

# Breezy Hill Energy Project National Vegetation Classification & Habitats Survey

## Technical Appendix 6.1

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## CONTENTS

1	INTRODUCTION .....	1
2	THE SITE AND STUDY AREA .....	1
2.1	Overview .....	1
2.2	Designated Sites .....	2
2.3	Ancient Woodland .....	5
2.4	Carbon and Peatland Map 2016.....	6
3	METHODOLOGY .....	6
3.1	National Vegetation Classification (NVC) .....	6
3.2	Phase 1 Habitat Characterisation .....	7
4	SURVEY DETAILS & LIMITATIONS.....	7
5	RESULTS .....	8
5.1	Summary of Habitat Types & NVC Communities.....	8
5.2	Woodland & Scrub .....	10
5.3	Grasslands & Marsh .....	12
5.4	Tall Herb & Fern.....	14
5.5	Heathland .....	14
5.6	Mire.....	14
5.7	Swamp, Marginal & Inundation Habitats .....	16
5.8	Open Water .....	16
5.9	Miscellaneous.....	16
5.10	Invasive Non-Native Species .....	17
5.11	Notable Species .....	17
6	EVALUATION OF BOTANICAL INTEREST .....	17
6.1	Overview .....	17
6.2	Groundwater Dependent Terrestrial Ecosystems (GWDTE) .....	17
6.3	Annex I Habitats.....	19
6.4	Scottish Biodiversity List Priority Habitats .....	20
6.5	Sensitivity Summary.....	21
7	SUMMARY .....	22
8	REFERENCES .....	24
ANNEX A.	NVC TARGET NOTES.....	25

ANNEX B.	TARGET NOTE PHOTOGRAPHS .....	26
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## LIST OF TABLES

Table 2-1 Designated Sites with Botanical Qualifying Features within 5 km of the Site.....	3
Table 2-2 LNCS within 5 km of the Site.....	3
Table 5-1 Phase 1 habitat type equivalents of NVC communities and other habitats recorded .....	8
Table 6-1 Communities within the Site which may Potentially be Classified as GWDTE .....	18
Table 6-2 Annex I Habitats and Corresponding NVC Communities.....	19
Table 6-3 Summary of Site Communities and Sensitivities .....	21

## LIST OF FIGURES

Figure 6.1:	Ecological Designated Sites and Ancient Woodland within 5 km
Figure 6.2:	Carbon and Peatland Map 2016
Figure 6.3:	National Vegetation Classification Survey Area and Survey Results
Figure 6.4:	Potential Groundwater Dependent Terrestrial Ecosystems (GWDTEs) Survey Area and Survey Results

## 1 INTRODUCTION

MacArthur Green was commissioned by the Applicant to carry out a National Vegetation Classification (NVC) and habitats survey at the proposed Breezy Hill Energy Project, near Cumnock and Dalmellington (both approximately 5.5 km away) (hereafter referred to as the 'Proposed Development').

The aim of the NVC survey is to identify and map the vegetation communities present within the Site in order to identify those areas of greatest ecological interest (i.e., Annex I habitats<sup>1</sup>; potential Groundwater Dependent Terrestrial Ecosystems (GWDTE); and Scottish Biodiversity List (SBL) priority habitats). This information is used to inform the wind farm design process and the ecological assessment for the Proposed Development's Environmental Impact Assessment Report (EIAR).

This report details the findings of the NVC surveys together with an evaluation of those communities described.

## 2 THE SITE AND STUDY AREA

### 2.1 Overview

The Proposed Development is located approximately 13 km south-east of Ayr, 8.5 km south-west of Cumnock and 4.5 km north of Dalmellington, within the North Kyle Forest Estate (NKF) managed by Forestry and Land Scotland (FLS). The Proposed Development is located adjacent to the North Kyle Energy Project. The Site falls within the East Ayrshire Council (EAC) administrative area, Site centre at British National Grid (BNG) coordinates 248092 612583. Figure 1.1 indicates the location of the Site.

The Site comprises an area of approximately 1,012 ha, and is situated within the NKF, which spans around 4,000 hectares. The NKF primarily features Sitka spruce and has experienced extensive opencast coal mining in recent decades. Many of the coal mines within the NKF have been abandoned, with the result that the land is scarred, derelict and unsafe in some locations.

Most of the Site is currently under forestry, some of which has been recently felled (2024). The Site is underlain by historical underground coal mine workings; consequently, there is residual mining infrastructure on the surface including a mine water reservoir or void which has become somewhat naturalised over time, referred to as the Coyle Water, and there are several mining access tracks that are used to access the Site.

2.2.4 The elevation of the Site varies from 245 m Above Ordnance Datum (AOD) in the north-west of the Site to 410 m AOD in the south of the Site.

This Technical Appendix reports on the habitats recorded within the Site, covering a total of 1,087.4 ha (Figure 6.3, EIA Report Volume 2a). The appropriate scale and 'Study Area' for the

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<sup>1</sup> As defined by the Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora – the 'Habitats Directive'.

assessment of effects with regards habitat loss has been deemed to be the Site (as defined in Chapter 6, EIAR Volume 1).

## 2.2 Designated Sites

There are three statutory designated sites containing habitat related, or botanical, qualifying features within 5 km of the Site. The details of, and relevant qualifying features for, each designation relevant to this Technical Appendix are detailed in Table 2-1; see also Figure 6.1 (EIA Report Volume 2a).

Table 2-1 Designated Sites with Botanical Qualifying Features within 5 km of the Site

Designated Site	Distance from Site	Qualifying Feature	Last Assessed Condition & Date
Barlosh Moss Site of Special Scientific Interest (SSSI)	3.4 km	Raised Bog	Unfavourable Declining <sup>2</sup> 19 March 2013
		Hydromorphological mire range	Unfavourable Declining 8 September 2015
Dalmellington Moss SSSI	4.1 km	Raised Bog	Unfavourable Recovering 5 October 2007
Bogton Loch SSSI	4.7 km	Open water transition fen	Unfavourable Recovering 19 August 2024

There are 21 Local Nature Conservation Sites (LNCS) within 5 km of the Site, that are designated (wholly or partially) for habitat related, or botanical, interests. The available summary details<sup>3,4</sup> of these LNCS are presented in Table 2-2, see also Figure 6.1 (EIA Report Volume 2a).

Table 2-2 LNCS within 5 km of the Site

LNCS	Distance from Site	Description
Benquhat Hill	0.002 km	Botanically rich grassland with rare plants, birds and butterflies. Dunaskin Glen is a steep-sided gorge with scattered scrubby woodland of upland character, rich ground flora and species-rich ledges and flushes. Benquhat Hill is a good example of upland grassland with rock outcrops supporting a good variety of mosses, lichens and uncommon ferns.
Rankinston Scrub, Water of Coyle	0.8 km	This site comprises agricultural fields, and scrub (hawthorn, blackthorn, gorse, willow) with scattered broadleaf woodland and Water of Coyle from the south to north. A disused railway also crosses the site.
Martyrs' Moss	1.2 km	This site comprises an area of upland habitats including bog, heathland and commercial forestry. Areas of scrub are to the north and east boundary, and Black Water runs along the north boundary. Beoch Lane burn runs along the south and east of the site. A minor road and farm is to the south of the site
Benbeoch / Pennyvennie Glen	1.3 km	Botanically rich grassland and woodland with rare plants. Mostly open grassland habitat. Botanical interest lies in the vegetated ledges, scree and boulders of Benbeoch Craig which is surrounded by acidic grassland. Pennyvennie Glen contains semi-natural gorge woodland of upland character of birch, alder and ash with good shrub and ground layers.
Belston Loch	2.0 km	This site comprises of an area of wetland habitat, with scrub and trees to the west and grassland surrounding the loch. Taiglum Burn

<sup>2</sup> Management measures are in place that should, in time, improve the feature to Favourable condition (Unfavourable Recovering Due to Management).

<sup>3</sup> <https://www.east-ayrshire.gov.uk/Resources/PDF/P/planning-nspg-local-nature-conservation-sites.pdf>

<sup>4</sup> <https://www.data.gov.uk/dataset/c3460656-74ab-435a-8f77-9a528e24beb1/local-nature-conservation-sites-scotland>



LNCS	Distance from Site	Description
		runs into the loch and small buildings are present to the north. Loch with surrounding swamp, willow carr and marshy habitat types.
Bow Burn	2.1 km	Semi-natural birch/alder woodland along steep banks of the burn. Some mature oak and pine. The wood is open to grazing which has impoverished the ground flora and prevented regeneration although there remains a good shrub layer.
Ashentree Glen Wood	2.7 km	Ashentree Glen, a small wych elm dominated woodland with good structure and dense thorn and hazel at its lower end.
Bent Burn	2.9 km	Wide roadside verge comprises open grassland, scrub and mature trees, with many acidic species and bounded at each end by dense willow scrub.
Dunaskin Ironworks	3.1 km	This site is predominantly a broadleaf semi-natural woodland comprised of mature and semi-mature silver birch, hawthorn, ash, sycamore, willow and beech trees. Scattered through the south-east of the site are areas of bare ground, scrub and ephemeral / short perennial which are remnants of the ironworks activities within the site. Species gradually colonising these areas include bird's-foot trefoil, clover, willow, wild strawberry, wood rush, dandelion, red campion, daisy, rosebay willowherb, all of which are moving in from the surrounding woodland.
Craigs of Kyle	3.2 km	No information available (located in South Ayrshire).
Cumnock Burn / Pennyvenie Burn	3.4 km	The grasslands in the west of the site, south of the B741 are a mosaic of improved, poor semi-improved and marshy grasslands, some of which contain scattered scrub or broadleaf trees. Much of the land in this area is grazed by sheep therefore species indicative of improvement are widespread. Tree species present in these grasslands include beech, oak, silver birch and horse chestnut, however large areas of rhododendron are also present.
Kerse Loch	3.5 km	Loch with small areas of swamp, willow carr and wet meadow. Western end has been infilled and only the narrow strip between the loch and dismantled railway embankment is of botanical interest.
Doon Valley Wetlands	3.5 km	A range of mire and fen communities covering a sizeable area along the River Doon between Waterside and Bellsbank. Includes Bogton Loch SSSI (standing water, fen carr and flush habitats) and Dalmellington Moss SSSI (raised mire, swamp and tall herb fen).
Burnock Water	3.6 km	This site is comprised of the Burnock Water watercourse and surrounding woodlands, grasslands and scrub. Semi-natural gorge woodland plus areas of gorse/broom scrub; old coppiced hazel woodland and small areas of semi-improved meadow along the Burnock Water. Grazed throughout and further damaged by rubbish dumping and bank erosion around Barquharrie.
River Doon Woodland	4.4 km	The southern section is predominantly wooded, with an access track running along the eastern boundary and small encroachment from a tarmac area in the south. This section is immediately bordered by Patna cemetery to the south, and the River Doon forms the eastern boundary of the site. The northern section of the site is predominantly wooded and follows the River Doon and is generally surrounded by agricultural land and small areas of woodland.

LNCS	Distance from Site	Description
Water of Coyle (Bridgend to Mill of Shield)	4.6 km	No information available (located in South Ayrshire).
Wallace Moor / Keirs Hill	4.6 km	A small area of relatively unmodified blanket bog, plus wet modified bog and wet heath/acid grassland habitats surrounded by <i>Molinia</i> -dominated marshy grassland. Bog myrtle ( <i>Mycrica gale</i> ) is abundant.
Glaisnock Moss / Carnivan Hill	4.6 km	The site comprises an area of upland habitats of blanket bog, modified bog and acid grassland. Forestry plantation is present to the south-west, with associated access tracks.
Dalmellington Town Common	4.7 km	This site comprises grasslands and two small sections of scrub woodland in the north-west and south-east. There is a small watercourse within the south-east, and a minor road through the centre.
Auchenroy / Glenmount Uplands	4.8 km	Part of an extensive site with variable habitat interest including large tracts of <i>Molinia</i> grassland, but also substantial areas of blanket bog with good representation of dry acid grassland.
Craigengillan / Ness Glen Woodland	4.9 km	A variety of woodland types including semi-natural.

## 2.3 Ancient Woodland

There are no areas of ancient woodland (as present on the Ancient Woodland Inventory (AWI)) within the Site; however, locally there are several areas within 5 km of the Site. The closest stand to the Site is located 551 m to the west of the Site and south of the hamlet of Rankinston; see Figure 6.1 (EIA Report Volume 2a).

The definition of ancient woodland is land that is currently wooded and has been continually wooded at least since 1750. It is not related to the age of the trees that are currently growing there and they do not have to be ancient or elderly, as it is the historical continuity of the woodland habitat that makes a woodland ancient. The AWI holds information on the location and extent of ancient woodland within Scotland, and categorises each stand as follows:

- Ancient Woodland (1a and 2a) - Interpreted as semi-natural woodland from maps of 1750 (1a) or 1860 (2a) and continuously wooded to the present day. If planted with non-native species during the 20th century they are referred to as Plantations on Ancient Woodland Sites (PAWS);
- Long-established woodlands of plantation origin (LEPO) (1b and 2b) - Interpreted as plantation from maps of 1750 (1b) or 1860 (2b) and continuously wooded since. Many of these sites have developed semi-natural characteristics, especially the oldest stands, which may be as rich as ancient woodland; and
- Other woodlands on Roy maps (3) - Shown as un-wooded on the 1st Edition of the Ordnance Survey maps (produced in circa 1850) but as woodland on the Roy maps

(produced in circa 1750). Such sites have, at most, had only a short break in continuity of woodland cover and may still retain features of ancient woodland.

## 2.4 Carbon and Peatland Map 2016

The Carbon and Peatland Map 2016<sup>5</sup> was consulted to determine likely peatland classes present within the Site. The map is a predictive tool that provides an indication of the likely presence of peat at a coarse scale. The Carbon and Peatland map has been developed as a high-level planning tool and identifies areas of nationally important carbon-rich soils, deep peat and priority peatland habitat<sup>6</sup> as Class 1<sup>7</sup> and Class 2<sup>8</sup> peatlands.

Figure 6.2 (EIA Report Volume 2a) indicates that, according to this predictive tool and map, there is one very small area of Class 1 peatland within the Site to the south towards Greengate Rig and which has been avoided by the Proposed Development; there are other areas of Class 1 peatland outwith the Site to the east and south. There are no areas of Class 2 peatland within the Site; there is no Class 2 peatland within 1.8 km of the Site. Much of the Site and surrounding area is underlain by Class 3<sup>9</sup>, Class 4<sup>10</sup>, Class 5<sup>11</sup> and Class 0<sup>12</sup> (mineral) soils (see Figure 6.2; EIA Report Volume 2a).

Peatland surveys were undertaken separately and are discussed in Chapter 8 (EIA Report, Volume 1) and Technical Appendices 8.1 and 8.2 (EIA Report, Volume 3) which informed design and the impact assessment.

## 3 METHODOLOGY

### 3.1 National Vegetation Classification (NVC)

The vegetation was surveyed by suitably qualified and experienced botanical surveyors using the NVC scheme (Rodwell, 1991-2000; 5 volumes) and in accordance with NVC survey guidelines (Rodwell, 2006). The NVC scheme provides a standardised system for classifying and mapping semi-natural habitats and ensures that surveys are carried out to a consistent level of detail and accuracy.

Homogeneous stands and mosaics of vegetation were identified and mapped by eye and drawn as polygons on high resolution aerial imagery field maps. These polygons were surveyed qualitatively to record dominant and constant species, sub-dominant species and other notable species

<sup>5</sup> SNH. (2016) Carbon and Peatland 2016 map. Available at: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/soils/carbon-and-peatland-2016-map>

<sup>6</sup> Priority peatland habitat is land covered by peat-forming vegetation or vegetation associated with peat formation.

<sup>7</sup> Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value.

<sup>8</sup> Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential.

<sup>9</sup> Class 3 - Dominant vegetation cover is not priority peatland habitat but is associated with wet and acidic type. Occasional peatland habitats can be found. Most soils are carbon-rich soils, with some areas of deep peat. Indicative soil = Predominantly peaty soil with some peat soil. Indicative vegetation = Peatland with some heath.

<sup>10</sup> Class 4 - Area unlikely to be associated with peatland habitats or wet and acidic type. Area unlikely to include carbon-rich soil. Indicative soil = Predominantly mineral soil with some peat soil. Indicative vegetation = Heath with some peatland.

<sup>11</sup> Class 5 - Soil information takes precedence over vegetation data. No peatland habitat recorded. May also include areas of bare soil. Soils are carbon-rich and deep peat. Indicative soil = Peat soil. Indicative vegetation = No peatland vegetation.

<sup>12</sup> Class 0 - Mineral soil - Peatland habitats are not typically found on such soils. No peatland vegetation.

present. The surveyors worked progressively across the Site to ensure that no areas were missed, and that mapping was accurate. NVC communities were attributed to the mapped polygons using surveyor experience and matching field data against published floristic tables (Rodwell, 1991-2000). Stands were classified to sub-community level where possible, although in many cases the vegetation was mapped to community level only because the vegetation was too species-poor or patches were too small to allow meaningful sub-community determination; or because some areas exhibited features or fine-scale patterns of two or more sub-communities.

Quadrat sampling was not used in this survey because experienced NVC surveyors do not need to record quadrats in order to reliably identify NVC communities and sub-communities (Rodwell, 2006). Notes were made about the structure and flora of larger areas of vegetation in many places (such as the abundance and frequency of species, and in some cases condition and evident anthropogenic impacts). It can be better to record several larger scale qualitative samples than one or two smaller quantitative samples; furthermore, qualitative information from several sample locations can be vital for understanding the dynamics and trends in local (Site) vegetation patterns (Rodwell, 2006).

Due to small scale vegetation and habitat variability and numerous zones of habitat transitional between similar NVC communities, many polygons can represent complex mosaics of two or more NVC communities. Where polygons have been mapped as mosaics an approximate percentage cover of each NVC community within the polygon is given so that the dominant community and character of the vegetation could still be ascertained.

### 3.2 Phase 1 Habitat Characterisation

The NVC and mapping data was also correlated to their equivalent habitats according to the Phase 1 habitat classification (JNCC, 2010), considering the species composition and habitat quality. The Phase 1 characterisation has been utilised to allow a broader visual representation of the habitats within the Site. Polygons or areas where there are mosaic NVC communities have generally been assigned a single Phase 1 classification based on the dominant NVC type (despite some polygons containing multiple Phase 1 types, often in low percentages). Therefore, the Phase 1 characterisation is generally a broader overview, and the NVC data should be referred to for further detail in any specific area.

Botanical nomenclature in this report follows that of Stace (2019) for vascular plants, Atherton *et al.* (2010) for bryophytes and Smith *et al.* (2009) for lichens.

## 4 SURVEY DETAILS & LIMITATIONS

NVC surveys were undertaken within the Site during:

- October 2017;
- June 2020;
- March and April 2021;
- July and October 2024; and

- March 2025.

Surveys were therefore carried out during the optimal season for habitat surveys. The weather conditions were amenable to survey; bright, with broken cloud and relatively light to moderate winds. All areas of the Site were accessible.

The NVC system does not cover all possible semi-natural vegetation or habitat types that may be found. Since the NVC was adopted for use in Britain in the 1980's further survey work and an increased knowledge of vegetation communities has led to additional communities being described that do not fall within the NVC system (e.g., see Rodwell *et al.*, 2000; Averis *et al.*, 2004; Mountford, 2011; and Averis and Averis, 2020). Where such communities are found and recorded they are given a non-NVC community code and are described.

It should be noted that the accuracy of GIS may be to within several meters of what is actually on the ground. The habitat figures are very detailed but should be acknowledged that the mapped habitat areas may be out by a few meters due to GPS and GIS differences.

It should be noted that the results from this survey, and the matches made in describing communities, represent a current community evaluation at the time of survey (as opposed to one seeking to describe what the community was before any human interference, or what it might become in the future). In light of this, a clear constraint of the vegetation survey and evaluation process as used in this and other surveys is that it offers only a snapshot of the vegetation communities present and should not be interpreted as a static long-term reference.

Ecological surveys are limited by factors which affect the presence of plants such as the time of year and weather. The ecological surveys undertaken to inform this project have not therefore produced a complete list of plants and the absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future. However, the results of these surveys are considered to be sufficient to undertake a robust assessment.

## 5 RESULTS

### 5.1 Summary of Habitat Types & NVC Communities

23 NVC communities and 28 non-NVC communities were recorded within the Site, and these corresponded to 22 Phase 1 habitat types. These communities and habitat types, and their respective Site-specific correlations are summarised below in Table 5-1.

**Table 5-1 Phase 1 habitat type equivalents of NVC communities and other habitats recorded**

Phase 1 Habitats	NVC Communities & Other Non-NVC Habitats/Features Recorded
A1.1.1 Broad-Leaved Semi-Natural Woodland	W4 <i>Betula pubescens</i> – <i>Molinia caerulea</i> woodland W7 <i>Alnus glutinosa</i> – <i>Fraxinus excelsior</i> – <i>Lysimachia nemoreum</i> woodland

Phase 1 Habitats	NVC Communities & Other Non-NVC Habitats/Features Recorded
A1.1.2 Broadleaved Plantation Woodland	W4(p) <sup>13</sup> <i>Betula pubescens</i> – <i>Molinia caerulea</i> woodland W7(p) <sup>13</sup> <i>Alnus glutinosa</i> – <i>Fraxinus excelsior</i> – <i>Lysimachia nemoreum</i> woodland W14(p) <sup>13</sup> <i>Fagus sylvatica</i> – <i>Rubus fruticosus</i> woodland
A1.2.2 Coniferous Plantation Woodland	CP Coniferous Plantation (non-NVC type) YCP Young Coniferous Plantation (non-NVC type)
A3.1 Scattered Broadleaved Tree	SBT (non-NVC type)
A3.2 Scattered Coniferous Tree	SCT (non-NVC type)
A4.2 Recently-Felled Coniferous Woodland	CF Clear-Felled Woodland (non-NVC type) CF>M23b (non-NVC type) CF>M19a (non-NVC type) CF>W7 (non-NVC type) CF>M25 (non-NVC type) CF>U4 (non-NVC type) CF>M25a (non-NVC type) CF>M25b (non-NVC type) CF>U4d (non-NVC type) CF>M6c (non-NVC type) CF>Je (non-NVC type) CF>OV27 (non-NVC type) CF>U2a (non-NVC type) CF>MG9 (non-NVC type)
B1.1 Unimproved Acid Grassland	U4 <i>Festuca ovina</i> – <i>Agrostis capillaris</i> – <i>Galium saxatile</i> grassland U5 <i>Nardus stricta</i> – <i>Galium saxatile</i> grassland U6 <i>Juncus squarrosus</i> – <i>Festuca ovina</i> grassland
B1.2 Semi-Improved Acid Grassland	U4b <i>Festuca ovina</i> – <i>Agrostis capillaris</i> – <i>Galium saxatile</i> grassland <i>Holcus lanatus</i> – <i>Trifolium repens</i> sub-community
B2.1 Unimproved Neutral Grassland	MG9 <i>Holcus lanatus</i> – <i>Deschampsia cespitosa</i> grassland
B5 Marsh/Marshy Grassland	MG10 <i>Holcus lanatus</i> – <i>Juncus effusus</i> rush-pasture M23 <i>Juncus effusus/acutiflorus</i> – <i>Galium palustre</i> rush-pasture M25 <i>Molinia caerulea</i> – <i>Potentilla erecta</i> mire M28 <i>Iris pseudacorus</i> – <i>Filipendula ulmaria</i> mire Je <i>Juncus effusus</i> acid grassland community (non-NVC type) Ja <i>Juncus acutiflorus</i> acid grassland community (non-NVC type)
C3.1 Tall Herb & Fern: Tall Ruderal	OV24 <i>Urtica dioica</i> – <i>Galium aparine</i> community OV25 <i>Urtica dioica</i> – <i>Cirsium arvense</i> community OV27 <i>Chamerion angustifolium</i> community

<sup>13</sup> The suffix (p) indicates that although the area has been attributed a NVC code and the vegetation is broadly referable to that community, the area is clearly, or very likely, of plantation origin and therefore not semi-natural.

Phase 1 Habitats	NVC Communities & Other Non-NVC Habitats/Features Recorded
C3.2 Tall Herb & Fern: Non-Ruderal	U16 <i>Luzula sylvatica</i> – <i>Vaccinium myrtillus</i> tall-herb community
D2 Wet Dwarf Shrub Heath	M15 <i>Trichophorum cespitosum</i> – <i>Erica tetralix</i> wet heath community
E1.6.1 Blanket Bog	M3 <i>Eriophorum angustifolium</i> bog pool community M18 <i>Erica tetralix</i> – <i>Sphagnum papillosum</i> blanket mire M19 <i>Calluna vulgaris</i> – <i>Eriophorum vaginatum</i> blanket mire
E1.7 Wet Modified Bog	M20 <i>Eriophorum vaginatum</i> blanket mire M25a^ <i>Molinia caerulea</i> – <i>Potentilla erecta</i> mire <i>Erica tetralix</i> sub-community
E2.1 Acid/Neutral Flush/Spring	M4 <i>Carex rostrata</i> - <i>Sphagnum fallax</i> mire M6 <i>Carex echinata</i> - <i>Sphagnum fallax/denticulatum</i> mire
E4 Bare Peat	ExP Exposed Peat (non-NVC type)
F1 Swamp	S9 <i>Carex rostrata</i> swamp
G1 Open Water	SW Standing Water (non-NVC type)
I2.1 Quarry	QY Quarry (non-NVC type)
J4 Bare Ground	BG Bare Ground, Tracks, Hardstandings etc (non-NVC type)
J5 Other Habitat	UM Unrestored Mine (non-NVC type) UM>Je (non-NVC type) UM>OV27 (non-NVC type) UM>U4 (non-NVC type)

The following sections describe each of these Phase 1 habitat types and the communities underpinning these within the Site. Habitats are described in the order they appear within the Phase 1 classification. The survey results are displayed in Figure 6.3 (EIA Report Volume 2a) which combines Phase 1 symbology with NVC data.

A number of target notes (TNs) were also made during surveys, often to pinpoint areas or species of interest. These target notes are shown in Figure 6.3 (EIA Report Volume 2a) and detailed within Annex A, target note photographs are included within Annex B.

## 5.2 Woodland & Scrub

### 5.2.1 A1.1.1 Broad-Leaved Semi-Natural Woodland

Semi-natural broadleaved woodland is of very low extent and only appears as a minor component part of several mosaics.

Most of the woodland recorded in the Site is a combination of W4 *Betula pubescens* – *Molinia caerulea* woodland and W7 *Alnus glutinosa* – *Fraxinus excelsior* – *Lysimachia nemoreum* woodland.

Areas of W7 were usually dominated by *Salix* spp., over a field layer with dominant to abundant *Juncus effusus*.



Areas of W4 were usually dominated by *Betula* spp. and *Salix* spp., over a field layer with dominant to abundant *Molinia Caerulea*.

#### 5.2.2 A1.1.2 Broadleaved Plantation Woodland

The majority of planted broadleaved woodland recorded within the Site is a mix of W4(p) *Betula pubescens* – *Molinia caerulea* woodland and W7(p) *Alnus glutinosa* – *Fraxinus excelsior* – *Lysimachia nemoreum* woodland. One small area of W14(p) *Fagus sylvatica* – *Rubus fruticosus* woodland was recorded in the north-west of the Site. The suffix (p) indicates that although the area has been attributed a NVC code and the vegetation in some respects is broadly referable to that community, the area is clearly, or very likely, of plantation origin and therefore not semi-natural.

The planted W4 consisted of mixes of *Betula* spp., *Alnus glutinosa*, *Sorbus aucuparia*, *Populus tremula* and *Salix* spp., over a *Molinia caerulea* dominated field layer.

The planted W7 recorded often comprised *Alnus glutinosa* and *Salix cinerea*, over a *Juncus* spp. dominated field layer with occasional to frequent *Deschampsia cespitosa*.

One area of planted W14, with *Fagus sylvatica*, was recorded in the north-west of the Site.

#### 5.2.3 A1.2.2 Coniferous Plantation Woodland

The majority of the Site includes large areas of planted commercial young and mature coniferous plantation woodland (YCP and CP). These plantation woodlands are mostly dominated by *Picea sitchensis*.

When mature, these types of typically dense plantation woodlands are of negligible botanical and ecological value due to over-shading and loss of the field flora; patchy areas of *Pteridium aquilinum* and/or *Molinia caerulea* is therefore generally all that persists here beneath the deep shade and the litter shed amongst the conifers.

#### 5.2.4 A3.1/A3.2 Scattered Broadleaved Tree & Scattered Coniferous Tree

Occasionally some habitats have individual or low numbers of scattered broadleaved trees (SBT) or scattered coniferous trees (SCT) that would not constitute a woodland community.

#### 5.2.5 A4.2 Recently Felled Coniferous Woodland

Several areas within the Site, towards the north-east near Green Hill, the centre of the Site along Water of Coyle and the south were recorded as recently felled conifer plantation.

Several areas that have been clear-felled for longer and not yet re-planted are now re-vegetating and re-establishing with secondary temporary/transitional semi-natural vegetation types through the remnant stumps and brash. The majority of re-vegetating clear-fell areas are denoted by the '>' symbol (see Figure 6.3 (EIA Report Volume 2a) and Table 5-1). The '>' also indicates the closest-fit NVC community to which the clear-felled area now appears, or is developing towards, e.g. 'CF > M25' indicates that mire vegetation resembling the M25 community is recolonising the clear-fell area. Throughout the Site sections of clear-fell appear in transition to a number of different communities (as per Table 5-1). In a few areas young self-seeded trees are invading, and in time fragments of woodland communities such as W4 and W7 would likely develop.



### 5.3 Grasslands & Marsh

#### 5.3.1 B1.1/B1.2 Unimproved & Semi-Improved Acid Grassland

Unimproved acid grassland was scarcely scattered within the Site with the larger stands found on thin mineral soils. Small, fragmented patches also make up component parts of mosaics.

The majority of unimproved acid grassland in the survey area is U4 *Festuca ovina* – *Agrostis capillaris* – *Galium saxatile* grassland, including U4a Typical sub-community and U4d *Luzula multiflora* – *Rhytidiadelphus loreus* sub-community. There are also some smaller patches of U5 *Nardus stricta* – *Galium saxatile* grassland and U6 *Juncus squarrosus* – *Festuca ovina* grassland scattered through the Site.

The U4 community often contained a variable mix of *Agrostis capillaris*, *Festuca ovina* and *Anthoxanthum odoratum*. The herbs *Potentilla erecta* and *Galium saxatile* are common and in some stands, there can also be smaller quantities of other vascular species such as *Holcus lanatus*, *Nardus stricta*, *Avenella flexuosa*, *Cynosurus cristatus*, *Juncus squarrosus*, *Prunella vulgaris*, *Ranunculus repens*, *Cerastium fontanum*, *Achillea millefolium*, *Trifolium repens*, *Luzula* spp., and *Cirsium* sp. Mosses are frequent, especially *Pleurozium schreberi* and *Rhytidiadelphus squarrosus*.

The U4d sub-community is very mossy and contains *Agrostis* spp., *Deschampsia cespitosa*, *Holcus lanatus*, *H. mollis*, *Galium saxatile*, *Fescue* spp., and *Polytrichum commune*.

Many of the grassland species found within the U5 and U6 communities replicate many of the species found within U4 as described above, but with *Nardus stricta* (U5) and *Juncus squarrosus* (U6) being the dominant and most characteristic species.

Areas of semi-improved acid grassland are characterised by the U4b *Holcus lanatus* - *Trifolium repens* sub-community only. A field in the north-west of the Site is characterised by U4b where there has been more agricultural improvement over time.

The areas of U4b are generally intensively grazed with a very short sward and only occasional and more sparse acid indicator species. The sward is mainly comprised of *Holcus lanatus*, *Agrostis* spp., *Festuca* spp., *Cynosurus cristatus* and *Trifolium repens* with the more occasional to rare species including *Anthoxanthum odoratum*, *Juncus effusus*, *Plantago lanceolata*, and *Cirsium* sp. The moss *Rhytidiadelphus squarrosus* is scattered in patches.

#### 5.3.2 B2.1 Unimproved Neutral Grassland

Unimproved neutral grasslands are very uncommon within the Site and of low total cover. These neutral grasslands were comprised of small patches of the MG9 *Holcus lanatus* – *Deschampsia cespitosa* grassland community and the MG9a *Poa trivialis* sub-community.

#### 5.3.3 B5 Marsh/Marshy Grassland

Marshy grassland is habitat that includes several different sward types in which *Molinia caerulea*, *Juncus* spp. and/or *Carex* spp. can be prominent. This habitat type is scattered within the Site, with the largest areas concentrated in the north and the centre of the Site and following watercourses or plantation rides.

Within the Site, the M23 (a & b), M25, M25a, M25b, MG10a and M28 NVC communities are included within its limits along with the non-NVC communities 'Je' and 'Ja'. In the Phase 1 methodology MG10 can fall within either marshy grassland or neutral grassland classifications, however here due to the abundance of *Juncus* spp. it has been included within marshy grassland. These communities also commonly form mosaics and transitional areas with each other, in particular the rushy areas, and also with adjoining grassland and mire communities.

The rush dominated communities present are M23a *Juncus effusus/acutiflorus* – *Galium palustre* rush-pasture, *Juncus acutiflorus* sub-community, M23b *Juncus effusus/acutiflorus* – *Galium palustre* rush-pasture, *Juncus effusus* sub-community, MG10a *Holcus lanatus* – *Juncus effusus* rush-pasture, typical sub-community and the non-NVC types *Juncus acutiflorus* acid grassland (Ja) and *Juncus effusus* acid grassland (Je).

The areas of M23 are often species poor with *Juncus* spp. being the dominant species, and it regularly grades in and out of MG10, Ja or Je (see below). Generally, areas of M23 are dominated by mixtures of *Juncus acutiflorus* and/or *Juncus effusus* with patches of a low diversity of grasses such as *Holcus lanatus*, *Anthoxanthum odoratum*, *Molinia caerulea* and *Agrostis* spp. Within the sward, a variety of other graminoids and herbs are more occasional to rare and included *Cirsium palustre*, *Rumex acetosa*, *Ranunculus repens*, *Potentilla erecta* and *Carex* spp. Wefts of mosses are also common in M23 between these species, including *Calliergonella cuspidata* and *Rhytidiadelphus squarrosus*.

The M25 NVC community was classified as marsh/marshy grassland where it was present at the community level and the M25a *Erica tetralix* (when likely on shallow peaty soil) and M25b *Anthoxanthum odoratum* sub-communities. These were areas either wholly dominated by *Molinia caerulea* (M25) or where *Molinia caerulea* was accompanied by a mixture of heath species (M25a) or grassland species (M25b). Other species recorded in M25a included lesser amounts of *Trichophorum germanicum*, *Erica tetralix*, *Calluna vulgaris*, *Narthecium ossifragum*, *Potentilla erecta*, *Galium saxatile* and *Vaccinium myrtillus*; the basal layer often included *Sphagnum fallax*, *S. capillifolium*, *Polytrichum commune* and *Pleurozium schreberi*. The M25b was dominated by *Molinia caerulea* in at times a tussocky sward and was found to form mosaics with the other marshy grassland and acid grassland communities. In some places where the *Molinia caerulea* was not purely dominant, species included variable abundances of *Potentilla erecta*, *Galium saxatile*, *Anthoxanthum odoratum*, *Holcus lanatus*, *Rumex acetosa*, *Agrostis capillaris*, *Juncus squarrosus*, *Juncus effusus* and *Juncus acutiflorus*; the mosses *Hylocomium splendens*, *Polytrichum commune* and *Pleurozium schreberi* are also common. M25, M25a and M25b areas tend to be found on shallow peaty/organo-mineral soils.

MG10 is less common in the Site than the other marshy grassland communities, and where it is present it is typical of the MG10a Typical sub-community and is characterised by a sward of *Juncus effusus* and *Holcus lanatus* with some scattered *Rumex acetosa* and *Ranunculus repens*.

The M28 community is rare within the Site, being recorded once within a mosaic. This mire comprises of *Iris pseudacorus*, with other herbs including *Filipendula ulmaria* and *Oenanthe crocata* recorded.

The 'Ja' and 'Je' non-NVC grassland communities are present here as patches of a *Juncus* spp. dominated calcifuge grassland, at times found as extensive areas or as a small component of a wider mosaic with other grassland and mire communities. This is vegetation in which dominant and tall *Juncus effusus* or *Juncus acutiflorus* grow abundantly among a few shorter 'acid grassland' swards including frequent to occasional *Agrostis capillaris*, *Holcus lanatus*, *Rumex acetosa*, *Potentilla erecta* and *Galium saxatile*. Other occasional species include *Carex nigra*, *Molinia caerulea* and *Ranunculus repens*. Mosses typical of acid communities are also abundant, the most common mosses are *Hylocomium splendens*, *Pleurozium schreberi*, *Polytrichum commune*, *Pseudoscleropodium purum* and *Rhytidiadelphus squarrosus*. This vegetation does not fit into any NVC community as it lacks the wetland element and key indicators of M6 and M23 *Juncus* spp. mires and has a more acidophilous flora than MG10 *Juncus effusus* rush-pasture; it is therefore classed separately.

## 5.4 Tall Herb & Fern

### 5.4.1 C3.1 Tall Ruderal

This habitat type within the Site covers a very small total area, being made up of OV24 *Urtica dioica* – *Galium aparine* community, OV25 *Urtica dioica* – *Cirsium arvense* community and OV27 *Chamerion angustifolium* community, usually associated with patches of waste or neglected ground or as part of trackside verges and comprising their characteristic community dominants.

### 5.4.2 C3.2 Non-Ruderal

The U16 community is uncommon within the Site. Generally, the species include *Luzula sylvatica* and *Vaccinium myrtillus* and wefts of mosses such as *Rhytidiadelphus loreus*, *R. squarrosus*, *Hypnum jutlandicum*, *Hylocomium splendens*, *Pleurozium schreberi* and *Pseudoscleropodium purum*.

## 5.5 Heathland

### 5.5.1 D2 Wet Dwarf Shrub Heath

Wet heath within the Site is limited to a single patch of the M15 *Trichophorum germanicum* – *Erica tetralix* wet heath community, towards Ewe Hill in the south-west. The wet heath present is of the M15b Typical sub-community.

The M15b sub-community typically consists of a mixture of *Calluna vulgaris*, *Molinia caerulea*, *Erica tetralix* and *Trichophorum germanicum*.

## 5.6 Mire

### 5.6.1 E1.6.1 Blanket Bog

Blanket bog is relatively uncommon within the Site. The blanket bog present is M18 *Erica tetralix* – *Sphagnum papillosum* blanket mire and M19 *Calluna vulgaris* – *Eriophorum vaginatum* blanket mire. A small area of the M3 *Eriophorum angustifolium* community was recorded once.

The M19 community is generally distinctive with the bulk of the vegetation consisting of a mixture of *Calluna vulgaris* and *Eriophorum vaginatum*. There is commonly at least frequent to occasional *Erica tetralix*, *Eriophorum angustifolium*, *Narthecium ossifragum*, *Trichophorum germanicum*,

*Vaccinium myrtillus*, *Empetrum nigrum*, *Potentilla erecta* and *Avenella flexuosa*. Areas of M19a *Erica tetralix* sub-community contained a notable abundance of *E. tetralix*.

The M18 present includes both the M18a *Sphagnum medium* – *Andromeda polifolia* sub-community and M18b *Empetrum nigrum*– *Cladonia* sub-community. The M18 vegetation consists of an assemblage of characteristic species for the community. The sward contains *Calluna vulgaris*, *Erica tetralix*, *Eriophorum vaginatum*, *E. angustifolium*, *Trichophorum germanicum*, variable amounts of *Narthecium ossifragum*, *Empetrum nigrum*, *Vaccinium myrtillus*, *Molinia caerulea*, *Potentilla erecta*, *Drosera rotundifolia* and often quite abundant trailing shoots of the preferential *Vaccinium oxycoccos*. Lawns of *Sphagnum* are present in some patches and includes the preferential *Sphagnum medium*, as well as *S. papillosum*, *S. capillifolium*, *S. palustre*, *S. fallax* and *S. cuspidatum*. Other lower plants present in variable abundances include *Cladonia* spp. (lichens) and the mosses *Pleurozium schreberi*, *Rhytidiadelphus loreus*, *Polytrichum strictum*, *P. commune* and *Aulacomnium palustre*. M18a is characteristic of wetter peat with abundant carpets of *Sphagna*. M18b is a drier sub-community and is present where the *Calluna* growth is more vigorous on ridges or hummocks. The vegetation in these M18b patches, as well as having less *Sphagna* and taller and more abundant *Calluna*, also have increased abundances of *Empetrum nigrum*, bulky pleurocarpous mosses, and *Cladonia* spp. lichens.

The M3 community is species-poor, generally characterised by colonising *Eriophorum angustifolium* on bare peat.

Many areas of the remaining and remnant patches of blanket bog have been subject to various impacts and forms of disturbance and associated drying out, such as drainage, forestry plantation, historical mine works, grazing etc. In places this has also allowed encroachment and invasion of younger trees such as conifer saplings and regenerating *Salix* spp., patches of bare peat, areas of modified vegetation and often encroachment of non-typical mire species which has overall resulted in blanket bog in poor condition.

#### 5.6.2 E1.7 Wet Modified Bog

Wet modified bog is relatively uncommon and is mainly located to the west and north-west of the Site. It is comprised of the M20 *Eriophorum vaginatum* blanket mire community and M25a^ *Molinia caerulea* – *Potentilla erecta* mire *Erica tetralix* sub-community. M25a being classified as wet modified bog and not marshy grassland here due to generally appearing on peat of greater than 0.5 m in depth or having affinities more to mire vegetation (see Section 5.3.3). In these circumstances, the M25a is denoted with a caret (i.e., M25a^).

The M25a^ areas were identified due to *Molinia* overwhelmingly dominating the sward but with an associated flora containing some mire species. The majority of the subordinate and associate species found within this M25a^ assemblage were occasional *Calluna vulgaris*, *Erica tetralix*, *Vaccinium myrtillus*, *Eriophorum vaginatum*, *Myrica gale* and occasional patches of *Sphagna*.

M20 *Eriophorum vaginatum* blanket mire areas were recorded both at community level and in places as the M20a Species-poor sub-community and M20b and *Calluna vulgaris* – *Cladonia* species sub-community. The species assemblage can be identified by the dominant tussocks of *Eriophorum vaginatum*, along with some *Vaccinium myrtillus* and *Empetrum nigrum*. Grasses found include

*Anthoxanthum odoratum*, *Agrostis capillaris*, *Nardus stricta* and *Avenella flexuosa*. The basal layer in these areas generally lacks abundant *Sphagna* although often some wetter patches contain *Sphagnum capillifolium* and *S. fallax*, however overall, the basal layer is dominated by pleurocarpous and hypnoid mosses, in particular *Hylocomium splendens*, *Hypnum jutlandicum*, *Rhytidiadelphus loreus* and *Pleurozium schreberi*.

### 5.6.3 E2.1 Acid/Neutral Flush

Acid/neutral flushes appear in several areas across the Site, tending to be relatively small patches of habitat and usually following the route of watercourses or soakways. The majority of this habitat is represented by M6 *Carex echinata* – *Sphagnum fallax/denticulatum* mire. The M6 on Site is predominately of the M6c *Carex echinata* – *Sphagnum fallax/denticulatum* mire, *Juncus effusus* sub-community, however there are frequent patches but lesser amounts of the M6d *Juncus acutiflorus* sub-community. The M4 *Carex rostrata* - *Sphagnum fallax* mire community was also recorded once in the Site.

The M6c and M6d communities are rush mires on wet ground, often following the lines of watercourses or soakways. A tall sward of *J. effusus* over a species-poor lawn of *Sphagnum fallax*, *S. palustre* and *Polytrichum commune* indicates the M6c sub-community; *J. acutiflorus* dominates in M6d. In many stands its extent encompasses little more than these species listed. Where other species were recorded, they tended to be of very low cover, and included typical species such as *Rumex acetosa*, *Molinia caerulea*, *Myosotis secunda*, *Ranunculus repens*, *Cirsium palustre* and *Carex* spp.

The small patch of M4 was characterised by *Carex rostrata* with a basal layer composed of *Sphagnum fallax*.

### 5.6.4 E4 Bare Peat

Bare peat (ExP) is a non-NVC community within the Site, often found in areas of peat erosion, or peatland areas devoid of vegetation through erosion.

## 5.7 Swamp, Marginal & Inundation Habitats

### 5.7.1 F1 Swamp

One very small patches of S9a *Carex rostrata* swamp was recorded close to Shield Burn, which was part of a marsh/marshy grassland mosaic.

## 5.8 Open Water

### 5.8.1 G1 Standing Water

There are a few standing waterbodies (SW) within the Site with the larger of which being east of Gibson's Hill, in an old mine working area.

## 5.9 Miscellaneous

### 5.9.1 I2.1 Quarry

Quarry (QY) is a non-NVC community within the Site and includes previously excavated stone/gravel quarries. Only one area was recorded towards Green Hill in the north-east.

### 5.9.2 J4 Bare Ground

Bare ground (BG) is a non-NVC community within the Site and includes existing tracks, hardstandings and roads. Any areas that were devoid of vegetation and that could not be classified as any other habitat are also included here.

### 5.9.3 J5 Other Habitat

Unrestored mine (UM) is a code used here to characterise areas of former surface mine that have been historically abandoned and unrestored within the Site. In these areas, patches of bare or disturbed ground, spoil, mining voids and evidence of historical disturbance remain (at the time of survey). Due to the time since abandonment sporadic ephemeral/short vegetation has established throughout these areas, but revegetation colonisation has been poor or minimal due to poor soil quality and exposure and the recolonising communities are sparse. Where vegetation is present the most abundant species is *Tussilago farfara*.

A few patches of these unrestored mine areas have slightly more vegetation and are slowly colonising with very poor examples of NVC communities although much bare ground remains in these areas. Where this has been noted the area has been mapped as 'UM>OV27' for example, the main types of vegetation returning in these areas include OV27, U4 and Je.

### 5.10 Invasive Non-Native Species

No INNS were incidentally recorded during the habitat surveys; however, this does not preclude their presence from the Site.

### 5.11 Notable Species

No notable or rare botanical species were incidentally recorded during the habitat surveys; however, this does not preclude their presence from the Site.

## 6 EVALUATION OF BOTANICAL INTEREST

### 6.1 Overview

NVC communities can be compared with a number of habitat classifications in order to help in the assessment of the sensitivity and conservation interest of certain areas. The following sections compare the survey results and the NVC communities identified against three classifications:

- SEPA guidance on Groundwater Dependent Terrestrial Ecosystems (GWDTEs);
- Habitats Directive (92/43/EEC) Annex I habitats; and
- Scottish Biodiversity List (SBL) priority habitats.

### 6.2 Groundwater Dependent Terrestrial Ecosystems (GWDTE)

SEPA has classified a number of NVC communities as potentially dependent on groundwater (SEPA, 2024). Many of the NVC communities on the list are very common habitat types across



Scotland, and some are otherwise generally of low ecological value. Furthermore, some of the NVC communities may be considered GWDTE only in certain hydrogeological settings.

Designation as a potential GWDTE does not therefore infer an intrinsic biodiversity value, and GWDTE status has not been used as criteria to determine a habitat's respective conservation importance. There is however a statutory requirement to consider GWDTEs and the data gathered during the NVC surveys has been used to inform this assessment (see Chapter 8 (EIA Report Volume 1)).

Using SEPA's (2024) guidance, Table 6-1 shows which communities recorded within the Study Area may be considered a potential GWDTE.

**Table 6-1 Communities within the Site which may Potentially be Classified as GWDTE**

NVC Code	NVC Community Name
W4	<i>Betula pubescens</i> - <i>Molinia caerulea</i> woodland
W7	<i>Alnus glutinosa</i> – <i>Fraxinus excelsior</i> – <i>Lysimachia nemoreum</i> woodland
M4	<i>Carex rostrata</i> - <i>Sphagnum fallax</i> mire
M6	<i>Carex echinata</i> – <i>Sphagnum fallax/denticulatum</i> mire
M15	<i>Trichophorum germanicum</i> – <i>Erica tetralix</i> wet heath
M23	<i>Juncus effusus/acutiflorus</i> – <i>Galium palustre</i> rush pasture
M28	<i>Iris pseudacorus</i> – <i>Filipendula ulmaria</i> mire
MG9	<i>Holcus lanatus</i> – <i>Deschampsia cespitosa</i> grassland
MG10	<i>Holcus lanatus</i> – <i>Juncus effusus</i> rush pasture
Je <sup>14</sup>	<i>Juncus effusus</i> acid grassland
Ja <sup>14</sup>	<i>Juncus acutiflorus</i> acid grassland
U6	<i>Juncus squarrosus</i> – <i>Festuca ovina</i> grassland
U16	<i>Luzula sylvatica</i> – <i>Vaccinium myrtillus</i> tall-herb community

The location and extent of all identified potential GWDTE are provided on an appropriate NVC map; see Figure 6.4 (EIA Report Volume 2a).

Within Figure 6.4 (EIA Report Volume 2a) the potential GWDTE classification of each polygon is classified on a three-tier approach as follows:

- 'Dominant' where potential GWDTE(s) dominate the polygon (i.e., >50% coverage);
- 'Sub-dominant' where potential GWDTE(s) make up a sub-dominant percentage cover of the polygon (1-50% coverage); and

<sup>14</sup> In light of the SEPA classification on potential GWDTEs the non NVC type 'Je' and 'Ja' should also qualify for potential GWDTE status. The classification is keeping in line with other similar *Juncus* spp. dominated grassland communities (e.g. MG10).

- 'Non' – no GWDTE(s) within the polygon.

GWDTE potential has been assigned solely on the SEPA listings (SEPA, 2024). However, depending on a number of factors such as geology, superficial geology, presence of peat and topography, many of the potential GWDTE communities recorded may in fact be only partially groundwater fed or not dependant on groundwater. Technical Appendix 8.7 (EIA Report, Volume 3) confirms that the potential GWDTEs are unlikely to be supplied by groundwater and are therefore unlikely to be GWDTEs.

### 6.3 Annex I Habitats

#### 6.3.1 Overview

A number of NVC communities can also correlate to various Annex I habitat types. However, the fact that an NVC community can be attributed to an Annex I type does not necessarily mean all instances of that NVC community constitute Annex I habitat. Its Annex I status can depend on various factors such as quality, extent, species assemblages, geographical setting and substrates.

Using Joint Nature Conservation Committee (JNCC) Annex I habitat listings and descriptions<sup>15</sup>, which have then been compared with survey results and field observations, the following NVC communities within the Site which constitute Annex I habitat are shown in Table 6-2.

**Table 6-2 Annex I Habitats and Corresponding NVC Communities**

Annex I Habitat	Corresponding NVC Communities & Other Non-NVC Habitats/Features Recorded
4010 North Atlantic wet heaths with <i>Erica tetralix</i>	M15 <i>Trichophorum germanicum</i> – <i>Erica tetralix</i> wet heath
7130 Blanket bog	M3 <i>Eriophorum angustifolium</i> bog pool community M18 <i>Erica tetralix</i> – <i>Sphagnum papillosum</i> blanket mire M19 <i>Calluna vulgaris</i> – <i>Eriophorum vaginatum</i> blanket mire M20 <i>Eriophorum vaginatum</i> blanket mire M25a^ <i>Molinia caerulea</i> – <i>Potentilla erecta</i> mire
7140 Transition mires and quaking bogs	M4 <i>Carex rostrata</i> - <i>Sphagnum fallax</i> mire

Further details on the inclusion or omission of certain NVC communities/sub-communities and/or Annex I types are also provided below.

#### 6.3.2 4010 Northern Atlantic wet heaths with *Erica tetralix*

Wet heath usually occurs on acidic, nutrient-poor substrates, such as shallow peats or sandy soils with impeded drainage. The vegetation is typically dominated by mixtures *Erica tetralix*, *Calluna vulgaris*, grasses, sedges and *Sphagnum* bog-mosses. All examples of M15 wet heath were included within the 4010 Northern Atlantic wet heaths category.

<sup>15</sup> <https://sac.jncc.gov.uk/habitat/>



### 6.3.3 7130 Blanket bog

The blanketing of the ground with a variable depth of peat gives the habitat type its name and results in the various morphological types according to their topographical position. Blanket bogs show a complex pattern of variation related to climatic factors, particularly illustrated by the variety of patterning of the bog surface in different parts of the UK. Such climatic factors also influence the floristic composition of bog vegetation.

‘Active’ bogs are defined as supporting a significant area of vegetation that is normally peat-forming. Typical species include the important peat-forming species, such as *Sphagnum* spp. and *Eriophorum* spp., or *Molinia caerulea* in certain circumstances, together with *Calluna vulgaris* and other ericaceous species. The most abundant NVC blanket bog types are M17, M18, M19, M20 and M25.

Annex I type 7130 Blanket bog therefore correlates directly with a number of NVC communities within the Site such as the M18, M19 and M20 mires. However, 7130 Blanket bog can also include bog pool communities (M1 – M3) where these occur within blanket mires such as M17 – M20. As such M3 within the Site are also assigned to the blanket bog Annex I type, as they are often associated with areas of M17, M19 and M20 mire.

M25 mire can also fall within the 7130 blanket bog Annex I type where the underlying peat depth is greater than 0.5 m and the associated flora includes typical bog vegetation. These areas denoted here as M25a<sup>16</sup> - see Section 5.6.2) have also been classified as potential Annex I blanket bog, to represent a worst-case scenario.

### 6.3.4 7140 Transition mires and quaking bogs

All examples of M4 *Carex rostrata* - *Sphagnum fallax* mire within the Site were assigned to the Annex I type Transition mires and quaking bogs. The term ‘transition mire’ relates to vegetation that in floristic composition and general ecological characteristics is intermediate between acid bog and alkaline fen.

## 6.4 Scottish Biodiversity List Priority Habitats

The SBL is a list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland. The SBL was published in 2005 to satisfy the requirement under Section 2(4) of The Nature Conservation (Scotland) Act 2004.

The SBL identifies habitats which are the highest priority for biodiversity conservation in Scotland: these are termed ‘priority habitats’. Some of these priority habitats are quite broad and can correlate to many NVC types.

The relevant SBL priority habitat types (full descriptions of which can be found on the NatureScot website<sup>16</sup>), and associated NVC types recorded within the Site are as follows:

<sup>16</sup> <https://www.nature.scot/scotlands-biodiversity/habitat-definitions>

- Wet woodland: W7;
- Blanket bog: M18, M19, M20, and M1-M3 (M1-M3 where associated with M17-M20), and M25a^ where peat depth is greater than 0.5 m;
- Upland flushes, fens and swamps: M4, M6, M28, S9 and M23a; and
- Upland heathland: M15.

These SBL priority habitats correspond with UK Biodiversity Action Plan (BAP) Priority Habitats<sup>17</sup>.

## 6.5 Sensitivity Summary

Table 6-3 Table 6-3 provides a summary of all the NVC communities and non-NVC types recorded within the Site and any associated habitat sensitivities as described in the sections above.

Table 6-3 Summary of Site Communities and Sensitivities

NVC/Non-NVC Codes Recorded	Potential GWDTE	Annex I Habitat	SBL Priority Habitat Type
Mires & Wet Heath			
M3	-	7130 Blanket bogs (examples associated with M17-M20)	Blanket bog
M4	Yes	7140 Transition mires and quaking bogs	Upland flushes, fens and swamps
M6, M6c, M6d	Yes	-	Upland flushes, fens and swamps
M15b	Yes	4010 North Atlantic wet heaths with <i>Erica tetralix</i>	Upland heathland
M18a, M18b	-	7130 Blanket bogs	Blanket bog
M19, M19a	-	7130 Blanket bogs	Blanket bog
M20, M20a, M20b	-	7130 Blanket bogs	Blanket bog
M23, M23a, M23b	Yes	-	Upland flushes, fens and swamps (applies to M23a only)
M25, M25a, M25a^, M25b	-	7130 Blanket bogs (applies to M25a^ where peat depth >0.5 m)	Blanket bogs (applies to M25a^ where peat depth >0.5 m)
M28	Yes	-	Upland flushes, fens and swamps
Calcifugous Grasslands			
U4, U4a, U4b, U4d	-	-	-
U5	-	-	-
U6	Yes	-	-

<sup>17</sup> <http://jncc.defra.gov.uk/page-5718>

NVC/Non-NVC Codes Recorded	Potential GWDTE	Annex I Habitat	SBL Priority Habitat Type
U16	Yes	-	-
Mesotrophic Grasslands			
MG9, MG9a	Yes	-	-
MG10a	Yes	-	-
Woodland & Scrub			
W4	Yes	-	-
W7	Yes	-	Wet woodland
W14	-	-	-
Swamps & Tall-Herb Fens			
S9a	-	-	Upland flushes, fens and swamps
Vegetation of Open Habitats			
OV24	-	-	-
OV25	-	-	-
OV27	-	-	-
Non-NVC Types			
BG	-	-	-
CF <sup>18</sup>	-	-	-
CP	-	-	-
YCP	-	-	-
ExP	-	-	-
Ja	Yes	-	-
Je	Yes	-	-
QY	-	-	-
SBT	-	-	-
SCT	-	-	-
SW	-	-	-
UM <sup>18</sup>	-	-	-

## 7 SUMMARY

MacArthur Green carried out NVC and habitat surveys within the Site during 1<sup>st</sup> October 2017, 16<sup>th</sup> to 17<sup>th</sup> June 2020, 24<sup>th</sup> and 31<sup>st</sup> March 2021, 1<sup>st</sup> April 2024, 21<sup>st</sup> to 22<sup>nd</sup> October 2024, and 21<sup>st</sup> March

<sup>18</sup> Including respective '>' communities as detailed in Table 5-1.

2025 in order to identify those areas of vegetation communities with the greatest ecological or conservation interest.

In total 23 NVC communities were recorded within the respective Site along with various associated sub-communities; a number of non-NVC habitat types are also present, in particular coniferous plantation woodland and clear fell which are extensive. Only a small number of communities or habitat types account for the majority of the Site.

Outwith the coniferous plantation and clear fell areas the Site is mainly open upland habitats, the most common and widespread making up the bulk of the rides and woodland openings is marsh/marshy grassland of the M23 *Juncus effusus/acutiflorus* – *Galium palustre* rush-pasture and M25 *Molinia caerulea* – *Potentilla erecta* mire communities. Breaking up the expanses of *Juncus* spp. and *Molinia* mires are patches and pockets of other habitat types such as acid grassland, blanket bog, wet modified bog and acid/neutral flush.

Although some large relatively homogeneous stands of vegetation occur, most of the open communities often form complex mosaics and transitional areas across the Site.

The survey results have also been compared to a number of sensitivity classifications, indicating the presence of Annex I, SBL and potential GWDTE habitats, as summarised in Table 6-3.

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## ANNEX A. NVC TARGET NOTES

A number of target notes were also made during surveys, often to pinpoint springs/flushes, or an area or species of interest, these target notes are shown on Figure 6.3 (EIA Report Volume 2a) and detailed within Table A-1 below. A representative sample of corresponding target note photographs is provided in Annex B.

Table A-1 Site Target Notes

Target Note ID	Easting	Northing	NVC Community	Description	Photo Reference
1	247679	613026	M6c	Example of M6c flushed drainage ditch.	B-1

## ANNEX B. TARGET NOTE PHOTOGRAPHS

The following photographs correlate to the target note described within Annex A, Table A-1.

Photo B-1 Target Note 1 – M6c Flush

