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Clune Wind Farm

Updated NVC Survey

RES Group

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1. Introduction

1.1 Terms of Reference

In July 2026, Atmos Consulting Ltd. (Atmos) was commissioned by the RES Group to undertake a National Vegetation Classification (NVC) survey on land south of the village of Tomatin, Highland. The survey was undertaken to inform proposals within the Outline Habitat Management Plan (OHMP) for the proposed Clune Wind Farm, specifically regarding an area on land that is available as a fenced peatland/habitat restoration area.

This area (referred to as 'the Site') sits within the proposed Clune Wind Farm site and is approximately 80 ha in size (Figure 1, Appendix A refers). It forms part of proposals for the wider OHMP mitigation programme. However, it did not form part of the original Environmental Impact Assessment proposals and, as such, NVC data were not obtained prior to the work described in the present report.

This report describes the methods followed and habitats / NVC communities identified. The conservation status and potential groundwater dependency of the habitats present on Site are also provided.

1.2 Site Location and Description

The wider Clune site (the location of the proposed development) is located approximately 20 km south-east of Inverness, and approximately 3 km south of the village of Tomatin. The NVC survey Site lies within Clune Estate which is predominately managed upland grouse moorland with agricultural fields and mixed woodland in lower altitude areas.

The Site is mainly used as a grouse moor, managed by grazing livestock such as sheep, and regular burning of mature heather to provide new growth. There is also grazing pressure from deer. The survey area contains a variety of plant communities including blanket bog, dry heath, acid grassland, flush and juniper scrub.

1.3 Objectives

The primary objectives of this NVC Survey are to document the NVC communities present within the Site and appropriate buffers in order to evaluate their potential nature conservation interest and to assess the potential for Groundwater Dependent Terrestrial Ecosystems (GWDTEs) to be present.

This report provides details of the following:

- field survey methods;
- field survey results;
- description of the plant communities present within the site boundaries; and
- discussion of potential Ground Water Dependent Terrestrial Ecosystems (GWDTEs).

2. Methodology

2.1 Desktop Study

A desk study was undertaken in order to establish baseline information for the Site. Various data sources were utilised including the website of the statutory agency, NatureScot via the 'Site Link Portal', and aerial photography for the Site.

Desk study identified statutory designations such as Special Areas of Conservation (SACs), Ramsar wetlands, Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs) within 10 km of the Site. In addition, Local Nature Reserves (LNRs) and relevant non-statutory designations within a 5 km radius of the Site were searched for.

2.2 NVC Survey

The vegetation survey was undertaken on 27th August 2026 by Jon Easton (Principal Ecologist), a suitably qualified and experienced botanical surveyor using the NVC (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.

Homogenous stands and mosaics of vegetation were identified and mapped by eye, drawn as polygons on field maps; these polygons were surveyed qualitatively to record dominant and constant species, sub-dominant species and other species present. In practice the vegetation was mapped progressively across the site to ensure that no areas were missed and that mapping was accurate. An aerial photograph of the site was also used to aid accurate mapping of vegetation boundaries. 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 where possible.

Although the dominant NVC community has been attributed to each polygon, due to vegetation and habitat variability across the site, and the numerous transitional zones between similar NVC communities, some polygons may include mosaics of the NVC communities rather than pure stands.

2.3 Groundwater Dependent Terrestrial Ecosystems

As part of the NVC exercise, any wetland habitats identified within the survey buffers stated earlier were evaluated in terms of their potential to be GWDTE, making reference to SEPA guidance (SEPA, 2024), modified from the United Kingdom Technical Advisory Group (UKTAG) list of NVC communities and associated groundwater dependency scores.

A GWDTE is defined by the UKTAG (2003) as:

> *"A terrestrial ecosystem of importance at Member State level that is directly dependent on the water level in or flow of water from a groundwater body (that is, in or from the saturated zone). Such an ecosystem may also be dependent on the concentrations of substances (and potential pollutants) within that groundwater body, but there must be a direct hydraulic connection with the groundwater body."*

A detailed study of vegetation communities allows the potential forgroundwater dependency to be determined.

Determination of complete groundwater dependency is complicated by the ability of many vegetation communities to use whatever source of water is available. In some topographical and

hydrogeological conditions, a particular community can be groundwater-dependent whereas in others the same community is surface water-dependent. Seasonal patterns of water use provide an additional level of complexity, with groundwater reliance typically being greater in the summer when rainfall and surface water are less available.

2.4 Limitations

The survey was undertaken in suitable weather conditions (i.e. good visibility and no snow cover). While the survey was undertaken towards the end of the season when many species of plant have finished flowering, this was not considered to be a significant limitation.

Although every effort was made to identify all plants, habitats, and any ecologically sensitive features, the results of the surveys should not be considered exhaustive.

3. Results

3.1 Desk Study

3.1.1 Designated Sites

Statutory Designations

There are eight sites designated for ecological (non-avian) interest in the vicinity (< 10 km) of the Site (Table 1 and Appendix A, Figure 2 refers).

Table 1: Designated Sites

Designated Site	Designated Feature	Distance from site
SACs		
Slochd (NatureScot, 2005a).	Dry heath	Immediately adjacent to north-eastern boundary on the opposite side of the A9.
Kinveachy Forest (NatureScot, 2005b).	North Atlantic wet heaths European dry heaths *Juniperus communis* formation on heaths or calcareous grasslands Blanket bog Old sessile oak woods with *Quercus robur* on sandy plains Bog woodland Caledonian forest Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*	1.8 km south-east (at its closest point).
River Spey SAC (NatureScot, 2005c).	Otter *Lutra lutra* Freshwater pearl mussel *Margaritifera margaritifera* Sea lamprey *Petromyzon marinus* Atlantic salmon *Salmo salar*	3.56 km to south-east (at its closest point).
Carn nan Tri-tighearnan (NatureScot, 2005d).	Blanket bog	7.57 km north-east (at its closest point).
SSSIs		
Kinveachy Forest (NatureScot, 1986).	Breeding bird assemblage: Crested tit Capercallie Scottish crossbill Native pinewood assemblage: Scots pine Birch Alder Bog woodland	1.8 km south-east (at its closest point).
Craigellachie SSSI (NatureScot, 1987).	Upland birch woodland: Aspen Hazel Sessile oak Wych elm Bird cherry Juniper	9.73 km south-east (at its closest point).

Designated Site	Designated Feature	Distance from site
	Moth assemblage: Kentish glory Rannoch sprawler Angle-striped sallow	
Carn nan Tri-tighearnan SSSI (NatureScot, 1983).	Upland blanket bog Subalpine dry heath	7.57 km north-east (at its closest point).
NNRs		
Craigellachie NNR (NatureScot, 1988)	Birch woodland Open glades	9.73 km south-east (at its closest point).

3.1.2 Aerial Photography

Review of aerial photography shows that the majority of the Site is moorland comprising of dry and wet heath, grassland and blanket bog. There are numerous patches of managed heather throughout the Site.

3.2 NVC Survey

3.2.1 Main Site (Overview)

The majority of the vegetation within the Site is dominated by blanket mire habitat, NVC community M19 *Calluna vulgaris – Eriophorum vaginatum*, and dry heath, NVC community H12 *Calluna vulgaris – Vaccinium myrtillus*. The Site is also characterised by smaller areas of H16 *Calluna vulgaris – Arctostaphylos uva-ursi* heath at higher altitudes, M6c *Carex echinata – Sphagnum fallax*/*denticulatum* mire (*Juncus effusus* subcommunity) in a small valley, M16 *Erica tetralix – Sphagnum compactum* wet heath, H10 *Calluna vulgaris – Erica cinerea* heath and U5c *Nardus stricta – Galium saxatile* grassland (*Carex panicea-Viola riviniana* subcommunity). Other minor habitats include a stand of W19 *Juniperus communis – Oxalis acetosella* woodland and a bog pool.

3.2.2 Community Description

H10 *Calluna vulgaris – Erica cinerea* heath

The dry heath vegetation is located in one area on sloping ground towards the north-east end of the Site (Quadrat 5), aligned most closely with H10 *Calluna vulgaris – Erica cinerea* heath, although the degree of fit with this community was 'poor'. The vegetation here was dominated by ling *Calluna vulgaris*. Cowberry *Vaccinium vitis-idaea*, crowberry *Empetrum nigrum*, purple moor-grass *Molinia caerulea and* reindeer lichen *Cladonia portentosa* were also present, but at low levels of cover. Red-stemmed feather-moss *Pleurozium schreberi* was abundant beneath the taller vegetation.

The H10 community is typically dominated by *Calluna vulgaris*, but the cover, height and structure of the sub-shrub canopy vary markedly depending on the intensity and timing of burning and grazing. *Erica cinerea*, a constant, is frequent but generally subordinate to heather and persists below taller *Calluna* canopies. *Vaccinium myrtillus*, by contrast, is at most occasional and *V. vitis-idaea* is scarce. *Empetrum nigrum* ssp. *nigrum* can occur, but mainly in sub-community H10b. The restricted occurrence of these sub-shrubs is a contrast with *Calluna vulgaris – Vaccinium myrtillus* heath (H12).

Apart from the abundance of the two constant sub-shrubs there are two other distinctive floristic features of this type of heath. These are firstly the high frequency of grasses and to a lesser extent sedges and dicotyledons, and secondly the striking contribution that the ground layer makes to this

community. *Deschampsia flexuosa* is the most consistent grass throughout, with *Agrostis canina* and *Nardus stricta* occasional to frequent. In certain sub-communities *Festuca ovina*, *Anthoxanthum odoratum*, *Agrostis capillaris* and *Molinia caerulea* become very common. *Carex binervis* and *C. pilulifera* are very characteristic of this community. After burning, mixtures of these plants can become patchily abundant and *Deschampsia flexuosa* and *C. pilulifera* temporarily dominant. There are typically only a few dicotyledons, but *Potentilla erecta* is a constant and *Galium saxatile* is fairly common.

After burning, a local abundance of *Polytrichum piliferum*, *P. juniperinum* and encrusting *Cladonia* species can develop. In exposed stands there is often a patchy carpet of *Racomitrium lanuginosum* and fruticose lichens. However, more important than these species in the community as a whole are bulky pleurocarpous mosses such as *Hypnum cupressiforme s.l.*, *Pleurozium schreberi* and *Hylocomium splendens*, with *Rhytidiadelphus triquetrus* and *R. loreus* also occurring occasionally. These species, with *Dicranum scoparium*, become abundant with the maturing and opening up of the *Calluna* bushes.

This heath is characteristic of acid to circumneutral and generally free-draining soils in the cool oceanic lowlands and upland fringes of northern and western Britain. The soils on which this community is found can be quite moist as a result of the climate and the superficial pH beneath the community can be anywhere between 3.5 and 6. It occurs widely through the more oceanic parts of Scotland, with outlying stands in Wales, western England and around the east-central Highlands.

In more exposed situations it may be considered as an edaphic or climatic climax but often burning and grazing are important in controlling its composition and structure. Steady grazing pressure pushes the vegetation towards the *Festuca ovina – Agrostis capillaris – Galium saxatile* grassland (U4) or, over more base-rich soils, the *Festuca ovina – Agrostis capillaris – Thymus praecox* grassland (CG10). After fire, heavy grazing can precipitate a run-down of the heath to swards in which *Nardus stricta* or *Juncus squarrosus* play an important part or permit the spread of *Pteridium aquilinum*. Release from grazing and burning, in all but the most exposed sites, would theoretically permit progression to scrub and woodland, although in many areas natural seed parents are now scarce.

H12 *Calluna vulgaris – Vaccinium myrtillus* heath

Much of the dry heath vegetation which occurs over a large part of the survey area and particularly on the well-drained slopes, aligned most closely with H12 *Calluna vulgaris – Vaccinium myrtillus* heath, though the degree of fit was ‘fair’ (Quadrat 8) to ‘poor’ (Quadrats 1, 2 and 6). The vegetation here was dominated by ling which covered from 90 to 98% of each quadrat and was typically 20 to 30cm tall. Crowberry was frequent and cowberry and bilberry *Vaccinium myrtillus* were occasional. Heath rush *Juncus squarrosus* was frequent in Quadrat 1, but did not appear in Quadrats 2, 6 and 8. Bryophytes such as red-stemmed feather-moss and glittering wood-moss *Hylocomium splendens* were generally abundant beneath the taller vegetation. Reindeer lichen also occurred.

The H12 heath community is generally dominated by *Calluna vulgaris* and includes most of the Calluneta from less oceanic sub-montane areas where burning is commonly practised, including many grouse moors. Here a predominance of building-phase *Calluna* is found, but a more open cover of degenerate *Calluna* can often also be present. *Vaccinium myrtillus* is constant though it is usually subordinate to *Calluna* and is most vigorous out of reach of grazing animals. *Vaccinium vitis-idaea* is also found, sometimes with local prominence, and *Erica cinerea* may also be present on drier slopes. *Empetrum nigrum* ssp. *nigrum* is frequent, forming mats after burning, but then becomes reduced after the *Calluna* has regrown.

In many stands herbs are rare. Only *Deschampsia flexuosa* is frequent throughout. When grazing is regular there may be additional herbs including *Festuca ovina*, *Agrostis capillaris*, *A. canina*, *Nardus stricta*, *Potentilla erecta* and *Galium saxatile*.

The ground-layer is often prominent with bulky mosses characteristic, such as *Dicranum scoparium*, *Pleurozium schreberi*, *Hypnum cupressiforme s.l.* and *Hylocomium splendens*, together with larger *Cladonia* species. Encrusting lichens and *Polytrichum* species can be abundant in the years following burning.

This community is the typical sub-shrub community of acidic to circumneutral, free-draining mineral soils throughout the cold and wet sub-montane zone generally between 200 m and 600 m. The soils on which it occurs are widespread throughout this zone, developing from a variety of siliceous parent materials, intrusive igneous rock or coarse glaciofluvial gravels. Despite being free-draining the soils are normally moist for the majority of the year because of the climate and the superficial pH is usually between 3.5 and 4.5. It is extensive in the east-central Highlands but also important in south-east Scotland, the Lake District, parts of Wales and the South-West Peninsula and the North York Moors. In places like the southern Pennines, where air pollution is severe, it is largely replaced by *Calluna vulgaris – Deschampsia flexuosa* heath (H9).

Burning and grazing are the major influences on floristics and structure, although climatic and edaphic difference play some part in determining variation within the community. Successional developments are usually held in check by burning and grazing and without these most stands would probably progress to scrub and woodland. Continuous heavy grazing favours the loss of sub-shrub vegetation to grassland and in some instances, particularly after burning, may result in the spread of *Pteridium aquilinum*.

H16 *Calluna vulgaris – Arctostaphylos uva-ursi* heath

The dry heath vegetation on the exposed hilltop towards the north-eastern end of the survey area aligned most closely with H16 *Calluna vulgaris – Arctostaphylos uva-ursi* heath with a ‘good’ degree of fit. The vegetation was dominated by ling, with abundant bearberry *Arctostaphylos uva-ursi.* Bell heather *Erica cinerea*, bilberry, crowberry and heath woodrush *Luzula multiflora* were also present but at low levels of cover. Heath plait-moss *Hypnum jutlandicum* was abundant beneath the taller vegetation.

Although *Arctostaphylos uva-ursi* is found as an occasional in a variety of heath types, it is most often found in this community, which has a distinct boreal character. *Calluna vulgaris* is always present and is the most usual dominant, forming a canopy 20-40 cm high and having a substantial total cover. *Arctostaphylos uva-ursi* is constant and can become modestly abundant in gaps within the heather cover. *Erica cinerea* is also very common but of low cover. In many stands there is some *Vaccinium myrtillus* and *V. vitis-idaea*.

Quite commonly there are small amounts of *Genista anglica*, but herbaceous associates are few except in the *Pyrola media – Lathyrus montanus* sub-community. The only constant grass is *Deschampsia flexuosa* and this can be joined by *Luzula multiflora* and *L. pilosa*.

Bryophytes are variable, with the bulkier mosses often strongly associated with particular stages in the heather regeneration cycle. *Hypnum jutlandicum*, *Pleurozium schreberi* and *Dicranum scoparium*, however, are very common overall and *Hylocomium splendens* is also a constant through much of the community.

Lichens also differ in their representation, with only *Cladonia impexa* constant and, in many stands, of low cover. Fruticose species such as *C. arbuscula* and *C. rangiferina* tend to follow the larger

pleurocarps in developing among the more shady and humid conditions of older heather canopies. *Hypogymnia physodes* and, less commonly, *Cetraria glauca* can be seen on decaying woody stems.

This heath is characteristic of base-poor to circumneutral soils at moderate altitudes, generally between 250 m and 600 m altitude, in the cold continental climate of the east-central Highlands of Scotland. It is found on a variety of acid soils developed from lime-poor parent material. It occurs widely but fairly locally through the east-central Highlands with especially good representation in Speyside.

The community forms an important part of grouse-moor in the central Highlands and although edaphic differences play some part in determining floristic variation in the community, their effects are often overlain and modified by the influence of burning which ultimately maintains this vegetation as a plagioclimax. Stretches of moorland including stands of the community are often open to livestock but there is little information on the impact of grazing on this vegetation.

M6 *Carex echinata – Sphagnum fallax/denticulatum* mire

The vegetation surrounding a stream in a small valley towards the south-eastern corner of the site aligned most closely with M6c *Carex echinata – Sphagnum fallax/denticulatum* mire, *Juncus effusus* subcommunity with a 'good' degree of fit. The community here was dominated by soft-rush *Juncus effusus*. Blunt-leaved bog-moss *Sphagnum palustre*, fringed bog-moss *Sphagnum fimbriatum* and common haircap *Polytrichum commune* were frequent here. Also present, but at lower levels of cover, were common sorrel *Rumex acetosa*, marsh violet *Viola palustre*, star sedge *Carex echinata* and grasses such as bent *Agrostis* sp. Another area of M6c was noted near to the access road at the southern end of the site. The vegetation here was also dominated by soft-rush.

This community has a distinct general character but includes a wide variation in composition, expressed here in four sub-communities. Essentially it is a poor-fen with small sedges or rushes dominating over a carpet of oligotrophic and base-intolerant *Sphagnum* spp. The constants are very few. Among vascular plants only *Carex echinata* has a uniformly high frequency, but *C. nigra* and *C. panicea* are common, and *C. demissa* occasional. There are two negative characters which aid definition of this community. Firstly, the general absence of more calcicolous *Carex* species, e.g. *C. dioica*, *C. pulicaris*, *C. lepidocarpa* and *C. flacca*, helps to separate this community from the Caricion davallianae rich fens (M9 to M12), and secondly, only local occurrence of species like *C. rostrata* and *C. curta* marks the vegetation off from communities like the *Carex rostrata – Sphagnum recurvum* mire (M4).

The most common vascular associates are grasses and poor-fen dicotyledons. Among the grasses, *Agrostis canina* ssp. *canina* and *Molinia caerulea* are the most common but *Anthoxanthum odoratum* is also frequent. Commonly occurring poor-fen dicotyledons include *Viola palustris* and *Potentilla erecta*, and occasionally one or more of

Galium saxatile, *G. palustre*, *Cirsium palustre*, *Epilobium palustre*, *Succisa pratensis*, *Ranunculus flammula* or *Cardamine pratensis* may be present. Sometimes species such as *Narthecium ossifragum*, *Drosera rotundifolia* and *Erica tetralix* are found. The rushes *Juncus acutiflorus* and *J. effusus* may each be dominant in particular subcommunities.

A ground carpet of *Sphagnum* spp. is prominent and it is most frequently composed of *S. recurvum* and *S. auriculatum*, with occasional occurrence of *S. subnitens* and *S. papillosum*. There are only a few other commonly occurring bryophyte species. *Polytrichum commune* is very frequent, *Rhytidiadelphus squarrosus* is occasional and *Calliergon stramineum* and *Aulacomnium palustre* are patchy throughout. *Calliergon cuspidatum* and *Plagiothecium undulatum* are conspicuously rare.

This mire is the major soligenous community of peats and peaty gleys irrigated by rather base-poor waters in the sub-montane zone of northern and western Britain. The soils and water are quite acidic with a superficial pH usually between 4.5 and 5. It typically occurs as small stands among other mire communities, grassland and heaths and sometimes with swamp and spring vegetation. It is commonly found in tracts of unenclosed pasture on upland fringes, particularly between 200 m and 400 m (although it may be found much higher) and is ubiquitous in the upland fringes of Britain. The community is frequently grazed. This, especially where combined with drainage, can convert the community to grassland. The exclusion of herbivores would be expected to permit progress to wet scrub and woodland, although in many cases this would probably be slow and patchy.

In the M6c *Juncus effusus* sub-community, sedges are less frequent and abundant and the vegetation is dominated by *Juncus effusus*. Frequent vascular associates are few but there is often some *Agrostis canina* ssp. *canina*, *Potentilla erecta*, and (rather diagnostic here) *Galium saxatile. Carex echinata*, *Molinia caerulea* and *Viola palustris* are also fairly common. The *Sphagnum* carpet is generally extensive and luxuriant and *S. recurvum* is almost always dominant. *Polytrichum commune* remains frequent and sometimes abundant.

This sub-community is found throughout the range of M6.

M16 *Erica tetralix* – *Sphagnum compactum* wet heath

The vegetation in an area of wet heath towards the southern-eastern corner of the Site aligned most closely with M16 *Erica tetralix* – *Sphagnum compactum* wet heath with a 'fair' degree of fit (Quadrat 10). Ling, cross-leaved heath and heath rush were abundant. Acute-leaved bog-moss *Sphagnum capillifolium* occurred occasionally and red-stemmed feather moss could be seen beneath the taller vegetation. Hare's-tail cotton-grass *Eriophorum vaginatum*, an important component of the M19 community, was notably absent here.

This community is characteristically dominated by mixtures of *Erica tetralix*, *Calluna vulgaris* and *Molinia caerulea*, but their proportions are very variable, being influenced by differences in the water regime and trophic state of the soils, and also by grazing and burning. *Erica tetralix* is often vigorous, particularly on wetter soils, while *Calluna* is often subordinate and weak (although it may be abundant in drier stands or where controlled burning is carried out). No other subshrubs attain a high frequency, although *Erica cinerea* and *Ulex gallii* may be abundant in transitions to drier heaths in south-west England and *E. cinerea* and *U. minor* can occur in similar situations further east. In some situations, *Molinia* may be dominant.

This community may have no other, or only sporadic, vascular associates. The commonest vascular associate, where present, is *Scirpus cespitosus. Eriophorum angustifolium* and *Narthecium ossifragum* are quite frequent, as is *Drosera rotundifolia* in wetter hollows. *Myrica gale* occurs occasionally, sometimes with local abundance.

Most characteristic of the bryophyte layer in drier situations is *Sphagnum compactum*, a constant and strong preferential for the community. In wetter places *S. tenellum* may be present. These species may occur as scattered cushions or form a continuous carpet, sometimes with several other *Sphagnum* spp. as well as a number of other bryophytes, between the dominants. Lichens may also be present, especially larger *Cladonia* species such as *C. impexa* and *C. uncialis*.

This wet heath community is found on acid and oligotrophic mineral soils or shallow peats that generally have a surface pH of between 3.5 and 4.5 and that are at least seasonally waterlogged. It is characteristic of the south of lowland England, being particularly associated with the surrounds of valley mires maintained by a locally high water table. It is also found through Wales, and in northern England and Scotland, where it extends on to thin ombrogenous peats at higher altitudes.

Grazing and burning are important in maintaining the vegetation, and burning is able to transform the appearance of particular stands over short periods of time, producing considerable structural diversity within a small area. Without any grazing or burning most stands would probably progress to woodland, and this has happened to some stands lying within tracts of heath on commons in south-east England where traditional management has fallen into disuse. The combination of frequent burning, draining, and damage due to other operations such as military manoeuvres and mineral extraction, have led to an irretrievable loss of this community in many areas and its distribution has been considerably fragmented with remaining stands closely hemmed in by coniferous plantations or intensive agricultural land.

M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire

The vegetation throughout large areas of the Site, particular in lower lying areas with more impeded drainage, aligned most closely with M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire with a 'fair' degree of fit (Quadrats 3 and 4). In these areas both ling and hare's-tail cottongrass *Eriophorum vaginatum* were dominant or abundant. Also present, but at low levels of cover, were cross-leaved heath *Erica tetralix*, cowberry and acute-leaved bog-moss *Sphagnum capillifolium*. Red-stemmed feather-moss and glittering wood-moss were abundant beneath the taller vegetation. Bog grove-moss *Aulacomnium palustre* was also noted.

This vegetation is generally dominated by mixtures of *Eriophorum vaginatum* and ericoid sub-shrubs. *Sphagnum* spp. can be prominent over wetter ground but are not as luxuriant or rich as in *Scirpus cespitosus – Eriophorum vaginatum* blanket mire (M17) or *Erica tetralix – Sphagnum papillosum* raised and blanket mire (M18). The ground surface is often uneven but does not show true hummock and hollow relief. *Eriophorum vaginatum* is abundant and at least co-dominant. Normally this community has very frequent occurrences of *Calluna vulgaris*, *Vaccinium myrtillus* and *Empetrum nigrum* ssp. *nigrum* and, at higher altitudes, *V. vitis-idaea*, *V. uliginosum* and *E. nigrum* ssp. *hermaphroditum*. Overall *Calluna* is the most common co-dominant along with *Eriophorum vaginatum*, but diverse mixtures of these sub-shrubs are very frequent. Vascular associates are few, the commonest being *Eriophorum angustifolium*, and *Rubus chamaemorus*, a species which is distinctive for this community. *Deschampsia flexuosa* and *Juncus squarrosus* occur occasionally throughout, and at higher altitudes *Carex bigelowii* becomes frequent.

In contrast to the vascular plants, the bryophyte flora is rich, often with a cover exceeding 50%. The most frequent Sphagnum species is *S. capillifolium*, which forms patches rather than carpets. Hypnaceous mosses are consistently present and *Pleurozium schreberi*, *Rhytidiadelphus loreus*, *Hypnum cupressiforme/jutlandicum* and *Plagiothecium undulatum* are all very frequent. *Hylocomium splendens* is common at higher altitudes.

A variety of leafy hepatics occur in this community and lichens are frequent. Larger *Cladonia* spp. can be abundant on old *Eriophorum* hummocks.

This mire is the typical blanket bog vegetation of high-altitude ombrogenous peats present in the wet and cold climate of the uplands of northern Britain. In particular, it occurs on high-level plateaux and broad watersheds, usually above 300 m, and is confined to deeper peats, usually more than 2 m thick, on flat or gently-sloping ground. The peats are usually well-humified, highly acidic with a surface pH often less than 4. They are not consistently waterlogged and may become surface oxidised in summer. Erosion of the peat is common. This community is found on the higher ground in the Pennines, the central Highlands of Scotland, and Wales.

Treatments such as burning and grazing are important in influencing the composition and structure of the vegetation throughout the range of this community, in particular where stands form part of unenclosed hill grazing or grouse moors. A stable diversity of bog vegetation can be maintained by

careful burning on a rotation of around 10 years, or by moderate levels of grazing. However, frequent burning or heavy grazing contribute to the conversion of the Calluna vulgaris – *Eriophorum vaginatum* blanket mire to *Eriophorum vaginatum* blanket mire (M20). In other cases, drainage can convert this community into heathland or grassland, and this type of blanket mire has been reclaimed for agriculture or forestry in many areas.

U5 *Nardus stricta – Galium saxatile* grassland

Very heavily sheep-grazed grassland area near the access track at the south-western end of the site aligned most closely with U5c *Nardus stricta – Galium saxatile* grassland - *Carex panicea-Viola riviniana* subcommunity with a 'fair' degree of fit (Quadrat 12). The vegetation here was dominated by mat grass *Nardus stricta* with abundant heath rush. Other plants recorded here included sheep's fescue *Festuca ovina*, sweet vernal-grass *Anthoxanthum odoratum*, common bent *Agrostis capillaris*, ribwort plantain *Plantago lanceolata*, yarrow *Achillea millefolium*, creeping buttercup *Ranunculus repens*, lousewort *Pedicularis sylvatica*, white clover *Trifolium repens*, eyebright *Euphrasia* agg., daisy *Bellis perennis* and heath bedstraw *Galium saxatile*. The vegetation here was generally between 5 to 10cm tall.

The vegetation in another grassy area towards the centre of the site also aligned most closely with the U5c community, but with a poor degree of fit (Quadrat 11). The height of the vegetation here was 15 to 20cm. The grassland, which was interspersed with areas of soft-rush, consisted of frequent mat grass, heath rush and white clover. Also present were bent *Agrostis* sp., sweet vernal-grass, common cat's-ear *Hypochaeris radicata* and common haircap. Where the grassland graded into the wetter rush-dominated areas marsh violet, marsh bedstraw *Galium palustre* and marsh willowherb *Epilobium palustre* were also noted.

Pale swards of the dense, wiry clumps of *Nardus stricta* clothe many upland slopes, and can form vast stands. Several other grasses can grow with the *Nardus*, the most common of which are *Agrostis capillaris* and *Festuca ovina*. The short turf is starred with *Potentilla erecta* and *Galium saxatile*, their flowers bright in summer. There is usually some *Vaccinium myrtillus*, its short, bright-green shoots pushing up through the mat of grasses. At the feet of the vascular plants there are the usual mosses of acid grassland: *Hypnum jutlandicum*, *Pleurozium schreberi*, *Rhytidiadelphus loreus*, *R. squarrosus* and *Hylocomium splendens*.

The *Carex panicea-Viola riviniana* subcommunity U5c extends the range of the community onto flushed, mildly base-rich soils where there can be an array of mesotrophic species such as *Ranunculus acris*, *Alchemilla glabra*, *Thalictrum alpinum*, *Geum rivale*, *Filipendula ulmaria*, *Trollius europaeus* and *Persicaria vivipara*.

Nardus-Galium grassland clothes damp mineral soils which have peaty upper horizons, and can occur in very large stands on upland hillsides. It typically occupies slopes where the depth and wetness of the soil are intermediate between the drier podsols under *Festuca-Agrostis-Galium* grasslands and the wet shallow peats under *Juncus-Festuca* grassland. The underlying rock can be anything from acid to basic, but the soils are generally acid with some podsolisation. The community can also occur on deep peat from which the original mire vegetation has been lost (e.g. through burning, heavy grazing or drainage). Another typical habitat is well-drained butmoist alluvial soil along the margins of streams, and it is quite common to see the pale sinuous lines of such grasslands cutting across areas of heath or bog.

This is a community of mid-altitude slopes, ranging from about 300 m to above 700 m, with the *Racomitrium* sub-community extending to over 850 m. Most stands are anthropogenic, but many examples of the *Racomitrium* sub-community at high altitudes are likely to be near-natural. This community is maintained by grazing. The leaves of *Nardus* are coarse, hard and fibrous, and are

neither inviting nor palatable to livestock. *Nardus* is hardly grazed by ewes and lambs, although cattle, wethers and ponies will eat the green centres of the tussocks, especially in spring when the young growth is most tender. On uplands that are grazed primarily by breeding ewes, for example in southern Scotland, northern England and Wales, *Nardus-Galium* grasslands have become widespread. In upland areas with fewer sheep and more cattle or ponies, *Nardus-Galium* grassland is scarcer, and stands tend to be smaller and restricted to flushed slopes. The scarcity of *Nardus-Galium* grassland in south-west England may be attributable in part to the large numbers of ponies there. Where the intensity of grazing is reduced, *Nardus-Galium* grasslands can develop into dry *Calluna vulgaris* or *Vaccinium myrtillus* heaths. This has been clearly demonstrated in Snowdonia, where grazing animals have been excluded from plots of ground since the 1950s or 1960s (Hill *et al.* 1992). However, once the thick grassy swards have become well-established it is difficult for trees and shrubs to recolonise without planting.

The spread of unpalatable *Nardus* into more mixed grasslands is a problem for farmers who see their pastures becoming less and less useful for grazing stock. On unenclosed land this concentrates the grazing animals onto the remaining more palatable herbage, which ultimately causes further losses of heaths and richer grasslands.

W19 *Juniperus communis – Oxalis acetosella* woodland

A small stand of dense juniper scrub was noted on the side of a small valley in the south-east corner of the site (TN13). This vegetation most closely aligns with W19 *Juniperus communis – Oxalis acetosella* woodland.

Juniperus-Oxalis woodlands occur at moderate to high altitudes between 200 m and 650 m on a variety of rocks from mica-schist and limestone to granite. The soils are free- draining and moist with a fast turnover of nutrients. There is a slight preference for damp hollows and for north-facing slopes where the soils are moister.

This is a northern and boreal community of northern England and eastern Scotland, with a few outliers in western Scotland. It is most common and extensive in the eastern Highlands and in parts of the Lammermuir Hills, the Lake District and Upper Teesdale. Many stands of *Juniperus-Oxalis* woodland may be relict understoreys of woods where birch and pine regeneration has been prevented by grazing. *Juniperus-Oxalis* woodland is an uncommon vegetation type with a restricted British distribution.

With only light grazing, trees can be expected to colonise juniper scrub. Juniper itself appears to benefit from alternating periods of intense and light grazing; more grazing creates the open conditions that are necessary for the establishment of seedlings, but too much grazing can eliminate seedlings and prevent regeneration. Under inappropriate management, such as burning or heavy grazing, stands can degenerate and eventually be replaced by heath or grassland. Some stands are quite even-aged and appear to represent ‘bursts’ of juniper regeneration during a period when there was some disturbance of the ground. Juniper is severely damaged or destroyed by fire. However, if adjacent stands of heathlands are burned, this will create open areas where juniper seedlings can establish. Thus, juniper scrub has a place in dynamic boreal woodland ecosystems, forming part of the seral succession from heathland to woodland after fire.

Other habitats

There is a bog pool next to the access track in the south-western corner of the site (TN14). The water level was very low at the time of survey and much of the peat base was exposed. There were no aquatic plants visible on which to base a classification of the habitat.

4. Evaluation of NVC, GWTEs and Conservation Status

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Table 2 evaluates each of the NVC communities in the survey area in terms of nature conservation interest and potential groundwater dependence with respect to the most recent SEPA guidance(SEPA, 2024).

Table 2: Evaluation of Recorded NVC Communities

NVC Community	Potential Groundwater Dependence (SEPA, 2017)	Nature Conservation Status
H10 *Calluna vulgaris – Erica cinerea* heath	No	European dry heaths (Annex 1) Alpine and Boreal heaths (Annex 1) Upland heathland (SBL)
H12 *Calluna vulgaris – Vaccinium myrtillus* heath	No	European dry heaths (Annex 1) Alpine and Boreal heaths (Annex 1) Upland heathland (SBL)
H16 *Calluna vulgaris – Arctostaphylos uva-ursi* heath	No	European dry heaths (Annex 1) Alpine and Boreal heaths (Annex 1) Upland heathland (SBL)
M6 *Carex echinata – Sphagnum fallax/denticulatum* mire	Yes	Upland flushes, fens and swamps (SBL)
M16 *Erica tetralix – Sphagnum compactum* wet heath	Yes	Northern Atlantic wet heaths with *Erica tetralix* (Annex 1) Temperate Atlantic wet heaths with *Erica tetralix* (Annex 1) Degraded raised bogs still capable of natural regeneration (Annex 1) Blanket bog (SBL) Upland heathland (SBL)
M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire	No	Active raised bogs (Annex 1) Blanket bogs (Annex 1) Depressions on peat substrates of the *Rhynchosporion* (Annex 1) Blanket bog (SBL) Upland heathland (SBL)
U5 *Nardus stricta – Galium saxatile* grassland	No	Species-rich *Nardus* grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe) (Annex 1) Upland heathland (SBL) *Juncus squarrosus – Festuca ovina* grassland (SBL) *Nardus stricta – Galium saxatile* grassland (SBL)
W19 *Juniperus communis – Oxalis acetosella* woodland	No	*Juniperus communis* formations on heaths or calcareous grasslands (Annex 1)

Definitions:

Annex 1 - Annex 1 of the European Union Habitats Directive (92/43/EEC)

SBL - Scottish Biodiversity List

5. Discussion

Much of the area within the red-line boundary is made up of the NVC communities H12 and M19 with smaller areas of M6c, M16, H10, H16, U5c and W19.

The vegetation sampled in Quadrats 7 and 9 fitted well with the NVC communities H16 and M6c respectively. However, for all other quadrats, the degree of fit with the NVC communities attributed by TABLEFIT was either 'fair' or 'poor' which may reflect the heavily altered state of the vegetation.

The Site is grazed by sheep and also heavily managed for grouse through the cutting and burning of small strips of vegetation. This has resulted in significant modification of the vegetation. Much of the dry heath vegetation is dominated by *Calluna vulgaris* and lacks diversity, both in terms of the range of species present and structure. Although some of the other dwarf shrub species normally associated with the H12 community were present, they made up only a small part of the vegetation in these areas. Large areas of M19 mire community occur which are dominated by *Calluna vulgaris* and *Eriophorum vaginatum* but lack the rich bryophyte flora normally associated with this community. Very few species of *Sphagnum* were noted here. Areas of U5c acid grassland are heavily sheep-grazed, resulting in a particularly short sward that lacks structural diversity. The bog pool next to the access track in the southwestern corner of the Site appeared degraded and lacked any aquatic vegetation. Much of the pool had dried out, leaving the peat base exposed. This would be a suitable area for peatland restoration.

Of the NVC communities recorded in the survey, only M6 and M16 are potentially Groundwater Dependent Terrestrial Ecosystems (GWDTEs) (SEPA 2024). GWDTEs are specifically protected under the Water Framework Directive and are sensitive receptors to the pressures that are potentially caused by development.

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Appendices

Appendix A. Figures

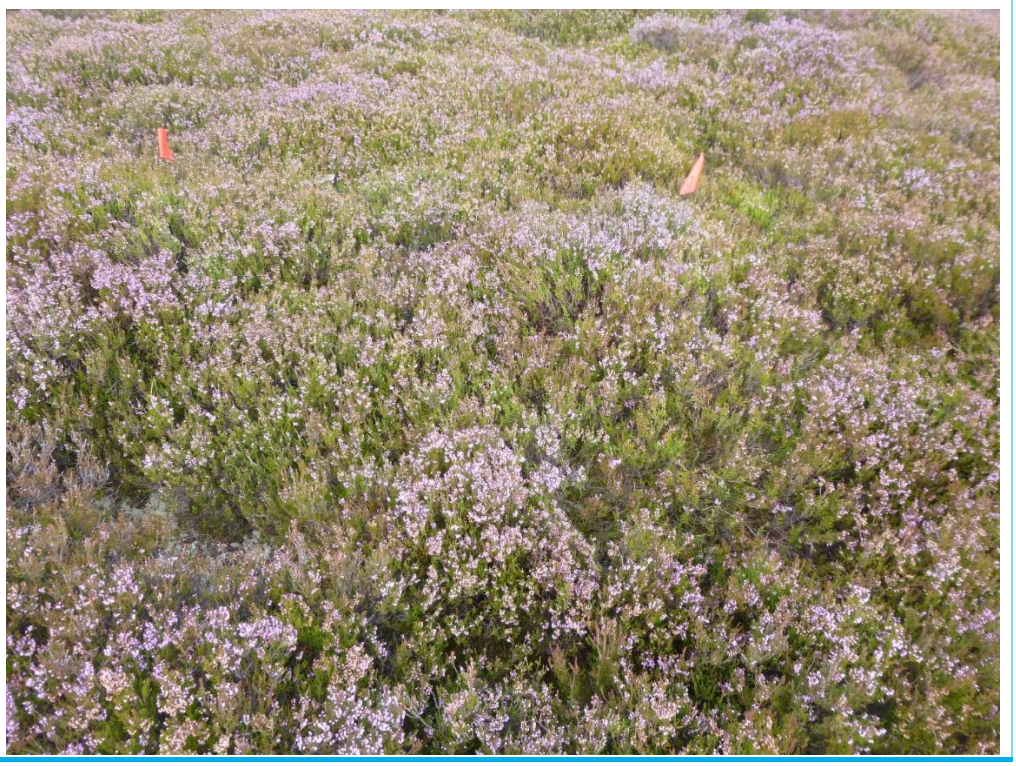
Figure 1: NVC Survey Results

Appendix B. Target Notes

Target Note and Description	Photograph
Target Note 1 **Grid Ref:** NH 82132 24546 **Description:** Quadrat 1 H12 *Calluna vulgaris – Vaccinium myrtillus* heath	
Target Note 2 **Grid Ref:** NH 82041 24655 **Description:** Quadrat 2 H12 *Calluna vulgaris – Vaccinium myrtillus* heath	

Target Note and Description	Photograph
Target Note 3 **Grid Ref:** NH 81996 24755 **Description**: Quadrat 3 M19 *Calluna vulgaris – Eriophorum vaginatum mire*	
Target Note 4 **Grid Ref:** NH 82466 24939 **Description**: Quadrat 4 M19 *Calluna vulgaris – Eriophorum vaginatum mire*	

Target Note and Description	Photograph
Target Note 5: **Grid Ref:** NH 82741 24987 **Description:** Quadrat 5 H10 *Calluna vulgaris – Erica cinerea* heath	
Target Note 6 **Grid Ref:** NH 82663 25223 **Description**: Quadrat 6 H12 *Calluna vulgaris – Vaccinium myrtillus* heath	

Target Note and Description	Photograph
Target Note 7 **Grid Ref:** NH 82983 24949 **Description:** Quadrat 7 H16 *Calluna vulgaris – Arctostaphylos uva-ursi heath*	
Target Note 8 **Grid Ref:** NH 82928 24790 **Description:** Quadrat 8 H12 *Calluna vulgaris – Vaccinium myrtillus* heath	

Target Note and Description	Photograph
Target Note 9 **Grid Ref:** NH 82937 24722 **Description:** Quadrat 9 M6c *Carex echinata – Sphagnum fallax/ denticulatum* mire (*Juncus effusus* subcommunity)	
Target note 10 **Grid Ref:** NH 82679 24641 **Description:** Quadrat 10 M16 *Erica tetralix – Sphagnum compactum* wet heath	

Target Note and Description	Photograph
Target Note 11 **Grid Ref:** NH 82553 24535 **Description:** Quadrat 11 U5c - *Nardus stricta – Galium saxatile* grassland (*Carex panicea-Viola riviniana* subcommunity)	

Target Note and Description	Photograph
Target Note 12 **Grid Ref:** NH 82138 24326 **Description:** Quadrat 12 U5c - *Nardus stricta – Galium saxatile* grassland (*Carex panicea-Viola riviniana* subcommunity) heavily grazed.	

Target Note and Description	Photograph
Target Note 13 **Grid Ref:** NH 82939 24709 **Description:** W19 *Juniperus communis – Oxalis acetosella* woodland	

Target Note and Description	Photograph
Target Note 14 **Grid Ref:** NH 82213 24399 **Description:** Bog pool	
Target Note 15 **Grid Ref:** NH 82245 24550 **Description:** View of survey area looking approximately north-eastwards towards the A9. The patchiness of the vegetation visible in the centre-ground is the result of muir burn, as part of the management of the habitat for red grouse.	

Appendix C. Botanical Species List

Common Name	Scientific Name
Bearberry	*Arctostaphylos uva-ursi*
Bell heather	*Erica cinerea*
Bilberry	*Vaccinium myrtillus*
Common cat's-ear	*Hypochaeris radicata*
Common sorrel	*Rumex acetosa*
Common dog-violet	*Viola riviniana*
Cowberry	*Vaccinium vitis-idaea*
Creeping buttercup	*Ranunculus repens*
Cross-leaved heath	*Erica tetralix*
Crowberry	*Empetrum nigrum*
Daisy	*Bellis perennis*
Eyebright	*Euphrasia agg.*
Heath bedstraw	*Galium saxatile*
Heather	*Calluna vulgaris*
Juniper	*Juniperus communis*
Lousewort	*Pedicularis sylvatica*
Marsh bedstraw	*Galium palustre*
Marsh violet	*Viola palustre*
Marsh willowherb	*Epilobium palustre*
Ribwort plantain	*Plantago lanceolata*
White clover	*Trifolium repens*
Yarrow	*Achillea millefolium*
Grasses, sedges and rushes	
Bottle sedge	*Carex rostrata**
Common bent	*Agrostis capillaris*
Common cotton-grass	*Eriophorum angustifolium*
Creeping bent	*Agrostis stolonifera**
Deer-grass	*Trichophorum germanicum*
Hare's-tail cotton-grass	*Eriophorum vaginatum*
Heath Rush	*Juncus squarrosus*
Heath wood-rush	*Luzula multiflora*
Mat grass	*Nardus stricta*
Purple moor grass	*Molinia caerulea*
Sheep's fescue	*Festuca ovina*
Soft-rush	*Juncus effusus*
Star sedge	*Carex echinata*
Sweet vernal-grass	*Anthoxanthum odoratum*

Common Name	Scientific Name
Mosses	
Blunt-leaved bog-moss	*Sphagnum palustre*
Bog groove-moss	*Aulacomnium palustre*
Bog-moss	*Sphagnum* sp.
Acute-leaved bog-moss	*Sphagnum capillifolium*
Common haircap	*Polytrichum commune*
Fringed bog-moss	*Sphagnum fimbriatum*
Glittering wood-moss	*Hylocomium splendens*
Heath plait-moss	*Hypnum jutlandicum**
Red-stemmed feather-moss	*Pleurozium schreberi*
Lichens	
Reindeer Lichen	*Cladonia portentosa*
	Cladonia floerkeana

Clune Wind Farm

NVC Survey Results 2026

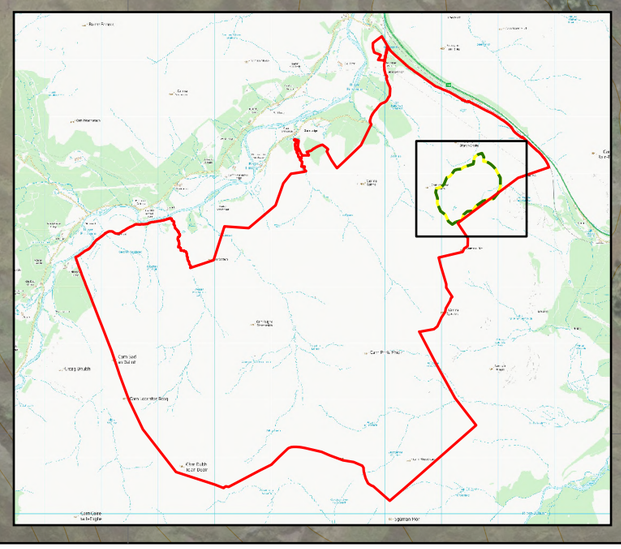
282000

283000

825000

824000

Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
TN13
TN14
TN15



Key

- Site boundary
- Survey area
- Target Note
- NVC Quadrat

NVC Habitat

- U5c
- M6c
- M16
- M19
- H16
- H12
- H10

atmos CONSULTING

0 0.07 0.15 0.3

Kilometres

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Scale @ A3:

1:6,000

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