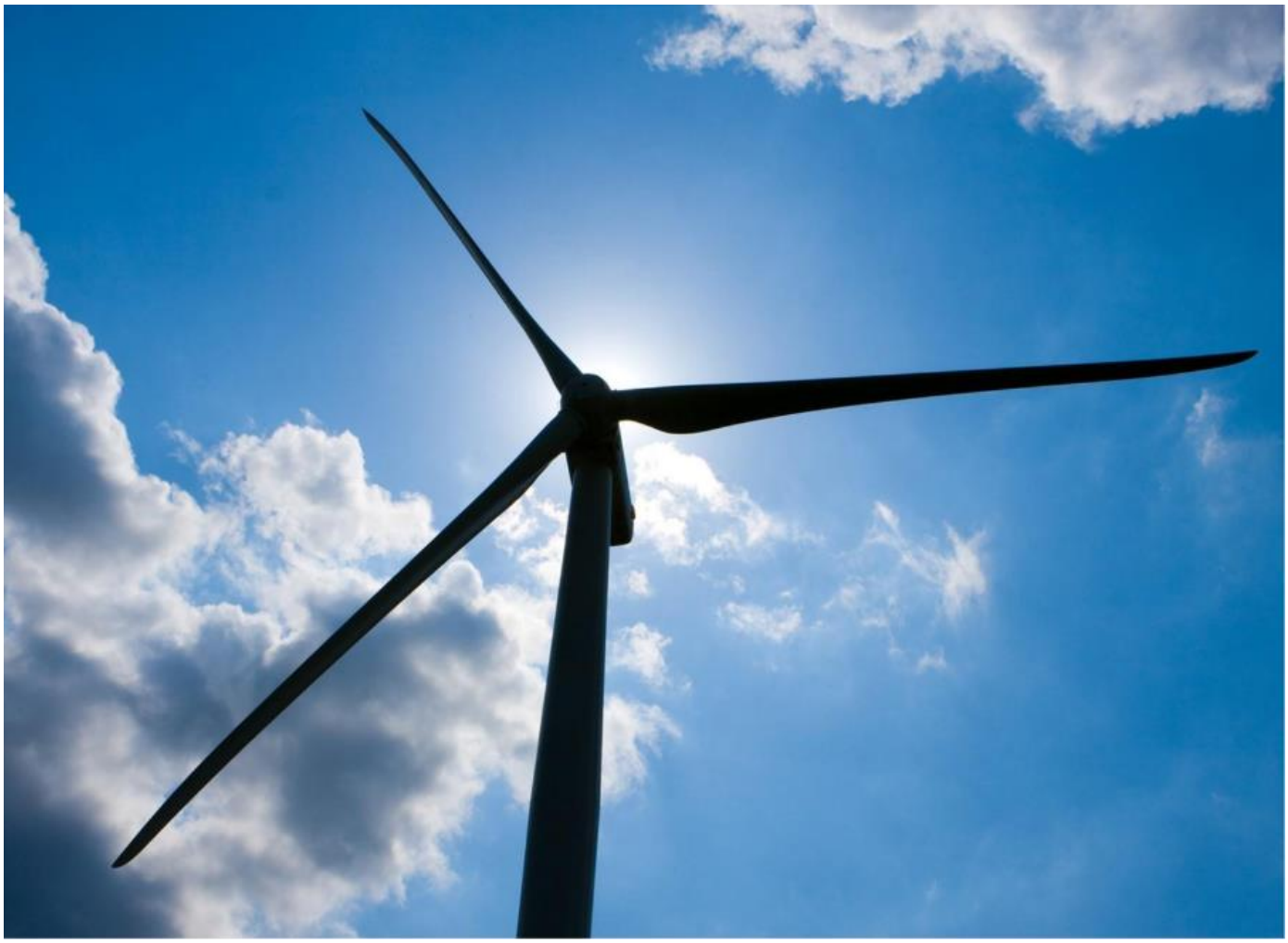

Foel Fach Wind Farm Limited.

Foel Fach Wind Farm – Environmental Statement Volume III

Appendix 5.1: Habitats and Vegetation

Project Reference: 664094

DECEMBER 2025

Energy for generations

Coriolis Energy

RSK

Foel Fach Wind Farm

on behalf of Foel Fach Wind Farm Limited

Environmental Statement

Appendix 5.1: Habitats and Vegetation

avian ecology

CONTENTS

ANNEXES

EXECUTIVE SUMMARY

Baseline information gathered from desk study sources and habitat surveys is provided in this Appendix. The surveys found the Application Site (herein "the Site") is predominantly semi-improved acid grassland, with some areas of other less extensive habitats including flush, heath and localised areas of bog. Some of the habitats (including areas of heath, bog and flush) are indicative of notable habitats (Annex I and/or Section 7 habitats).

1 INTRODUCTION

1.1.1 This Appendix has been prepared to accompany the Environmental Statement **(ES) Volume II, Chapter 5: Terrestrial Ecology**, for the Proposed Development.

1.1.2 It presents detailed methodologies and results of desk study and field surveys completed to establish baseline conditions with regards protected and notable habitats and should be read with reference to the following figures presented in **ES Volume IV**:

- **Figure 5.1**: Ecological Statutory Designated Sites
- **Figure 5.2:** Ecological Non-Statutory Designated Sites (Confidential)
- **Figure 5.3:** Existing Ecological Records (Sensitive) (Confidential)
- **Figure 5.4**: Phase 1 Habitat Survey Plan, and
- **Figure 5.5**: National Vegetation Classification (NVC) Survey Plan.

1.1.3 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 Section 7 of the Environment (Wales) Act 2016[2], and/or which represent potential Groundwater Dependent Terrestrial Ecosystems (GWDTEs)[3],and
- Record the presence of any protected or non-native invasive plant species.

1.1.4 Survey methodologies and the subsequent interpretation of results in this Appendix refer to key pieces of guidance, which are listed in **Section 6**.

1.1.5 Information considered sensitive (**ES Volume IV, Figure 5.2: Ecological Non-Statutory Designated Sites (Confidential)** and **Figure 5.3: Existing Ecological Records (Sensitive) (Confidential)**) will not be made publicly available but will be provided to Natural Resources Wales (NRW) and Gwynedd Council.

[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] Environment (Wales) Act 2016 Section 7 – list of the habitats of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales (Welsh Government, 2016).
[3] As per guidance from Scottish Environment Protection Agency (2017).

1.1.6 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. The corresponding scientific / common names for all listed species are supplied in **Annex 4**.

2 METHODOLOGY

2.1 Desk Study and Consultation

2.1.1 A desk study was undertaken to identify the proximity of the Site to any designated site for nature conservation with habitat or botanical qualifying interest, and to obtain any records of protected and/or non-native flora within the Site and the surrounding wider area. This used publicly available sources as well as consultation with the relevant Biological Records Centre (**Table 2.1**).

Table 2.1: Desk study key sources and information sought.

Key Source	Date of Consultation	Information Sought	Search Area
NRW's website https://naturalresources.wales/?lang=en DEFRA's 'MAGIC' website https://magic.defra.gov.uk/magicmap.aspx	January 2025	Proximity to statutory designated sites.	Within 10 kilometres (km) of the Site (see **ES Volume IV, Figure 5.1: Ecological Statutory Designated Sites**).
Welsh Government's DataMapWales website https://datamap.gov.wales/	June 2025	Environment (Wales) Act Section 7 Terrestrial Habitats of Principal Importance.	Within the Site.
Cofnod (the local environmental records centre for North Wales)	November 2023	Existing plant and habitat records of interest, and non-statutory designated sites.	Within 2 km of the Site[4]. The results of which are shown in **ES Volume IV, Confidential Figures 5.2** and **5.3**.

2.2 Field Surveys

2.2.1 Field surveys were conducted between 2022 and 2025 in accordance with standard methodologies (see **Table 2.2**):

2.2.2 An Extended Phase 1 Habitat Survey and NVC Survey was conducted between 15 and 19 August 2022 by S. Turner and C. Davies. The survey included all land within the Site (excluding the access track which sits immediately to the west of the Site and is a linear strip of land connecting the Site to the B4501 road), extended to include a 250 metre (m) buffer zone.

2.2.3 An Extended Phase 1 Habitat Survey of the access track (and out to 100 m either side) was conducted between 15 and 17 October 2024 by A. Hulme.

[4] Note, the Desk Study Search Area was based on an original application boundary which extended further than the final application boundary, so the search area used during the desk study was greater than 2 km from the Site.

2.2.4 A habitat validation survey (extended to record any evidence of protected species) was carried out of the areas surveyed in 2022 and 2024 (as described above) on 11 and 12 September 2025 to check habitats were consistent with those habitats record in 2022 and 2024, and to note any notable change. The survey was carried out by Dr C. Bonnington. During the survey, some peripheral habitats onsite but greater than 100 m north and south of the access track were surveyed as these did not form part of the original study areas. These peripheral areas were subject to an Extended Phase 1 Habitat Survey.

2.2.5 The above surveys meant that all habitats within the Site were surveyed, extending considerably offsite especially to the east, north and south given the evolution of the boundary of the Site. The study area is thus considerably more extensive than the Site itself as can be seen from **ES Volume IV, Figure 5.4: Phase 1 Habitat Survey Plan** and **ES Volume IV, Figure 5.5: NVC Survey Plan**.

2.2.6 All field personnel are competent ecologists and botanists, with considerable experience of undertaking these methodologies across numerous comparable sites in Britain.

2.2.7 The NVC data were further reviewed by C. Dean, a competent botanist with experience of undertaking NVC surveys, and analysing NVC survey data.

Table 2.2: Descriptions of the survey methodologies used in this report.

Survey Type	Brief Description	Key Outcomes	Guidance
Phase 1 Habitat Survey	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 was extended to also record signs of the presence, or potential presence, of protected species (e.g. birds, mammals) including the presence of habitat types 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 Section 7 of the Environment (Wales) Act 2016. Identify the presence or potential presence of species listed on Schedules 8 and 9 of the Wildlife and Countryside Act (1981) and/or Section 7 of the Environment (Wales) Act 2016.	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 2 sqm (m^2) 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, and/or Groundwater Dependent Terrestrial Ecosystems.	National Vegetation Community Users' Handbook (Rodwell, 2006). British Plant Communities (JNCC, 1991 - 1992). MAVIS Plot Analyser (2016).

Survey Type	Brief Description	Key Outcomes	Guidance
Habitat validation survey	Previously surveyed habitats were appraised to check whether comparable with those identified during previous surveys or whether any notable change to the habitat. Additional peripheral areas not previously surveyed were subject to a Phase 1 Habitat Survey. The survey was extended to also record signs of the presence, or potential presence, of protected species (e.g. birds, mammals).	A broad overview of the habitat types occurring within an area and their extent. Check that for those habitats previously surveyed, the habitats had not notably changed since the original surveys. Corresponding to priority habitats listed on Section 7 of the Environment (Wales) Act 2016, where applicable. Identify the presence or potential presence of species listed on Schedules 8 and 9 of the Wildlife and Countryside Act (1981) and/or Section 7 of the Environment (Wales) Act 2016.	Handbook for Phase 1 habitat survey – a technique for environmental audit (JNCC, 2016).

2.2.8 Limitations

2.2.9 Surveying of the 250 m buffer zone surrounding the Site was restricted in some areas due to private land ownership. However, surveys appropriately covered the majority of the study area, and those habitats which are most likely to be affected by the Proposed Development.

2.2.10 Mid-October (when the access track survey was undertaken) is considered to be the very end of the habitat survey season, and as such it is possible that some plant species present within the habitats associated with the access track may not have been observed or identified due to autumn senescence. A full species inventory is not however required for Phase 1 Habitat Survey, and key diagnostic features could still be observed in these habitats in October, which allowed the surveyor to correctly assign the habitat type.

2.2.11 The initial Site survey was undertaken in August 2022 and as such, this data is over two years old. As the Site use has not significantly changed during this time, the habitat data it is still considered valid. Following CIEEM guidance, surveys and report validity is subject to professional judgement when between 18 months and three years old (CIEEM, 2019). A habitat validation survey in 2025 has confirmed that habitats remain comparable to those identified in 2022 and 2024 and thus the survey results are considered robust.

3 RESULTS

3.1 Desk Study

3.1.1 This section provides details of existing plant information and existing records of protected and notable plants species identified within and in proximity to the Site from desk study sources listed in **Table 3.1.**

Statutory Designated Sites for Nature Conservation

3.1.2 This section should be read with reference to **ES Volume IV, Figure 5.1**.

3.1.3 Review of the key sources indicates that the Site does not form a part of any international or national designated site for nature conservation. However, 13 statutory designated sites (noting some have multiple designations, such as a SAC with component SSSI) with qualifying habitat and/or botanical interest were located within 10 km of the Site (see **Table 3.1**).

Table 3.1: Designated sites for nature conservation.
SAC – Special Area of Conservation; SSSI – Site of Special Scientific Interest.

Site	Distance / Orientation	Qualifying Interest(s)
Llyn Tegid (Bala lake) Ramsar site, SAC and SSSI	Immediately west	• Largest natural lake in Wales. • Internationally rare plant species, particularly floating water plantain.
Afon Dyfrdwy (River Dee) SAC and SSSI	Immediately west	• Range of river habitat types. • Annex I habitat: '3260 water courses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation'.
Migneint-Arenig-Dduallt SAC and SSSI	805 m west	• Blanket bog, dry heath, montane heath, wet heath, flushes, lakes, woodland. • Mosaics of acid, neutral and calcareous grassland, rush pasture, bracken, ledge communities, swamp, running water and cliff and scree vegetation. • Ground beetle (Trechus rivularis). • Weevil (Anthonomus conspersus). • Fungus gnat (Brevicornia kingi). • Large heath butterfly (Coenympha tullia). • Assemblage of invertebrates. • Multiple flora species (including flowering plant assemblage).
Cors y Sarnau SSSI	2.55 km south-east	• Wetland habitats over peat (mire, fen, bog, wet woodland).
Caerau Uchaf SSSI	3.19 km east	• Species-rich hay meadow and wet pasture.
Llyn Tegid SSSI and Ramsar	3.9 km south	• Lake and aquatic/emergent vegetation. • Lake fen/swamp including wet woodland. • Floating water-plantain (*Luronium natans).* • *Limosella aquatica.* • *Elatine hexandra.* • *Carex aquatilis.*

Site	Distance / Orientation	Qualifying Interest(s)
Y Glyn-diffwys SSSI	4.61km north-east	• No information found.
Corsydd Nug a Merddw SSSI	6.12 km north-west	• Lowland valley side blanket mire. • Associated habitats including mire, swamp, rush pasture and wet grassland, with aquatic and emergent vegetation present in the slow-flowing River Merddwr.
Berwyn SAC and SSSI	7.3 km south-east	• Common heather dominated heath and blanket mire.
Coedydd Dyffryn Alwen SSSI	7.49 km north-east	• Semi-natural broad-leaved woodland.

Non-statutory Designated Sites for Nature Conservation

3.1.4 Through consultation with Cofnod it has been determined that the Site is located within 2 km of 79 Wildlife Sites (including 'Candidate Wildlife Sites'), with three ('Llandderfel', 'Llwyn-y-brain heath' and Llwyn-y-brain cottage - candidate) of those located within the application boundary. A full list is presented in **ES Volume IV, Figure 5.2. Table 3.2** provides the information with regards to the three onsite Candidate Wildlife Site.

Table 3.2: Non-statutory designated sites for nature conservation located within the Site.

Site Name	Location	Area (hectares (ha))	Listed Features
Llandderfel - candidate	SH 938413	995.8	Acid grassland; dwarf shrub heath; bracken.
Llwyn-y-brain heath - candidate	SH 919415	18.4	Valley mire.
Llwyn-y-brain cottage - candidate	SH910413	0.4	Neutral grassland.

Priority Habitats

3.1.5 A review of the DataMap Wales website[5] revealed the Site contains the following habitats which are considered Environment (Wales) Act Section 7 terrestrial habitats of principal importance:

- Upland heathland
- Blanket bog
- Lowland dry acid grassland, and
- Upland flushes, fens and swamps.

3.1.6 Lowland fens and reedbed was also recorded adjoining part of the northern application boundary.

3.1.7 The DataMap Wales website also revealed the presence of a restored ancient woodland site on the ancient woodland inventory (AWI) in the west of the Site, and this was confirmed from the Cofnod data search (**ES Volume IV, Confidential Figure 5.2**).

[5] Noting the data source for this information is the phase 1 survey of Wales 1979-1997 digital data.

Notable Plant Species

3.1.8 The Cofnod data search returned 174 locally notable plant species, with 340 individual records, in the last 20 years. Of these records, four species are protected under Schedule 8 of the Wildlife & Countryside Act 1981 and/or are listed on Section 7 of the Environment (Wales) Act 2016 (**Table 3.3**). There are a further 11 species which are listed as being nationally rare or scarce. No Schedule 8 of the Wildlife & Countryside Act 1981, Section 7 of the Environment (Wales) Act 2016, or nationally rare or scarce plant species were returned from within the Site. The records are presented in **ES Volume IV, Confidential Figure 5.3**.

Table 3.3: Records of Schedule 8 (WCA) &/or Section 7 plant species from within search area.

Species Name	Distance from the Site	Protection Status
Lesser Butterfly-orchid	487 m	• Section 7. • IUCN Red List of Threatened Species – Vulnerable. • Gwynedd Local Biodiversity Action Plan.
Bog Paw-wort	549 m	• Section 7.
Bluebell	307 m	• Schedule 8.
	1.63 km	
	1.81 km	
	1.87 km	
	1.92 km	
Juniper	1.63 km	• Section 7.

Non-Native Invasive Species

3.1.9 There are multiple records of rhododendron returned within the search area, all observed in 2008-2009.

3.1.10 There are also a further 563 records of non-native invasive species returned for the search area. These records cover ten different species, and seven of these species are included under Schedule 9 of the Wildlife & Countryside Act 1981[6]: Canadian waterweed, giant knotweed, Himalayan balsam, cotoneaster, Japanese knotweed, montbretia, and rhododendron. Of these, Himalayan balsam and Japanese knotweed have the most records.

3.1.11 The records are presented in **ES Volume IV, Figure 5.3**.

3.1.12 Schedule 9 means that these species have already established in the wild in Great Britain and pose a continuing conservation threat to native biodiversity and habitats.

[6] Wildlife & Countryside Act 1981 (as amended), Schedule 9 – part II. Plants to which section 14 applies. Available at: https://www.legislation.gov.uk/ukpga/1981/69/schedule/9

3.2 Field Surveys

3.2.1 These results should be read with reference to the following figures:

- **ES Volume IV, Figure 5.4: Phase 1 Habitat Survey Plan**, and
- **ES Volume IV, Figure 5.5: NVC Survey Plan**.

3.2.2 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 3**.

Overview

3.2.3 Semi-improved acid grassland dominates in the eastern and central areas of the Site, along with extensive areas of acid flush and marshy grassland. In the west, there is a complex mosaic of poor semi-improved grassland, acid grassland, and marshy grassland, with areas of wet heath, acid flush, and fen. There is also scattered dry heath and bracken/gorse scrub across the Site, and small remnant patches of blanket bog. There are a few small streams in the centre and south-west of the Site, running off the hills, and also a small lake, Llyn Maen Bras, in the south-west.

3.2.4 The access track follows an existing farm track and the habitats adjacent to the access track comprise of enclosed species-poor pasture, with some native hedgerow boundaries and mature broad-leaved trees. In the extreme south-west of the Site (south of the access track) the dominant habitat is improved grassland.

3.2.5 The survey recorded 21 Phase 1 habitats, and within these 12 NVC communities were identified. These are:

- A1.1.1 Broadleaved woodland – semi-natural.
- A1.2.2 Coniferous woodland – plantation.
- A1.2.3 Mixed woodland – plantation.
- A4 Recently felled woodland.
- A2 Scrub.
- B1.2 Acid grassland, semi-improved: U2, U5, U6.
- B2.2 Neutral grassland - semi-improved: MG9.
- B4 Improved grassland.
- B5 Marshy grassland: M23, M25.
- B6 Poor semi-improved grassland.
- C1.1 Bracken – continuous: U20.
- D1.1 Dry Heath: H8, H12.
- D2 Wet heath: M15, (M19).
- E1.6.1 Blanket bog: M19.
- E2.1 Flush and spring - acid: M6.
- F2.1 Marginal / inundation.
- G1 Standing water.
- G2 Running water.
- J1.1 Cultivated / disturbed land – arable.
- J2 Boundaries.

- J3 Built-up areas.

Detailed Descriptions

A1.1.1 Broad-leaved Woodland – Semi-Natural

3.2.6 There are small stands of broad-leaved trees close to the access track, and to the north and south of the access track along field boundaries, including mature beech, willow and ash trees. The western and south-western parts of the Site also contain numerous individual mature broad-leaved trees, predominantly oak, with some sycamore, beech and rowan.

A1.2.2 Coniferous Woodland – Plantation / A1.2.3 Mixed Woodland – Plantation / A4 Recently Felled Woodland

3.2.7 Plantation forestry occurs in the south of the study area, with some adjoining the application boundary. Some compartments had been recently felled at the time of surveying.

A2 Scrub

3.2.8 Patches of dense gorse occur on the steep valley sides within the Site, generally as a mosaic with acid grassland and large stands of bracken. Gorse scrub also occurs close to the access track as stands within the semi-improved acid grassland.

B1.2 Acid Grassland - Semi-Improved

3.2.9 Acid grassland occurs in several forms across the Site. In general, is not particularly species-rich and is heavily grazed by sheep, so considered to be semi-improved. On steep valley sides it often forms mosaics with gorse or bracken.

3.2.10 U5 (*Nardus stricta - Galium saxatile)* grassland: The bulk of the steep slopes, hilltops and ridges on the Site consist of acid grassland. Mat-grass is particularly abundant in the higher areas, but other abundant grasses include common bent, wavy hair grass, sweet vernal grass and sheep's fescue. Bryophytes are abundant, especially common haircap moss, but also red-stemmed feather moss, glittering wood moss and springy turf moss. Bog mosses are rare to occasional only. Heath rush is occasional but becoming abundant in some flatter and wetter hilltop areas. Very small, stunted bilberry plants are frequent. Heath bedstraw is abundant, but there are few other forbs. There are occasional clumps and larger patches of soft rush.

3.2.11 U6 (*Juncus squarrosus - Festuca ovina)* grassland: Within the valley in the west of the Site (east of the access track) wavy hair grass, heath rush, bilberry, red-stemmed feather moss and common haircap moss are abundant, with occasional to frequent acute-leaved, lustrous, and Russow's bog-mosses, springy turf-moss, heath bedstraw, hare's-tail cottongrass and purple moor grass. Sheep's fescue is locally abundant. Cross-leaved heath and common heather are rare. This habitat may represent wet heath suppressed by sheep grazing. This community grades into lower lying adjacent rush flushes (E2.1 / M6) with dominant soft rush.

3.2.12 There is also a small area of U2 *Avenella flexuosa* grassland in the south of the Site, associated with adjacent the wet heath and acid flush communities. It is dominated by wavy hairgrass.

3.2.13 Along (and south of) the access track are areas of acid grassland where the sward suggests greater nutrient inputs based on the presence of species such as cocksfoot, perennial ryegrass and common nettle. These fields were typically used for livestock grazing (particularly cattle).

B2.2 Neutral Grassland - Semi-Improved

3.2.14 MG9 (*Holcus lanatus - Deschampsia cespitosa)* grassland: This community occurs on the Site in the south-western valley, on a lower lying but well drained floodplain. The sward has abundant tufted hairgrass, sweet vernal grass, red fescue, common bent and Yorkshire fog, frequent soft rush, creeping bent, sheep's sorrel, meadow buttercup, marsh thistle, tormentil and occasional mat grass, sheep's fescue, red-stemmed feather-moss, marsh violet, sharp-flowered rush and viviparous fescue.

3.2.15 Along the access track is a fenced-in strip of neutral grassland following a watercourse. Species occur which are reflective of this damp environment such as tufted hairgrass, flag iris and soft rush, but also species which indicate higher nutrient inputs such as common nettle, creeping thistle and cocksfoot.

B4 Modified Grassland

3.2.16 There is a field of agriculturally improved grassland along the access track. This modified grassland is dominated by perennial ryegrass with creeping buttercup but otherwise shares many of the same species that occur in the surrounding semi-improved enclosed pasture. This grassland is also the main habitat in south-western extreme of the Site which is used for sheep grazing. Species present include clover, dandelion and creeping thistle.

B5 Marshy Grassland

3.2.17 M23 (*Juncus effusus/acutiflorus - Galium palustre)* rush pasture: This community is widespread in the western part of the Site (east of the access track), characterised by tall dominating rushes, with Yorkshire fog and limited bog-moss (in contrast to acid flush). These communities are mostly dominated by soft rush (M23b *Juncus effusus* sub-community), but there are also a couple of small areas where sharp-flowered rush is dominant instead (M23a *Juncus acutiflorus* sub-community). In the south-west, a mosaic of wet heath, rush pasture and rush flush is heavily grazed by cattle.

3.2.18 In the south-western valley in the Site there are areas of rush flush grading to marshy grassland. Soft rush is mostly dominant, but there is abundant tussocky purple moor grass in places (M25 *Molinia caerulea - Potentilla erecta* mire).

3.2.19 There are also small areas of marshy grassland along the access track, along and at the bottom of a hill slope. These are dominated by soft rush, with tufted hairgrass, marsh thistle and occasionally species such as Yorkshire fog, mare's tail, creeping buttercup and water forget-me-not.

B6 Poor Semi-Improved Grassland

3.2.20 This species-poor sward occurs on flatter ground within the Site, predominantly in the west and south, and makes up the majority of the habitat along (and to the north and south) the access track. This grassland is heavily sheep grazed. Perennial ryegrass is abundant, alongside other common grasses such as Yorkshire fog, crested dog's-tail, wavy hairgrass and tufted hairgrass. The forbs present are generally common ruderal species such as creeping thistle, common nettle, creeping buttercup and white clover.

C1.1 Bracken – Continuous

3.2.21 U20 (*Pteridium aquilinum - Galium saxatile)* community: Large dense stands of bracken are found on sloping ground in several areas across the Site. These stands are overwhelmingly dominated by bracken but occur as a mosaic with semi-improved acid grassland, so that some species of the acid grassland community occur under the bracken where the fronds are less dense.

D1.1 Dry Heath

3.2.22 H8e (*Calluna vulgaris - Ulex gallii)* heath (*Vaccinium myrtillus* sub-community): This community occurs in central and southern areas of the Site. The vegetation is dominated by common heather, western gorse and bilberry, with scattered bell heather.

3.2.23 H12a (*Calluna vulgaris - Vaccinium myrtillus)* heath (*Calluna vulgaris* sub-community): This community occurs in the higher areas, centrally in the west of the Site (east of the access track). It is dominated by common heather, with abundant small bilberry plants, heath plait-moss, glittering wood-moss and red-stemmed feather-moss. There are occasional tufts of hare's-tail cottongrass and rare patches of acute-leaved bog-moss, greater wood rush and crowberry. The heather is generally at the mid growth stage and healthy. Purple moorgrass has an increasing presence on the steep hillsides, where the dry heath forms a mosaic with acid grassland.

D2 Wet Heath

3.2.24 M15d (*Trichophorum cespitosum - Erica tetralix)* wet heath (*Vaccinium myrtillus* sub-community): This community occurs on the Site on more gently sloping valley floors and sides, on shallow peat. Frequent to abundant are common heather, wavy hair-grass, common haircap moss, and hummocks of bilberry and red-stemmed feather-moss. Occasional to frequent constants include heath rush, tormentil and heath bedstraw. Acute-leaved, flat-topped, lustrous, papillose, and Russow's bog-mosses, bog asphodel, crowberry and deergrass are occasional to locally frequent. In places on wetter ground this habitat transitions to M6 flush / M23 rush pasture, with frequent soft rush and marsh thistle. These areas may also represent greater nutrient enrichment from sheep.

3.2.25 In the south-western valley in the Site there is a distinct area of blanket bog type vegetation which resembles M19 *Calluna vulgaris - Eriophorum vaginatum* mire. However, as the peat is mostly less than 0.5 m deep and there is limited bog-moss, it is classified as a wet heath. There are pronounced tussocks of red-stemmed feather moss, juniper haircap moss, bilberry, common heather and hare's-tail cottongrass with well-marked sheep tracks between. Bog-mosses are limited to Russow's bog-moss and acute-leaved bog-moss. Crowberry and cowberry are occasional throughout, as is cranberry. Bog asphodel is locally frequent. This may represent a former bog which has been altered by drainage and heavy grazing.

E1.6.1 Blanket Bog

3.2.26 M19a (*Calluna vulgaris - Eriophorum vaginatum)* mire (*Erica tetralix* sub-community): A small pocket of blanket bog is found on deep peat on the central hilltop in the west of the Site (east of the access track). Common heather, cross leaved heath, red-stemmed feather-moss and wavy hair grass are frequent to abundant. Papillose and acute-leaved bog-moss are locally abundant. Bilberry, common haircap moss, hare's-tail cotton-grass and lustrous bog moss are occasional to frequent. Cup lichen, purple moor-grass, crowberry and common cottongrass are also occasional. A larger area is found on wet, deep peat on a shoulder centrally within the Site, forming a complex mosaic of bog, rush pasture and flush.

3.2.27 In the east of the Site are very small areas of blanket bog. This community is typically dominated by common heather and hare's-tail cottongrass, with common cottongrass and straggling shoots of bilberry and clumps of crowberry. Acute-leaved and lustrous bog-mosses are commonest, along with a patchwork heath plait-moss, little shaggy-moss, glittering wood-moss and red-stemmed feather-moss.

E2.1 Flush and Spring - Acid

3.2.28 M6c (*Carex echinata - Spagnum fallax)* flush (*Juncus effusus* sub-community): In the west of the Site, acid flushes form narrow bands along the higher streams and broader areas in the more gently sloping valley bottoms. They occur mostly on wet, deep peat and are dominated by soft rush, with abundant common haircap moss and flat-topped bog-moss. Sharp-flowered rush, lesser spearwort, Yorkshire fog, tufted hair grass, red fescue, marsh violet, wavy hairgrass, cross-leaved heath, bilberry, marsh bedstraw, cow-horn bog-moss and blunt-leaved bog-moss occur occasionally. In the east, there are large areas of flush also dominated by soft rush, with flat-topped, blunt-leaved and papillose bog-mosses, velvet bent, purple moor grass, marsh violet and tormentil.

3.2.29 M6a (*Carex echinata - Spagnum fallax)* (*Carex echinata* sub-community): In some wetter places, the community described above changes to more abundant papillose bog-moss, common cottongrass, bog asphodel, star sedge, bog bean and cranberry, without dominating soft rush.

G1 Standing Water

3.2.30 A small lake (Llyn Maen Bras) occurs in the south of the Site. It is fringed with marginal stands of bottle sedge, soft rush and flat-topped bog moss (F2.1 marginal / inundation), with extensive pondweed across the lake surface. Fish are present.

3.2.31 There is a man-made pond at the eastern end of the access track, which has soft rush growing marginally. It is likely naturally fed from the surrounding hills but is connected to a pipe system that then feeds into a ditch system and thus has a flow of water passing through it.

G2 Running Water

3.2.32 A number of small streams/brooks are present across the Site. These are detailed in the **Annex 1**.

J1.1 Cultivated / Disturbed Land - Arable

3.2.33 In the west of the Site the land-use transitions to lowland farming, including fields for arable cultivation.

J2 Boundaries

3.2.34 The access track is located within agricultural land and therefore consists of field separated by boundaries. The majority of these boundaries are native hedgerows with mature trees, a few hedgerows are defunct, and there is a ditch system running along some of the fields. To the south of the access track are a number of boundary hedgerows, including running parallel to the B4501.

J3 Built-Up Areas

3.2.35 A group of farm buildings and yards ('Llaithgwm') is present on the eastern end of the access track.

Notable Species

Protected Species

3.2.36 The surveys did not record any plant species that are listed under Schedule 8 of the Wildlife and Countryside Act 1981, or on Section 7 of the Environment (Wales) Act 2016, as having special protected status.

Non-Native Invasive Species

3.2.37 During the survey, rhododendron was noted in two separate locations in wooded areas south of Llyn Maen Bras (**Annex 1**). Rhododendron is listed on Schedule 9 of the Wildlife and Countryside Act 1981.

4 DISCUSSION

4.1.1 **Table 4.1** presents the communities and habitats identified within the study area that have designations relating to habitat status or potential groundwater dependence.

Annex I Habitats

4.1.2 The H8 and H12 dry heath communities come under the '4030 European dry heaths' Annex I habitat type, and the M15 wet heath corresponds to '4010 Northern Atlantic wet heaths with *Erica tetralix*'.

4.1.3 The M19 community classed as blanket bog may correspond to the Annex I category '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 the M19 blanket bog community (**Annex 2**) bog-mosses were recorded in almost every quadrat at reasonable abundances, and particularly acute-leaved and papillose bog-mosses. Furthermore, hare's-tail cottongrass co-occurred with common heather in these habitats, matching the description of 'State 5 (Active)' in guidance published by Moors for the Future (2017). In contrast, the areas of M19 that have been described as degraded and more matching wet heathland are not thought to qualify for this Annex I designation.

Section 7

4.1.4 The above-mentioned Annex I qualifying communities also have corresponding habitats listed as Section 7 habitats (of the Environment (Wales) Act)), these are 'upland heathland' and 'blanket bogs'.

4.1.5 All areas of M19 likely qualify for the blanket bogs category under Section 7, as there is no requirement for the community to be 'active', rather that plant species indicative of blanket bog are still prevalent within the community (JNCC, 2024).

4.1.6 The M6 flush communities qualify as 'upland flushes, fens, and swamps'. Species-rich M23 rush pasture and M25 mire can qualify as 'upland flushes, fens, and swamps' but the species-poor communities that predominate on the Site are excluded from this category, so that only the small areas of M23a sub-community have been included (JNCC, 2024).

4.1.7 Based on the acidic nature of the Site, it is thought that Llyn Maen Bras may qualify as 'oligotrophic and dystrophic lakes', and any native hedgerows (present in the west) correspond to 'hedgerows'.

4.1.8 Lowland examples of acid grassland and purple moorgrass swards have corresponding Section 7 habitat categories, however it is not thought that the upland examples of these communities that occur on the Site (U5, M25) qualify for these designations.

Potential Groundwater Dependence

4.1.9 The widespread flush and rush features on the Site can signify groundwater dependent terrestrial ecosystems. Guidance from SEPA (2017) indicates that the M6 flush and M23 rush pasture communities have possible high groundwater dependence, and the U6, MG9, M15, and M25 communities all have possible moderate groundwater dependence.

4.1.10 These classifications are preliminary and further detailed hydrological assessment is required to determine whether any of the communities in the context of the Site do rely on groundwater or whether they are fed by surface water flows instead.

Table 4.1: Summary of NVC communities and Phase 1 habitats with relevant conservation designations and/or potential groundwater dependence.

Phase 1 habitat	NVC community	NVC Sub-Community	Annex I Habitat	Section 7 habitat	Potential Groundwater Dependence*
B1.2 Acid grassland, semi-improved	U5 *Nardus stricta - Galium saxatile* grassland	-	-	-	-
	U6 *Juncus squarrosus - Festuca ovina* grassland	-	-	-	Moderate
B2.2 Neutral grassland, semi-improved	MG9 *Holcus lanatus - Deschampsia cespitosa* grassland	-	-	-	Moderate
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
	M25 *Molinia caerulea - Potentilla erecta* mire	-	-	-	Moderate
D1.1 Dry dwarf shrub heath - acid	H8 *Calluna vulgaris - Ulex gallii* heath	H8e *Vaccinium myrtillus* sub-community	4030 European dry heaths	Upland heathland	-
	H12 *Calluna vulgaris- Vaccinium myrtillus* heath	H12a *Calluna vulgaris* sub-community	4030 European dry heaths	Upland heathland	-
D2 Wet dwarf shrub heath	M15d *Trichophorum cespitosum - Erica tetralix* wet heath	M15d *Vaccinium myrtillus* sub-community	4010 Northern Atlantic wet heaths with *Erica tetralix*	Upland heathland	Moderate
D2 Wet dwarf shrub heath (degraded blanket bog)	M19 *Calluna vulgaris - Eriophorum vaginatum* mire	-	-	Blanket bog	-
E1.6.1 Blanket bog	M19 *Calluna vulgaris - Eriophorum vaginatum* blanket mire	M19a *Erica tetralix* sub-community	7130 Blanket bogs	Blanket bog	-

Phase 1 habitat	NVC community	NVC Sub-Community	Annex I Habitat	Section 7 habitat	Potential Groundwater Dependence*
E2.1 Flush and spring – acid	M6 *Carex echinata* - *Sphagnum fallax* flush	M6a *Carex echinata* sub-community	-	Upland flushes, fens and swamps	High
		M6c *Juncus effusus* sub-community	-	Upland flushes, fens and swamps	High
G1 Standing water	-	-	-	Oligotrophic and dystrophic lakes	-
J2 Boundaries – native hedgerows	-	-	-	Hedgerows	-

*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. Formal conclusive categorisation is based on subsequent formal hydrological assessment, and see **ES Volume III, Appendix 7.7: Groundwater-Dependent Terrestrial Ecosystems Assessment** for further details.

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6 ANNEX 1: PHASE 1 TARGET NOTES

Table A1-1: Target notes relating to the habitat survey reported in Section 4.

Target Note	Grid reference	Description	Photo
TN2	SH 92966 39799	A pair of adult hobbies were observed at Llyn Maen Bras 16/08/2022 with two recently fledged juveniles and clearly agitated by my presence. The habitat around the lake looks good for them to breed. Same family party still present here on 18/08/2022.	7
TN5	SH 93402 39917	Semi-improved acid grassland with scattered mosaic of scrub. Species: common gorse, hard fern, broad buckler-fern, tufted hairgrass.	9
TN6	SH 93810 40580	Ringtail hen harrier mobbing a buzzard. In the same area 10 minutes later a hunting red kite.	-
TN18	SH 94588 40856	Stream approx. 1.5 m wide, 0.2 m deep, rocky bottom moderate flow. Not suitable for water vole or otter.	-
TN19	SH 94431 41797	Two adult hobbies flew over the ridge near the summit of Foel Goch. Probably not the pair from Llyn Maen Bras.	-
TN20	SH 92966 39799	Llyn Maen Bras waterbody. Lake created by stone dam in the south. Apart from the dam, it is fringed with marginal stands of bottle sedge, soft rush and flat-topped bog moss. There is extensive pondweed on the surface. Fish are present.	8
TN21	SH 92740 41293	Typical small rush flush, dominated by soft rush, with red fescue, tufted hair grass, Yorkshire fog, sharp flowered rush, creeping buttercup, marsh thistle and marsh willowherb. Sheep grazed.	10
TN22	SH 93153 40285	Deep channel with very small stream in bottom, rushes in places.	-
TN23	SH 92972 40477	Stone ruin, suitable for reptiles, may be limited potential for individual roosting bats, but possibly too exposed.	11
TN24	SH 92895 39478	Small fast flowing stream emerging from lake. Incised, gravel and rocks on bed. Scattered grey willow, alder, and rhododendron along banks. Suitable for crayfish and water vole.	12
TN25	SH 92804 39384	Very small incised fast flowing stream few cm deep on gravel and boulders. Rush lined, in heavily grazed semi-improved grassland. Possible crayfish and water vole potential? Occasional goat willow and young beech.	13

Target Note	Grid reference	Description	Photo
TN26	SH 92767 39373	Waxcap in well grazed pasture, a few more present in area.	14
TN27	SH 92960 39137	Old stone farm building and outbuildings, surrounded by scattered mature ash, alder, beech, sycamore.	15
TN28	SH 93275 38848	Large standalone ash, Bat Roost Potential (BRP) likely.	16
TN29	SH 93779 38880	Small, ruined stone building, no roof. Mature beech trees.	-
TN30	SH 93224 39264	Small flush area on shallow peat in woodland, with purple moor-grass and bog asphodel.	-
TN31	SH 92628 39291	Dense willow scrub in flush, with small stream. Some rhododendron present.	17
TN32	SH 91995 40246	Ruined stone farmhouse, no roof, low BRP.	-
TN33	SH 92242 40650	Small, ruined stone building, no roof, possible BRP. Mature trees – ash, beech, sycamore with low BRP.	18
TN34	SH 91670 40747	Stream, 1 m wide and 8 cm deep, fast flowing. Has yellow-flag iris and marshy woundwort along its margins. Upstream to the east the watercourse is choked with vegetation.	-
TN35	SH 91812 40627	Stream, 1.25 m wide and 5 cm deep, with rocky substrate.	-
TN36	SH 91162 40484	Stream, 1.5 m wide and 10 cm deep.	-
TN37	SH 91372 40193	Along field boundary, small wet ditch, 0.5 m wide and 3 cm deep.	-

ANNEX 2: NVC SURVEY FULL RESULTS

The data in **Tables A2-1** to **A2-8** 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 A2-1**.

'Constancy' refers to the frequency with which each plant species occurs across all quadrats within a specific NVC community and is ranked from 1 (least frequent) to 5 (most frequent).

Table A2-1: 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 A2-2

Phase 1 habitat type	B1.2 Acid grassland, semi-improved								
NVC Community	U5 *Nardus stricta-Galium saxatile* grassland								
Quadrat	1	2	6	21	22	30	44	45	
OS grid co-ordinates	SH 93740 39822	SH 93713 40142	SH 94759 40302	SH 95577 41391	SH 95481 41509	SH 95039 42401	SH 94104 41876	SH 94094 41731	
Species	**Cover (DOMIN)**								**Const.**
Agrostis capillaris	6	6	7	5	6	6	6	6	5
Anthoxanthum odoratum	4			4		5			2
Carex panicea		4		4			4		2
Deschampsia flexuosa	5	4	4		4		4	4	4
Festuca ovina	5	5	4	5	5	4	6	5	5
Galium saxitile	7	8	6	6	5	7	7	7	5
Hylocomium splendens		4							1
Hypnum jutlandicum	4		5		4	4		4	4
Juncus effusus				4					1
Juncus squarrosus		4					4		2
Lotus pendunculatus								4	1
Luzula multiflora	4		2		2				2
Nardus stricta	8	8	8	8	7	7	8	8	5
Pleurozium schreberi	4	5		5		5	4	4	4
Polytrichum commune		4			4				2
Potentilla erecta	4	4	4	4	4	4	4	4	5
Rhytidiadelphus squarossus	5	9	7	7	7	6	7	4	5
Scorzoneroides autumnalis			4			1		2	2
Vaccinium myrtillus	5	4	4	4		4	4	4	5

Table A2-3

Phase 1 habitat type	B1.2 Acid grassland, semi-improved					
NVC Community	U6 *Juncus squarrosus-Festuca ovina* grassland					
Quadrats	Q16	Q17	Q18	Q19	Q20	
OS grid co-ordinates	SH 92930 41663	SH 92962 41585	SH 92917 41551	SH 92885 41557	SH 92938 41586	
Soil depth (cm)	<50	<50	<50	<50	<50	
Species	**Cover (DOMIN)**					**Const.**
Calluna vulgaris	4					1
Deschampsia flexuosa	4	5	4	6	7	5
Eriophorum vaginatum		3	4	2		3
Festuca ovina	3			4	3	3
Galium saxatile		2		2	2	3
Juncus squarrosus	6	6	5	4	7	5
Molinia caerulea	1		3	1	3	4
Pleurozium schreberi	6	7	8	6	7	5
Polytrichum commune	5	5	5	5	5	5
Rhytidiadelphus squarrosus	2		1	4	3	4
Sphagnum capillifolium			3	2		2
Sphagnum papillosum			1			1
Sphagnum russowii	2					1
Sphagnum subnitens	3	4		4		3
Vaccinium myrtillus	7	6	5	3	2	5

Table A2-4

Phase 1 habitat type	D1.1 Dry dwarf shrub heath - acid			
NVC Community	H8e *Calluna vulgaris-Ulex gallii heath (Vaccinium myrtillus sub-community)*			
Quadrats	7	8	9	
OS grid co-ordinates	SH 93887 40069	SH 93906 40034	SH 93909 40013	
Species	**Cover (DOMIN)**			**Const.**
Agrostis capillaris		4	4	4
Anthoxanthum odoratum		4		2
Calluna vulgaris	7	6	6	5
Carex binervis	4	4	5	5
Deschampsia flexuosa	7	7	7	5
Erica cinerea	5	4	4	5
Erica tetralix	2			2
Galium saxitile	4		4	4
Holcus lanatus	4			2
Nardus stricta		4		2
Potentilla erecta	4	4	4	5
Rhytidiadelphus squarossus	4		4	4
Ullex gallii	8	8	7	5
Vaccinium myrtillus	9	8	9	5
Agrostis capillaris		4	4	4
Anthoxanthum odoratum		4		2
Calluna vulgaris	7	6	6	5
Carex binervis	4	4	5	5

Table A2-5

Phase 1 habitat type	D1.1 Dry dwarf shrub heath - acid					
NVC Community	H12a *Calluna vulgaris-Vaccinium myrtillus* heath (*C. vulgaris* sub-community)					
Quadrats	Q21	Q22	Q23	Q24	Q25	
OS grid co-ordinates	SH 93004 41067	SH 92974 41072	SH 92894 41080	SH 92862 41061	SH 93824 41078	
Soil depth (cm)	<50	<50	<50	<50	<50	
Species	**Cover (DOMIN)**					**Const.**
Calluna vulgaris	8	7	9	8	9	5
Deschampsia flexuosa		1				1
Eriophorum angustifolium			1			1
Eriophorum vaginatum			2			1
Hylocomium splendens		5		4	5	3
Hypnum jutlandicum	8	5	7	5		4
Molinia caerulea		4				1
Pleurozium schreberi		6	6	5	4	4
Vaccinium myrtillus	5	5	5	7	5	5

Table A2-6

Phase 1 habitat type	D2 Wet dwarf shrub heath					
NVC Community	M15d *Trichophorum cespitosum-Erica tetralix* wet heath (*Vaccinium myrtillus* sub-community)					
Quadrats	Q11	Q12	Q13	Q14	Q15	
OS grid co-ordinates	SH 93077 39881	SH 93110 39878	SH 93164 39867	SH 93214 39896	SH 93244 39959	
Soil depth (cm)	<50	<50	<50	<50	<50	
Species	**Cover (DOMIN)**					**Const.**
Agrostis canina					2	1
Aulacomnium palustre					2	1
Calluna vulgaris	5	4	3	4	5	5
Carex echinata				2		1
Carex nigra				3	2	2
Cladonia sp.			3			1
Deschampsia flexuosa	3	5	5	5	4	5
Eriophorum angustifolium		1				1
Erica tetralix	3	4	4	3		4
Eriophorum vaginatum	4	4	3	4		4
Galium saxatile	2		1	2	1	4
Hypnum jutlandicum	4			3		2
Juncus squarrosus	1			1	3	3
Molinia caerulea	6	3	3			3
Nardus stricta	3			2		2
Narthecium ossifragum		1				1
Pleurozium schreberi	4	7	8	8	7	5
Polytrichum commune	2	4	3	2	4	5
Polytrichum juniperinum				2		1
Potentilla erecta	3	3	3	3		4
Rhytidiadelphus squarrosus	3					1
Sphagnum capillifolium	5			4	6	3
Sphagnum fallax		2	2	2		3
Sphagnum papillosum		2				1
Vaccinium myrtillus	6	5	5		5	4
Vaccinium oxycoccus		2	2			2

Table A2-7

Phase 1 habitat type	E1.6.1 Blanket bog																
NVC Community	M19 *Calluna vulgaris - Eriophorum vaginatum* mire																
Quadrat	3	4	5	23	24	25	26	27	28	29	38	39	40	41	42	43	
OS grid co-ordinates	SH 93716	SH 93732	SH 93708	SH 95289	SH 95286	SH 95229	SH 95235	SH 95235	SH 95142	SH 95053	SH 94324	SH 94309	SH 94339	SH 94360	SH 94433	SH 94456	
Species	**Cover (DOMIN)**																**Const.**
Calluna vulgaris	8	8	8	6	6	6	6	6	6	7	6	6	6	5	7	6	5
Carex binervis						2			2				2		4		2
Carex echinata	4	4	4			2		4		4					4		3
Carex nigra	4								4								1
Carex panicea	4						4										1
Carex pulicaris			4					4				4					1
Cirsium palustre			4						1			1					1
Cladonia sp.	4		4	4		4		4		4	5	4	4	5		4	4
Deschampsia flexuosa	4	4	4	4	4	4		4	4		4	5	4	4	4	4	5
Drosera rotundifolia	4		4		4									4			2
Empetrum nigrum	5	5	4	4	4	4	4		5	4		4	5	5	4	5	5
Erica tetralix	5	4	4	4	4	4	4	4	4	4	4	5	5	4	4	4	5
Eriophorum angustifolium	4	5	4			4				4							2
Eriophorum vaginatum	6	6	6	6	7	6				5	5	5	6	4	6	4	5
Festuca ovina					4							4		4			1
Galium palustre											4		5				1
Holcus lanatus														4	4		1
Hydrocotyle vulgaris	4	4			4		4			4			4				2

Phase 1 habitat type	E1.6.1 Blanket bog																
NVC Community	M19 *Calluna vulgaris - Eriophorum vaginatum* mire																
Hylocomium splendens	4	4			4		4			4			4				2
Hypnum jutlandicum	5	6	5	4	4	4	4	4	4			4		4		4	4
Juncus acutiflorus		4												4	4		1
Juncus conglomeratus	4	4											4				1
Juncus effusus	4		4					4									1
Juncus squarrosus							4			4				4	4		2
Molinia caerulea	5	4	4	4		4	4			4	4	4	4	5	4	5	5
Nardus stricta		5	5		4	4			4								2
Narthecium ossifragum	4		5	4				4	4	4		4		4			3
Plagiothecium undulatum		4	4		4		4		4		4				4		3
Pleurozium schreberi	4	4	4		4	4			4	4		4		5		4	4
Polytrichum commune	5	4	4		4	4		4	5			4			5		3
Potentilla erecta	5	5	5	5	5	4	4	4	5	4	4	4	5	4	4	4	5
Rhytidiadelphus loreus			4							4						4	1
Rhytidiadelphus squarossus										4			4		4		1
Sphagnum capillifolium	5	6	6	7	6	7	5	5	4	5	4		5	4		5	5
Sphagnum fallax						4								4			1
Sphagnum papillosum	4		4		4	4					4			4	4		3
Sphagnum subnitens		4	4	4		4			4			4	4	4		4	3
Ullex gallii												4		4			1
Vaccinium myrtillus	7	6	5	5	5	5	4	4	5	5	6	6	5	6	4	4	5

Phase 1 habitat type	E1.6.1 Blanket bog																
NVC Community	M19 *Calluna vulgaris - Eriophorum vaginatum* mire																
Vaccinium oxycoccus													3		3		1
Vaccinium vitis-idaea							4	4	5	4							2
Viola palustris	4										4			4			1

Table A2-8

Phase 1 habitat type	E2.1 Flush and spring – acid flush																		
NVC Community	M6 *Carex echinata-Sphagnum fallax* flush																		
Quadrat	10	11	12	13	14	15	16	17	18	19	20	31	32	33	34	35	36	37	
OS grid co-ordinates	SH 94119	SH 94099	SH 94147	SH 94158	SH 94216	SH 94191	SH 95869	SH 95950	SH 95951	SH 95824	SH 95761	SH 94654	SH 94689	SH 94584	SH 94572	SH 94579	SH 94003	SH 93940	
Species	**Cover (DOMIN)**																		**Const.**
Agrostis canina	6	5	5	4	4	5	5	4	5	4	4	4		4	4	5			5
Anthoxanthum odoratum	4	4			4		4	4	4		4		4	4	4		4		4
Calluna vulgaris							4		4										1
Carex echinata	4	4		5	4	4	4			4	4	4		5	5	4	5		4
Cirsium palustre	4						2			4		2			4		4		2
Deschampsia cespitosa							6	6			4	4							2
Deschampsia flexuosa		4		4			4		4				4	4	4		4		3
Empetrum nigrum							4			4									1
Erica tetralix						2		4					4						1
Eriophorum angustifolium							4	4		4									1
Eriophorum vaginatum							4												1
Festuca ovina			4					4											1
Galium palustre													4		4				1
Galium saxatile	4	4	4		4		4	4	4	5	5	4	4	4		4	4	4	5
Holcus lanatus	4			4		4			4			4			4		4		2
Hydrocotyle vulgaris	4	4			4		4			4	5								2
Juncus acutiflorus	4										4								1
Juncus effusus	8	8	7	7	8	8	8	8	9	7	7	8	8	9	9	7	8	8	5
Lotus pedunculatus	4												4		4	4	4		2

Phase 1 habitat type	E2.1 Flush and spring – acid flush																		
NVC Community	M6 *Carex echinata-Sphagnum fallax* flush																		
Luzula multiflora					4														1
Molinia caerulea	5	5	6	4			4	5	5	5		4	6	6	6	5	5	4	5
Polytrichum commune	7	7	7	7	6	5	7	7	7	4		7	4	5	7		7	4	5
Potentilla erecta	4	5	5	6	4	4	5	6	5	5	4	5	5	5	5	4	5	5	5
Ranunculus flammula	4					4										4			1
Rhytidiadelphus squarrosus		4	4				4		5		4		4		5	5		5	3
Rumex acetosa			4					4							4	4		4	2
Sphagnum capillifolium				4						4					4				1
Sphagnum fallax	5	5	5	4	6			4	5	6	6	7	7	7	5			5	4
Sphagnum palustre	5	4	5		4		4		5		5		4	4		5		4	4
Sphagnum papillosum			4								4				4				1
Trifolium repens					4								4		4	4			2
Vaccinium myrtillus	4		4			4				4						4			2
Viola palustris	5	4		4		4	4	5	4			5		4	4	5	5	4	4

ANNEX 3: PHOTOGRAPHS

Phase 1 Habitat Survey Photographs	

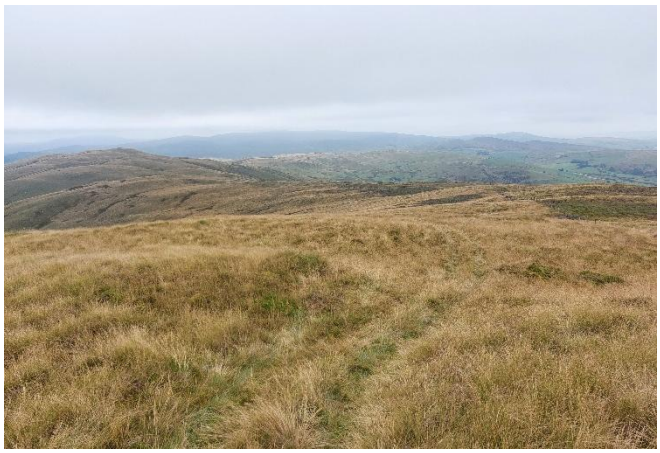
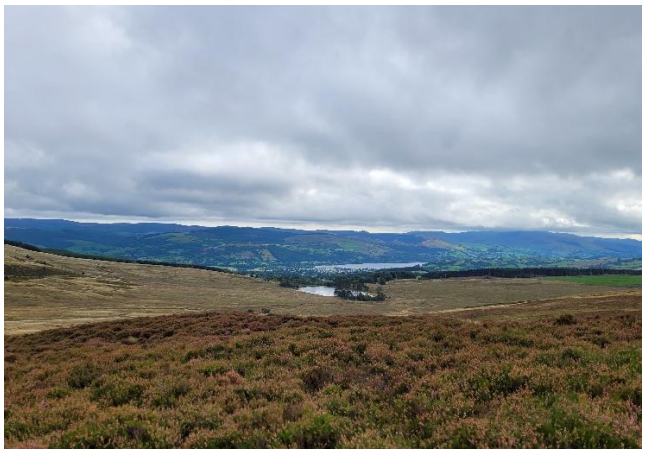

	

Photo 1. View of the Site from the summit of Foel Goch. Upland acid grassland.	**Photo 2.** Dry heath transitioning to acid grassland, with Llyn Maen Bras to the south and Llyn Tegid beyond.

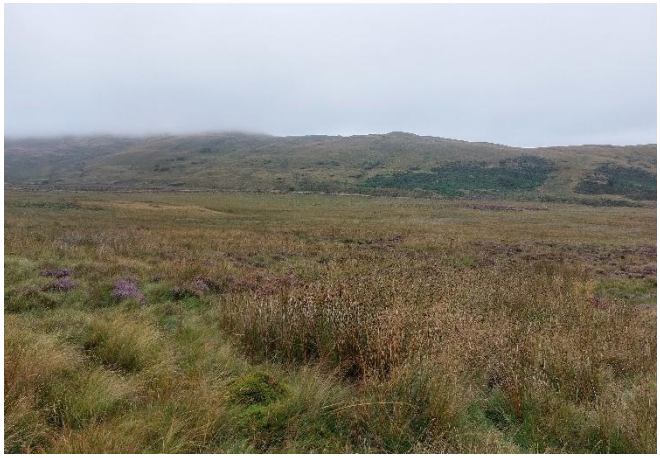
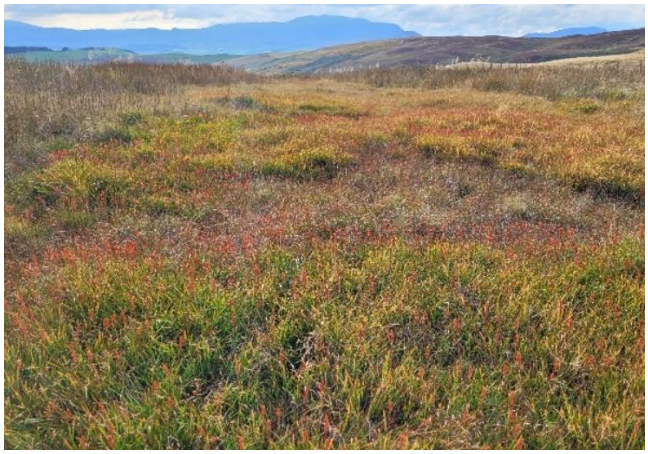

	

Photo 3. Upland rush pasture.	**Photo 4.** Blanket bog vegetation; abundant bog asphodel and cottongrass.

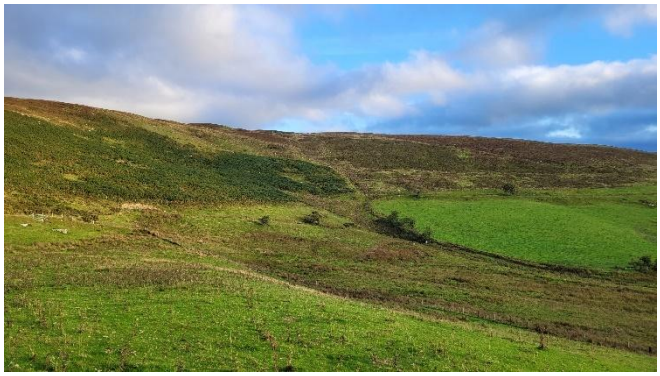
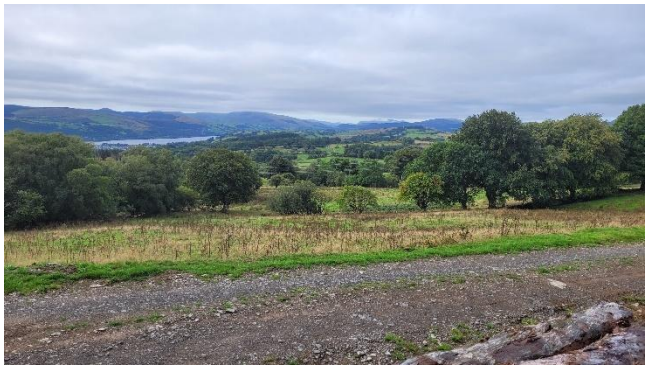

	

Photo 5. Mosaic of scrub and semi-improved grassland.	**Photo 6.** Scattered broadleaved woodland and pasture.

Target Note Photographs	

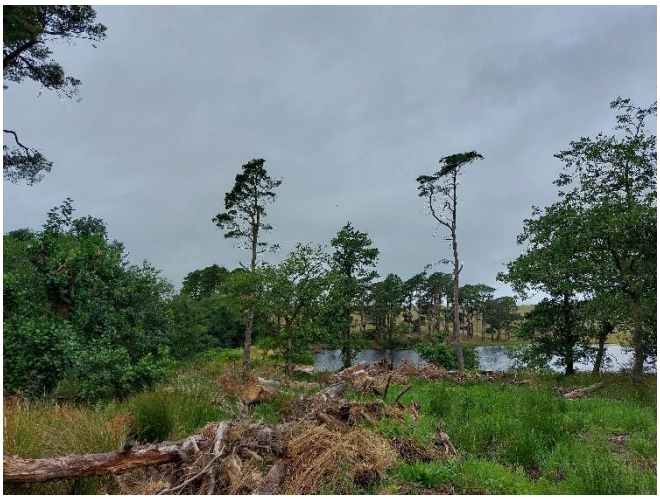
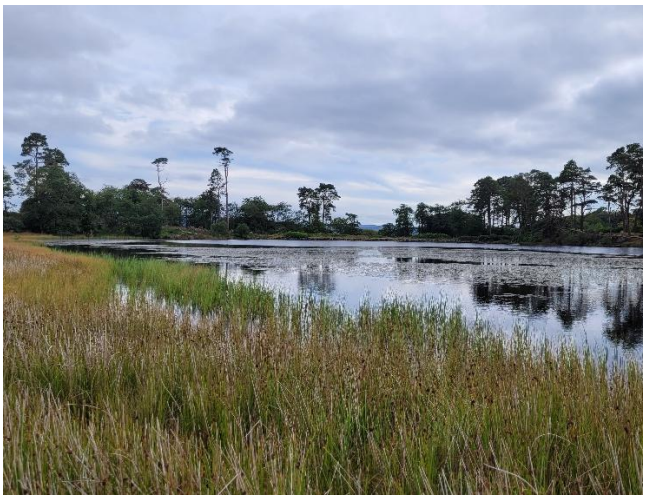

	

Photo 7. Target note 2.	**Photo 8.** Target note 20.

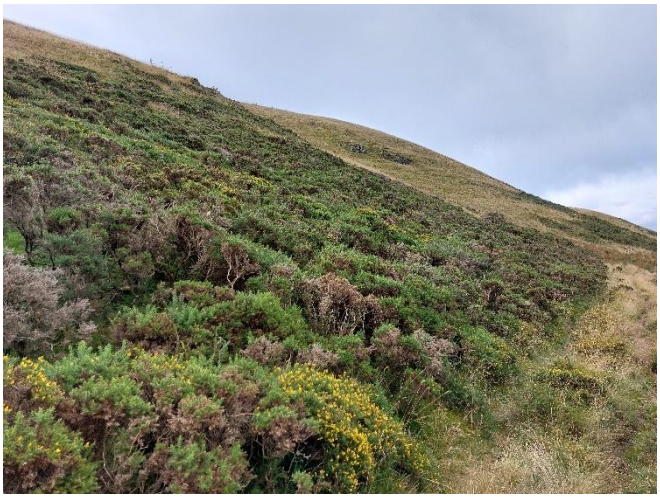
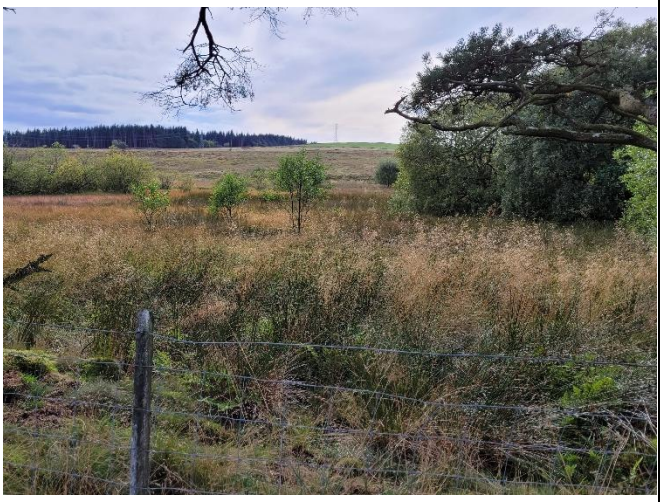

	

Photo 9. Target note 5.	**Photo 10.** Target note 21.

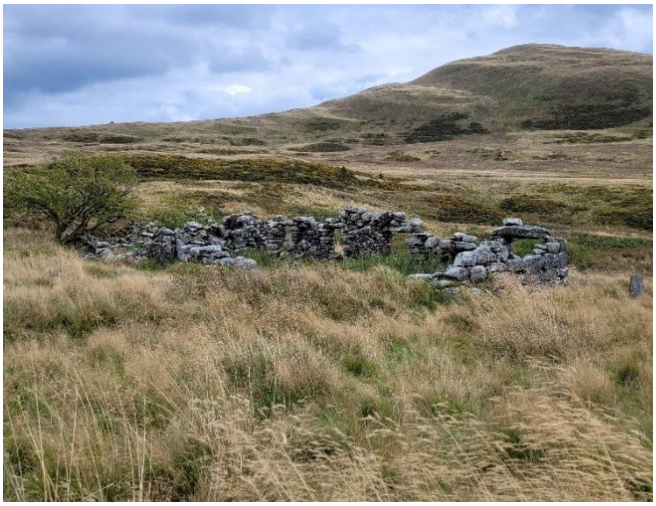
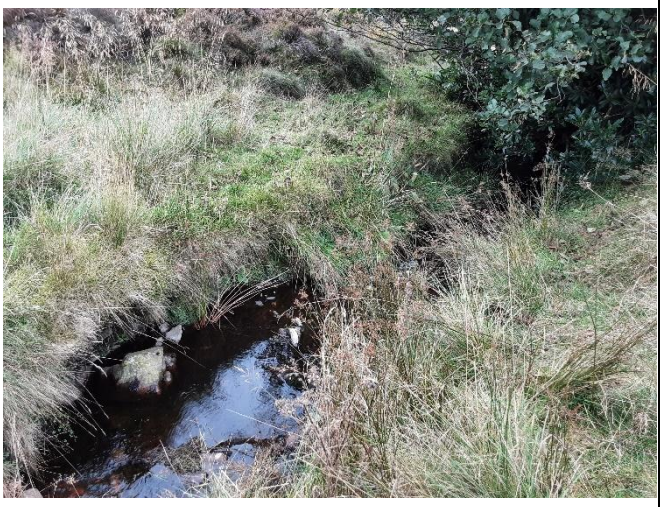

	

Photo 11. Target note 23.	**Photo 12.** Target note 24.

Target Note Photographs	
	
Photo 13. Target note 25.	**Photo 14.** Target note 26.

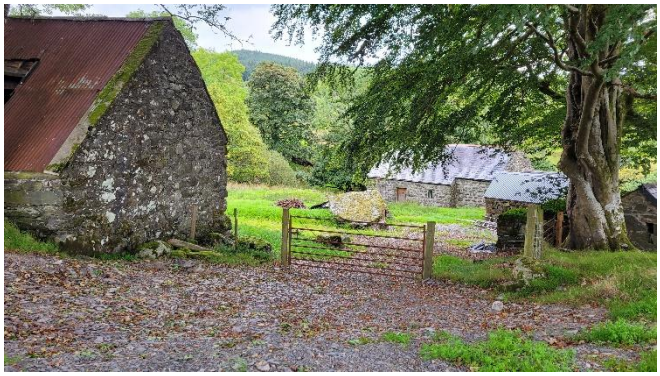
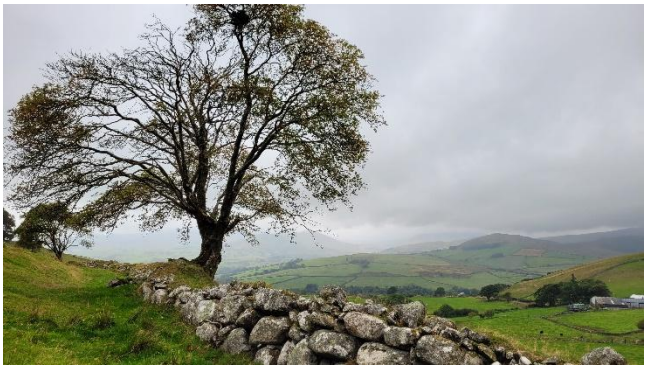

	

Photo 15. Target note 27.	**Photo 16.** Target note 28.

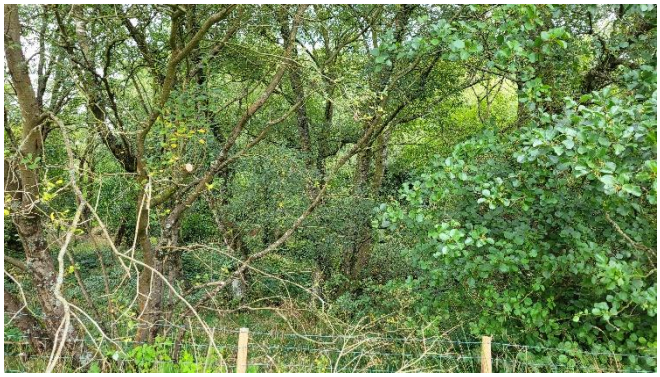



Photo 17. Target note 31.	**Photo 18.** Target note 33.

NVC Survey Photographs	

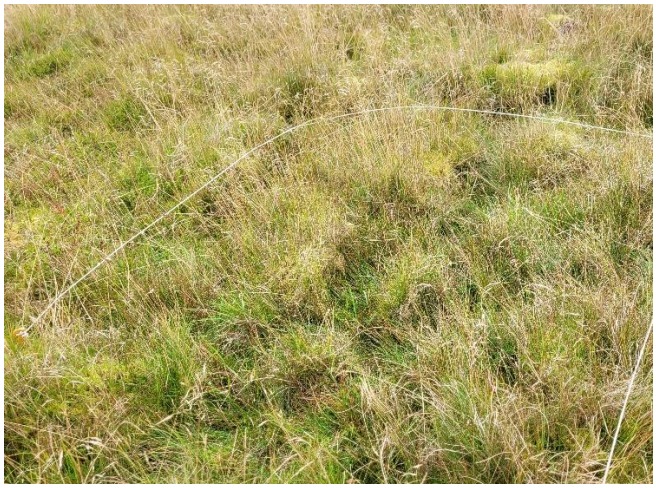



Photo 19. U6 *Juncus squarrosus - Festuca ovina* grassland	**Photo 20.** H8e *Calluna vulgaris - Ulex gallii* heath (*Vaccinium myrtillus* sub-community)

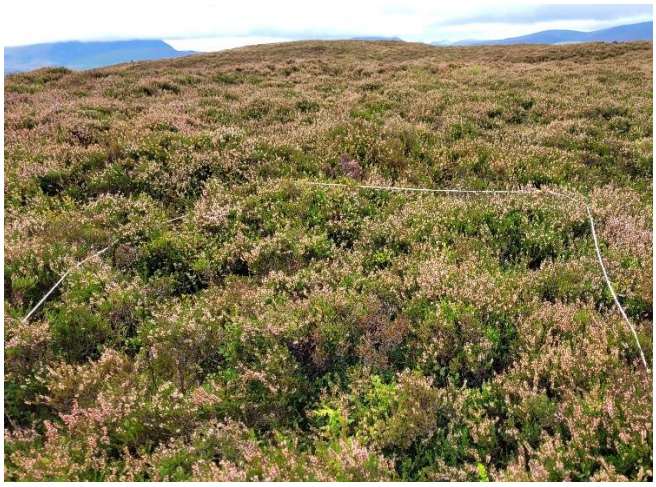
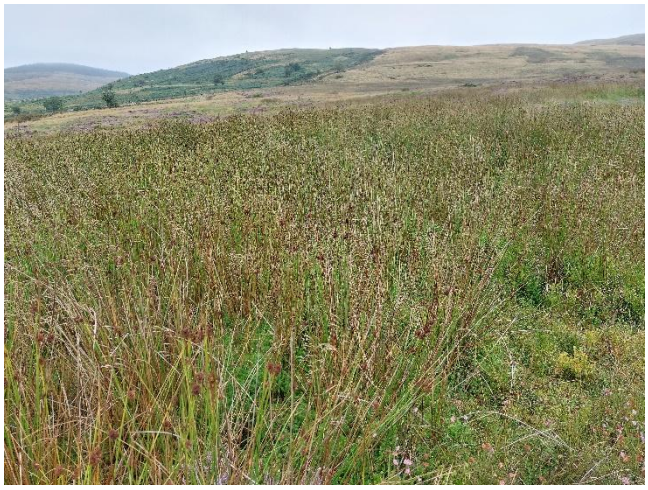



Photo 21. H12a *Calluna vulgaris-Vaccinium myrtillus* heath (*C. vulgaris* sub-community)	**Photo 22.** M15d *Trichophorum cespitosum-Erica tetralix* wet heath (*Vaccinium myrtillus* sub-community)
	
Photo 23. M19 *Calluna vulgaris - Eriophorum vaginatum* mire	**Photo 24.** M6c *Carex echinata – Sphagnum fallax* mire (*Juncus effusus* sub-community)

ANNEX 4: SCIENTIFIC NAMES

Table A4-1: The common and scientific names of the plant species included in this Appendix.

Common Name	Scientific Name
Aquatic plants	
Nuttall's waterweed	*Elodea nuttallii*
Canadian waterweed	*Elodea canadensis*
Floating water plantain	*Luronium natans*
Pondweed	*Potamogeton sp.*
Forbs	
American skunk-cabbage	*Lysichiton americanus*
Autumn hawkbit	*Scorzoneroides autumnalis*
Bluebell	*Hyacinthoides non-scripta*
Bog asphodel	*Narthecium ossifragum*
Common nettle	*Urtica dioica*
Common sorrel	*Rumex acetosa*
Creeping buttercup	*Ranunculus repens*
Creeping thistle	*Cirsium arvense*
Flag iris	*Iris pseudacorus*
Giant knotweed	*Fallopia sachalinensis*
Greater bird's-foot trefoil	*Lotus pedunculatus*
Heath bedstraw	*Galium saxatile*
Himalayan balsam	*Impatiens glandulifera*
Himalayan knotweed	*Persicaria wallichii*
Japanese knotweed	*Fallopia japonica*
Lesser butterfly-orchid	*Platanthera bifolia*
Lesser spearwort	*Ranunculus flammula*
Marsh bedstraw	*Galium palustre*
Marsh pennywort	*Hydrocotyle vulgaris*
Marsh thistle	*Cirsium palustre*
Marsh violet	*Viola palustris*
Marsh willowherb	*Epilobium palustre*
Montbretia	*Crocosmia x crocosmiiflora*
New Zealand willowherb	*Epilobium brunnescens*

Common Name	Scientific Name
Round-leaved sundew	*Drosera rotundifolia*
Tormentil	*Potentilla erecta*
Water forget-me-not	*Myosotis scorpioides*
White clover	*Trifolium repens*
Grasses, sedges, and rushes	
Bottle sedge	*Carex rostrata*
Carnation sedge	*Carex panicea*
Cocksfoot	*Dactylis glomerata*
Common bent	*Agrostis capillaris*
Common cottongrass	*Eriophorum angustifolium*
Common sedge	*Carex nigra*
Compact rush	*Juncus conglomeratus*
Crested dog's-tail	*Cynosurus cristatus*
Deergrass	*Trichophorum cespitosum*
Flea sedge	*Carex pulicaris*
Green-ribbed sedge	*Carex binervis*
Hare's-tail cottongrass	*Eriophorum vaginatum*
Heath rush	*Juncus squarrosus*
Heath wood-rush	*Luzula multiflora*
Mat-grass	*Nardus stricta*
Perennial ryegrass	*Lolium perenne*
Purple moorgrass	*Molinia caerulea*
Red fescue	*Festuca rubra*
Sharp-flowered rush	*Juncus acutiflorus*
Sheep's fescue	*Festuca ovina*
Soft rush	*Juncus effusus*
Star sedge	*Carex echinata*
Sweet vernal-grass	*Anthoxanthum odoratum*
Tufted hairgrass	*Deschampsia cespitosa*
Velvet bent	*Agrostis canina*
Wavy hairgrass	*Avenella flexuosa*
Yorkshire fog	*Holcus lanatus*

Common Name	Scientific Name
Mosses, ferns, and lichens	
Acute-leaved bog-moss	*Sphagnum capillifolium*
Blunt-leaved bog-moss	*Sphagnum palustre*
Bog bead-moss	*Aulacomnium palustre*
Bog Paw-wort	*Barbilophozia kunzeana*
Bracken	*Pteridium aquilinum*
Broad buckler-fern	*Dryopteris dilatata*
Common haircap	*Polytrichum commune*
Cow-horn bog-moss	*Sphagnum denticulatum*
Flat-topped bog-moss	*Sphagnum fallax*
Glittering wood-moss	*Hylocomium splendens*
Hard fern	*Blechnum spicant*
Heath plait-moss	*Hypnum jutlandicum*
Juniper haircap	*Polytrichum juniperinum*
Little shaggy-moss	*Rhytidiadelphus loreus*
Lustrous bog-moss	*Sphagnum subnitens*
Mare's tail	*Hippuris vulgaris*
Papillose bog-moss	*Sphagnum papillosum*
Red-stemmed feather-moss	*Pleurozium schreberi*
Reindeer lichen	*Cladonia sp.*
Russow's bog-moss	*Sphagnum russowii*
Springy turf-moss	*Rhytidiadelphus squarossus*
Waved silk-moss	*Plagiothecium undulatum*
Trees and shrubs	
Alder	*Alnus glutinosa*
Ash	*Fraxinus excelsior*
Beech	*Fagus sylvatica*
Bell heather	*Erica cinerea*
Bilberry	*Vaccinium myrtillus*
Common heather	*Calluna vulgaris*
Cotoneaster	*Cotoneaster bullatus*
Cowberry	*Vaccinium vitis-idaea*

Common Name	Scientific Name
Cranberry	*Vaccinium oxycoccos*
Cross-leaved heath	*Erica tetralix*
Crowberry	*Empetrum nigrum*
Grey willow	*Salix cinerea*
Juniper	*Juniperus communis*
Oak	*Quercus sp.*
Rhododendron	*Rhododendron ponticum*
Rowan	*Sorbus acuaparia*
Sycamore	*Acer pseudoplatanus*
Common gorse	*Ulex europaeus*
Western gorse	*Ulex gallii*
Willow	*Salix sp.*