shrubs and trees	
Alpine bearberry	*Arctostaphylos alpinus*
Bearberry	*Arctostaphylos uva-ursi*
Bell heather	*Erica cinerea*
Bilberry	*Vaccinium myrtillus*
Common heather	*Calluna vulgaris*
Cowberry	*Vaccinium vitis-idaea*
Cross-leaved heath	*Erica tetralix*
Crowberry	*Empetrum nigrum*
Crowberry (upland)	*Empetrum nigrum subsp. hermaphroditum*
Dwarf birch	*Betula nana*