

Viking Wind Farm NVC Survey, 2008

A Report for EnviroCentre/SSE

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NVC Survey for Viking Wind Farm (track & turbine layout)

1 Summary

The area of the proposed Shetland windfarm covers a large area of mainland Shetland between Weisdale in the south, Aith in the west, Vidlin in the east and Sullom Voe to the north. The survey was split into four separate quadrants (Kergord, Nesting, Collafirth and Delting) by the main A970 road running north/south and the minor B9071 east/west.

The majority of the area consists of gently sloping hills with a covering of deep peat which has accumulated since the last ice age. This supports large areas of a range of important blanket bog vegetation types. These generally conform well to the NVC classification system and, being in good condition, support a range of typical species. The majority of this is composed of three main NVC types (M17a, M17b and M19a) depending on the water content of the upper surface layer. The more sensitive and less frequent types of wet hollow and pool vegetation (M1, M30) are usually found within M17a, the most waterlogged of the three main types, and these have been valued relatively high for this reason.

Erosion of the blanket bog is a prominent feature and intensive sheep grazing has led to the acceleration of erosion by maintaining bare un-vegetated surfaces which are then open to the effects of wind, rain, heat etc. This is especially frequent around exposed broad summits and ridges. In these areas water has drained out of the peat and the surface and there is more of the drier M17b type of vegetation. Away from these areas of erosion the blanket bog is generally intact and in good condition. The main areas of erosion occur over the exposed summit ridges although in many areas extensive peat erosion in the past has led to the colonization of bare ground by grassland and heathland characteristic of shallow peats. This vegetation often has a high cover of *Sphagnum* spp. and new peat can be actively forming in some of these areas.

Other vegetation types occurring on shallower peat are wet heath, dry heath and acid grassland. These often occur in mosaics of more than one type, especially in areas of erosion along with remnant deep peat blocks. They are generally more robust and can colonise bare ground and therefore have been valued relatively low compared to blanket bog, which is irreplaceable except over periods of thousands of years.

More scattered and occasional vegetation types include acid and basic flush and, rarely, some rush-pasture and calcareous grassland.

2 Methods

2.1 Field survey

A National Vegetation Classification (NVC) survey was carried out to cover the proposed wind farm site and an additional 100m buffer zone beyond the turbine envelope, both sides of access routes and borrow pits.

Field survey was carried out according to the NVC methodology outlined in Rodwell J. S. *British Plant Communities Vols. 1 – 5* (Cambridge University Press, 1990, 1991, 1992, 1995) and using the methodology described in the *Handbook for Phase 1 Habitat Survey* (NCC 1993).

Surveyors walked over the proposed layout in such a way as to see all habitats present within buffer zones. Each vegetation type encountered was mapped with a closed polygon onto field maps at 1:10,000. All areas were mapped to NVC sub-community level wherever possible and at least to community level when the vegetation did not easily fit any of the documented sub-communities. Where it was not possible to map areas as an NVC community (e.g. house and garden, quarry or other habitats not covered by the NVC) then Phase 1 Habitat Survey codes were used instead.

Where two or more vegetation types occurred closely together in a repeating pattern they were mapped as a mosaic with an approximate ratio indicative of the amount of each vegetation type within that polygon. Often communities occur as small fragments, 5% or less, and these were indicated in brackets. e.g. M17a + M17b 7:3 (M3, M1).

Where the vegetation in a mapable area appeared to be transitional between 2 different NVC types, and was not easily classifiable as either, it was mapped as a transitional type, e.g. M6d/M23a, and a target note made.

Target notes, referencing NVC community types, were made of all features of nature conservation interest, including important plant species, condition of the vegetation and management practices. All target notes were referenced using a handheld GPS and given an 8 figure grid reference.

Sufficient supporting data was gathered for the more important vegetation types. This consists of quadrat data sets with a DOMIN rating for each species present.

In addition to the above, notes were made on peat depth, wetness, erosion etc. Depth was measured using a handheld pole. This enabled depths of between 0m and 1.75m to be measured.

Fieldwork was carried out by Tim Rafferty, Kate Proctor and Nikki Dayton at an average rate of 30Ha/day.

2.2 Sources of error and limitations

The following factors influence the accuracy of mapping and classification of vegetation in a walkover survey of this nature:

- Different NVC communities and sub-communities frequently occur in fine-grained repeating patterns of two or more types and only a rough estimate of the composition of these can be made in the field.
- Transitional vegetation is frequent and it is not always possible to confidently assign it to a single NVC community or sub-community.
- Although as much of the survey area was walked as was possible much of the ground was scanned and proportions of various communities were estimated. Errors can occur in viewing sloping 3D surfaces from a low viewpoint.

3. NVC Communities – technical descriptions

3.1 Blanket bog/mire communities

EC Habitats Directive 7130 Blanket bogs, UKBAP Priority Habitat

The major part of the proposed development area is covered by blanket peat of varying depth. This was usually measured to be over 2 metres and often very much deeper, as displayed at various hags. The blanket mire is comprised mainly of three extensive different NVC mire communities or sub-communities (M17a, M17b and M19) with other more localised and patchier mire communities within the overall matrix (M1, M3, M6, M15) along with acid grassland, dry heath and wet heath (U6, H10, M15).

M1 *Sphagnum denticulatum* bog pool

EC Habitats Directive 7150 Depressions on peat substrates of the *Rhynchosporion*

Sphagnum cuspidatum A, *Sphagnum denticulatum* A, *Sphagnum papillosum* O, *Eriophorum angustifolium* F, *Erica tetralix* O, *Calluna vulgaris* F, *Eriophorum vaginatum* F.

This community is one of wet hollows/depressions in the peat surface or the margins of deeper pools. Although widespread through the survey area it is less frequent than the main blanket bog communities, occurring where the water table is at the surface for much of the year. As such it tends to occur mainly within the more waterlogged blanket bog community M17a or sometimes within hag systems where water does not drain away.

The main visual constant here is *Sphagnum cuspidatum*, which can be abundant in vegetated hollows, and there is usually some associated *Sphagnum denticulatum*, which distinguishes this community from M2. As it is generally found in the wetter

areas it is more frequently associated with M17a into which it grades via a transitional zone of *Sphagnum cuspidatum*/*Sphagnum denticulatum* to *Sphagnum capillifolium*/*Sphagnum papillosum*.

Vascular associates are typically sparse but there is usually some *Eriophorum angustifolium* and one or more of *Erica tetralix*, *Calluna vulgaris*, *Eriophorum vaginatum* and *Menyanthes trifoliata*.

This community is one of the most sensitive and throughout the survey area it has been much degraded through trampling by sheep. Where grazing is heavy the hollows are maintained as a bare wet peat surface open to further erosion by wind and rain. Where this occurs on gently sloping blanket bog the water is able to drain from the un-vegetated hollows readily, creating a network of bare channels, which continue to erode and deepen over the years. Where sheep numbers are lower the hollows hold standing water and support good covers of *Sphagnum cuspidatum* and/or *Sphagnum denticulatum* and there is little bare peat open to erosion. These two extremes can sometimes be seen closely together at fence-lines between different grazing regimes on the same bit of blanket bog.

As well as occurring through the larger tracts of uneroded blanket mire this community can also be found within the wet hollows of hag systems where it survives or may have re-colonised parts following previous erosion episodes.

M3 *Eriophorum angustifolium* bog pool

EC Habitats Directive 7150 Depressions on peat substrates of the *Rhynchosporion*

Eriophorum angustifolium F, *Sphagnum cuspidatum* O, *Juncus squarrosus* O, *Narthecium ossifragum* R.

This is a community of bare peat surfaces, either wet or dry. It is widespread over the Viking site in areas where blanket bog is being eroded by wind, rain and sheep. It is therefore particularly common over higher summit ground where blanket bog erosion is most severe, but it also occurs within the majority of blanket bog throughout the site to varying degrees.

The most frequent pioneer species which colonises bare peat is *Eriophorum angustifolium* and a few other associates. This habitat is very common where sheep numbers are high and concentrated along the bare peat channels within eroding bog, trampling the peat and churning up the colonising plants and therefore holding back re-vegetation. This holding back of re-vegetation is particularly noticeable on the drier peat surfaces. Where the bare peat is wetter *Eriophorum angustifolium* and subsequent colonisers seem to be able to get a hold more effectively. This may be due to better environmental conditions for colonisation and/or the fact that sheep tend to prefer the drier surfaces.

Another important coloniser of bare peat is *Juncus squarrosus* which appears to be particularly important in forming a tough and erosion-resistant vegetated peat surface

around which *Sphagnum* spp. can colonise, eventually forming stands of the U6a *Juncus squarrosus* acid grassland community.

The community is probably on the increase as blanket bog breaks down but in previously eroded areas recolonisation is taking place with succession to M15d/U6 occurring and replacing some of the bare ground.

**M17a *Trichophorum cespitosum*-*Eriophorum vaginatum* blanket mire
Drosera rotundifolia-*Sphagnum* spp. sub-community**

EC Habitats Directive 7130 Blanket bogs

Eriophorum angustifolium A, *Calluna vulgaris* A, *Eriophorum vaginatum* A, *Trichophorum cespitosum* O, *Erica tetralix* O, *Empetrum nigrum* ssp. *nigrum* O, *Narthecium ossifragum* R, *Potentilla erecta* R, *Drosera rotundifolia* R, *Sphagnum papillosum* A, *Sphagnum capillifolium* A, *Sphagnum tenellum* O, *Pleurozia purpurea* O.

This is a community of more or less permanently waterlogged peat and is characterised by an abundance of *Sphagnum* spp. and *Drosera rotundifolia*. It usually occurs in mosaics with the other two main blanket bog types, M17b and M19, occupying ground where the peat surface is kept more or less waterlogged throughout the year. It also occurs in more extensive stands in its own right on particularly flat ground and in large depressions, wide channels and shallow valley bottoms where water does not drain away.

Over the proposed Viking site this mire type is fairly typical of that described in the NVC with an abundance of *Sphagnum papillosum* and *Sphagnum capillifolium*, often in extensive carpets and forming a peat surface that is soft and spongy underfoot. Amongst these two prominent mosses there can also be some *Sphagnum tenellum*, *Sphagnum cuspidatum* and *Pleurozia purpurea*.

The hypnaceous bryophyte element of M19a here is absent or much reduced and the lack of prominent *Eriophorum vaginatum* tussocks also marks it out from that community. *Eriophorum vaginatum* still occurs as a constant throughout the vegetation but generally as a sparser smaller amount. M17a differs from the drier M17b in having much more extensive *Sphagnum capillifolium* along with *Sphagnum papillosum*, absent from M17b, and much reduced amount of *Racomitrium lanuginosum* compared to that community.

The bulk of the vascular component here is comprised of *Eriophorum angustifolium*, *Calluna vulgaris*, *Eriophorum vaginatum* and *Narthecium ossifragum*. *Erica tetralix* is notably sparse through most stands compared to the rest of Scotland where it is usually quite a prominent component. Compared to the rest of Scotland *Molinia caerulea*, normally a prominent component species of M17a, is completely absent from this vegetation type.

The condition of this community varies over the site but tends to represent some of the best condition blanket bog where it occurs as intact stands over large areas of

flatter or depressed ground. Where it has become modified by management practices it can become the drier M17c community with *Juncus squarrosus* and grasses becoming prominent. Where grazing is heavy the sensitive *Sphagnum* carpet can become very trampled and broken but many of the larger, uniform stands of this community remain in good condition as it is thought that sheep may have a tendency to avoid the wetter spongy conditions.

This vegetation type may have been much more extensive in the past and it has been much reduced in parts by sheep grazing, erosion and drainage, especially so over the exposed broad summits and ridges where the blanket bog cover is much broken down.

M17b *Trichophorum cespitosum*-*Eriophorum vaginatum* blanket mire *Cladonia* spp. sub-community

EC Habitats Directive 7130 Blanket bogs

Eriophorum angustifolium A, *Calluna vulgaris* A, *Eriophorum vaginatum* A, *Sphagnum capillifolium* A, *Cladonia portentosa* A, *Racomitrium lanuginosum* A, *Erica cinerea* F, *Trichophorum cespitosum* F, *Erica tetralix* O,

This is a community of the drier peat surfaces found within stretches of blanket bog and is present as one of the three main blanket bog types, along with M17a and M19, throughout the whole survey area. It occurs on the driest peat surfaces and it is therefore the main NVC type found in the more eroded areas of blanket bog where water has, over time, drained out of the remaining peat blocks. It also occurs commonly in mosaics with the other two blanket bog communities where it occupies the better drained hummocks or more extensive elevated peat surfaces.

This sub-community is characterised by an abundance of *Racomitrium lanuginosum* and a generally reduced cover of *Sphagnum* compared to the M17a sub-community. *Sphagnum capillifolium* is still very frequent here but it is generally more patchy than in M17a and *Sphagnum papillosum* is virtually absent compared to the wetter M17a. Along with *Racomitrium lanuginosum*, *Hypnum jutlandicum* is usually present here and, also distinctive of the dry surface, *Erica cinerea*, which although not constant, is frequently present, especially around the driest edges of peat hags.

Vascular associates are generally sparse but *Eriophorum vaginatum*, *Calluna vulgaris*, *Trichophorum cespitosum* and *Eriophorum angustifolium* are constant or very frequent. The lack of high cover of tussocky *Eriophorum vaginatum* and carpet of hypnaceous mosses mark this vegetation out from M19 blanket bog.

As this is a community of drier peats it is often associated with erosional complexes and heavily grazed and trampled by sheep, which use the hags as shelter and as convenient head-high grazing. Here it forms mosaics with bare peat and shallow peat acid grassland/heathland (U6/M15d/H10b) which have replaced the former deep peat blanket bog.

**M17c *Trichophorum cespitosum*-*Eriophorum vaginatum* blanket mire
Juncus squarrosus-*Rhytidiadelphus loreus* sub-community**

Calluna vulgaris A, *Sphagnum papillosum* A, *Sphagnum capillifolium* F, *Eriophorum vaginatum* F, *Juncus squarrosus* F, *Eriophorum angustifolium* F, *Anthoxanthum odoratum* O, *Nardus stricta* O, *Trichophorum cespitosum* O.

Intensive grazing results in the scattered occurrence of this sub-community where it is derived from the wetter M17a sub-community. In many instances it occurs around the margins of wetter mire where there is some transition towards drier habitats.

Calluna vulgaris, *Juncus squarrosus*, *Eriophorum vaginatum* and *Eriophorum angustifolium* are the vascular dominants. *J. squarrosus* and various grass species generally attain a higher cover here than in other mire communities and indicate some transitional tendencies (to U6a). *Trichophorum cespitosum* is often at low cover here. In the moss layer *Sphagnum papillosum* and *Sphagnum capillifolium* cover can be still quite extensive in this sub-community.

M19 *Calluna vulgaris*-*Eriophorum vaginatum* blanket mire

EC Habitats Directive 7130 Blanket bogs

Eriophorum vaginatum A, *Calluna vulgaris* A, *Erica tetralix* O, *Empetrum nigrum* ssp. *nigrum* F, *Eriophorum angustifolium* F, *Rhytidiadelphus loreus* A, *Hylocomium splendens* A, *Pleurozium schreberi* F, *Hypnum jutlandicum* O, *Sphagnum capillifolium* F, *Sphagnum papillosum* O, *Sphagnum palustre* O.

This is a community of more aerated peat than the M17a community and less subject to waterlogging. It is therefore found in extensive uniform stands on somewhat steeper slopes which shed water more easily. As well as forming stands in its own right this community also occurs in mosaics with the other blanket bog types occupying banks and patches of peat where water table conditions support the prominent growth of *Eriophorum vaginatum*, in its tussock form, and *Calluna vulgaris*.

The peat surface of this community has a firmer feel than M17a and M17b and the prominence of bulky vascular associates, along with much decreased *Sphagnum* and increased hypnaceous moss element, make this type of blanket bog the most tough and resilient of the 3 types. As such it is thought that development on this type of bog might lead to less extensive losses through further fragmentation compared to the more waterlogged and sensitive M17a.

The community is usually at once visually distinguished by a predominance of *Eriophorum vaginatum* which flourishes here in pronounced tussocks, usually co-dominant with pronounced bushy *Calluna vulgaris*. Within the Shetland context the *Eriophorum vaginatum* can often grow in a smoother, less tussocky sward. There is also usually some *Empetrum nigrum* and *Eriophorum angustifolium* growing more sparsely through the predominant species along with some *Trichophorum cespitosum* and a little *Erica tetralix*, although the latter is sparse and much less frequent here than in typical M19a. Although this type of vegetation can be quite

confidently classed as M19 it is not easy to place it in a sub-community and it is best to consider it as a Shetland form of M19.

The bryophyte layer in this community is characterised by an abundance of hypnaceous mosses with *Hylocomium splendens* particularly prominent along with very frequent *Rhytidiadelphus loreus* and *Hypnum jutlandicum* and, more occasionally, *Pleurozium schreberi*. Although *Sphagnum* cover in general is much reduced compared to M17a, *Sphagnum capillifolium* is frequent here and there can also be some *Sphagnum palustre* or *Sphagnum papillosum* in wetter parts. *Sphagnum* becomes more pronounced in transitions to the wetter M17a mire where the two occur together in mosaics.

The condition of this community is generally very good, being robust and less prone to erosion than M17a and M17b. The tough character of the peat surface also make it resilient to trampling in areas of heavy grazing, though on the most historically heavily grazed slopes there are much reduced amounts of *Calluna vulgaris* and other dwarf shrubs along with an increase in grasses amongst the tussocks of *Eriophorum vaginatum*. In the most extremely modified cases this type of vegetation could almost be classed as M20 *Eriophorum vaginatum* mire.

3.2 Marshy grassland/rush-pasture

M23b *Juncus effusus/acutiflorus-Galium palustre* mire

Juncus effusus A, *Agrostis canina* O, *Potentilla erecta* O, *Anthoxanthum odoratum*, *Polytrichum commune* O, *Rumex acetosa* O.

This is usually a very common upland community, of wet, peaty mineral soils of acid to neutral pH but it only occurs as small isolated stands over the survey area.

An abundance of the rush *Juncus effusus* with a range of marshy herbs (*Ranunculus ficaria*, *Cirsium palustre*, *Viola palustris*) and grasses (*Agrostis canina*, *Anthoxanthum odoratum*, *Holcus lanatus*) is characteristic, along with a general absence of *Sphagna*.

3.3 Flushes, soakways and springs: acidic and base-rich

Flushes occur throughout the survey area as small, usually linear, stands where there is some associated soligenous influence. These vary greatly between acid *Sphagnum* dominated flushes and soaks and the stony base-rich *Carex* dominated flushes.

M6b *Carex echinata-Sphagnum fallax* mire *Carex nigra-Nardus stricta* sub-community

M6c *Carex echinata-Sphagnum fallax* mire *Juncus effusus* sub-community

Carex echinata F, *Eriophorum angustifolium* F, *Carex nigra* F *Juncus effusus* F, *Sphagnum palustre* F, *Molinia caerulea* F, *Polytrichum commune* F, *Rumex acetosa* F, *Anthoxanthum odoratum* F, *Agrostis canina* F.

This community occurs in zones of flushing where there may be some slight nutrient enrichment but where water chemistry remains acid. The peat can be deep and is usually quite wet. It is common as linear stands in soakways and patchily along the sides of more prominent watercourses.

The soligenous vegetation is distinguished by a high frequency of *Carex echinata* along with several of *Juncus effusus*, *Eriophorum angustifolium*, *Carex nigra*. *Sphagnum* is usually present as *Sphagnum denticulatum* or sometimes *Sphagnum palustre*. *Sphagnum fallax*, usually prominent in this type of vegetation is much reduced in this community over the Viking survey area. *Juncus effusus* and other rushes which are usually very prominent in this type of vegetation are quite patchy and sparse here therefore there is a tendency for it to be recorded as the M6b sub-community due to the frequent presence of *Carex nigra* and *Eriophorum angustifolium*.

M10 *Carex dioica*-*Pinguicula vulgaris* mire

EC Habitats Directive 7230 Alkaline fens

Scorpidium scorpioides A, *Pinguicula vulgaris* A, *Carex viridula* ssp. *oedocarpa* A, *Thalictrum alpinum* F, *Carex panicea* F, *Campylium stellatum* F, *Bryum pseudotriquetrum* F, *Blindia acuta* F, *Juncus bulbosus* F, *Scorpidium revolvens* F, *Selaginella selaginoides* F, *Euphrasia officinalis* F, *Juncus articulatus* O, *Ctenidium molluscum* O

This type of flush is irrigated by relatively more base-rich waters and usually it occurs as small linear stands or patches. It can be quite frequent in areas of eroded blanket bog where the substrate has become exposed and shallow surface peats are irrigated by waters which have been subject to influence from rock material.

The most distinctive elements of the vegetation are the frequent presence of the small yellow sedge *Carex viridula* ssp. *oedocarpa* and a wet straggling mass of the dark moss *Scorpidium scorpioides*. Amongst the vascular component *Pinguicula vulgaris* is usually also present and characteristic along with some *Carex panicea*, *Thalictrum alpinum*, *Juncus bulbosus* and sometimes some *Juncus articulatus*. Other distinctive bryophytes flourish here such as *Scorpidium revolvens*, *Campylium stellatum*, *Blindia acuta*, *Bryum pseudotriquetrum*. Rarely there can even be a little *Plantago maritima*.

Generally this type of vegetation does not support as many species as elsewhere in Scotland but there are some richer stands which have *Carex dioica*, *Carex pulicaris* and the mosses *Fissidens adianthoides* and *Ctenidium molluscum*.

M30 Related vegetation of seasonally-inundated habitats

This is a rather poorly described vegetation type in the NVC. It is similar to M29 *Hypericum elodes*-*Potamogeton polygonifolius* but it lacks *Hypericum elodes*.

This is a type of vegetation found in narrow soakways within areas of blanket bog over gently sloping ground. It is therefore often associated with M6 flushes from which it is marked out by an abundance of *Potamogeton polygonifolius* and slowly flowing water.

There is frequently *Sphagnum denticulatum*, *Carex rostrata* and *Menyanthes trifoliata*, making it transitional to M1 wet hollow or bog pool vegetation from which it differs in the *Potamogeton polygonifolius* and in being long/linear with flowing water. In some stands there is often a fair amount of *Eleocharis multicaulis*. Other frequent associates are *Juncus bulbosus*, *Eriophorum angustifolium*, *Sphagnum papillosum*, *Myosotis scorpioides*, *Ranunculus flammula*, *Equisetum palustre* and *Carex nigra*.

M32 *Philonotis fontana*-*Saxifraga stellaris* spring

Philonotis fontana A, *Bryum pseudotriquetrum* A, *Calliergon cuspidatum* F, *Agrostis capillaris* O, *Cardamine pratensis* O, *Carex nigra* O, *Sphagnum denticulatum* O, *Ranunculus flammula* O, *Rhytidiadelphus loreus* O.

Springs of this kind are a rare habitat over the Viking survey area and only noted from isolated locations in Nesting and Delting. The spring head itself is usually heavily bryophyte dominated forming a bright mat within the surrounding vegetation. Through the moss carpet tend to grow scattered grasses and small herbs but never attaining anything more than low cover.

These springs are often intimately associated with flushes (M6 or M10) which occur down-slope as a direct result of increased water movement.

A feature of Shetland are springs formed by mono-dominant *Pseudobryum cinclidioides*, which is a moss of very scattered Scottish distribution but which is concentrated on mainland Shetland. Such springs were found occasionally throughout the survey area.

3.4 Dry Heath communities

EC Habitats Directive 4030 European dry heaths

Dry heath occurs on well-drained, shallow peats and is usually restricted to the steepest slopes. It can also occur around knolls within the blanket peat and along steeper banks, often adjacent to watercourses. It is also common in areas of eroded blanket bog on broad summits where it often resembles alpine *Calluna vulgaris*-*Racomitrium lanuginosum* heath.

H10a *Calluna vulgaris*-*Erica cinerea* heath Typical sub-community

EC Habitats Directive 4030 European dry heaths

Calluna vulgaris D, *Hypnum jutlandicum* A, *Hylocomium splendens* A, *Dicranum scoparium* F, *Pleurozium schreberi* F, *Rhytidiadelphus loreus* F, *Potentilla erecta* O, *Juncus squarrosus* O, *Rhytidiadelphus squarrosus* O.

Much of the dry heath on steep slopes and shallow free-draining peats proved difficult to classify in NVC terms. It is usually entirely dominated by *Calluna vulgaris* with a carpet of *Hylocomium splendens* and *Hypnum jutlandicum*. As it usually does not contain any great amount or frequency of *Erica cinerea* or *Vaccinium myrtillus* it does not easily fit within either H10 or H12. By default it was decided therefore to map it as H10a. Later in the season *Vaccinium myrtillus* did become more prominent in some stands and it is thought therefore that H12 may have been under-recorded, although this is not critical as both heath types are very similar.

As it is found on the steepest slopes large stands of this habitat are very rare in the survey area. It is however quite widespread occurring as small patches over rock outcrops or along the steep sides of watercourses where shallow peat overhangs and freely drains.

H10b *Calluna vulgaris*-*Erica cinerea* heath *Racomitrium lanuginosum* sub-community

EC Habitats Directive 4030 European dry heaths

Calluna vulgaris A, *Racomitrium lanuginosum* A, *Empetrum nigrum* A, *Hypnum jutlandicum* A, *Hylocomium splendens* A, *Deschampsia flexuosa* A, *Nardus stricta* A, *Vaccinium myrtillus* F, *Erica cinerea* F, *Agrostis capillaris* F

This is normally an alpine heath community of high summits on mainland Scotland. On Shetland it occurs on broad summits at lower elevations and is frequently found in areas of previous blanket bog which has completely or partially eroded away to shallow peat or substrate. Here it usually forms a mosaic with grassy wet heath (M15d), acid grassland (U6), remnant blanket bog (M17b) and bare peat (M3).

It is characterised by the dominance of *Calluna vulgaris* and abundance of *Racomitrium lanuginosum*. Also making it similar to the alpine heath is the frequent presence of *Empetrum nigrum* and *Cladonia uncialis*. Also constant or frequent here are *Nardus stricta* and the mosses *Hylocomium splendens* and *Hypnum jutlandicum*. Other frequent associates are *Festuca vivipara*, *Potentilla erecta*, *Erica cinerea*, *Carex bigelowii*, *Deschampsia flexuosa*, *Vaccinium myrtillus* and *Agrostis capillaris*.

Although these areas are heavily grazed this community is resistant to trampling. Due to ongoing heavy grazing of areas of eroding blanket bog the community is thought to be probably slowly increasing.

H10c *Calluna vulgaris*-*Erica cinerea* heath *Festuca ovina*-*Anthoxanthum odoratum* sub-community

EC Habitats Directive 4030 European dry heaths

This community was not recorded very often or over any great extents but occasionally drier heaths with some grasses growing through it were recorded as H10c. The H10c sub-community can often resemble a very fine-grained mosaic of acid grassland and heathland giving the vegetation a quite patchy appearance. This vegetation type tends to occur where there is increased pressure from herbivores

**H12a *Calluna vulgaris-Vaccinium myrtillus* heath
Calluna vulgaris sub-community**

EC Habitats Directive 4030 European dry heaths

Calluna vulgaris D, *Vaccinium myrtillus* F, *Hypnum jutlandicum* A, *Hylocomium splendens* F, *Rhytidiadelphus loreus* F

This community was recorded more frequently towards the end of the survey and it is thought that it may have been under-recorded during the early part due mainly to the much less prominent growth of *Vaccinium myrtillus* at that time of year. The *Vaccinium myrtillus* in this type of heath is very sparse indeed becoming more detectable when the longer leafier shoots have grown.

**H12c *Calluna vulgaris-Vaccinium myrtillus* heath
Galium saxatile-Festuca ovina sub-community**

EC Habitats Directive 4030 European dry heaths

Calluna vulgaris D, *Vaccinium myrtillus* F, *Hypnum jutlandicum* A, *Hylocomium splendens* F, *Rhytidiadelphus loreus* F, *Anthoxanthum odoratum* F, *Nardus stricta* F, *Luzula multiflora* F

Very similar to H12a, this sub-community was recorded very infrequently within dry heath where grasses become more prominent through the *Calluna vulgaris* canopy.

3.5 Wet Heath communities

EC Habitats Directive 4010 Northern Atlantic wet heaths with *Erica tetralix*.

Wet heath vegetation occurs on less well-drained, shallow, acid peats (less than 50cm) thus it is found on sloping banks and around knolls. It is found throughout the survey area on gently to moderately sloping ground in addition to areas which are becoming re-vegetated following peat erosion.

**M15a *Trichophorum cespitosum-Erica tetralix* wet heath
Carex panicea sub-community**

EC Habitats Directive 4010 Northern Atlantic wet heaths with *Erica tetralix*.

Thalictrum alpinum F, *Calluna vulgaris* F, *Erica tetralix* O, *Trichophorum cespitosum* O, *Deschampsia flexuosa* O, *Prunella vulgaris* O, *Potentilla erecta* O, *Pinguicula vulgaris* O, *Selaginella selaginoides* O, *Viola riviniana* O, *Carex panicea* O, *Polygala serpyllifolia* O, *Nardus stricta* O, *Huperzia selago* O, *Deschampsia flexuosa* O, *Fissidens* sp. O, *Hylocomium splendens* O, *Pleurozium schreberi* O, *Ctenidium molluscum* O, *Breutelia chrysocoma* F, *Racomitrium lanuginosum* O, *Hypnum jutlandicum* O.

This type of wet heath is not widespread but occurs on the southern slopes below Riding Hill in the Delting Quadrant. Here the wet heath is subject to flushing resulting in the occurrence of this, the richest, most floristically diverse sub-community (M15a).

There is no particular vascular dominant as is seen in the other wet heath sub-communities but instead a more open and varied mixture of species. *Calluna vulgaris* attains quite high cover, interspersed by low growing *Thalictrum alpinum*. *Breutelia chrysocoma*, an M15a indicator species, forms a large proportion of the bryophyte cover, although the range of bryophytes present is also greater than that found in the more common wet heath communities over the site. These include *Racomitrium lanuginosum*, *Hylocomium splendens*, *Pleurozium schreberi*, *Ctenidium molluscum*, *Hypnum jutlandicum* and *Fissidens adianthoides*.

M15b *Trichophorum cespitosum*-*Erica tetralix* wet heath Typical sub-community

EC Habitats Directive 4010 Northern Atlantic wet heaths with *Erica tetralix*.

Trichophorum cespitosum A, *Calluna vulgaris* A, *Eriophorum angustifolium* A, *Juncus squarrosus* F, *Erica tetralix* F, *Sphagnum capillifolium* F

This sub-community is found on shallow peats with more impeded drainage compared to those supporting dry heath. It is less frequent over the survey area than the grassy M15d.

Calluna vulgaris, *Eriophorum angustifolium* and *Trichophorum cespitosum* are the main vascular species here and, along with frequent patchy *Sphagnum capillifolium* this habitat can grade into and look very much like blanket bog vegetation except that it is found on shallower peat. It differs from M15c in lacking *Erica cinerea* and much *Racomitrium lanuginosum* and from M15d by the reduced grasses, hypnaceous mosses and *Juncus squarrosus*.

In areas of heavy grazing the *Sphagnum* component can suffer damage and it is thought that the overall proliferation of M15d over M15b in the survey area is a result of long-term heavy grazing by sheep.

M15c *Trichophorum cespitosum*-*Erica tetralix* wet heath *Cladonia* spp. sub-community

EC Habitats Directive 4010 Northern Atlantic wet heaths with *Erica tetralix*.

Calluna vulgaris A, *Trichophorum cespitosum* A, *Erica cinerea* A, *Racomitrium lanuginosum* A, *Eriophorum angustifolium* A, *Cladonia portentosa* F, *Hypnum jutlandicum* F

Although not widespread and common in the survey area this sub-community was recorded at several locations in the Kergord quadrant. Here it is found on thin wet peats on somewhat steeper slopes where there is often some exposed rock or mineral substrate.

Marking this type of wet heath out is the presence of *Erica cinerea* and *Racomitrium lanuginosum* as constants along with the main species found in the other sub-communities, i.e. *Calluna vulgaris*, *Trichophorum cespitosum*, *Eriophorum angustifolium* and *Hypnum jutlandicum*. As in M15d there is a lack of *Sphagnum* cover. In parts this vegetation type is transitional towards H10b and in such situations is only separated from that community by the frequency of *Trichophorum cespitosum* and presence of scattered *Sphagnum capillifolium*.

M15d *Trichophorum cespitosum*-*Erica tetralix* wet heath *Vaccinium myrtillus* sub-community

EC Habitats Directive 4010 Northern Atlantic wet heaths with *Erica tetralix*.

Calluna vulgaris A, *Juncus squarrosus* A, *Hylocomium splendens* A, *Rhytidiadelphus loreus* A, *Hypnum jutlandicum* A, *Nardus stricta* F, *Empetrum nigrum* F

This is the most widespread type of wet heath recorded on the survey. It is frequently found in areas of eroding blanket bog where it gains a hold, along with acid grassland, on the shallow peats there. With the grasslands it forms a patchy mosaic and the two vegetation types do grade into each other. The heath though supports a much greater cover of ericoids.

Calluna vulgaris is the most frequent and visually prominent dwarf shrub here but there is usually also some *Empetrum nigrum*. *Juncus squarrosus* and *Nardus stricta* are prominent and together they form a continuity with the acid grassland communities (U6) with which it forms mosaics. *Sphagnum capillifolium* is generally present here, although of reduced frequency compared to M15b, with frequent hypnaceous mosses, particularly *Hylocomium splendens*, *Rhytidiadelphus loreus* and *Hypnum jutlandicum* forming the bulk of the bryophyte layer.

This is a tough community that is resistant to trampling damage by sheep although its further spread on shallow bare peat and mineral substrate within eroding blanket bog may be being held back somewhat by the effects of trampling.

3.6 Acid Grassland communities

U4a *Festuca ovina*-*Agrostis capillaris*-*Galium saxatile* grassland Typical sub-community

U4b *Festuca ovina*-*Agrostis capillaris*-*Galium saxatile* grassland *Holcus lanatus*-*Trifolium repens* sub-community

Semi-improved U4 acid grasslands are not a widespread feature but can occur around the edges of the survey area in marginal pastures. It also occurs in areas of blanket bog erosion around broad summits and ridges where it forms a very short and heavily grazed species-poor turf of *Festuca ovina* or *Festuca vivipara* sometimes with *Aira praecox*, and can often be found forming mosaics with the other main type of acid grassland, U6, from which it is distinguished by the lack of *Juncus squarrosus*.

In the more improved parts, around the edges of the survey area it is more typical and variably improved leading to both sub-communities, U4a and U4b, with the latter containing more species of nutrient-rich conditions. Thus it is often comprised of a number of grassy sward species such as *Nardus stricta*, *Luzula campestris*, *Plantago lanceolata*, *Juncus squarrosus*, *Festuca rubra*, *Prunella vulgaris*, *Carex panicea*, *Narthecium ossifragum*, *Potentilla erecta*, *Rhytidiadelphus squarrosus*, *Anthoxanthum odoratum*, *Agrostis capillaris*, *Holcus lanatus*, *Holcus mollis*, *Rumex acetosa*, *Cirsium palustre*, *Deschampsia flexuosa* and *Cardamine pratensis*. In the moss layer can be found an abundance of calcifugous hypnoid mosses such as *Dicranum scoparium*, *Hylocomium splendens*, *Rhytidiadelphus loreus*, *Dicranum scoparium*, *Mnium hornum*, *Frullania sp.* and *Polytrichum commune*.

In richer areas there may be a little *Thalictrum alpinum* which indicates some degree of base enrichment and a transition towards CG10.

U5b *Nardus stricta*-*Galium saxatile* grassland *Agrostis canina*-*Polytrichum commune* sub-community

This *Nardus stricta*-dominated community was not recorded much on the current survey as most of the acid grassland containing *Nardus stricta* is thought to fall more easily within U6 *Juncus squarrosus* grassland as *Juncus squarrosus* is usually present in all of the acid grassland found. Within grassland/heath mosaics though there are localised patches where *Nardus stricta* increases in cover and in some instances these could be categorised as U5.

U6 *Juncus squarrosus*-*Festuca ovina* grassland

This type of *Juncus squarrosus*-dominated acid grassland is common throughout the survey area, especially within erosional complexes, where it is found in mosaics with dwarf shrub heath, on the shallower peats amid remnant deep peat blocks of blanket bog. It is also found as patches within more intact blanket bog.

Juncus squarrosus appears to be one of the early colonisers of bare peat and broken down blanket bog. Where it gets a hold it can often form a dense mass of tight rosettes which bind the peat surface together forming a very tough surface resistant to trampling by sheep and erosion by wind and rain and providing a matrix for Sphagnum to regain a hold. It is therefore thought to be of some importance in the regeneration of blanket bog and also in forming dams and banks which hold back

erosion and water runoff and thereby protect or create pools and wet hollows within eroding blanket bog.

Two sub-communities were recorded.

U6a *Juncus squarrosus*-*Festuca ovina* grassland *Sphagnum* spp. sub-community

Juncus squarrosus D, *Sphagnum papillosum* A, *Sphagnum capillifolium* F, *Nardus stricta* F, *Eriophorum angustifolium* F, *Sphagnum palustre* F, *Calluna vulgaris* O, *Festuca vivipara* O, *Potentilla erecta* O, *Polytrichum commune* O.

This sub-community is identified by the dominance of *Juncus squarrosus* and the frequency and cover of *Sphagnum*. This is mainly *Sphagnum capillifolium* and *Sphagnum papillosum* and not *Sphagnum fallax* as in the documented NVC tables. It is transitional in nature to wet heath and blanket bog and usually contains more *Eriophorum angustifolium* and *Calluna vulgaris*. Although generally less grassy in appearance than U6d it usually has *Nardus stricta* and occasionally a little *Agrostis canina*.

It is thought that this community can form on areas of previously bare peat where *Juncus squarrosus* gets a hold and around which further mire species can re-colonise, especially *Sphagnum* spp. It also occurs as patches within more intact mire.

U6d *Juncus squarrosus*-*Festuca ovina* grassland *Agrostis capillaris*-*Luzula multiflora* sub-community

Juncus squarrosus D, *Hylocomium splendens* F, *Rhytidiadelphus loreus* F, *Nardus stricta* F, *Anthoxanthum odoratum* F, *Potentilla erecta* F, *Rhytidiadelphus squarrosus* O, *Empetrum nigrum* O, *Polytrichum commune* O, *Agrostis capillaris* O.

This sub-community is visually more grassy in appearance and *Sphagnum* is generally absent here. It occurs within eroding blanket bog and also on steeper slopes with a covering of shallow peat.

Juncus squarrosus is the most prominent vascular constant here along with a range of grasses such as *Anthoxanthum odoratum*, *Nardus stricta*, *Festuca ovina*, *Agrostis capillaris* and, more occasionally, *Agrostis canina* and *Deschampsia flexuosa*. *Potentilla erecta* and *Galium saxatile* are also prominent here. Although *Calluna vulgaris* and *Eriophorum angustifolium* can still be present the appearance here is less like a heath than U6a and more like a grassland. Instead of an abundance of *Sphagnum* in the bryophyte layer there are usually good covers of the hypnaceous mosses *Hylocomium splendens*, *Rhytidiadelphus loreus*, *Rhytidiadelphus squarrosus* and *Pleurozium schreberi* as well as frequent *Polytrichum commune* and occasional *Dicranum scoparium* and *Mnium hornum*.

Both these sub-communities have no doubt increased over the years as blanket bog has eroded and broken up along with widespread heavy grazing management practices.

Also noted frequently are patches of vegetation composed almost entirely of dense *Juncus squarrosus* which seem to form on small mounds of remnant peat creating very tight *Juncus squarrosus* hummocks. Vegetation such as this could form a valuable resource in the process of mitigation, through creation of new habitat and protection of existing habitat, by providing tough erosion-resistant vegetated peat surfaces to work with.

3.7 Calcareous Grassland communities

CG10a *Festuca ovina*-*Agrostis capillaris*-*Thymus polytrichus* grassland *Trifolium repens*-*Luzula campestris* sub-community

Agrostis capillaris, *Campanula rotundifolia*, *Festuca ovina*, *F. rubra*, *Plantago lanceolata*, *Potentilla erecta*, *Prunella vulgaris*, *Thymus praecox*, *Viola riviniana*, *Hylocomium splendens*.

Calcareous grassland is a rare vegetation type over the survey area and as such was only recorded from one location as the CG10a sub-community. It occurs where there is some base enrichment from underlying bedrock.

A rather open grassy sward tends to be dominated by the community constants *Festuca ovina* and *Thymus polytrichus* with frequent *Deschampsia flexuosa*, *Euphrasia* agg., *Alchemilla alpina*, *Anthoxanthum odoratum*, *Potentilla erecta*, *Plantago lanceolata*, *Nardus stricta*, *Galium saxatile*, *Rhytidiadelphus squarrosus*, *Pleurozium schreberi* and *Pseudoscleropodium purum*.

Thymus polytrichus is generally slow growing and easily shaded out by more vigorous herbs. Moderate/high grazing pressures appear to benefit this vegetation type keeping the sward fairly open and diverse with *T. polytrichus* generally avoided by herbivores. A lowering of current high domestic stock levels may therefore have an adverse effect on this flora.

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APPENDIX 1: TARGET NOTES

Collafirth NVC Target Notes

- 146.41377 65963 Hillside is moderate to heavily grazed by sheep. The majority of vegetation is a bryophyte dominated M19 with abundant *Hylocomium splendens*, *Rhytidiadelphus loreus* and *Calluna vulgaris* and frequent *Eriophorum vaginatum*, interspersed with fragments of acid grassland (U6). [KP]
- 147.41530 66063 High cover of *Eriophorum vaginatum* and *Eriophorum angustifolium* over this hillside gives the vegetation a distinctive, grassy appearance. *Calluna vulgaris* is much reduced in cover and *Empetrum nigrum* spp. *nigrum* scattered. Peat depth is greater than 0.5m and *Sphagnum* spp. locally frequent. Where *Calluna vulgaris* becomes more frequent it tends to be low growing and fairly inconspicuous. [KP]
- 148.41770 66124 Stony flush (M10) with parts *Sphagnum denticulatum* dominated (M6). The open sward is composed of *Potamogeton polygonifolius*, *Carex panicea*, *Carex viridula* ssp. *Oedocarpa*, *Eriophorum angustifolium*, *Trichophorum cespitosum*, *Scorpidium scorpioides*, *Nardus stricta*, *Narthecium ossifragum*, *Equisetum palustre*, *Campylium stellatum*, *Pinguicula vulgaris* and *Juncus bulbosus*. Photograph C1. [KP]
- 149.41784 66146 Flush/soakway (photographs C2 & C3) vegetated by *Bryum pseudotriquetrum*, *Calliargon cuspidatum*, *Potamogeton polygonifolius*, *Ranunculus flammula*, *Anthoxanthum odoratum*, *Agrostis capillaris*, *Cardamine pratensis*, *Montia fontana*, *Cerastium fontanum*, *Carex nigra*, *Equisetum palustre*, *Glyceria fluitans*, *Myosotis scorpioides*, *Carex rostrata*. This vegetated soakway/channel continues eastwards to 41922 66101 (upstream) and is approximately 1-4m wide over this area of good condition wet/intact blanket bog (M17a). There are also further acid flushes through the peat surface with *Potamogeton polygonifolius*, *Scorpidium scorpioides*, *Carex* spp. and *Sphagnum denticulatum*. [KP]
- 150.41747 66428 Area of active/intact blanket bog with a notably reduced cover of *Calluna vulgaris* compared to vegetation on the East side of stock fence. *Calluna vulgaris* is in fact still frequent but greatly reduced in stature as a result of long term grazing pressures. Cover of *Sphagnum papillosum*, *S. capillifolium* and *S. palustre* is generally high through areas of M17a and grasses infrequent. Photograph C4. [KP]
- 151.41870 66199 Stony M10 flush (photograph C5) with *Carex viridula* ssp. *Oedocarpa*, *Carex nigra*, *Pinguicula vulgaris*, *Eriophorum angustifolium*, *Juncus bulbosus*, *Equisetum palustre*, *Scorpidium scorpioides*, *Trichophorum cespitosum*, *Carex panicea*, *Campylium stellatum*, *Potamogeton polygonifolius*, *Drosera rotundifolia*, *Campylopus atrovirens*, *Narthecium ossifragum*, *Schoenus nigricans* and *Juncus articulatus*. Towards the flush margins there are also *Thalictrum alpinum*, *Plantago maritima*, *Prunella vulgaris* and *Ctenidium molluscum*. Photograph C6 from 41860 66166 upslope. [KP]

152. 41833 66213 Stony (M10) flush similar to above. There are 2 or 3 similar flushes between here and stock fence to the West. [KP]
153. 41721 66213 Over this mainly grassy hillside there are occasional patches of *Sphagnum papillosum* interspersed with graminoids (*Anthoxanthum odoratum*, *Carex nigra*) over deep peat. [KP]
154. 41659 66215 Small, species-rich, grassy flush with *Nardus stricta*, *Juncus squarrosus*, *Narthecium ossifragum*, *Taraxacum* agg., *Prunella vulgaris*, *Plantago lanceolata*, *Equisetum palustre*, *Potentilla erecta*, *Trifolium repens*, *Eriophorum angustifolium*, *Anthoxanthum odoratum*, *Trollius europaeus?* and *Cirsium palustre*. [KP]
155. 41624 66222 M10 flush (*Carex viridula* ssp. *oedocarpa*, *Pinguicula vulgaris*, *Trichophorum cespitosum*, *Pedicularis sylvatica*, *Potamogeton polygonifolius*, *Schoenus nigricans* and *Scorpidium scorpioides*). Blanket bog communities over these slopes were found to be transitional towards grassland although retaining a high cover of peat building *Sphagnum papillosum*. [KP]
156. 41679 66146 Vigorously growing channel vegetation (*Cardamine pratensis*, *Eriophorum angustifolium*, *Juncus effusus*, *Myosotis scorpioides*, *Ranunculus flammula*, *Anthoxanthum odoratum*, *Equisetum palustre*, *Rhytidiadelphus squarrosus*, *Calliergon cuspidatum*, *Carex nigra*, *Sphagnum denticulatum*). Photograph C7. [KP]
157. 42374 66235 Approximate turbine location (#36) within wide area of intact blanket bog which was mainly of the drier M17b NVC sub-community (*Calluna vulgaris*, *Racomitrium lanuginosum*, *Eriophorum angustifolium*, *Eriophorum vaginatum*, *Erica tetralix*, *Trichophorum cespitosum*, *Cladonia portentosa*, *Sphagnum capillifolium*) interspersed with smaller areas of the wetter M17a sub-community with *Sphagnum capillifolium* generally replacing *Sphagnum papillosum*. There were also small fragments of M19 vegetation. Photographs C8 & C9. [KP]
158. 42774 66209 Although there is frequent small-scale erosion over this area of blanket bog it is generally active with frequent *Sphagnum* filled hollows (M1) and *Eriophorum angustifolium* colonising bare peat (M3). Photographs C10 & C11. [KP]
159. 42901 66261 Approximate turbine location (#38) within area of intact M17b with virtually no erosion and interspersed with wetter M17a vegetation (mainly *Sphagnum capillifolium*). There is some haggging to the East but this is small scale. Photographs C12, C13 & C14. [KP]
160. 42740 65536 Peat greater than 3m deep here (photograph C15). Blanket bog over this area varies greatly in terms of the degree of erosion/haggging with some areas completely intact and others deeply haggged. [KP]

161. 42686 65242 Approximate turbine location #41 in area of intact M17b/a blanket bog with little or no erosion channels (photographs C16 & C17). To the West of here at the bottom of slope there was some erosion but here eroded hollows have become *Sphagnum* filled. [KP]
162. 42740 65760 Approximate turbine location #39 (photographs C18, C19 & C20) within area of M17b with some erosion/hagging (M3). Re-vegetation of bare peat was frequent and generally at a faster rate than erosion. There was also some *Juncus squarrosus* grassland (U6a) where peat is shallow as a result of past erosion and *Sphagnum cuspidatum*/*Sphagnum denticulatum* hollows (M1). [KP]
163. 42138 65041 A wide flush dominated by *Sphagnum denticulatum* with sparse *Juncus effusus* and *Carex nigra* along the centre and *Juncus bulbosus* at the margins, somewhat poached (M6aii). [ND]
164. 42262 64947 An extensive valley mire supporting a mosaic of M17a, M17b, generally smooth, not hagged and in good condition with frequent depressions (M1) (photo C21). More or less constant *Sphagna*, though *Sphagnum capillifolium* more frequent than *Sphagnum papillosum* which is occasional to frequent. The track along the valley to turbine 42 should be moved 150m west to avoid this basin mire. There are also frequent sink holes with pockets of *Juncus effusus* and flushed grassland at the bases. [ND]
165. 42067 64679 Site of turbine 45. This turbine is sited within the extensive valley mire in a particularly good area dominated by *Eriophorum angustifolium*, *Sphagnum papillosum* and *Calluna vulgaris* (photo C22 close-up, photo C23 S across mire system) in very good condition, the *Sphagna* forming a deep and continuous carpet. Move the turbine and access tracks to either side 100m west onto the slope above to avoid this system. [ND]
166. 42161 64544 A hag system with quite abundant erosion but fenced all around and apparently less heavily grazed (photo C24). Active revegetation of hags and *Sphagna* abundant on hag tops. [ND]
167. 42444 64578 A large pool at the edge of the 100m strip with some *Sphagnum denticulatum* and *Eriophorum angustifolium* at the margins. [ND]
168. 42561 64734 Site of turbine 46. Sited on smooth peat (M17b) adjacent to a hagged area. The vegetation here is in reasonable condition though *Sphagna* are not frequent on dry hag tops. Occasional pools and depressions (M1) (photo C25 N). [ND]
169. 43023 64815 Site of turbine 44. Turbine sited on a small mound near to the burn at the bottom of the valley (photo C26 N, photo C27 SW). [ND]
170. 42857 64847 *Potamogeton polygonifolius* flushes (M30) through blanket bog in good condition with: *Potamogeton polygonifolius*, *Sphagnum denticulatum*,

Ranunculus flammula, *Juncus bulbosus*, *Eriophorum angustifolium*, *Carex nigra*, *Narthecium ossifragum* (photo C28). [ND]

171. 42208 65401 Site of turbine 42 in an extensive valley mire (photos C29 N, C30 E, C31, C32). predominantly blanket bog (M17a) in good condition on very deep peat with scattered pools and depressions and abundant *Sphagna* including *Sphagnum papillosum*. If possible move the turbine and tracks 100m west to avoid this system. [ND]
172. 42265 65427 M1/M6aii flush in good condition supporting: *Sphagnum cuspidatum*, *Sphagnum denticulatum*, *Juncus bulbosus*, *Trichophorum cespitosum*, *Narthecium ossifragum* and *Eriophorum angustifolium*. [ND]
173. 42309 65953 *Potamogeton polygonifolius* flush (M30) through a large area of species-rich, flushed grassland (photo C33, C34) from which the following species have been recorded: *Ranunculus flammula*, *Trifolium repens*, *Ranunculus ficaria*, *Juncus bulbosus*, *Callitriche stagnalis*, *Myosotis secunda*, *Viola palustris*, *Leontodon autumnalis*, *Caltha palustris*, *Nardus stricta*, *Agrostis capillaris*, *Anthoxanthum odoratum*, *Festuca ovina*, *Carex panicea*, *Carex viridula ssp. oedocarpa*, *Carex flacca*, *Sphagnum denticulatum*, *Dicranella palustris*, *Pseudobryum cinclidioides*, *Bryum pseudotriquetrum*, *Calliargon cuspidatum*. [ND]
174. 41912 66099 *Potamogeton polygonifolius* flush through blanket bog (M17a) in good condition. Flush supports a rich flora including *Sphagnum denticulatum*, *Juncus bulbosus*, *Carex panicea*, *Eriophorum angustifolium*, *Ranunculus flammula*, *Aneura pinguis* and other herbs as yet too small to identify (photo C35). Avoid if possible. Base-enrichment of these flushes from soaks flowing down from the hills to the south and north. [ND]
175. 41770 66105 M10a flush at the base of the slope on stony substrate (photo C36). *Carex viridula ssp. oedocarpa*, *Carex panicea*, *Pinguicula vulgaris*, *Potamogeton polygonifolius*, *Juncus bulbosus*, *Narthecium ossifragum*, *Scorpidium scorpioides*, *Sphagnum denticulatum*, *Equisetum palustre*, *Carex dioica*, *Dicranella palustris*, *Calliargon cuspidatum*. Avoid by micro-siting. [ND]
176. 41685 66049 M10a flush as above, avoid by micro-siting. [ND]

Delting NVC Target Notes

177. 43056 72548 Fragments of vegetation similar to grassy dry heath (H10c) where *Calluna vulgaris* is heavily grazed by sheep and occurs in a fine-grained mosaic with *Rhytidiadelphus loreus*, *Hylocomium splendens* and *Deschampsia flexuosa*. This habitat is over deep peat (>0.5m) and most likely derived from M19 through long term grazing and drying of peat surface. [KP]
178. 43615 72940 Very wet flush/soakway (M30) with abundant *Potamogeton polygonifolius*, *Montia fontana* and *Sphagnum denticulatum*. Also present at

varying frequencies are *Ranunculus flammula*, *Juncus bulbosus*, *Eriophorum angustifolium* and *Myosotis scorpioides* (photograph D30). [KP]

179. 44368 73045 Expanse of *Sphagnum papillosum* dominated mire with constant *Eriophorum vaginatum* and *Eriophorum angustifolium*. *Calluna vulgaris* is fairly constant although at low cover and predominantly pioneer making it inconspicuous beneath cotton grasses. *Sphagnum palustre* and *Polytrichum commune* are quite localised in occurrence and the bog here is modified to some degree. However, the bog remains active with high cover of peat building *Sphagna* and *Eriophorum* spp. Consider moving track to grassy slopes just north of here. Photograph D31 at 44330 73049. [KP]
180. 42950 72320 Small area of peat hags (photograph D32) within wider area of more-or-less completely intact blanket bog (photograph D33). Here re-vegetation of eroded surfaces is frequent and generally occurring at a greater rate than associated erosion. Species present in these hollows are mainly *Eriophorum vaginatum*, *Eriophorum angustifolium*, *Calluna vulgaris*, *Sphagnum papillosum*, *Sphagnum cuspidatum* and *Sphagnum capillifolium*. [KP]
181. 40543 72274 Turbine location number 170. Large area of intact blanket bog. *Sphagnum capillifolium* largely replaces *Sphagnum papillosum* through areas mapped as M17a and is interspersed with areas of the drier *Racomitrium lanuginosum* dominated M17b sub-community and M1 hollows (*Sphagnum cuspidatum*, *Sphagnum denticulatum*, *Eriophorum angustifolium*, *Eriophorum vaginatum*). Photographs D34 & D35. [KP]
182. 40721 72183 Small area of peat erosion and re-vegetation, with erosion appearing to be occurring at a slower rate than re-vegetation. M17a here has a greater percentage of *Sphagnum papillosum* than seen over the slopes immediately to the North. [KP]
183. 40505 71467 Turbine location number 6. Small scale peat erosion, within wider area of mainly intact blanket bog, with frequent *Eriophorum angustifolium* and *Sphagnum cuspidatum* colonising the peat surface (M3). Photographs D36, D37 & D38. [KP]
184. 40439 71651 Small open water pool at proposed track junction within area of mainly intact blanket bog (photograph D39). In contrast, most areas with a similar exposed ridge or hilltop topography over the site tend to be badly eroded. Track movement. [KP]
185. 40367 71641 M1 pools (*Sphagnum cuspidatum*, *Sphagnum denticulatum*, *Eriophorum angustifolium*) within area of wetter blanket bog (M17a) are starting to dry out due to lack of rain. *Sphagnum papillosum* is particularly abundant around pool margins. Photograph D40. [KP]
186. 40468 71699 Partially re-vegetated pools within small scale hag system (photograph D41). This is a potentially fragile habitat which should be avoided by track route. [KP]

- 187.40750 71938 Turbine location number 2. Small fragment of wet heath (M15d) where peat has eroded/slipped in the past and subsequently become re-vegetated, within wider area of intact blanket bog (M19/M17) with little or no erosion. Photographs D42 & D43. [KP]
- 188.39859 72756 Sequence of M1 bog-pools (photograph D44). Re-route track to avoid this habitat. [KP]
- 189.39812 72817 Flush/soakway on proposed track route vegetated by *Potamogeton polygonifolius*, *Carex nigra*, *Sphagnum denticulatum*, *Equisetum palustre*, *Hydrocotyle vulgaris*, *Bryum pseudotriquetrum* and *Carex dioica*. [KP]
- 190.40056 71322 M1 pool (*Sphagnum cuspidatum*, *Sphagnum denticulatum*, *Juncus bulbosus*) which is drying out and poached by sheep. Associated flush/soakway (M6b) is vegetated by *Sphagnum denticulatum*, *Carex nigra*, *Juncus bulbosus*, *Agrostis capillaris* and *Sphagnum cuspidatum*. [KP]
- 191.39534 71194 Bog surface is more structurally diverse, than to North-east, with small-scale haggling and associated vegetation of hollows (M1/M3) becoming flushed in parts (M6aii). Re-vegetation is generally occurring at a faster rate than erosion. Photograph D45. Difficult to choose a suitable track route through this habitat. [KP]
- 192.39375 70736 Wet heath (M15d) vegetation occurs where peat has slipped or been eroded away in the past and ground subsequently becomes re-vegetated. *Calluna vulgaris* dominates with abundant *Juncus squarrosus*. Associates include frequent *Sphagnum capillifolium*, *Sphagnum papillosum*, *Eriophorum angustifolium* and occasional *Racomitrium lanuginosum*. Some intact peat blocks of M17b/M19 remain and current erosion is at a low level. Photograph D46. [KP]
- 193.39385 70695 Photographs D47, D48 & D49 show area of intact mire around the Burn of Laxobigging to the South-east. [KP]
- 194.39452 70700 This steeper slope is mainly a mosaic of atypical wet heath vegetation (M15d) which is dominated by *Calluna vulgaris* with *Juncus squarrosus*, *Hylocomium splendens*, *Potentilla erecta* and *Galium saxatile* over deep peat. The top of the slope supports more typical blanket bog vegetation (M19) from which the rest of the slope is probably derived through modification. Photograph D50. [KP]
- 195.39460 70486 Flush vegetation through channel is mainly *Juncus effusus* and *Sphagna* (M6ci). Where there is very slow flowing water visible aquatic flora becomes more diverse and includes *Ranunculus flammula*, *Cardamine pratensis*, *Myosotis scorpioides*, *Montia fontana*, *Drepanocladus* sp., marginal *Sphagnum denticulatum* and *Juncus effusus*. Photograph D60. [KP]

- 196.39402 70442 Continuation of soakway described above (39460 70486). Additional species here include *Juncus bulbosus* and *Potamogeton polygonifolius*. Photograph D61. Surrounding mire is active and intact with a good cover of *Sphagnum* species. [KP]
- 197.39486 71199 Small pool of standing water surrounded by *Sphagnum papillosum* dominated M17a mire on proposed track line. This track may be better situated along Mid field ridge, although this was not surveyed. [KP]
- 198.38754 70575 Turbine location number 11 (photographs D62, D63 & D64). Area of mainly intact blanket bog (M17b/a) with some fragments of wet heath (M15d) over shallower peats between small re-vegetating hags. Current rate of erosion appears to be minimal. *Sphagnum papillosum* is locally abundant through wet heath vegetation which is floristically closer to M17a despite occurring over less than 50cm of peat. [KP]
- 199.38829 70184 Small pools vegetated around the margins by *Sphagnum denticulatum* and *Sphagnum cuspidatum* (photographs D65 & D66). Blanket bog varies between active, good condition M17a with a high cover of *Sphagnum papillosum* which forms a carpet over the surface, and areas of erosion where M17 forms a mosaic with M3. Some areas which have been eroded away in the past have become re-vegetated by M15d. [KP]
- 200.38897 69906 Area of haggling and associated erosion. There is some re-vegetation of bare peat by *Eriophorum angustifolium* but in general rate of erosion is greater than that of re-vegetation. Remaining peat blocks support mainly M17b. Photograph D67. [KP]
- 201.39042 69917 Soakway/flush with *Potamogeton polygonifolius*, *Carex nigra*, *Carex viridula* ssp. *oedocarpa*, *Eriophorum angustifolium*, *Sphagnum cuspidatum*, *Deschampsia flexuosa* and *Juncus squarrosus*. [KP]
- 202.39142 69870 Flush/soakway with *Potamogeton polygonifolius*, *Ranunculus flammula*, *Sphagnum denticulatum*, *Eriophorum angustifolium*, *Carex viridula* ssp. *oedocarpa* and *Carex* spp. There are frequent similar flushes scattered over this area. [KP]
- 203.39232 69768 Fragments of H14 typically have high cover of *Racomitrium lanuginosum* and *Calluna vulgaris*. Associates include *Nardus stricta*, *Carex bigelowii*, *Juncus squarrosus*, *Cladonia uncialis*, *Huperzia selago*, *Potentilla erecta*, *Trichophorum cespitosum* and *Hypnum jutlandicum* (photograph 7). Floristically this vegetation is quite similar to H10b recorded elsewhere over the site. [KP]
- 204.39016 69378 Large open water bog pool within an area of *Sphagnum papillosum* dominated (M17a) blanket bog (photograph D69). Margins of pool have frequent *Sphagnum cuspidatum* and *Sphagnum denticulatum*. [KP]

- 205.39130 69388 Turbine location number 29. Small scale haggling within wider area of largely intact blanket bog (photographs D70, D71 & D72). Where the peat depth decreases to less than 0.5m in there are small patches of U6d and M15d. Open water bog-pools occur scattered over this area. Degree of erosion varies over area. [KP]
- 206.39095 69734 Frequent acid flushes (M6a) and M30 soakways (*Potamogeton polygonifolius*, *Sphagnum denticulatum*, *Eriophorum angustifolium*, *Carex* spp., *Narthecium ossifragum*) over this area in general.
- 207.38977 69815 Bryophyte dominated flush/spring with *Potamogeton polygonifolius*, *Ranunculus flammula*, *Carex echinata*, *Carex nigra*, *Bryum pseudotriquetrum*, *Drepanocladus* sp. etc. [KP]
- 208.38792 70104 Turbine location number 15 within area of predominantly shallow peat (M15d) with scattered peat blocks (M17b) and occasional bare ground. Blanket bog here is not particularly active but vegetation as a whole appears to be in a state of recovery (photographs D86 & D87). [KP]
- 209.38672 70494 Open water pools and M1 hollows (*Sphagnum cuspidatum*) within area of fairly intact blanket bog (photograph D73). [KP]
- 210.36650 66182 Enclosed field with vegetation intermediate between mire and acid grassland. *Calluna vulgaris* and *Erica tetralix* are generally present through the acid grassland (U5d) although at low cover and quite inconspicuous. In parts *Carex panicea* becomes quite frequent and the vegetation more similar to the *Carex panicea-Viola riviniana* sub-community (U5c). [KP]
- 211.36712 66190 Flush/soakway with abundant *Carex nigra* and frequent *Potamogeton polygonifolius*, *Ranunculus flammula* and *Eriophorum angustifolium*. Also present at lower cover area mixture of *Carex dioica*, *Pinguicula vulgaris*, *Menyanthes trifoliata*, *Drosera rotundifolia*, *Erica tetralix*, *Sphagnum denticulatum*, *Racomitrium lanuginosum* and *Sphagnum papillosum*. [KP]
- 212.36771 66188 Small hollow of *Sphagnum papillosum* dominated blanket bog (M17a) with usual associates (*Eriophorum angustifolium*, *Erica tetralix*, *Potentilla erecta*, *Calluna vulgaris*, *Narthecium ossifragum*, *Sphagnum capillifolium*, *Racomitrium lanuginosum*) and scattered *Carex panicea/Nardus stricta*. There are frequent pools and soakways (*Potamogeton polygonifolius*, *Eriophorum angustifolium*, *Sphagnum denticulatum*, marginal *Pinguicula vulgaris*) through this habitat. Photograph D88. [KP]
- 213.36851 66282 Very wet flush with *Juncus effusus*, *Rumex acetosa*, *Cardamine pratensis*, *Eriophorum angustifolium*, *Equisetum palustre*, *Calliergon* sp., *Ranunculus flammula*, *Montia fontana*, *Agrostis stolonifera*, *Anthoxanthum odoratum*, *Carex* spp., *Carex nigra* and open water. In parts the flush becomes bryophyte dominated (*Philonotis fontana*, *Calliergon cuspidatum*, *Bryum*

pseudotriquetrum, *Aulacomnium palustre* and *Sphagnum* spp. towards margins. [KP]

- 214.37391 66588 Frequent peat cuttings through blanket bog. Some areas are also eroded away to bare mineral substrate. The bog itself is quite heavily grazed in parts and lightly hagged. [KP]
- 215.37522 67177 Steep slopes supporting dry heath have become a fine-grained mosaic of heath and acid grassland (H10c) through heavy grazing by sheep (photograph D89). [KP]
- 216.37521 67032 Scattered species poor flushes (*Carex viridula* ssp. *oedocarpa*, *Carex panicea*, *Nardus stricta*, *Sphagnum denticulatum*, *Campylopus atrovirens*, *Erica tetralix*, *Calluna vulgaris*, *Eriophorum angustifolium*). [KP]
- 217.37294 66697 Frequent peat cuttings (up to 1m) through blanket bog with associated access tracks and areas of bare ground, wet heath and acid grassland (U6). [KP]
- 218.40021 69840 Spring/flush between peat hags vegetated by *Drepanocladus* sp., *Cardamine pratensis*, *Scapania* sp., *Carex echinata*, *Juncus squarrosus*, *Juncus bulbosus* and *Eriophorum angustifolium* (photograph D90). [KP]
- 219.39897 69532 Turbine location number 18. These gentle slopes support extensive, intact blanket bog with abundant *Sphagnum papillosum* and *Sphagnum capillifolium*. Where there is some small scale erosion there is also a good rate of re-vegetation by *Eriophorum angustifolium* and *Sphagnum* spp. (photographs D91, D92 & D93). [KP]
- 220.39489 69130 Location of turbine number 21. Ridge of blanket mire (M17a/b) with haggings either side. The actual ridge here is of fairly intact M17a (photographs D94, D95 & D96). Within this polygon the condition and activeness off the blanket bog varies greatly between eroding hags and deep carpets of *Sphagnum papillosum* (M17a). [KP]
- 221.39377 68785 Deep spongy *Sphagnum papillosum* dominated M17a mire. Constants include *Eriophorum angustifolium*, *Eriophorum vaginatum*, *Calluna vulgaris*, *Trichophorum cespitosum*, *Empetrum nigrum* and *Sphagnum capillifolium* (photograph D97). This vegetation type occurs in a mosaic with drier M17b and M19 with scattered peat hags (M3). [KP]
- 222.39392 68656 Summit vegetation which is predominantly a mixture of *Racomitrium lanuginosum*, *Calluna vulgaris*, *Juncus squarrosus* and *Eriophorum angustifolium* with scattered *Cladonia portentosa*, *Eriophorum vaginatum*, *Hypnum jutlandicum*, *Cladonia uncialis*, *Rhytidiadelphus loreus*, *Dicranum majus* and *Trichophorum cespitosum* over shallow peat. This vegetation was mapped as *Calluna vulgaris*-*Racomitrium lanuginosum* heath (H14) although due to the presence of mire species such as *Eriophorum angustifolium* and *Eriophorum vaginatum* it is not typical of the documentation for this community and exhibits a

transition towards the *Trichophorum cespitosum*-*Erica tetralix* wet heath (M15d). [KP]

223.38783 67242 Flush with abundant *Carex limosa* and *Potamogeton polygonifolius* co-dominating the vegetation with margins vegetated by frequent *Sphagnum denticulatum*, *Nardus stricta* and *Carex echinata* (photograph D98). Upslope the flush becomes quite stony with sparse *Carex viridula* ssp. *oedocarpa*, *Eriophorum angustifolium* and *Carex echinata*. Also noted within the flush as a whole were *Carex dioica* and *Drepanocladus revolvens*. Top end (38836 67212) of flush becomes quite grassy looking with *Nardus stricta*, *Trichophorum cespitosum*, *Carex limosa*, *Carex viridula* ssp. *oedocarpa*, *Narthecium ossifragum*, *Eriophorum angustifolium* and *Sphagnum denticulatum* making up the bulk of cover. [KP]

224.39194 67471 Eroding bank of peat where subterranean stream reappears (photograph D99). [KP]

225.38976 67954 Scattered M10 flushes across hillside with *Carex viridula* ssp. *oedocarpa*, *Potamogeton polygonifolius*, *Pinguicula vulgaris*, *Drosera rotundifolia*, *Erica tetralix*, *Trichophorum cespitosum* and *Narthecium ossifragum*. Towards the margins there is also frequent *Scorpidium scorpioides* and *Sphagnum denticulatum*. Adjacent wet heath is most similar to M15a (see quadrat 21). [KP]

226.38570 67799 Location of turbine number 28 (photographs D100, D101, D102 & D103) within a wider area of fairly intact and active blanket bog which is mainly M17b with M3 hollows/hagging. In parts there is also some wetter (M17a) mire with frequent *Sphagnum papillosum* and M19. Proportions of the various NVC types are quite difficult to assess here. Eroded hollows are generally re-vegetating (*Sphagnum cuspidatum*/*Eriophorum angustifolium*) and habitat appears to be in a stable condition. [KP]

227.38246 68094 Location of turbine number 26 (photographs D104, D105, D106 & D107) towards edge of area with frequent hagging/erosion where M17b dominates. *Eriophorum angustifolium* is frequent through areas of bare peat. Where erosion has occurred in the past *Juncus squarrosus* and *Calluna vulgaris* dominate shallow peat (M15d) with frequent *Sphagnum papillosum/capillifolium*. [KP]

228.38224 68031 Frequent M1 pools across area of active saddle mire (M17a). Pools are mainly vegetated by aquatic *Sphagnum cuspidatum* (photograph D108). Track movement to East to avoid negatively impacting on this habitat is recommended. [KP]

229.38592 68132 Continuous carpet of *Sphagnum papillosum/capillifolium* with an even mix of the usual M17a constants (*Eriophorum angustifolium*, *Eriophorum vaginatum*, *Calluna vulgaris*). Photograph D109 from 38548 68089 of saddle mire and associated pools. This area of blanket bog is intact, active and in good

condition. Towards the edges of the polygon *Juncus squarrosus* begins to appear and becomes quite frequent in parts. [KP]

- 230.38722 68285 Location of turbine number 25 (photographs D110, D111 & D112). Varying degrees of haggging/erosion over these slopes in general with re-vegetation generally equal to erosion. [KP]
- 231.39138 68585 Location of turbine number 24 (photographs D113, D114, D115, D116) at edge of *Sphagnum papillosum* dominated mire. Immediately to the south vegetation is over shallow peat/mineral soil. Avoid *Sphagnum papillosum* dominated mire and pools when micrositing turbine and tracks. [KP]
- 232.38868 68866 Location of turbine number 22 (photographs D117, D118 & D119) is within an area of intact M17a with deep/spongy more-or-less continuous *Sphagnum papillosum*. To the East of here and elsewhere along this ridge vegetation tends to be over shallower peat/mineral soil as a result of past erosion processes and subsequent re-vegetation. It would be preferable here to microsite turbine and move track to the East so as to avoid deeper peat and active bog. [KP]
- 233.42361 71577 Site of turbine 171, Hill of Neegarh (photo D51 S, D52 SW, close-up). Relatively smooth bog with vegetated flushes and very little bare peat and abundant *Sphagna* in hollows and pools. Not approached closely due to nesting birds. Move track and turbine 50m to the south-east, downhill from an area of good condition hilltop saddle-mire (see 42265 71540). [ND].
- 234.42265 71540 Hilltop saddle mire with blanket bog (M17a) in good condition with abundant *Sphagnum papillosum* and frequent pools (M1). Some hags but good revegetation of bare peat evident (photo D53). [ND]
- 235.41833 71324 Spur mire around the site of turbine 35. the mire is dominated by M17a with frequent pools (photo D54). Some low hags but good revegetation (photo D55 N). [ND]
- 236.41554 71859 Site of turbine 4. Relatively smooth habitat (M17b) to the south-west (photo D56 SW) but the mire breaks up into hags downhill of the turbine as the mire steepens towards the burn (photo D57 NE). The habitat is generally in good condition, some haggging but good revegetation of bare peat areas, abundant *Sphagnum denticulatum* in depressions, though few real pools. [ND]
- 237.41988 71895 Site of turbine 1. M1 depression in the fore and relatively smooth peat behind (photo D58). Mire in good condition, some hags but these are low and evidently revegetating, few defined pools (photo D59). Hags are larger to the east. [ND]
- 238.41525 70937 Site of turbine 8 at the corner of two fence-lines and an extensive area of bare peat in good condition just breaking up into hags down-slope. The M17 polygon is good habitat with abundant *Sphagnum papillosum* and should be retained undamaged. The track and turbines will be better run along the top

of Oxnabool where they are more eroded. (Photo D74 S, Hill of Oxnabool, photo D75 NE of good condition M17a, photo D76 across the hags). [ND]

- 239.41249 71325 Site of turbine 5, on smooth gentle peat with occasional, low hags. The habitat is predominantly M17b with pockets of U6a in places. (photo D77 across the peat to the south-east, photo D78 N towards the burn). [ND]
- 240.40983 71305 Species-rich flush across this slope (photo D79) with *Cardamine flexuosa*, *Aulacomnium palustre*, *Carex panicea*, *Trifolium repens*, *Caltha palustris*, *Pseudobryum cinclidioides*, *Cirsium palustre*, *Galium saxatile*, *Agrostis capillaris*, *Anthoxanthum odoratum*, *Carex viridula ssp. oedocarpa*, *Thalictrum alpinum*, *Ranunculus flammula*, *Sphagnum denticulatum*. *Philonotis fontana* springs are also present above. Avoid these features. [ND]
- 241.41083 70932 Flushed grassland with a herb-rich spring-head (photo D80): *Callitriche stagnalis*, *Juncus effusus*, *Agrostis capillaris*, *Calliargon cuspidatum*, *Cardamine flexuosa*, *Juncus bulbosus*, *Juncus squarrosus*, *Rhytidiadelphus squarrosus*, *Sphagnum denticulatum*. [ND]
- 242.41035 70864 Site of turbine 10. (photo D81 SE across M17b slope, D82 NW along burn channel with frequent base-rich soak communities immediately below the turbine). Turbine located on lightly hagged blanket bog M17b but is immediately above a burn channel with base-flushed grassland and flush communities. May require a relook at track and turbine positioning to avoid damage to these features through changes to run-off, surface-flow and potential pollution hazards. [ND]
- 243.40967 70938 Springhead (photo D83) dominated by *Sphagnum denticulatum*, with frequent *Juncus bulbosus*, *Eriophorum angustifolium*, *Ranunculus flammula*, *Caltha palustris*, *Cardamine flexuosa* and algae, immediately below turbine 10 (see above).
- 244.40529 70788 Site of turbine 32 (photo D84 SW over M17a blanket bog, photo D85 NW towards burn). This turbine is located within an extensive valley mire with extensive areas of active M17a blanket bog, on deep peat and in good condition, with frequent *Sphagnum papillosum*, *Sphagnum capillifolium* and *Pleurozia purpurea*. Suggest moving turbine and tracks away from this valley system, possibly south-east onto the slopes or removing them from the project. [ND]
- 245.39154 70460 A large pool (M1) in good condition c. 50m from the turbine 13 (photo D1): *Juncus bulbosus*, *Sphagnum denticulatum*, *Narthecium ossifragum*, *Potamogeton polygonifolius*, *Eriophorum angustifolium*, *Sphagnum papillosum*, *Drosera rotundifolia*, quite scummy with algae in the deepest part. Avoid. [ND]
- 246.39358 70385 A soakway through a flat valley mire dominated by M17a. The soak is dominated by *Sphagnum denticulatum* and *Juncus bulbosus* in its upper reaches winding down from hags and pools above. At this point it becomes richer, first with *Ranunculus flammula* and *Potamogeton polygonifolius* and then

with *Myosotis secunda*, *Callitriche stagnalis*, *Cardamine flexuosa* and *Juncus effusus*. Avoid. [ND]

- 247.39211 70439 Site of turbine 13 (photo D2 W, photo D3 S across hags and photo D4 of the extensive valley mire). Turbine sited within hags just at the head of an intact and important valley mire system. The hags are generally low with little bare peat which is re-vegetating well. Keep turbine and tracks away from valley bottom – could move west onto hillside. [ND]
- 248.39409 70312 Grassy flats on the banks of a burn with an interesting mix of species (photo D5). The moss layer is 90% *Sphagnum papillosum* with *Polytrichum commune* scattered through and the herb layer is: *Juncus effusus*, *Anthoxanthum odoratum*, *Agrostis capillaris*, *Luzula multiflora*, *Carex nigra*, *Carex echinata*, *Galium saxatile*, *Potentilla erecta*, *Viola palustris*, *Caltha palustris*, *Mnium hornum*, *Aulacomnium palustre*. There are also grips through this area, though largely blocked. [ND]
- 249.39713 70420 Site of turbine 77. Sited in the middle of an extensive valley mire supporting abundant M17a in good condition. The turbine itself is located within a small group of hags but the surrounding mire would be affected. This is an inappropriate location for development (photo D6 SE, photo D7 NW). [ND]
- 250.40182 70417 Site of turbine 14 (photo D8 down the burn of Oxnabool towards grassy areas, photo D9 E across a gentle slope of mostly smooth blanket bog M19/M17). Gentle slope with some light haggling in places but in good condition and part of valley system (see turbine 77 above), to be avoided. [ND]
- 251.39974 70024 To the south-east of the fence-line, the vegetation is evidently more heavily grazed than in the valley mire and there are signs of long-term impacts such as the replacement of blanket bog by *Juncus squarrosus* grassland U6. [ND]
- 252.39885 70030 Species-rich flushes (photo D10) by the fence and close to turbine 27, *Ranunculus flammula*, *Callitriche stagnalis*, *Juncus bulbosus*, *Carex nigra*, *Carex echinata*, *Juncus effusus* and *Sphagnum denticulatum* DOMIN 9-10. [ND]
- 253.39867 70007 Site of turbine 27 (photo D11 E over adjacent grassland and flushes, photo D12 S over M19b bog). Turbine is sited on a smooth area of M19b bog, not hagged but with signs of long-term heavy grazing. [ND]
- 254.39811 70062 *Potamogeton polygonifolius* flush (M30) extending from the flush at the fence line by turbine 27 several hundred metres down the burn. Locally species-rich (photo D13). [ND]
- 255.39195 69924 Site of turbine 17 (photo D14 N along the eroded ridge, photo D15 W a small area of very eroded ground A1, near the turbine site). The eroded ridge extends all along the top of the hill with lots of bare peat and slumped ground, though largely revegetated. [ND]

- 256.39131 70431 *Philonotis fontana* spring (M32) on the hillside above turbine 13, *Sphagnum denticulatum* and *Philonotis fontana* above and *Carex viridula* ssp. *oedocarpa* and *Carex panicea* below tending to M10 (photo D16). *Pseudobryum cinclidioides* also present. Avoid this feature, especially if moving track and turbines west to avoid the valley mire. [ND]
- 257.41140 70197 A broad saddle mire between three summits. This large area of M17a mire is in very good condition with abundant *Sphagnum papillosum* and deep active pools (photo D17). Avoid this area. [ND]
- 258.41105 70249 A large flush M6aii with M30 at the head of this burn and extending some way down (photo D18): *Carex nigra*, *Potamogeton polygonifolius*, *Cardamine flexuosa*, *Sphagnum denticulatum* (9), *Ranunculus flammula*, *Cardamine pratensis*, *Eriophorum angustifolium*, *Hylocomium splendens*, *Calliargon cuspidatum*, *Plantago lanceolata*, *Anthoxanthum odoratum*, *Pseudobryum cinclidioides*, *Campylium stellatum*. Avoid this area. [ND]
- 259.41073 70160 A broad, flushed area extending into M6c soaks downhill. *Sphagnum denticulatum* is dominant with abundant *Eriophorum angustifolium* and local *Sphagnum cuspidatum* and other species (photo D19). Avoid. [ND]
- 260.40920 70042 An M30 flush, well developed with abundant *Narthecium ossifragum*. [ND]
- 261.40787 70141 A large pool with the saddle mire system with *Sphagnum cuspidatum*, *Sphagnum denticulatum*, *Juncus bulbosus* (photo D20, D21). [ND]
- 262.40697 70412 Site of turbine 12 (photo D22 E to *Sphagnum denticulatum* depression and D23 S across blanket bog 0.8m deep. Bog in good condition with occasional low hags, constant *Sphagna* and active revegetation of bare peat areas. [ND]
- 263.40287 70347 Mossy bank on the burn of Oxnabool with *Fontinalis antipyretica* in the stream and *Ranunculus flammula*, *Callitriche stagnalis* and *Persicaria amphibian* (new hectad record for this species). On the bank are *Dicranella palustris*, *Aneura pinguis*, *Scapania* spp., *Sphagnum palustre*, *Viola palustris*, *Rumex acetosa* and *Mnium hornum*. [ND]
- 264.40361 69936 Site of Turbine 16 (photo D25 E along track line and D26 N hags, M17a and pools). This turbine is situated at the base of a gentle hillside with regular low hags but some good re-vegetation. Some underground burns and sink-holes present so micro-location of turbines necessary if placed here, although this area is in good condition with pool features present so better to avoid. Turbine and tracks could be located along the ridge to the south. [ND]
- 265.40529 69675 The peat is all slumped away from this hilltop. Occasional mounds are left supporting wet heath type vegetation (M15d) and *Juncus squarrosus* grassland (U6) but the majority of the vegetation is dry heath with frequent *Racomitrium lanuginosum* (H10b) and open stony ground. (photo D27). [ND]

- 266.40583 69650 Blanket bog M17a/M15b on relatively shallow peat 50-70cm deep on top of the hill, apparently actively building following a past erosion event (photos D28, D29). [ND]
- 267.37885 67419 *Listera cordata* in blanket bog (photo D127). [ND]
- 268.37984 67375 M30 stony *Potamogeton polygonifolius* flush running down the hillside, tending to M10 in places: *Potamogeton polygonifolius*, *Sphagnum denticulatum*, *Scorpidium scorpioides*, *Carex panicea*, *Juncus bulbosus*, *Carex viridula ssp. oedocarpa*, *Narthecium ossifragum*, *Ranunculus flammula*, *Pinguicula vulgaris*, *Schoenus nigricans*, *Aneura pinguis*, *Scorpidium revolvens* and *Carex dioica*. Avoid this feature [ND]
- 269.37894 67133 Site of turbine 31 (photo D128 E and D129 N) along the stony plateau. The peat has slumped away from the summit in this area due to past erosion but active revegetation is evident. Abundant *Sphagna* including *Sphagnum papillosum* are present in M15 and U6 communities in mosaic with dry heath H10b, some open stony patches and some relics of blanket bog (M17b). [ND]
- 270.38378 66791 A deep pool on the hilltop in an area where deep haggging is frequent but similar pools are still occasional (photo D130). *Sphagnum denticulatum* at the margins, *Sphagnum cuspidatum* with some emergent *Juncus bulbosus*. Very vulnerable to any increase in erosion here, e.g. through development. [ND]
- 271.38378 66690 Site of turbine 33 (photo D131 NE and D132 SW across blanket bog in good condition). In a saddle between two hilltops is an area of M17a mire in good condition with some pools, deep peat and abundant *Sphagnum papillosum*. The turbine location should be moved onto higher ground, e.g. 20m north onto Duddin Hill. The track should also go across the top of Duddin Hill. [ND]
- 272.38524 67072 a small stand of flushed grassland on the hillside with M6c and M6b at the base of the slope and some U4 grassland, *Philonotis fontana* springs M32 and base-rich flushes M30 at the top (photo D133). Avoid this feature. [ND]
- 273.38421 67127 Site of turbine 30 (photo D134 E) A gentle slope, lightly haggged but re-vegetating at the same rate. Occasional flushes suggest some local base enrichment. [ND]
- 274.38090 67383 A narrow M10 flush, one of several along this part of the slope where steeper (photo D135). It is dominated by *Carex viridula ssp. oedocarpa* with *Carex dioica*, *Juncus bulbosus*, *Potamogeton polygonifolius*, *Ranunculus flammula*, *Pinguicula vulgaris*, *Deschampsia* spp (? *setacea*), *Scorpidium scorpioides*, *Aneura pinguis*, *Campyllum stellatum*, *Drosera rotundifolia*. Avoid these flushes. [ND]

- 275.38537 68594 Much of the *Calluna vulgaris* over this hillside is dead. Heather beetle? Photograph D120. [KP]
- 276.38463 69034 Turbine location number 20 at edge of small-scale peat haggging within otherwise fairly intact mire (photographs D121, D122 & D123). [KP]
- 277.38424 68580 Turbine location number 23 within wide expanse of uniform M19/M17 which exhibits very little variation in surface structure. Areas of light erosion/haggging to the NW should be avoided as naturally eroding and re-vegetating. There are small fragments of *Juncus squarrosus* grassland (U6) here and *Calluna vulgaris* mainly dead. Photographs D124, D125 & D126. [KP]

Kergord NVC Target Notes

- 278.41023 55493 For the most part steeper slope support dry heath vegetation (*Calluna vulgaris*, *Hylocomium splendens*, *Rhytidiadelphus loreus*) over peat depths of 50-70cm which comes closest in NVC terms to H10a. *Juncus squarrosus* occurs as discrete patches and *Empetrum nigrum* ssp. *nigrum* locally scattered through the heath. Due to the peat depth this vegetation will have been derived from past blanket bog. Photograph K1. [KP]
- 279.41015 55769 Unvegetated open water bog pool within ridge of intact mire. Photograph K2. [KP]
- 280.40963 55996 Approximate turbine location number 141. Small fragment of M15d/H10b (*Calluna vulgaris*, *Juncus squarrosus*, *Sphagnum capillifolium*, *Hylocomium splendens*, *Empetrum nigrum*, *Racomitrium lanuginosum*) within largely intact blanket bog (mainly M19) along ridge. *Sphagnum* spp. are frequent through blanket mire. Photographs K3 & K4. [KP]
- 281.40977 56216 Proposed track route is through an area of wetter M17a blanket bog between two main pools (marked on map) and scattered smaller pools. Re-route track to the west of fence here. [KP]
- 282.40992 56441 Two M1 bog-pools with abundant aquatic *Sphagna* and open water (Photograph K5). Surrounding mire habitat is quite varied and ranges between localised haggging/quite severe erosion and wet areas with abundant *Sphagnum* spp. [KP]
- 283.41008 56501 Approximate turbine location number 128 within area of degraded/eroding summit mire. Re-vegetation is abundant, and mainly of *Juncus squarrosus* (U6d) and wet heath (M15d) where the peat has mainly been eroded away to leave a shallow layer. Peat blocks still remain, creating a mosaic with above vegetation. Photographs K6 & K7. Immediately off the ridge the mire vegetation is more or less intact. Bog pool immediately to the north of here. [KP]

284. 40833 55057 Sedge-rich flush (*Carex panicea*, *C. viridula* ssp. *oedocarpa*, *C. dioica*, *C. nigra*) with frequent *Pinguicula vulgaris*, *Eriophorum angustifolium* and *Potamogeton polygonifolius* as well as occasional *Selaginella selaginoides*, *Nardus stricta*, *Potentilla erecta*, *Calluna vulgaris* and *Erica tetralix*. Unusually here, bryophytes are dominated by *Fissidens* sp. with *Calliergon* sp., *Campylium stellatum*, *Scorpidium scorpioides*, *Drepanocladus* sp., *Scapania* sp., *Bryum pseudotriquetrum* and *Sphagnum denticulatum*. This flush continues downslope to road at 40847 54999. As this flush is in close proximity to the proposed track it is recommended that disturbance to the flush is avoided. [KP]
285. 40955 58593 Small bog pool, on proposed track line, which is vegetated by aquatic *Sphagnum cuspidatum* in association with small area of M17a/c to 40961 58563 where there is a further pool. It is recommended that the track line be moved slightly either east or west to avoid these standing water habitats. [KP]
286. 40988 58453 Location of turbine number 88. Extensive erosion and associated bare peat along ridge of Mid Kame. Rate of eroding peat appears greater than subsequent re-vegetation. In parts the peat erosion is complete, leaving exposed gravel substrate, which in parts has become colonised by *Juncus squarrosus* and/or *Calluna vulgaris* (U6d/M15d). Remaining peat blocks are mainly present towards the break of slope meaning that the proposed track route is predominantly through bare peat or vegetation associated with shallow peat or mineral substrate. Photographs K8, K9 & K10. [KP]
287. 41033 57979 Location of turbine number 95. Extensive bare gravel and peat (M3) forming a mosaic with remaining peat blocks and areas which have become re-vegetated by *Juncus squarrosus* (U6d). Similar habitat to that described at turbine number 88. Photographs K11, K12, K13 & K14. [KP]
288. 41078 57497 Location of turbine number 107. Area of eroding peat bog which is mainly M3 and M19. Rate of erosion appears greater than that of re-vegetation. Photographs K15, K16 & K17. [KP]
289. 41056 56999 Location of turbine number 119 (photographs K18, K19, K20 & K21). Fairly intact blanket bog (M17a/b/M19) with some minimal erosion and re-vegetation. In some parts erosion rate is greater than re-vegetation and in others the opposite is occurring. Close to the proposed turbine location is a pool with *Juncus squarrosus*, *Sphagnum cuspidatum*, *Sphagnum denticulatum*, *Eriophorum vaginatum* and *Calluna vulgaris* re-vegetating ground that is assumed to have been previously bare peat (photograph K22). This ridge is currently heavily impacted by sheep grazing with high quantities of dung within the shelter of hags in particular and frequent hoof prints/poaching. [KP]
290. 40964 58164 Shallow pool (17m x 10m in size) which is approximately 45m from proposed track and vegetated by aquatic *Sphagnum denticulatum* around its margins. Banks on 3 sides are of abundant *Juncus squarrosus* and associated sphagnum which appears to be increasing. This combination provides support and rigidity to the bank structure. The remaining side is of eroding bare peat. Photograph K23. [KP]

291. 40932 58936 Location of turbine number 81 (photographs K24, K25 & K26). Area of relatively intact M17a blanket bog (*Eriophorum vaginatum*, *Calluna vulgaris*, *Sphagnum papillosum*, *Sphagnum capillifolium*) with scattered *Juncus squarrosus* where it becomes transitional to the M17c sub-community. These fairly wet blanket bog communities form a mosaic with M19 over this area. Hags and associated erosion are present along the ridge to the North and South of here. There are also small bog-pools to the South and West of here. [KP]
292. 40902 59427 Location of turbine number 74. Bare peat with locally frequent *Eriophorum angustifolium* scattered over the surface and forming a mosaic in general with bare gravel, *Juncus squarrosus* dominated acid grassland (U6d) and wet heath, all of which are interspersed with remaining small peat blocks. This polygon in general is re-vegetating (U6/M15) through the centre where past erosion has resulted in minimal depths of peat remaining and eroding at the margins towards the break of slope (M19/M3). Photographs K27, K28 & K29. [KP]
293. 40853 59913 Location of turbine number 69 (photographs K30, K31 & K32). Fairly intact/active blanket bog (M19) over marginal ground between eroding ridge top vegetation and slopes to the East. [KP]
294. 40750 60129 Area of eroding and eroded bare ground with some colonisation of peat by *Eriophorum angustifolium* (M3) and bare ground by *Juncus squarrosus* (U6d). Move track away from more fragile eroding blanket bog margins to pass through centre of bare ground. Photograph K33. [KP]
295. 40491 60643 Peaty flush vegetated by *Potamogeton polygonifolius*, *Trichophorum cespitosum*, *Juncus bulbosus*, *Juncus squarrosus*, *Carex viridula* ssp. *oedocarpa*, *Carex panicea*, *Narthecium ossifragum*, *Pinguicula vulgaris* and *Sphagnum denticulatum*. Flushes are frequent in general through wet and dry heath which occurs between acid grassland on the steeper slopes above and blanket bog on the flatter ground below. Constant species include *Potamogeton polygonifolius*, *Carex viridula* ssp. *oedocarpa* and *Pinguicula vulgaris*. Through adjacent wet heath there is also some *Thalictrum alpinum* and *Succisa pratensis*. [KP]
296. 40485 60694 Heath vegetation (H10) on these lower slopes is relatively quite species rich. Species present and noted at the time of survey include *Calluna vulgaris*, *Juncus squarrosus*, *Thalictrum alpinum*, *Potentilla erecta*, *Selaginella selaginoides*, *Polygala serpyllifolia*, *Carex panicea*, *Carex nigra*, *Pleurozium schreberi*, *Hylocomium splendens*, *Viola riviniana*, *Leontodon autumnalis*, *Leontodon autumnalis*, *Galium saxatile*, *Rhynchospora loreus* and *Anthoxanthum odoratum*. [KP]
297. 40768 60385 Location of turbine number 65. Habitat here is between severely eroded bare ground and a mosaic of M17/M3 which is hagged and eroding. If possible micro-site turbine slightly to the west in centre of bare peat. Photographs K34, K35 & K36. [KP]

298. 37682 50950 Slopes here are very uniform and heavily grazed area of acid grassland conforming to U6 and composed of abundant *Juncus squarrosus* with *Nardus stricta*, *Anthoxanthum odoratum*, *Agrostis canina*, *Galium saxatile*, *Luzula campestris*, and *Cladonia uncialis*, *Polytrichum commune*, *Mnium hornum*, *Hylocomium splendens* and *Dicranum scoparium*. There are also small clumps less than 50cm across, of heavily browsed *Calluna vulgaris* scattered about indicating former dwarf shrub heath. Also, mainly higher up the slope, there is an occasional patch of modified M19 blanket bog which is very grassy but still has visually prominent tussocks of *Eriophorum vaginatum*. [TR]
299. 37635 51495 Spring above M6c flush has abundant *Pseudobryum cinclinum* in a lush wet carpet (Photograph K90, K91, K92). Also growing here are *Cardamine pratensis*, *Carex nigra*, *Montia fontana* and *Calliergonella cuspidata*. [TR]
300. 37351 52817 Turbine 167 situated on blanket bog with frequent but not severe erosion (A4) so mainly intact but with bare peat channels 50-200cm across. The blanket bog is mainly the drier M17b with *Calluna vulgaris*, abundant *Racomitrium lanuginosum*, *Eriophorum vaginatum*, *Eriophorum angustifolium*, *Trichophorum cespitosum* and *Hypnum jutlandicum*. Photograph K93-K96 [TR]
301. 37556 52564 Track here crosses a water-holding saddle with wet hollows/pools supporting *Sphagnum cuspidatum* (M1) *Sphagnum capillifolium* and *Sphagnum papillosum* carpets (M17a) U6a *Juncus squarrosus* acid grassland and fragments of drier deep peat M17b blanket bog. [TR]
302. 37815 52758 Turbine 168 located on a large, intact and active area of blanket bog with extensive *Sphagnum capillifolium* and *Sphagnum papillosum*. There is also abundant *Eriophorum vaginatum*, *Eriophorum angustifolium* and *Calluna vulgaris* with sparser *Empetrum nigrum*, *Trichophorum cespitosum* and in the moss layer *Cladonia portentosa*, *Pleurozia purpurea* and *Scapania gracilis*. Some parts have more hypnoid mosses (mainly *Rhytidiadelphus loreus* and *Hylocomium splendens*) like M19 and there is also some drier M17b blanket bog, especially where hagged, marked out abundant *Racomitrium lanuginosum* cover. Hags are generally infrequent and low, up to 1m. On slope above there is firmer but just as intact M19 in good natural condition. The track north and south of this turbine also runs over intact blanket bog (A5). Photograph K97-100 [TR]
303. 38015 53127 Track runs over an area with large intact blocks of blanket bog broken by frequent large hags to around 2m high and several metres across. [TR]
304. 37904 53626 Turbine 165 and access track will adversely affect an area of largely intact and active blanket bog which is mainly M17a and M17b. There is an area of more eroded bog (A3) to the west and south consisting of the drier M17b type and bare peat (M3). Re-locate turbine and track to minimise impacts. Photograph K101-K104 [TR]

- 305.37485 53782 Turbine 161 Located on more or less intact blanket bog but with frequent areas of bare peat up to about 2m wide and with hags 1m high. This is mainly M17b with a high cover of *Racomitrium lanuginosum* with *Eriophorum vaginatum*, *Eriophorum angustifolium* and *Calluna vulgaris*. There are patches with more *Sphagnum capillifolium* and *Sphagnum papillosum* (M17a) but these are not extensive. Photograph K105-K108 [TR]
- 306.36856 54185 Turbine 159 located on blanket bog with widespread but small-scale erosion where bare peat channels are usually less than 1m wide and less than 50cm deep. The vegetation is mainly the drier M17b type with abundant *Racomitrium lanuginosum* along with *Calluna vulgaris*, *Eriophorum vaginatum*, *Trichophorum cespitosum* and *Eriophorum angustifolium* as the main dominants and scattered *Cladonia portentosa*, *Dicranum scoparium*, *Hypnum jutlandicum* and some sparse *Erica tetralix*. There is a little patchy *Sphagnum capillifolium* but no great extents. The vegetation is heavily grazed and trampled and occasional M1 hollows with *Sphagnum cuspidatum* are in poor condition. There are patches of M17a where *Sphagnum papillosum* and *Sphagnum capillifolium* are more extensive on waterlogged peat surfaces. Photograph K109-112 [TR]
- 307.36870 54645 Turbine 157 located on partly eroding blanket bog with bare peat channels generally less than 1m wide but also with some older deeper hags 1-2m high and with acid grassland and heath in the hag bottoms (U6, M15d). The blanket bog is mainly the drier M17b with abundant *Racomitrium lanuginosum*. There is some *Sphagnum* but it is heavily trampled and struggling Photograph K113-K116 [TR]
- 308.36789 55358 Turbine 155 located on blanket bog mainly of the drier M17b type (*Calluna vulgaris*, *Eriophorum vaginatum*, *Racomitrium lanuginosum*, *Eriophorum angustifolium*) which has frequent bare peat channels less than 1m wide and 50cm deep. Some hollows are vegetated with active *Sphagnum cuspidatum* and *Sphagnum papillosum* but they are not in good condition due to heavy grazing and trampling. Much of the track to the south of here goes over more intact blanket bog with extensive *Sphagnum* in places. Photograph K117-K120 [TR]
- 309.37260 55273 Turbine 151 located on the boundary between intact (A5) blanket bog to the south-east and more fragmented blanket bog (A3-A4) to the north and west. The eroded bog fragments are mainly drier M17b and the intact bog to SE has more extensive *Sphagnum capillifolium* and *Sphagnum papillosum* (M17a) on the wetter peat surfaces and there is also the occasional hollow with *Sphagnum cuspidatum* (M1). Photograph K121-124 [TR]
- 310.37335 56341 Turbine 134 located on partially eroded blanket bog and consisting of deep peat blocks several metres across and bare peat covering areas of several metres. Hags are generally less than a metre high and there is some vegetation in the hag bottoms resembling acid heath and grassland (M15d, U6). Photograph K125-K128 [TR]

- 311.37598 55963 Turbine 149 located within intact blanket bog which is mainly the drier M17b type. This is close to an area of blanket bog that is more fragmented and bare peat areas up to 2m across and with hags up to 1.5m high. Photograph K129-K132 [TR]
- 312.37163 55852 Turbine 144 located blanket bog of M17b. Hollows have virtually no *Sphagnum* and consisting of bare peat channels up to 1m wide, which are heavily trampled. *Sphagnum capillifolium* occurs as patchy carpets but these are not usually extensive and well-developed enough to call M17a. Photograph K133-K136 [TR]
- 313.36869 55174 Turbine 142 on intact (A5) blanket bog with only small-scale erosion channels which are quite sparse. There is U4 grassland nearby. Mainly M17b with patchy *Sphagnum capillifolium* and *Sphagnum cuspidatum* in hollows but these are well trampled. Photograph K137-K140. [TR]
- 314.40001 55011 Blanket bog here is very rich in species due to soligenous influences. There can be abundant *Sphagnum papillosum* and other species not normally found in grazed blanket bog such as *Carex dioica*, *Plantago lanceolata*, *Festuca rubra* and *Equisetum palustre*. [TR]
- 315.40098 55253 Track runs through intact A5 blanket bog. Not easily classed. There is no *Sphagnum papillosum* but extensive *Sphagnum capillifolium* and no *Racomitrium lanuginosum*. *Erica tetralix* seems to be more predominant than usual for bog in this area and there is also a high cover of *Eriophorum angustifolium* along with *Eriophorum vaginatum*, *Trichophorum cespitosum*, *Narthecium ossifragum*, *Calluna vulgaris* and *Cladonia portentosa*. [TR]
- 316.39833 56117 There is deep peat here but blanket bog is very grassy due to history of heavy grazing. There is also less and heavily trampled *Sphagnum*. Amongst the grasses *Anthoxanthum odoratum* is of high cover. (M17c and grassy M19) [TR]
- 317.40148 55038 Vegetated islands and banks of burn have *Primula vulgaris*, *Cardamine pratensis*, *Anthoxanthum odoratum*, *Plantago lanceolata*, *Euphrasia officinalis*, *Trifolium repens*, *Carex nigra*, *Caltha palustris*, *Bellis perennis* and the stream bed has the moss *Fontinalis antipyretica*. [TR]
- 318.39492 56743 Turbine 122 on very intact, extensive and active blanket bog which has carpets of *Sphagnum papillosum* and *Sphagnum capillifolium* on wetter peat surfaces and the drier M17b and M19 types where the peat surface is drier and drained. Bare peat is virtually absent. Photograph K141-K144 [TR]
- 319.39167 56732 Very wet area of blanket bog with pools. Track runs close to this and maybe re-locate further away so as to avoid any damaging effects. [TR]
- 320.38995 56343 Turbine 132 located on eroded blanket bog with remaining fragments of deep peat 10s of metres across- this is largely M17b and M19. Shallow peat between these blocks had acid grassland and heath (U6 and

M15d). There is also bare peat and stony substrate it is not that extensive.
Photograph K145-K148 [TR]

321. 39802 57098 This is on deep peat but is so modified that it has been classed as H12a. There is virtually no *Eriophorum vaginatum* or *Eriophorum angustifolium* and *Calluna vulgaris* is the dominant vascular species. Amongst this there is sparse *Vaccinium myrtillus*, *Potentilla erecta*, *Anthoxanthum odoratum* and *Deschampsia flexuosa*. The moss layer is made up of much *Hylocomium splendens* with *Rhytidiadelphus loreus*. There are also patches of *Juncus squarrosus* grassland and *Festuca ovina*/*Festuca vivipara* grassland (U6 and U4). [TR]
322. 39546 57210 Turbine 111 on very intact blanket bog which is active (A5). M19 (*Calluna vulgaris*, *Eriophorum vaginatum*, *Vaccinium myrtillus*, *Hylocomium splendens*, *Rhytidiadelphus loreus*), M17a (*Sphagnum papillosum*, *Eriophorum vaginatum*, *Calluna vulgaris*, *Sphagnum papillosum*, *Empetrum nigrum*) and M17b (*Racomitrium lanuginosum*) all occur and intergrade. Bare peat and shallow peat are only occasional here in small patches. Photograph K149-K152. [TR]
323. 39107 57314 Turbine 110 located on relatively intact blanket bog with occasional bare and shallow peat. Carpets of abundant *Sphagnum papillosum* and *Sphagnum capillifolium* indicate the active nature here and there is also plentiful *Eriophorum vaginatum*, *Eriophorum angustifolium*, *Trichophorum cespitosum*, *Calluna vulgaris*, *Juncus squarrosus* and *Cladonia portentosa*. Wetter hollows support standing water and *Sphagnum cuspidatum*. Photograph K153-K156. [TR]
324. 38955 56848 Turbine 121 on intact blanket bog with some localised erosion but overall this has been classed A5 as any hag bottoms are pretty well-vegetated. M19 and M17 types occur with extensive *Sphagnum papillosum* and *Sphagnum capillifolium* (M17a) on flatter more waterlogged peat surfaces and M17b where the surface is much drier. This turbine could be re-located to more fragmented and less active blanket bog to the east. Photograph K157-K160. [TR]
325. 39383 56208 Turbine 136 – track to this turbine runs along a ridge of fragmented blanket bog. Turbine at end of ridge borders on more intact blanket bog with extensive M17a *Sphagnum papillosum*/*Sphagnum capillifolium* along with M17b and M19. Photograph K161-K164. [TR]
326. 39191 62052 Blanket bog on this side of the fence is transitional towards grassland (*Eriophorum vaginatum* A, *Rhytidiadelphus loreus* A, *Anthoxanthum odoratum* F, *Galium saxatile* F, *Eriophorum angustifolium* F). *Calluna vulgaris* and *Erica tetralix* are absent from the sward. There are high quantities of sheep dung. Photograph K37. [KP]
327. 39076 61741 Large area of grassland (modified bog) which is over deep peat. *Anthoxanthum odoratum* dominates with frequent *Trifolium repens* and occasional *Cerastium fontanum*, *Cardamine pratensis*, *Viola riviniana*, *Luzula*

campestris, *Carex nigra* and *Cirsium palustre*. *Rhytidadelphus loreus* is locally abundant. Fragments of degraded M19/M20 are scattered across the area with some *Calluna vulgaris* at very low cover in parts. [KP]

- 328.39128 61570 M30 soakway/flush dominated by *Potamogeton polygonifolius* with *Ranunculus flammula*, *Myosotis scorpioides*, *Cardamine pratensis* and *Calliergon cuspidatum*. [KP]
- 329.38119 57909 Small M10 flush (*Carex viridula* ssp. *oedocarpa*, *Narthecium ossifragum*, *Trichophorum cespitosum*, *Sphagnum denticulatum*, *Campylopus atrovirens*, *Carex panicea*, *Potamogeton polygonifolius*, *Ranunculus flammula*). [KP]
- 330.38301 58565 Turbine location number 82 within area of mainly blanket bog interspersed with fragments of acid grassland and wet heath. Blanket bog is more-or-less intact (photographs K38, K39, K40). Upslope from here there are frequent exposed rocks and associated shallower peat around which fragments of M15c occur. [KP]
- 331.38309 57785 Turbine location number 99 with area of fairly intact M19. There is some small-scale haggling immediately upslope (North-east). Photographs K41, K42 & K43. [KP]
- 332.39028 61325 M30/M1 soakway/pool (*Sphagnum denticulatum*, *Potamogeton polygonifolius*, *Equisetum palustre*, *Sphagnum cuspidatum*, *Eriophorum angustifolium*, *Carex nigra*). [KP]
- 333.38928 61176 Through this polygon vegetation is frequently over shallow peat/mineral soil with exposed gravel etc. Vegetation which is mapped as H10b and M15c here tend to be very similar and frequently transitional between the two. M15c, however, tends to have at least some *Trichophorum cespitosum* and *Eriophorum angustifolium* in addition to occasional *Sphagnum* spp. whereas the drier H10b does not (photograph K44). [KP]
- 334.38933 60993 Scattered stony flushes (mainly M10 although transitional to M6bii and M30 in parts) with *Carex viridula* ssp. *oedocarpa*, *Carex panicea*, *Trichophorum cespitosum*, *Narthecium ossifragum*, *Nardus stricta*, *Eriophorum angustifolium* and *Potamogeton polygonifolius*. [KP]
- 335.39016 60804 Scattered *Salix herbacea* through H10b (*Calluna vulgaris* F, *Erica cinerea* F, *Racomitrium lanuginosum* A, *Cladonia uncialis* O, *Juncus squarrosus*, *Agrostis canina*, *Festuca vivipara*, *Carex bigelowii*) which is transitional towards more alpine heath (i.e. H14). Over these slopes habitats of shallow soils are very similar and often differentiated by one or two species. Photographs K45 & K46. [KP]
- 336.39012 60642 Stony species-poor M10 flush (*Carex viridula* ssp. *oedocarpa*, *Carex panicea*, *Nardus stricta*, *Juncus squarrosus*). Mainly bare ground/gravel/rock. There are frequent similar flushes scattered over this area.

Adjacent to the flush acid grassland has scattered *Thalictrum alpinum* and *Breutelia chrysocoma* indicating some base-enrichment. [KP]

337. 40932 60794 Eroding peat hags (M17b/M3). Lower lying ground between the hags which has been eroded/slipped in the past has become re-vegetated by *Juncus squarrosus*, *Calluna vulgaris*, *Sphagnum* spp. occurring in fine-grained mosaic (U6d/U6a/M15d). Current rate of erosion appears \geq re-vegetation (photograph K47). [KP]
338. 40775 60883 Turbine location number 60 in hollow of M17a/M6bii. Blanket bog is intact/active A5 with acid flushes through it. Erosion is minimal, with high rates of re-vegetation where it does occur. Track/turbine move. Photographs K48, K49 & K50. M30 soakways nearby with *Potamogeton polygonifolius*, *Carex panicea*, *Carex viridula* ssp. *oedocarpa*, *Sphagnum denticulatum*, *Narthecium ossifragum* and *Eriophorum angustifolium*. These are frequent and transitional to M6bii with *Carex echinata*, *Sphagnum denticulatum*, *Potamogeton polygonifolius*, *Carex nigra*, *Juncus bulbosus*, *Eriophorum angustifolium* etc. [KP]
339. 40657 60823 Large stony M10 flush within mainly M19 (photograph K51). [KP]
340. 39290 57498 Blanket bog communities over this hilltop are generally fairly typical (M17/M19) although occasionally occurring over <0.5m peat. Approximately 10% of vegetation appears to be over shallower peats although difficult to assess. [KP]
341. 39211 57494 Fragments of wind-clipped summit heath (H14) over more exposed areas of ground which is dominated by a fairly even mix of *Calluna vulgaris*, *Racomitrium lanuginosum* and *Juncus squarrosus*. Occasional through the vegetation are the sub-shrubs *Vaccinium myrtillus*, *Empetrum nigrum* and, undocumented for this community, *Salix herbacea* and *Vaccinium vitis-idaea*. Lower plants are represented by a mix of *Hylocomium splendens*, *Sphagnum capillifolium*, *Hypnum jutlandicum* and *Cladonia arbuscula*. *Listera cordata* is also frequent through this vegetation. Photographs K52 & K53. [KP]
342. 38984 57401 Tall-herb ledges outwith survey area which were noted because of their rare occurrence of the area. *Salix herbacea* F, *Luzula sylvatica* A, *Rumex acetosa* O, *Dryopteris dilatata* O, *Cerastium fontanum* O, *Vaccinium myrtillus* O, *Rhytidiadelphus loreus* F, *Plagiothecium undulatum* O, *Hymenophyllum wilsonii* O, *Dicranum scoparium* O. Photographs K54, K55, K56 & K57. [KP]
343. 39159 57575 Ridge of rock outcrop with some fragments of tall herb vegetation (photograph K58). A wide range of species occur over this small habitat which is at least partially grazed: *Deschampsia flexuosa*, *Luzula sylvatica*, *Empetrum nigrum*, *Anthoxanthum odoratum*, *Vaccinium myrtillus*, *Viola riviniana*, *Salix herbacea*, *Dryopteris dilatata*, *Potentilla erecta*, *Carex binervis*, *Carex echinata*, *Agrostis stolonifera*, *Carex bigelowii*, *Euphrasia officinalis*, *Selaginella selaginoides*, *Diplophyllum albicans*, *Dicranum scoparium*, *Sphagnum capillifolium*, *Sphagnum palustre*, *Sphagnum papillosum*, *Campylopus atrovirens*, *Ctenidium molluscum*, *Scapania gracilis*, *Drepanocladus revolvens*,

Hymenophyllum wilsonii. Photograph K58. Immediately adjacent to this outcrop are a sequence of M10 flushes. [KP]

344. 39179 57674 Scattered rocky outcrops in close proximity to one another. These support a mixture of *Salix herbacea*, *Polypodium vulgare*, *Poa alpina*, *Hymenophyllum wilsonii*, *Polytrichum commune*, *Festuca vivipara*, *Deschampsia flexuosa*, *Nardus stricta*, *Rhytidiadelphus loreus*, *Galium saxatile*, *Luzula sylvatica*, *Agrostis capillaris* and *Dryopteris dilatata*. Photographs K59, K60 & K61. [KP]
345. 38898 57768 Very wet valley mire (M17a) with central stand of *Carex rostrata* over *Sphagnum denticulatum* (M4) with scattered *Narthecium ossifragum* and much standing water. [KP]
346. 38759 57856 Location of turbine number 98 within mainly intact M17b/a with some minimal erosion. There is scattered *Erica cinerea* through edges of M17b. Eroding edges give way to re-vegetating shallow gullies with abundant *Sphagnum papillosum* and *Eriophorum angustifolium* in addition to scattered *Narthecium ossifragum*, *Erica cinerea*, *Erica tetralix*, *Sphagnum cuspidatum*, *Trichophorum cespitosum* and *Drosera rotundifolia*. Photographs K62, K63 & K64. [KP]
347. 38564 58231 Area of M17b with some erosion (M3) and obvious trampling by sheep through bare peat. To North and West are areas of intact bog. Photographs K68, K69 & K70. [KP]
348. 39404 58005 Location of turbine number 91 within expanse of intact M19. Minimal localised erosion. Photographs K65, K66 & K67. [KP]
349. 39058 58288 Turbine number 98 within mosaic of deep peat and shallow peat vegetation. M19 is interspersed with M17 and M15d. There are also some patches of summit heath (H14) which is transitional towards wet heath (M15). Of equal abundance are *Juncus squarrosus*, *Calluna vulgaris*, *Racomitrium lanuginosum* and *Sphagnum capillifolium*. There is also scattered *Empetrum nigrum*, *Eriophorum angustifolium*, *Cladonia portentosa* and *Vaccinium myrtillus*. Photographs K71, K72 & K73. [KP]
350. 39040 58318 Small pools through intact bog (photograph K74). [KP]
351. 38868 58557 Large pool which has been partly drained is mainly vegetated by *Sphagnum* spp, *Juncus squarrosus* and *Eriophorum angustifolium*. [KP]
352. 38968 58745 Proposed track route here corresponds to line of watercourse through bog with associated linear hag system (photographs K75 & K76). [KP]
353. 38877 58772 Location of turbine number 83 is a mosaic of wind-clipped heath (H14) and M15d with M17 at the edge of the main area of blanket bog. Vegetation is partially fragmented by exposed rocks where there is some water movement across these shallow peats. Photographs K77, K78, K79 & K80. [KP]

354. 38728 58600 Scattered larger bog pools with *Sphagnum cuspidatum* and *Eriophorum angustifolium* within area of intact blanket bog. [KP]
355. 39183 59087 Tall herb/fern community with *Luzula sylvatica* A, *Dryopteris dilatata* A, *Anthoxanthum odoratum* F, *Deschampsia flexuosa* F, *Galium saxatile* F, *Potentilla erecta* F, *Vaccinium myrtillus* F and *Rhytidiadelphus loreus* O (photograph K81). [KP]
356. 39176 59197 *Potamogeton polygonifolius* soakway (M30) with frequent *Juncus bulbosus*, *Sphagnum denticulatum* and *Callitriche* sp. [KP]
357. 39203 59667 Location of turbine number 72 within wide expanse of semi-intact blanket bog. Any hags present are generally small. Photographs K82 & K83. [KP]
358. 39197 60332 Over this flat area of mire with frequent peat hags there is also a high level of re-vegetation (*Eriophorum angustifolium*, *Sphagnum cuspidatum*, *Juncus squarrosus*) within hollows. Erosion appears to be at an equal rate to re-vegetation. [KP]
359. 39380 59222 Location of turbine number 78 at edge of fragmented blanket bog (to North and West). Over this area the peat depth varies between 0 and >1m. To the south there are more frequent areas of exposed bedrock and mineral substrate. Photographs K84, K85 & K86. [KP]
360. 39332 58727 Location of turbine number 85 within wider area of fairly intact blanket bog (M17a/M19). Areas of erosion tend to be localised over this area. Photographs K87, K88 & K89. [KP]
361. 38467 56263 Borrow pit area. Lower slopes have some rock outcrops from which moss samples were gathered to check. Maybe base enrichment here as there are also M10a flushes in this area which appear to be richer than usual (see quadrat at same location). Also found here *Vaccinium uliginosum* not seen elsewhere on survey. [TR]
362. 38660 57343 xxxxxxxxx
363. 38863 57318 Steep slopes with heath that is quite difficult to classify in NVC terms. It has been classed as H12c due to combination of *Calluna vulgaris*, *Vaccinium myrtillus* and grasses. Species present: *Calluna vulgaris*, *Juncus squarrosus*, *Luzula multiflora*, *Nardus stricta*, *Carex echinata*, *Potentilla erecta*, *Vaccinium vitis-idaea*, *Vaccinium myrtillus*, *Anthoxanthum odoratum*, *Empetrum nigrum*, *Festuca vivipara*, *Galium saxatile*, *Sphagnum papillosum*, *Sphagnum capillifolium*, *Rhytidiadelphus loreus*.
364. 38634 57106 Turbine 118 is situated close to some quite isolated M1 pools and could be re-situated to avoid these. Overall the blanket bog here is intact with localised hags and falls within M17 and M19 NVC types. K165-K168[TR]

- 365.38500 56616 Turbine 129 located on a small area of A3 eroding bog with remaining deep peat blocks up to 20m across. This is M17a and M19 and bare peat (M3) and substrate. Overall area is active blanket bog approx. 70% cover. K169-K172 [TR]
- 366.38780 56442 This location marks the edge of a large very wet area, lying mainly to the north, which supports much M17a waterlogged blanket bog with wet hollows and pools (M1). Typical species *Sphagnum papillosum*, *Sphagnum capillifolium*, *Sphagnum cuspidatum* and *Sphagnum denticulatum* are all prominent in continuous carpets over much of the surface. [TR]
- 367.38014 54505 Blanket bog is predominantly of the M19 type here with prominent tussocks of *Eriophorum vaginatum* visually dominating along with *Calluna vulgaris*. The area also has a network of M6 acid flushes running into the south-east part of Maa Water (*Sphagnum palustre* particularly high cover in these). [TR]
- 368.37743 54480 Here the track runs through an area of eroded bog which also has a large amount of re-vegetating and active blanket bog in the hag bottoms and is therefore considered of some value. There is much very wet ground supporting M17a and M1 with extensive *Sphagnum*. Care should be taken to avoid the wetter parts here and to route track through the least vegetated parts. K173 [TR]
- 369.38013 54131 Turbine 155 located on intact blanket bog. Good condition M17b with *Calluna vulgaris*, *Eriophorum vaginatum*, *Trichophorum cespitosum*, *Narthecium ossifragum*, *Eriophorum angustifolium*, *Racomitrium lanuginosum*, *Cladonia portentosa* and patchy *Sphagnum capillifolium*. There is also M17a with increased amounts of *Sphagnum capillifolium* and also *Sphagnum papillosum* with less *Racomitrium lanuginosum* K174-K177 [TR]
- 370.37198 53991 Fenceline between different grazing levels. Heavy on the west side with eroding peat hags to 1m high covering approx.20% of the area. To the east bare peat is virtually absent. K178-K182 [TR]
- 371.37314 54201 Turbine 160 located on intact, uniform, good condition blanket bog. This is mainly M17a to the north and west and M17a/M17b/M19 to the south and east. K183-K186 [TR]
372. Turbine 156 on intact blanket bog, mainly M17b with depressions with M17a and wet pools/hollows (M1) K187-K190 [TR]
- 373.38095 54766 Turbine 154 - Intact blanket bog with extensive *Sphagnum capillifolium* and *Sphagnum papillosum* (M17a) – also *Calluna vulgaris*, *Eriophorum angustifolium*, *Trichophorum cespitosum*, *Eriophorum vaginatum*, *Narthecium ossifragum*, *Drosera rotundifolia*, *Cladonia portentosa*. There is also M17b and M19, more so on the slopes above to the east. Areas of shallower peat with rock outcrops 20m to the NE might be more suitable. K191-K194 [TR]

374.38205 55738 Turbine 153 on area of intact blanket bog within hummocky mounds which support shallower peat with H10b dry heath. K195-K199 [TR]

375.38656 55671 Turbine 146 on intact blanket which is variable between M17a, M17b and M19 NVC types. There is some patchy U6 d acid grassland and M15b and H10c on shallower peat over nearby rock outcrops. K200-K203 [TR]

NVC Target Notes

Nesting

1. 42324 54889 M10 flush within blanket bog. *Carex panicea*, *Carex viridula* ssp. *oedocarpa*, *Calluna vulgaris*, *Thalictrum alpinum*, *Pinguicula vulgaris*, *Potentilla erecta*, *Plantago maritima*, *Eriophorum angustifolium*, *Erica tetralix*, *Prunella vulgaris*, *Ctenidium molluscum*, *Campylium stellatum*, *Scorpidium scorpioides*, *Selaginella selaginoides*, *Carex dioica*, *Nardus stricta*. Many such flushes in the area so try and avoid damage here. [TR]
2. 42337 55572 Line of track runs through intact blanket bog which has a less intact and less active bog to the east of here (photograph N84). [TR]
3. 42384 55791 Eroded blanket bog to west, intact to the east. Route track through the more eroded bog approx.20m to the west. (photograph N85 looking north)
4. 42458 55791 Turbine 138 location approx. 70% blanket bog 30% bare or shallow peat or substrate with M3 and U6 grassland. Photograph N86-N89 [TR]
5. 44225 56000 Turbine location has M17 and M19 blanket bog with frequent M10 flushes on bare stony ground and shallow peat (*Scorpidium scorpioides*, *Scorpidium revolvens*, *Campylium stellatum*, *Carex viridula* ssp. *oedocarpa*, *Carex panicea*, *Thalictrum alpinum*, *Calluna vulgaris*). On shallow peat there is some M15b wet heath. Photograph N90-N92. [TR]
6. 44528 56906 Summit heath similar to H10b consisting of dominant *Calluna vulgaris* with abundant *Racomitrium lanuginosum* and *Juncus squarrosus*, *Cladonia portentosa*, *Hypnum jutlandicum*, *Empetrum nigrum*. Photograph N93-N95. [TR]
7. 44513 55631 Turbine 143 Mainly M17b with high cover of *Racomitrium lanuginosum*, *Cladonia portentosa* and *Eriophorum vaginatum* with *Eriophorum angustifolium*, *Calluna vulgaris*, *Sphagnum capillifolium* and *Hypnum jutlandicum*. Erosion is quite sparse and small-scale. There is an occasional M1 hollow and M10 flush on where peat has eroded to substrate. Photograph N96-N99. [TR]
8. 44651 55822 Wetter area in depression with a good amount of M17a blanket bog and M30 soakways and wet hollows. The blanket bog has extensive *Sphagnum papillosum* and *Sphagnum capillifolium* and is therefore active.

Aulacomnium palustre, *Eriophorum vaginatum*, *Eriophorum angustifolium*, *Carex panicea* and *Viola palustris* also occur. The soakways, classed as M30, consist of *Potamogeton polygonifolius*, *Sphagnum denticulatum*, *Carex rostrata* and *Menyanthes trifoliata*. The track goes right across this good condition bog. Photograph N100-N101. [TR]

9. 44819 55976 Track crosses a channel, the steep banks of which support wet and dry dwarf shrub heath (H10a, H21a, M15) with a dominant *Calluna vulgaris* and constant *Hylocomium splendens*, *Rhytidiadelphus loreus*. There is sparse *Eriophorum angustifolium* and *Eriophorum vaginatum* and there are also areas with extensive *Sphagnum capillifolium* (H21a). Patchy acid grassland (U4). Photograph N102. [TR]
10. 44870 55981 Track here crosses a nice wet soakway (M30, M17a, M1) with abundant *Potamogeton polygonifolius*, *Juncus bulbosus*, *Eriophorum angustifolium*, *Carex nigra*, *Sphagnum denticulatum* and *Sphagnum papillosum*. Photograph N103-N104. [TR]
11. 45048 55790 Turbine 140 is right on top of remains of some old dwelling or walls (check archaeology?) Most of the area here is intact M17 or M19 blanket bog with grassier areas of U4 and basic flushing (M10a with *Carex panicea*, *Carex viridula ssp. oedocarpa* and the moss *Scorpidium revolvens*. N105-N108 [TR]
12. 44750 56138 Turbine 131 is very close to a band of wetter blanket bog with acid and basic flushing (M30, M17a, M10a). Species noted: *Scorpidium scorpioides*, *Pinguicula vulgaris*, *Juncus bulbosus*, *Potamogeton polygonifolius*). This might be avoidable. N109-N112[TR]
13. 44812 56644 Turbine 148 located on good intact blanket bog with nice wet M1 pools/hollows. This could be shifted further to the west onto lower slopes which are mainly drier and more robust M19 blanket bog. The whole track to the north of here also runs through similar more waterlogged ground with more sensitive blanket bog types (M1, M30, M17a) and the more robust M19 approx. 40m to the west. Track and turbine could be moved to minimise damage. Photograph N113-N116. [TR]
14. 44937 57039 Track here goes through the wetter ground and more sensitive communities with drier blanket bog (M19) to the west approx.50-100m, species noted: *Potamogeton polygonifolius*, abundant *Sphagnum denticulatum*, *Eriophorum angustifolium*, *Carex rostrata* and *Menyanthes trifoliata*. Consider moving track to avoid. Photograph N117. [TR]
15. 44988 57143 Turbine 115 located on the edge of more intact blanket bog with wet areas (M17a, M19). The M19 is indicated by *Calluna vulgaris*, *Eriophorum vaginatum* and *Eriophorum angustifolium* with much *Hylocomium splendens* along with *Rhytidiadelphus loreus* and, in wetter parts *Sphagnum capillifolium* and *Sphagnum papillosum*. *Sphagnum* is more extensive here than usual in M19 and somewhat transitional to M17a. Photograph N118-N121. [TR]

16. 43560 55461 Turbine 150 located on eroding blanket bog with hags and much bare peat with little re-vegetation or any active build-up. The remaining bog is mainly M17b dominated by *Calluna vulgaris* and *Racomitrium lanuginosum* with *Cladonia portentosa*, *Eriophorum angustifolium*, *Eriophorum vaginatum*, *Cladonia uncialis* and *Hypnum jutlandicum* with sparse *Trichophorum cespitosum*. Bare peat occupies about 30% of the ground over areas up to about 5m across. Photograph N122-N125. [TR]
17. 43677 55880 M10 flush here has *Carex viridula ssp. oedocarpa*, *Carex panicea*, *Thalictrum alpinum*, *Narthecium ossifragum*, *Trichophorum cespitosum*, *Plantago maritima*, *Pinguicula vulgaris*, *Ctenidium molluscum*, *Scorpidium revolvens*, *Racomitrium lanuginosum*, *Calluna vulgaris*, *Campylium stellatum*, *Scorpidium scorpioides*, *Erica tetralix*, *Potentilla erecta*, *Selaginella selaginoides*, *Eriophorum angustifolium*, *Potamogeton polygonifolius*, *Calliergonella cuspidata*, *Sphagnum denticulatum*. [TR]
18. 43722 55952 Turbine 139 M17b and M17a blanket bog with some M6 flushes, M3 bare peat and also a little basic flushing on stony substrate and very thin peat (M10) Photograph N126-N129. [TR]
19. 43303 56029 Turbine 137 is blanket bog with hags and 10% of area bare peat. The blanket bog is mainly dry M17b consisting of *Calluna vulgaris*, *Eriophorum vaginatum*, *Eriophorum angustifolium*, *Hypnum jutlandicum*, *Sphagnum capillifolium* and *Racomitrium lanuginosum*. There are also areas much like M19 with more luxuriant *Hylocomium splendens*, *Rhytidiadelphus loreus* and *Pleurozium schreberi* hypnoid mosses and no *Racomitrium lanuginosum*. On thin peats in hag bottoms re-vegetation has taken place and there is U6 *Juncus squarrosus* grassland and M15b wet heath. Photograph N130-N133. [TR]
20. 43333 56343 A *Juncus squarrosus* "dam" on the track line is holding back peat from eroding (Photograph N134). [TR]
21. 43128 56603 The track runs along a boundary between an intact area of blanket bog (A4) and a much more eroded area (A3 M17/M3). Track should be moved here to over 30m west in order to minimise damage to better blanket bog. [TR]
22. 43202 56785 Turbine 123 located within an area of intact blanket bog (M17a, M17b, M19, M1, M3) when it could be moved to a more appropriate area of eroded blanket bog upslope to the west and also use less track length. Photographs N135-N138. [TR]
23. 43075 56831 This is the alternative location for turbine 123 saving an area of intact blanket bog. Photographs N139, N140. [TR]
24. 43059 56573 A pool here showing effect *Juncus squarrosus* build-up (U6a) has in holding back water and erosion. Track should avoid damage to such areas as this in micro-placement on lay-down. Photographs N141-N142. [TR]

25. 43649 56723 Turbine 127 on the edge of an area of very eroded (A1) former blanket bog with widespread bare peat. There is also stony substrate and a U4 type grassland (*Festuca ovina* or *Festuca vivipara*) and patches of *Juncus squarrosus* dominated grassland (U6). Turbine - photograph N143-N146. U4 grassland N147-N148 [TR]
26. 44052 57078 Turbine 112 and the track leading to it are badly located within an area of intact and active blanket bog surrounded by more eroded areas of bog. There are hags here but the bottoms waterlogged and there is much vegetation and active build-up of mire vegetation. Bare peat is also being colonised more vigorously by *Eriophorum angustifolium*. Photograph N149-N152. [TR]
27. 43955 57093 Very wet area with pool containing *Potamogeton polygonifolius* right by line of track. Try and avoid this area. Photograph N153-N154. [TR]
28. 46542 55709 Borrow pit area is largely acid grassland with some more heathy patches and also areas of rich flushing. The grassland conforms to U4a and U4b consisting of *Nardus stricta*, *Festuca rubra*, *Anthoxanthum odoratum*, *Juncus squarrosus*, sparse *Holcus lanatus*, *Potentilla erecta*, *Galium saxatile*, *Luzula campestris*, *Cardamine pratensis*, *Hylocomium splendens*, *Rhytidiadelphus loreus*, *Dicranum scoparium*, *Mnium hornum*, *Frullania sp.* and *Polytrichum commune*. The flushed areas are rich with much vegetation just coming out-these areas should be re-checked for rarities later in the season. Noted species: *Trifolium repens*, *Caltha palustris*, *Eriophorum angustifolium*, *Montia fontana*, *Myosotis scorpioides*, *Cardamine pratensis*, *Calliargonella cuspidata*, *Eriophorum angustifolium*. Small patches of dry heath occur over rock with thin peat consisting of heavily grazed *Calluna vulgaris* with *Hylocomium splendens*, *Dicranum scoparium* and *Nardus stricta*. There is also U6a type grassland dominated by *Juncus squarrosus* with *Sphagnum capillifolium*. Photograph N155-N158. [TR]
29. 46480 55890 Numerous M10a flushes within heath here have *Schoenus nigricans*, *Carex viridula ssp. oedocarpa*, *Pinguicula vulgaris*, *Eriophorum angustifolium*, *Potamogeton polygonifolius*, *Scorpidium scorpioides*, *Campylium stellatum*, *Blindia acuta*, *Scorpidium revolvens* and *Eleocharis sp.* [TR]
30. 46285 56081 Typical uniform dry heath dominated by *Calluna vulgaris* but with neither *Vaccinium myrtillus* nor *Erica cinerea* and therefore difficult to assign an NVC community. Within the *Calluna vulgaris* is sparse but constant or frequent *Juncus squarrosus*, *Galium saxatile*, *Anthoxanthum odoratum*, *Agrostis capillaris* with a layer of mosses composed mainly *Hylocomium splendens*, *Rhytidiadelphus squarrosus*, *Dicranum scoparium*, *Polytrichum alpestre*, *Cladonia portentosa*, *Hypnum jutlandicum* and *Mnium hornum*. Very occasionally there is also some *Empetrum nigrum*. In places where *Racomitrium lanuginosum* becomes dominant in the bryophyte layer the heath resembles H10b. *Sphagnum capillifolium* is also patchy and the heath then resembles a wet heath, M15b. [TR]
31. 46366 56211 M1 pools in M15b heath right beside line of track. [TR]

32. 46009 56653 Turbine 130 is right on the edge of an area of intact and active blanket bog (M17a, M17b) with high covers of *Sphagnum* species. Move turbine so as not to affect this area. Photograph N159-N162. [TR]
33. 45887 56726 Heavily grazed U4 acid grassland, short turf with patchy *Calluna vulgaris* (H10c). There is also occasional acid and basic flushing (M6, M10). Grassland consists of *Nardus stricta*, *Luzula campestris*, *Plantago lanceolata*, *Juncus squarrosus*, *Prunella vulgaris*, *Carex panicea*, *Dicranum scoparium*, *Hylocomium splendens*, *Narthecium ossifragum* and *Potentilla erecta*. Also present in the sward here is *Thalictrum alpinum* which indicates some degree of base enrichment and a transition towards CG10. There are also flushed and spring areas (M32, M10a) with abundant *Philonotis fontana*, *Bryum pseudotriquetrum*, *Scorpidium revolvens*, *Calliergonella cuspidata* and *Scorpidium scorpioides*. [TR]
34. 46455 56374 Area within fence here is more active with M1 hollows of abundant *Sphagnum cuspidatum* and *Eriophorum angustifolium*. There is also much less bare peat so this has been upgraded from A2 to A3. [TR]
35. 46570 56487 The majority of the area is one of previous and some current erosion but generally the hag bottoms are well vegetated with U6, M1 and M15d and there is active build-up within the matrix. Some areas have more bare peat. Photograph N163-N165. [TR]
36. 45235 56755 Turbine 124 Located on more intact blanket bog with less intact, more eroded bog to the NE. Track does a 90 degree turn here whereas it could go straight, over more eroded bog and also be less long. There is extensive *Sphagnum capillifolium* and *Sphagnum papillosum* here (M17a photographs N170 & N171) with *Eriophorum vaginatum*, *Eriophorum angustifolium*, *Calluna vulgaris*, *Trichophorum cespitosum*, patchy *Cladonia portentosa* and *Racomitrium lanuginosum*. *Sphagnum compactum* also occurs. Within 100m of turbine there are hags, some of which have waterlogged bottoms and are revegetating with M1 (*Sphagnum cuspidatum*, *Sphagnum denticulatum*) but there are also areas of bare peat. Broadly though this is A5 blanket bog. Photograph N166-N169 [TR]
37. 45084 56933 A wet area of low-lying ground over which the track line goes in places. There is patchy *Calliergonella cuspidata* and areas of wet peat supporting *Potamogeton polygonifolius*, *Carex panicea*, *Scorpidium scorpioides*. This is not easy to classify in NVC terms but is between M30 and M10. There are also patches of *Sphagnum papillosum* (M17a) with areas of standing water and bare peat. [TR]
38. 45263 56898 Blanket bog east of track here is less waterlogged with more bare peat and is the drier M17b type rather than M17a. [TR]

39. 45778 57012 Turbine 120 Eroded and eroding blanket bog (A2) with only fragments of M17b remaining up to 40cm across. There is also heath on shallow peat consisting of *Calluna vulgaris*, *Racomitrium lanuginosum*, *Empetrum nigrum*, *Hylocomium splendens* and *Hypnum jutlandicum* along with bare peat, stony substrate and U5 and U6 type acid grasslands. Photograph N172-N175. [TR]
40. 45597 57384 Turbine 108 This is on the boundary between very intact and active blanket bog (A5) to the west and much more eroded bog to the east with much more bare peat. Photograph N176-N179. [TR]
41. 46067 57272 Very badly eroding area with a large amount of bare peat and no re-vegetation. Photograph N180. [TR]
42. 46275 57114 Turbine 116 on the edge of intact M19 blanket bog and more eroding M17b/M3 blanket bog. Photograph N181-N184. [TR]
43. 42141 56220 Borrow pit area – most of these slopes have quite similar vegetation, varying between blanket bog and heath with a peat depth of 30-100cm but mainly over 50cm deep and classed mainly as blanket bog. In NVC most like M19 with much *Calluna vulgaris* and *Eriophorum vaginatum* with *Eriophorum angustifolium* and *Erica tetralix* visually dominant. The moss layer has abundant *Hylocomium splendens*, *Rhytidiadelphus loreus*, *Hypnum jutlandicum*, *Cladonia portentosa* and *Diplophyllum albicans*. There is patchy bare peat which is trampled by sheep but the area is generally intact (A5) and some good cover of *Sphagnum capillifolium*. Occasionally the vegetation is more like M17b with abundant *Racomitrium lanuginosum* along with *Trichophorum cespitosum*, *Sphagnum capillifolium* and less of the M19 hypnoid mosses. Photograph N185-N186[TR]
44. 42692 55651 Turbine 145 located right on edge of intact blanket bog to the east. Should therefore be shifted west onto more fragmented and currently eroding blanket bog with much dry, bare peat supporting very little re-vegetation or active build-up. The intact blanket bog to east consists of M19 (*Calluna vulgaris*, *Eriophorum vaginatum*, *Eriophorum angustifolium*, *Hylocomium splendens*, *Rhytidiadelphus loreus*, *Hypnum jutlandicum*, *Sphagnum capillifolium*) with some areas of M17b (*Racomitrium lanuginosum*, *Cladonia portentosa*, *Calluna vulgaris*, *Eriophorum vaginatum*, less hypnoid mosses and more *Sphagnum capillifolium*). Where the *Sphagnum capillifolium* and *Sphagnum papillosum* is more extensive it could be classed as M17a. Photograph N187-N190. [TR]
45. 42824 55616 Track runs along the boundary between an area of wetter and more intact blanket bog to the west and more fragmented and eroded bog to the east. Therefore shift track to the east in order to minimise damage. Also to the north of here a bend in the track should also be shifted north to avoid this wetter valley mire. [TR]
46. 42874 55250 Turbine 152 Frequent erosion channels up to 1m wide but not very deep. Bare peat is heavily trampled and not re-vegetating (A4). Much M17b

consisting of *Racomitrium lanuginosum*, *Calluna vulgaris*, *Cladonia portentosa*, *Eriophorum vaginatum*, *Eriophorum angustifolium*, *Trichophorum cespitosum*, *Huperzia selago*. Bare peat has some sparse *Eriophorum angustifolium* but it is grazed heavily and trampled. Photograph N191-N194. [TR]

47. 46301 58000 Turbine 94 On previously and currently eroding blanket bog but the precise area of the turbine is waterlogged with large patches of active blanket bog vegetation consisting of hollows/pools with much M1 *Sphagnum denticulatum* and *Sphagnum cuspidatum* (Photographs N199-N200), although these are quite heavily trampled by sheep. It has therefore been upgraded to A4. Re-locate turbine to avoid damage to wet areas. Photograph N195-N199. [TR]
48. 46130 57518 Turbine 106 Largely intact blanket bog with some hags and current erosion but there is much intact M17b composed of *Racomitrium lanuginosum*, *Calluna vulgaris*, *Eriophorum vaginatum*, *Eriophorum angustifolium*, *Empetrum nigrum*, *Trichophorum cespitosum*, *Cladonia portentosa*, *Hypnum jutlandicum*. Bare peat is frequent within this up to 1m wide and there is also patchy U6 *Juncus squarrosus* acid grassland. Photograph N201-N204. [TR]
49. 45823 57866 Turbine 97 Large area of eroded blanket bog with some fragments of deep peat still remaining, covering approx. 20% of ground (A2). There is much M3 bare peat plus shallow peat acid grassland and heath (U6/M15d) and there is also bare stony substrate. Turbine is currently located at the edge of one of the bigger more intact blocks of blanket bog approx. 50m across and could be shifted so as to avoid damage. Photograph N205-N208. [TR]
50. 45295 57702 Turbine 100 located on very intact blanket bog with extensive carpets of *Sphagnum capillifolium* and patchier *Sphagnum papillosum*, indicating active build-up of peat. *Eriophorum angustifolium* is prominent visually and there are also patches approaching M19 where *Hylocomium splendens* and *Rhytidiadelphus loreus* take over from *Sphagnum* and there is also an occasional acid flush (M6c) and wet hollow with *Sphagnum denticulatum* and *Sphagnum cuspidatum* (M1) Photograph N209-N212. [TR]
51. 46093 58411 Turbine 96 located on very intact blanket bog with extensive *Sphagnum capillifolium* and *Sphagnum papillosum* indicating active build-up of peat. *Calluna vulgaris*, *Eriophorum vaginatum* and *Eriophorum angustifolium* are visually abundant and it does not seem so heavily grazed here. Flushed ground is acid (M6) and there is also patchy M19 marked out by hypnoid mosses replacing *Sphagnum* in the moss layer. There is very little M3 bare peat at all here. Photograph N213-N216. [TR]
52. 45582 58174 Area of flushing (M6/M17a) on slopes has much *Sphagnum cuspidatum*, *Sphagnum papillosum* and *Sphagnum denticulatum* with *Eriophorum angustifolium* and *Carex nigra* growing through the carpet. Take care to avoid this area in micro-siting the track. Photograph N217. [TR]

53. 45557 58317 Turbine 93 on edge of eroding blanket bog (A4) but which remains largely intact with bare peat forming patches around 50cm wide. This is mainly quite dry blanket bog with much *Racomitrium lanuginosum* and *Calluna vulgaris*, *Eriophorum angustifolium*, *Eriophorum vaginatum*, *Erica tetralix*, *Trichophorum cespitosum*, *Hypnum jutlandicum*, *Cladonia portentosa*, *Cladonia uncialis* and *Sphagnum capillifolium*. Bare peat has some sparse *Eriophorum angustifolium* but it is heavily trampled. Photograph N218-N221. [TR]
54. 45651 58581 The track, south of this point, runs through an area with many acid flushes and soligenous ground (M6 and M30) supporting, in the wettest parts, *Menyanthes trifoliata* and *Potamogeton polygonifolius*. It may be less damaging to these if the track so these wetter areas are avoided. Photograph N222-N223. [TR]
55. 45602 58656 Track runs over very intact, wet and good quality M17a blanket bog with extensive *Sphagnum capillifolium* and *Sphagnum papillosum* carpets. Also there are wet hollows with *Sphagnum cuspidatum* (M1) and acid flushed ground (M6). [TR]
56. 45438 58786 Track here goes over intact blanket bog with much *Sphagnum papillosum* and *Sphagnum capillifolium*. This is active blanket bog as good as it gets in this area. Track could be re-routed though less valuable sheep grazing nearby to the west (U4) to avoid damage. [TR]
57. 45255 58836 Turbine 109 Located on intact blanket bog (A5). Much of it is M19 with abundant *Calluna vulgaris* and *Eriophorum vaginatum* with a lush carpet of *Hylocomium splendens*, *Rhytidiadelphus loreus* and some *Pleurozium schreberi*. There is sparse *Eriophorum angustifolium* and patchy *Sphagnum papillosum* and *Sphagnum capillifolium* also. Where *Sphagnum capillifolium* increases and hypnoid mosses decrease it becomes more like M17a. Turbine could potentially be re-located lower down in U4 acid grassland. Photograph N224-N227. [TR]
58. 45048 58223 Turbine 87 on intact blanket bog (M17a and M17b) with extensive *Sphagnum papillosum* and *Sphagnum capillifolium* where the ground is more waterlogged and *Racomitrium lanuginosum* predominating with *Cladonia portentosa* on drier peat surfaces. *Calluna vulgaris* and *Eriophorum vaginatum* are the main vascular dominants with sparser *Eriophorum angustifolium* and *Trichophorum cespitosum*. Photograph N228-N231. [TR]
59. 44943 57855 Along track line there is base flushing (M10a) indicated by *Carex panicea*, *Carex viridula ssp. oedocarpa*, *Juncus bulbosus*, *Potamogeton polygonifolius*, *Campylium stellatum*, *Pinguicula vulgaris*, *Thalictrum alpinum* and *Scorpidium scorpioides*. [TR]
60. 44913 57382 Track here runs through lower, wetter ground with drier, more firm peat on slope above around 80-100m away to the west. On this wetter ground there is extensive patches of M17a consisting of *Sphagnum papillosum*, *Sphagnum capillifolium*, *Eriophorum vaginatum*, *Eriophorum angustifolium* and *Calluna vulgaris*. Hollows can be wetter with standing water, *Sphagnum*

cuspidatum and *Sphagnum denticulatum* (M1) but these are generally quite heavily trampled by sheep. In the wettest parts of soakways there is generally some *Potamogeton polygonifolius* and *Sphagnum denticulatum* (M30) and there is also patchy drier peat surfaces with M17b or M19 type vegetation. Track in this area could be re-located higher up the slope to the west in order to avoid this wettest ground. Similarly to the south of here for much of its length. [TR]

61. 44571 58178 Turbine 86, and the track leading to it from the east, is located on very intact blanket bog in good condition. The NVC type is somewhere between M17a and M17b – there is usually extensive *Sphagnum capillifolium* with *Pleurozia purpurea* in the moss layer and the vascular dominants *Eriophorum vaginatum*, *Eriophorum angustifolium* and *Trichophorum cespitosum*. There is often some *Sphagnum papillosum* (M17a) and on drier peat surfaces *Racomitrium lanuginosum* and *Cladonia portentosa* take over in the moss layer (M17b). *Calluna vulgaris* is predominant throughout with some m19 on steeper banks indicated by a high cover of *Hylocomium splendens* and decreased *Racomitrium lanuginosum* and *Sphagnum capillifolium*. Photograph N232-N235. [TR]
62. 44292 58558 Turbine 57 located on the edge of intact and active blanket bog (M17 and M19) with areas of extensive *Sphagnum* (A5). Track could be shifted to the east where there is more eroded and fragmented blanket bog, minimising damage. Photograph N236-N239. [TR]
63. 44789 58653 Turbine 103 located on quite intact (A4-A5) blanket bog than that further west (A2). This could be shifted to the west approx.50m or more onto a big eroded area. Photograph N240-N243. [TR]
64. 44211 58703 Muckle Hill, to the west of this point, is a very large area of massively eroded former blanket bog with very little remaining deep peat or active build-up. There is therefore much bare ground and shallow peat acid grassland (U6) or heath (M15d) and is an area very much more suited to development in order to minimise damage. Track layout currently runs right around the edge of this area and would enlarge the area of damaged blanket bog greatly. Re-think this whole area. [TR]
65. 44015 58918 Turbine 34 Located on edge of eroded blanket bog fragments with dry peat surface vegetation (M17b) and areas of shallow peat acid grassland and heath (U6, M15d) and bare peat (M3) and substrate. Not far to the south is an area of much more widely eroded former bog and moving turbine to here would avoid damage to the remaining peat blocks in the current location. Photograph N244-N247. [TR]
66. 44105 58926 Track here runs very close to wet areas with much M1 active bog pool/hollow vegetation (*Sphagnum denticulatum* and *Sphagnum cuspidatum*) within A4 eroding blanket bog. Shift track onto more massively eroded area of Muckle Hill. [TR]

67. 44427 58931 Track runs over intact and active blanket bog with extensive continuous *Sphagnum papillosum* and *Sphagnum capillifolium* carpets which is also largely untrampled. Could be moved to more eroded area to the east of here. Photograph N248-N249. [TR]
68. 44496 59059 Turbine 43 Located on edge of intact blanket bog on low-lying wet ground with extensive *Sphagnum* carpet. Could be shifted onto eroded blanket bog 50-100m east. Photograph N250-N253. [TR]
69. 44796 59519 Turbine 40 on the edge of an area to the west with very intact blanket bog with extensive *Sphagnum* and waterlogged hollows supporting *Sphagnum denticulatum* and *Sphagnum cuspidatum* (M1). Shift onto more eroded (A3) area to the south of here. Photograph N254-N257. [TR]
70. 44951 59111 Turbine 37 located on variably eroded blanket bog (A3) with some large remaining fragments and also large patches of bare ground and shallow peat acid grassland and heath (U6, M15d). Micro-site so as to avoid damage to remaining peat blocks. Photograph N258-N261. [TR]
71. 43503 57279 Turbine 117 located on the edge of eroding blanket bog with hags over 2m high but not extensive. The blanket bog is more intact to the north. Photograph N262-N265. [TR]
72. 44041 57760 Track runs across mainly intact blanket bog with frequent but not extensive bare peat surfaces. Most of the NVC blanket bog types occur in a mosaic with M17b (*Racomitrium lanuginosum*, *Calluna vulgaris*, *Cladonia portentosa* low *Sphagnum capillifolium*) on drier surfaces and M17a (much *Sphagnum capillifolium*, *Sphagnum papillosum*) on more waterlogged ground and M19 (higher *Eriophorum vaginatum*, extensive *Hylocomium splendens* and much less *Sphagnum*). Photograph N266-N267 [TR]
73. 43794 57732 Turbine 105 located on the edge of intact blanket bog with increased waterlogging lower down – much active wet *Sphagnum capillifolium*, *Sphagnum papillosum*, *Sphagnum cuspidatum*, *Sphagnum denticulatum* in hollows. The track to here from the north also runs through this vegetation. Photograph N268-N271. [TR]
74. 43923 58311 Turbine 79 located on intact blanket bog (A5) with extensive areas supporting abundant *Sphagnum capillifolium* and *Sphagnum papillosum* (M17a). Vascular dominants are *Calluna vulgaris*, *Eriophorum vaginatum*, *Eriophorum angustifolium*, *Erica tetralix*, *Trichophorum cespitosum* and *Juncus squarrosus*. There is also some M1n bog with much increased *Eriophorum vaginatum* less *Sphagnum* and increased *Hylocomium splendens* and *Rhytidiadelphus loreus*. There is an area of more eroded (A1) blanket bog to the north approx.120m. Photographs N272-N275. [TR]
75. 44314 56653 Turbine 125 located on boundary between eroded (A3) blanket bog to the east and more intact peat to the west (A4). Mainly M17b (*Calluna vulgaris*, *Eriophorum vaginatum*, *Eriophorum angustifolium*, *Racomitrium*

lanuginosum, *Cladonia portentosa*, *Erica cinerea*). Move turbine 50-100m to the east. Photographs N276-N279 [TR]

76. 44193 55748 The blanket bog to the south of the quarry is more degraded and broken up on lower slopes than that to the north so maybe better to locate borrow pit to south. [TR]
77. 44523 57108 Turbine 114 located on very eroded area with only small remaining fragments of blanket bog which are continuing to erode. Most of area is bare peat and substrate with shallow peat vegetation similar to acid grassland and heathland. U6 has *Juncus squarrosus*, *Rhytidiadelphus loreus*, *Dicranum scoparium* and *Hypnum jutlandicum*. M15d/H10b has *Calluna vulgaris*, *Juncus squarrosus*, *Racomitrium lanuginosum*, *Hypnum jutlandicum*, *Cladonia uncialis* and *Rhytidiadelphus loreus*. Photograph N280-N283. [TR]
78. 44207 57577 Turbine 104 located on edge of an area of high erosion (A2) with only fragments of the drier M17b blanket bog type left. Mainly un-vegetated bare peat with patchy acid grassland or heathland on shallow peat (U6, M15d, H10b). Turbine could be finely positioned so as to minimise damage. Photograph N284-N287. [TR]
79. 44656 57573 Turbine 102 located just beyond edge of highly eroded area. Move this turbine south and up slope to avoid damaging more intact blanket bog. Photograph N288-N291. [TR]
80. 44140 55486 Natural hag system with *Racomitrium lanuginosum* hummocks and frequent pools (M1) that are intact with abundant *Sphagnum cuspidatum*, *Sphagnum denticulatum*, *Menyanthes trifoliata*, *Juncus bulbosus* (photo N5). All the ground within these fences is in good condition and could be easily avoided by moving the track to the north of the fence-line. [ND]
81. 44279 55576 *Potamogeton polygonifolius* flush (M29) through a strip of M6b vegetation with *Carex nigra*, *Equisetum palustre* and *Eriophorum angustifolium* running through active blanket bog in good condition. Locally abundant *Sphagnum denticulatum* (photo N6). [ND]
82. 44330 55738 Blanket bog in poorer condition with little structure and more *Trichophorum cespitosum*, *Molinia caerulea* and pleurocarpous mosses on mounds with *Cladonia* spp. [ND]
83. 44260 55926 M10a flush on stony substrate with abundant *Scorpidium scorpioides*, *Narthecium ossifragum*, *Carex viridula* ssp. *oedocarpa*, *Carex panicea*, *Pinguicula vulgaris*, *Campylium stellatum*, *Scapania undulata*, *Scorpidium revolvens*, *Blindia acuta* (photo N7). Also present around the margins are: *Thalictrum alpinum*, *Potamogeton polygonifolius* and *Blindia acuta*. There are frequent similar flushes around this slope that will be crossed by the proposed track. [ND]

84. 44345 56152 Around the edge of the plateau there are areas where the peat has slumped downhill due to erosion. The shallow peat and stony ground exposed supports a mosaic of *Nardus stricta* grassland (U5), *Juncus squarrosus* grassland (U6) and dry (H10) and wet heath (M15). [ND]
85. 44404 56224 *Potamogeton polygonifolius* flush (M29) with *Juncus bulbosus*, *Sphagnum denticulatum* and *Ranunculus flammula*. [ND]
86. 44513 56614 Hill of Flamister. The summit plateau is heavily eroded with large expanses of bare peat. Hags are not revegetating and sheep tracks are abundant, trampling is probably responsible for erosion of the walls of pools so that they drain out. Evident drying of the peat surface and peat loss. [ND]
87. 41639 60045 Site of Turbine 68 on a hilltop plateau. Some erosion of the deep peat but this is not extensive (photo N8 east, photo N9 south). Also see quadrat 44 (M17c). [ND]
88. 41957 59811 A large, hagged area on this hilltop (photo N10). [ND]
89. 42001 59775 Site of Turbine 73. There is an extensive hagged area across the summit of this hill, some large bare areas although the hag tops support blanket bog that is still in reasonable condition with *Sphagnum capillifolium*. A3 degrading to A2. (photos N11 & N12). [ND]
90. 42142 59426 A system of bog pools on a plateau below Hoo Kame (photo N13). Some M1 pools dominated by *Sphagnum cuspidatum* with some *Sphagnum denticulatum* and *Eriophorum angustifolium* at the margins. The only area of intact bog and pools within this extensive peat system which is generally very degraded so important to retain this feature. Moving the track at least 20m to the east and marking a buffer around these pools with tape to avoid damage. [ND]
91. 42278 59374 Site of turbine 75. A large hag system down slope from the location of this turbine with severe erosion. *Juncus squarrosus* grassland (U6) in valley bottoms. (photo 14 NE, photo 15 SE). [ND]
92. 42101 58905 Site of turbine 80 (photo N16 W, N17 E) All the peat has slumped away from the summit to leave bare peat hag walls surrounding the stony summit with occasional mounds of *Juncus squarrosus* and some *Calluna vulgaris*, *Racomitrium lanuginosum*, *Festuca ovina*, *Pleurozium schreberi*, *Hypnum jutlandicum*, *Cladonia portentosa*, *Rhytidiadelphus loreus*, *Empetrum nigrum* (U6d). Some *Vaccinium vitis-idaea* in good blanket bog just west of the summit. [ND]
93. 42088 60428 Site of turbine 64 (photo N18 E, N19 NW) just above a large area of bare peat and haggings. Above the turbine location is smooth blanket bog in relatively good condition. [ND]

94. 42399 60158 Site of turbine 67 (photo N20 E, photo N21 S). A large area of extreme haggling and bare peat. Very little *Eriophorum angustifolium* revegetation on peat and the hags are badly wind-eroded. [ND]
95. 42643 60723 Site of turbine 63 (photo N22 SW). Vast bare area across the top of mossy hill. [ND]
96. 41885 60375 Bog pools just outside the survey area but likely to be affected by works above (photo N23) so look again at layout here. M1 with *Sphagnum denticulatum*, *Eriophorum angustifolium*, *Sphagnum cuspidatum*. [ND]
97. 42073 60308 Two bog-pools still holding water, though with few species. The pools are dominated by *Eriophorum angustifolium* with *Sphagnum denticulatum* at the margins. In this area, where the peat is still damp, revegetation of bare peat areas is good, though where dry it is much less in evidence. This is a good example of natural peatland restoration and suggests that actions to retain water, such as stacking peat turves in hags to create natural dams could encourage bog species to re-establish. [ND]
98. 42072 60610 Some evident regeneration of *Eriophorum angustifolium* in damp peaty areas (photo N1), good example of conditions needed for natural regeneration. [ND]
99. 42153 60828 Very sluggish, almost stagnant burn channel through these deep, peat hags (photo N2). Some clumps of *Juncus effusus* and *Juncus bulbosus* alongside the channel, and algae abundant in wetter areas suggesting local nutrient loading. *Polytrichum commune* is locally abundant on peat mounds. [ND]
100. 42077 61002 A large bog-pool with a small amount of *Sphagnum denticulatum* on the south shore and sparse *Eriophorum angustifolium*. Relatively stable pool with signs of some regeneration. [ND]
101. 42335 60928 Site of turbine 59. A lightly haggled slope (photo N3). [ND]
102. 42804 61202 Site of turbine 56. Severely haggled above and on the slope (photo N4), predominantly M17b and bare peat. Below the turbine site is a broad valley mire of some interest and it is recommended that the turbine be moved 100m or so west, back onto the hilltop. [ND]
103. 42891 61281 A broad valley mire, possibly an old, infilled lochan, with a burn meandering along the east side (photos N25, N26). Areas of M17a with abundant *Sphagnum papillosum* but most of the valley base is *Eriophorum angustifolium* and *Sphagnum denticulatum* suggesting relatively recent revegetation. The peat here is very deep and sheep grazing is locally heavy. If possible, move the track 50m to the north to avoid this feature, both for ecological and logistical reasons. [ND]

- 104.43039 61177 A group of bog-pools in relatively good condition right on the track-line (photo N27). Avoid if possible. [ND]
- 105.43009 61031 Mounds of deep peat on the plateau about 10m diameter, supporting M19b type vegetation on the top. [ND]
- 106.43128 60868 Site of turbine 61. (photo N28 NW) Relatively smooth peat mound on the summit plateau. Some small bog-pools present near the turbine, partly dried out and within unstable hags. Assessed from close by to avoid golden plover nest. [ND]
- 107.43165 60938 A small depression with M17a vegetation in good condition and a *Carex echinata* soak running through (M6aii). Avoid this if possible. [ND]
- 108.43234 61307 Site of turbine 53. This turbine is located on a slope of intact blanket bog (M17b) with few hags except on low mounds around the turbine site (photo N29 N). [ND]
- 109.43945 62202 Site of turbine 48. (photo N30 S, smooth peat and photo N31 NE, revegetating runnel). A broad slope of largely smooth blanket bog (M17b) with frequent runnels but mainly revegetating (U6a) or pools (M1) where water retained. Some bare peat areas but these are small and damp so mostly revegetating with *Eriophorum angustifolium* (M3). Could move a bit further east to keep away from valley mire. [ND]
- 110.43878 62117 A broad, shallow slope leading to a valley mire that is predominantly wet blanket bog (M17a) in good condition, with frequent *Sphagnum papillosum* and minimal bare peat (photo N32). [ND]
- 111.43721 61682 Site of turbine 51. A hagged area but the rate of revegetation is good and hence is classed as activity A4. There are frequent mounds of *Racomitrium lanuginosum*, *Eriophorum vaginatum* and *Juncus squarrosus* (photo N33) and M1 in runnels. *Sphagnum capillifolium* is also relatively abundant on hag tops (photo N34). This turbine is currently sited just above a good area of M17a valley mire blanket bog that is crossed by the track between turbines 48 and 51. It which would be less affected if the track could be moved south, uphill by about 50m. [ND]
- 112.43838 61375 Haggings on the hillside with frequent areas of peat slumping evident and the peat between hags stripped away to expose rock and mineral soil beneath. Some areas revegetated with *Juncus squarrosus* (U6) and wet heath (M15) and *Sphagna* present and appears to be a good example of natural recovery of a severely eroded area (photo N35). [ND]
- 113.43825 61340 A large pool (M1) within hags but surrounding blanket bog locally in good condition. [ND]
- 114.43971 61171 A large pool above turbine 58 and close to the track-line. Avoid by micro-siting. [ND]

- 115.43838 61122 Site of turbine 58 (photo N36 S) Lightly hagged M17b. Not approached closely due to nesting birds. [ND]
- 116.44031 61413 A large pool close to the track within an area of peat that is quite badly hagged and slumped. The pool supports M1 type vegetation with *Sphagnum denticulatum* and *Eriophorum angustifolium* at the margins and *Juncus bulbosus* in shallow water. Avoid. [ND]
- 117.44111 61466 A large, shallow pool on the summit plateau with a pair of redshank. Adjacent peat is largely bare (photo N37). [ND]
- 118.44067 61487 Site of turbine 54 (photo N38 W, photo N39 S) Turbine sited within an area where the peat has slumped away from the plateau. [ND]
- 119.44091 61596 A large pool supporting abundant *Juncus bulbosus*, *Sphagnum denticulatum* and *Sphagnum cuspidatum* in shallow water, not just at the margins (photo N40). [ND]
- 120.41382 60631 Heavily grazed blanket bog adjacent to the road which forms a mosaic with M15d (*Juncus squarrosus/Calluna vulgaris*) and U6d with some eroding bare peat. Sheep numbers in these areas were high at the time of survey. [KP]
- 121.41522 60518 Frequent peat cuttings across this area. [KP]
- 122.41783 60718 Steeper slope, over small area, supports generally drier vegetation with an overall 'grassy' appearance although predominantly over peat greater than 0.5m deep. Grazing pressures are particularly high with sheep preferentially grazing these slopes. In parts the vegetation is dominated by a mix of *Hypnum* sp., *Agrostis capillaris* and *Deschampsia flexuosa*, although predominantly of more typical U6d or grazed M19. [KP]
- 123.41850 60769 Approximate turbine location number 62. Area of more-or-less intact blanket bog (M17b) with some minimal erosion. Sheep prints through these erosion channels are frequent and re-vegetation of bare peat is mainly by frequent *Eriophorum angustifolium*, although in parts over wider area there are scattered *Sphagnum* pools (M1). Photographs N41, N42 & N43. [KP]
- 124.41873 61038 Peat locally eroded through to mineral soil/bedrock. *Juncus squarrosus* is colonising some areas and *Eriophorum angustifolium* is localised through peat where erosion processes have slowed sufficiently. Erosion is at its greatest around hags/peat blocks. [KP]
- 125.41920 61110 Area of shallow peat which has become almost completely re-vegetated by mono-dominant *Juncus squarrosus*, interspersed by remaining peat blocks and stands of M15d (*Calluna vulgaris/Juncus squarrosus*). Photograph N44. [KP]

- 126.41921 61267 Approximate turbine location number 55 (photographs N45, N46 & N47). Deep (1-2m) haggling through peat with associated erosion which is at a greater rate than re-vegetation. Locally *Juncus squarrosus* had formed dams within erosion gullies, behind which *Sphagnum cuspidatum* is able to grow in the wetter, more stable conditions (photograph N48). [KP]
- 127.41717 60215 Small fragment of M17a with constant *Sphagna* (*Sphagnum palustre*, *Sphagnum capillifolium*, *Sphagnum papillosum*, *Sphagnum cuspidatum*) and an even sward of *Eriophorum vaginatum*, *Eriophorum angustifolium* and *Calluna vulgaris*. Also present at low cover are *Empetrum nigrum*, *Rhytidiadelphus loreus* and *Cladonia portentosa*. Immediately adjacent to this wetter blanket bog are fragments of *Rhytidiadelphus loreus* dominated deep peat with scattered *Eriophorum vaginatum*, *Calluna vulgaris* and *Juncus squarrosus* (photograph N49). [KP]
- 128.41495 60320 Disused quarry which supports a mixture of *Juncus squarrosus* grassland (U6d), *Juncus effusus* (M23b) and U4 grassland (*Rhytidiadelphus squarrosus*, *Anthoxanthum odoratum*, *Agrostis capillaris*, *Holcus mollis*, *Rumex acetosa*, *Cirsium palustre*, *Deschampsia flexuosa* and *Cardamine pratensis*). Soakway at 41468 60331 is vegetated by *Potamogeton polygonifolius*, *Equisetum palustre*, *Juncus articulatus*, *Glyceria fluitans*, *Philonotis fontana*, *Cardamine pratensis*, *Juncus bulbosus* and *Cirsium palustre*. [KP]
- 129.42624 61887 Stony flush (M10) with *Carex viridula* ssp. *oedocarpa*, *Juncus squarrosus*, *Narthecium ossifragum*, *Scorpidium scorpioides*, *Juncus bulbosus* and *Trichophorum cespitosum* which becomes closer to M30 soakway (*Potamogeton polygonifolius*, *Sphagnum denticulatum*, *Eriophorum angustifolium*, *Juncus squarrosus*, *Carex viridula* ssp. *oedocarpa*) down slope (photograph N50). [KP]
- 130.42691 61869 Approximate location of turbine number 49 (photographs N51, N52 & N53) over area of M17b/M1/M3 which extends to the east of here. Immediately to the West is an area of shallower peat which supports wet heath (M15d). In parts a high cover of *Racomitrium lanuginosum* is present and the vegetation appears transitional towards H14. To avoid areas of deeper peat and frequent haggling micrositing of turbine may be preferable over areas of shallow peat. [KP]
- 131.42260 61674 Approximate turbine location number 52 (photographs N54, N55 & N56). Majority of this area is of blanket bog (M17b) with patchy erosion (M3) and *Sphagnum* dominated pools/hollows (M1). In this area there is also more frequent vegetation of shallow peats (M15d/U6) where the peat appears to have slipped or become eroded away in the past and subsequently become re-vegetated. Micrositing of turbine where this more stable ground exists would be preferable. [KP]
- 132.41978 61507 Short-grazed, species-rich calcareous grassland (CG10a) around rocky outcrop (*Thalictrum alpinum*, *Prunella vulgaris*, *Plantago lanceolata*, *Plantago maritima*, *Thymus polytrichus*, *Carex panicea*, *Achillea millefolium*,

Bellis perennis, *Achillea millefolium*, *Luzula campestris*, *Trifolium repens*, *Agrostis capillaris*, *Ranunculus ficaria*, *Selaginella selaginoides*, *Festuca ovina*, *Bryum alpinum*). Photographs N57 & N58. Area should be re-visited in July to search for potential Shetland rarities, particularly through crevices/ledges which are inaccessible to grazers, and to gather a full species list. [KP]

- 133.41916 61405 Base-rich flush (M10) is mainly bare gravel with scattered *Carex panicea*, *Carex viridula* ssp. *oedocarpa*, *Thalictrum alpinum*, *Plantago maritima* and *Prunella vulgaris*. Grazing pressures are high. [KP]
- 134.42614 62294 M1 bog pools dominated by aquatic *Sphagnum cuspidatum* with marginal *Eriophorum angustifolium* and *Sphagnum denticulatum*. Surrounding blanket bog is predominantly of the wetter M17a sub-community with abundant *Sphagnum papillosum* (photograph N59). Consider re-routing track to avoid this habitat. [KP]
- 135.42675 62321 Location of turbine number 47 is within a mosaic of active blanket bog NVC types (M17a/b/M19) with little or no erosion (photographs N60 & N61). Pools are heavily vegetated and there is an undulating surface structure to the bog. An area of acid grassland to the North-north-west would be more suitable for turbine micro-siting. [KP]
- 136.43613 62248 Narrow ridge of drier vegetation and shallow peat which supports a mosaic of wet heath (M15d) and *Juncus squarrosus* dominated acid grassland (U6d). Photograph N62. [KP]
- 137.43537 62259 Location of turbine number 66 (photographs N63, N64, N65 & N66). Dry grassy ridge/knoll within otherwise extensive intact and active blanket bog. *Juncus squarrosus* is frequent with *Galium saxatile*, *Hylocomium splendens*, *Polytrichum juniperinum*, *Luzula multiflora*, *Mnium hornum* and *Hypnum jutlandicum* (U6d). Where the frequency/cover of *Juncus squarrosus* becomes reduced or absent vegetation is closer to NVC documentation of U4. [KP]
- 138.43379 62114 Any haggling here is generally small-scale with erosion gullies completely re-vegetated by *Eriophorum angustifolium*, *Sphagnum papillosum*, *Sphagnum cuspidatum*, *Sphagnum denticulatum*, *Sphagnum palustre*, *Calluna vulgaris* and *Erica tetralix* (photograph N67). Blanket bog is mainly intact M17b dominated by *Calluna vulgaris*, *Eriophorum angustifolium*, *Trichophorum cespitosum*, *Erica tetralix* and *Eriophorum vaginatum* over *Racomitrium lanuginosum* and *Cladonia portentosa*. Also present are *Huperzia selago*, *Potentilla erecta*, *Pleurozia purpurea*, *Cladonia uncialis*, *Narthecium ossifragum* and *Carex panicea* at low cover. [KP]
- 139.43131 61835 Location of turbine number 50 (photographs N68, N69, N70 & N71). Small area of *Juncus squarrosus* dominated (U6) grassland, with associates including *Calluna vulgaris*, *Empetrum nigrum*, *Erica cinerea*, *Polytrichum commune*, *Sphagnum palustre*, *Hypnum jutlandicum*, *Pleurozium schreberi*, *Rhytidiadelphus loreus* and *Cladonia portentosa*, over shallow peat

(0.1 - 0.4m) within wider area of M17b. Blanket bog varies in terms of intactness and activeness with some parts intact and others bare/eroding (particularly nearer the fence to the north). As a whole re-vegetation rate greater than erosion with former erosion gullies becoming re-vegetated by *Juncus squarrosus* with some *Sphagnum* spp. Areas eroded in the past and subsequently stabilised tend to have become colonised by *Calluna vulgaris* (M15d). [KP]

140. 42826 62254 Hollows vegetated by U6d (*Juncus squarrosus*, *Rhytidiadelphus squarrosus*, *Potentilla erecta*, *Anthoxanthum odoratum*, *Carex nigra*) and M15d (*Calluna vulgaris*, *Juncus squarrosus*, *Sphagnum papillosum*, *Mnium hornum*, *Hylocomium splendens*, *Rhytidiadelphus loreus*, *Eriophorum angustifolium*). Within this hollow are patches of building *Sphagnum papillosum* although still occurring over less than 0.5m peat (photographs N72 & N73). Similar small mounds of building *Sphagnum* are frequent over this area and in general the vegetation appears to be in a state of recovery. [KP]
141. 43039 62344 Soakway/flush (M6c/b/M30) with M17a along margins (photographs N74 & N75). Species present include *Juncus effusus*, *Potamogeton polygonifolius*, *Ranunculus flammula*, *Cardamine pratensis*, *Montia fontana*, *Juncus bulbosus*, *Philonotis fontana*, *Carex nigra*, *Sphagnum denticulatum*, *Calliargon cuspidatum*, *Caltha palustris* and *Pseudobryum cinclidioides*. [KP]
142. 43086 62273 Spring head/flush vegetated by *Juncus bulbosus*, *Caltha palustris*, *Ranunculus flammula*, *Cardamine pratensis*, *Carex nigra*, *Philonotis fontana* and *Pseudobryum cinclidioides* (photograph N76). [KP]
143. 43141 62290 Location of turbine number 70 (photographs N77, N78 & N79). Wide area of M19 blanket bog dominated by *Calluna vulgaris* and *Eriophorum vaginatum* over a mix of, predominantly pleurocarpous, bryophytes (*Hylocomium splendens*, *Rhytidiadelphus loreus*, *Sphagnum capillifolium*, *Sphagnum papillosum*). Also present, at low cover, are *Eriophorum angustifolium* and *Empetrum nigrum* ssp. *nigrum*. The high cover of *Hylocomium splendens* gives the vegetation a distinctive yellow colour and in parts becomes the dominant species in localised absence of *Calluna vulgaris* and *Eriophorum vaginatum* (photograph N79). Peat depth greater than 0.5m throughout. [KP]
144. 43431 62312 Flush with frequent *Potamogeton polygonifolius*, *Trichophorum cespitosum*, *Eriophorum angustifolium* and *Juncus bulbosus* adjacent to small mound of peat (photographs N80 & N81). This mound, with peat almost 0.5m deep, is mainly vegetated by *Bryum pseudotriquetrum*, *Ranunculus flammula*, *Cardamine pratensis*, *Agrostis capillaris*, *Cerastium fontanum* and *Sagina procumbens* none of which are known peat forming species. [KP]
145. 43825 62333 Acid flush/hollow (M6/M1) dominated by *Sphagnum denticulatum*, *Sphagnum cuspidatum* and *Eriophorum angustifolium* with *Juncus squarrosus*, *Agrostis capillaris* and *Carex nigra* (photograph N82). [KP]

APPENDIX 2: QUADRAT DATA

M1

Quadrat No.	1	2	3	4	5
Quadrant	Kergord	Kergord	Kergord	Kergord	Kergord
Date	30/05/08	05/06/08	12/07/08	11/07/08	13/07/08
Eastings	37901	39492	38868	39200	42272
Northings	53825	56743	58557	57895	65371
Surveyor	T. Rafferty	T. Rafferty	K. Proctor	K. Proctor	T. Rafferty
Slope (degrees)			0	0	
Aspect (degrees)			N.A.	N.A.	
Height (heath/herb/moss)	10/25/4	0/20/1	0/12/3	0/15/1	0/1/1
% cover (heath/herb/moss)	10/30/50	0/2/40	0/10/80	0/35/20	0/5/30

Species:

<i>Sphagnum denticulatum</i>	6	6	3	5	5	V	(3-6)
<i>Sphagnum cuspidatum</i>	7	5	9		4	IV	(4-9)
<i>Eriophorum angustifolium</i>	4	3	4	5		IV	(3-5)
<i>Potamogeton polygonifolius</i>				3	4	II	(3-4)
<i>Juncus bulbosus</i>			2	3		II	(2-3)
<i>Carex echinata</i>				2	3	II	(2-3)
<i>Eriophorum vaginatum</i>	6					I	(6)
<i>Calluna vulgaris</i>	5					I	(5)
<i>Menyanthes trifoliata</i>				4		I	(4)
<i>Sphagnum papillosum</i>	3					I	(3)
<i>Erica tetralix</i>	3					I	(3)
<i>Juncus squarrosus</i>			3			I	(3)
<i>Sphagnum palustre</i>			3			I	(3)
<i>Polytrichum commune</i>			3			I	(3)
<i>Juncus effusus</i>					3	I	(3)
Water	6	9	4		9	IV	(4-9)

M3

Quadrat No.	6	7	8	9	10
Quadrant	Kergord	Kergord	Kergord	Kergord	Kergord
Date	26/05/08	28/05/08	11/07/08	13/07/08	13/07/08
Eastings	41047	40920	39160	42326	41632
Northings	57392	59075	57789	65370	65143

Surveyor	K. Proctor	K. Proctor	K. Proctor	T. Rafferty	T. Rafferty		
Slope (degrees)	1	0	0				
Aspect (degrees)	200	N.A.	N.A.				
Height (heath/herb/moss)	0/15/0.5	0/5/0	0/12/0	0/20/2	0/20/0		
% cover (heath/herb/moss)	0/55/1	0/25/0	0/10/0	0/25/5	0/20/0		
Species:							
<i>Eriophorum angustifolium</i>	8	9	4	6	5	V	(4-9)
<i>Sphagnum cuspidatum</i>	8			3		II	(3-8)
<i>Juncus squarrosus</i>					3	I	(3)
<i>Sphagnum papillosum</i>					3	I	(3)
Bare peat	8	5	10	9	9	V	(5-10)
Litter			3			I	(3)
M6							
Sub-community	M6b	M6b	M6c	M6c	M6c		
Quadrat No.	11	12	13	14	15		
Quadrant	Nesting	Kergord	Collafirth	Nesting	Kergord		
Date	20/05/08	11/07/08	12/05/08	10/05/08	12/07/08		
Eastings	45531	38863	42138	43960	38181		
Northings	58198	57796	65041	61914	54773		
Surveyor	T. Rafferty	K. Proctor	N. Dayton	N. Dayton	T. Rafferty		
Slope (degrees)		0	1	5			
Aspect (degrees)		N.A.	80	270			
Height (heath/herb/moss)	0/40/5	0/15/5	0/50/10	0/50/10	0/50/20		
% cover (heath/herb/moss)	0/25/90	0/35/85	0/60/70	0/40/80	0/30/95		
Species:							
<i>Juncus effusus</i>	4		4	7	6	IV	(4-7)
<i>Sphagnum denticulatum</i>	10	9	8	2		IV	(2-10)
<i>Juncus bulbosus</i>	3	3	4			III	(3-4)
<i>Polytrichum commune</i>			4	4	3	III	(3-4)
<i>Carex nigra</i>	3	2	5			III	(2-5)
<i>Sphagnum palustre</i>				6	10	II	(6-10)

<i>Eriophorum angustifolium</i>		4	4			II	(4)
<i>Agrostis capillaris</i>				4	3	II	(3-4)
<i>Potentilla erecta</i>		3		3		II	(3)
<i>Galium saxatile</i>				3	3	II	(3)
<i>Carex panicea</i>	3	2				II	(2-3)
<i>Carex echinata</i>		4	1			II	(1-4)
<i>Rhytiadelphus squarrosus</i>				7		I	(7)
<i>Nardus stricta</i>		5				I	(5)
<i>Anthoxanthum odoratum</i>					3	I	(3)
<i>Rumex acetosa</i>					3	I	(3)
<i>Agrostis canina</i>					3	I	(3)
<i>Sphagnum capillifolium</i>			2			I	(2)
<i>Viola riviniana</i>		2				I	(2)
<i>Ranunculus flammula</i>		2				I	(2)
<i>Plagiothecium undulatum</i>				2		I	(2)
Bare peat			4			I	(4)

M10a

Quadrat No.	16	17	18	19	20
Quadrant	Collafirth	Collafirth	Kergord	Kergord	Kergord
Date	14/05/08	14/05/08	05/06/08	11/07/08	11/07/08
Eastings	41770	41831	40657	39077	38455
Northings	66105	66218	60823	57429	56261
Surveyor	N. Dayton	K. Proctor	K. Proctor	K. Proctor	T. Rafferty
Slope (degrees)	4	5	10	20	
Aspect (degrees)	345	200	350	340	
Height (heath/herb/moss)	0/5/1	0/10/1	0/8/1	0/5/1	0/8/2
% cover (heath/herb/moss)	0/50/20	0/40/10	0/25/35	0/35/5	0/20/20

Species:

<i>Carex viridula</i> ssp. <i>oedocarpa</i>	4	3	4	5	3	V	(3-5)
<i>Scorpidium scorpioides</i>	5	4	5		4	IV	(4-5)
<i>Pinguicula vulgaris</i>	3		3	1	2	IV	(1-3)
<i>Thalictrum alpinum</i>			2	5	3	III	(2-5)
<i>Carex panicea</i>	4		3			II	(3-4)
<i>Juncus bulbosus</i>	4		3			II	(3-4)

<i>Euphrasia</i> sp.				3	3	II	(3)
<i>Bryum pseudotriquetrum</i>			4		2	II	(2-4)
<i>Equisetum palustre</i>	2		3			II	(2-3)
<i>Carex nigra</i>		2	3			II	(2-3)
<i>Prunella vulgaris</i>			2		3	II	(2-3)
<i>Selaginella selaginoides</i>				2	3	II	(2-3)
<i>Ctenidium molluscum</i>				1	3	II	(1-3)
<i>Juncus articulatus</i>				1	3	II	(1-3)
<i>Schoenus nigricans</i>		7				I	(7)
<i>Sphagnum denticulatum</i>	4					I	(4)
<i>Calliergon cuspidatum</i>	4					I	(4)
<i>Nardus stricta</i>				4		I	(4)
<i>Campylopus atrovirens</i>				4		I	(4)
<i>Nartheccium ossifragum</i>	3					I	(3)
<i>Potamogeton polygonifolius</i>	3					I	(3)
<i>Dicranella palustris</i>	3					I	(3)
<i>Trichophorum cespitosum</i>		3				I	(3)
<i>Campylium stellatum</i>		3				I	(3)
<i>Drepanocladus revolvens</i>			3			I	(3)
<i>Drepanocladus</i> sp.			3			I	(3)
<i>Fissidens</i> sp.			3			I	(3)
<i>Festuca vivipara</i>				3		I	(3)
<i>Festuca ovina</i>				3		I	(3)
<i>Blindia acuta</i>					3	I	(3)
<i>Plantago maritima</i>					3	I	(3)
<i>Galium saxatile</i>				2		I	(2)
<i>Agrostis capillaris</i>				2		I	(2)
<i>Viola riviniana</i>				2		I	(2)
<i>Carex pulicaris</i>					2	I	(2)
<i>Carex dioica</i>	1					I	(1)
Bare ground		8	7	8	8	IV	(7-8)

M15a

Quadrat No. 21
 Quadrant Delting
 Date 30/05/08
 Eastings 38976
 Northings 67954
 Surveyor K. Proctor

Slope (degrees)	10
Aspect (degrees)	220
Height (heath/herb/moss)	12/15/4
% cover (heath/herb/moss)	30/60/50

Species:

<i>Calluna vulgaris</i>	6	II	(6)
<i>Thalictrum alpinum</i>	5	II	(5)
<i>Breutelia chrysocoma</i>	5	II	(5)
<i>Trichophorum cespitosum</i>	4	II	(4)
<i>Nardus stricta</i>	4	II	(4)
<i>Racomitrium lanuginosum</i>	4	II	(4)
<i>Deschampsia flexuosa</i>	4	II	(4)
<i>Hylocomium splendens</i>	4	II	(4)
<i>Pleurozium schreberi</i>	4	II	(4)
<i>Ctenidium molluscum</i>	4	II	(4)
<i>Carex panicea</i>	4	II	(4)
<i>Erica tetralix</i>	3	II	(3)
<i>Potentilla erecta</i>	3	II	(3)
<i>Prunella vulgaris</i>	3	II	(3)
<i>Hypnum jutlandicum</i>	3	II	(3)
<i>Polygala serpyllifolia</i>	3	II	(3)
<i>Selaginella selaginoides</i>	3	II	(3)
<i>Fissidens adianthoides</i>	3	II	(3)
<i>Viola riviniana</i>	3	II	(3)
<i>Taraxacum officinale</i>	3	II	(3)
<i>Pinguicula vulgaris</i>	2	II	(2)
<i>Huperzia selago</i>	2	II	(2)

M15b

Quadrat No.	22	23
Quadrant	Nesting	Kergord
Date	13/05/08	01/06/08
Eastings	46339	36837
Northings	56270	54683
Surveyor	T. Rafferty	T. Rafferty

Slope (degrees)		
Aspect (degrees)		
Height (heath/herb/moss)	15/10/3	25/35/4
% cover (heath/herb/moss)	80/10/60	80/20/60

Species:

<i>Calluna vulgaris</i>	9	8	III	(8-
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<i>Sphagnum capillifolium</i>	7	7			III	(7)
<i>Juncus squarrosus</i>	5	4			III	(4-5)
<i>Rhytidiadelphus loreus</i>	3	5			III	(3-5)
<i>Eriophorum angustifolium</i>	3	4			III	(4)
<i>Dicranum scoparium</i>	4				II	(4)
<i>Hypnum jutlandicum</i>	4				II	(4)
<i>Cladonia portentosa</i>	3				II	(3)
<i>Trichophorum cespitosum</i>		3			II	(3)
<i>Eriophorum vaginatum</i>		3			II	(3)

M15c

Quadrat No.	24	25	26	27	28
Quadrant	Delting	Delting	Kergord	Kergord	Kergord
Date	20/05/08	20/05/08	03/06/08	05/06/08	11/07/08
Eastings	36919	37501	38163	38954	38670
Northings	66510	66706	58368	60917	58148
Surveyor	K. Proctor	K. Proctor	K. Proctor	K. Proctor	K. Proctor
Slope (degrees)	3	3	15	2	10
Aspect (degrees)	180	000	310	330	260
Height (heath/herb/moss)	10/10/5	8/10/5	15/08/03	5/10/2	10/10/2
% cover (heath/herb/moss)	65/15/65	25/10/90	60/40/40	35/25/70	30/10/20

Species:

<i>Racomitrium lanuginosum</i>	8	9	6	8	5	V	(5-9)
<i>Calluna vulgaris</i>	8	5	7	6	6	V	(5-8)
<i>Erica cinerea</i>	4	4	5	4	4	V	(4-5)
<i>Hypnum jutlandicum</i>	3	3	3	4	3	V	(3-4)
<i>Trichophorum cespitosum</i>	5		4	4	4	IV	(3-5)
<i>Eriophorum angustifolium</i>		4	3	4	3	IV	(3-4)
<i>Juncus squarrosus</i>			5	3	3	III	(3-5)
<i>Rhytidiadelphus loreus</i>	3		4	3		III	(3-4)
<i>Nardus stricta</i>			4	3	4	III	(3-4)
<i>Potentilla erecta</i>	3		3	3		III	(3)
<i>Carex panicea</i>	3		2			III	(2-)

				3				3)
<i>Cladonia uncialis</i>	3	3	2			III		(2-3)
<i>Cladonia portentosa</i>	3	3				II		(3)
<i>Narthecium ossifragum</i>			3	3		II		(3)
<i>Festuca ovina</i>	2	3				II		(2-3)
<i>Hylocomium splendens</i>	4					I		(4)
<i>Empetrum nigrum</i> spp. <i>nigrum</i>			3			I		(3)
<i>Deschampsia flexuosa</i>			3			I		(3)
<i>Pleurozium schreberi</i>			3			I		(3)
<i>Listera cordata</i>	2					I		(2)
<i>Dicranum majus</i>	2					I		(2)
<i>Plagiothecium undulatum</i>			2			I		(2)
<i>Carex binervis</i>						2	I	(2)
<i>Sphagnum capillifolium</i>						2	I	(2)
<i>Polygala serpyllifolia</i>	1						I	(1)
Bare ground		4	3			7	III	(3-7)

M15d

Quadrat No.	29	30	31	32	33
Quadrant	Delting	Nesting	Delting	Nesting	Nesting
Date	13/05/08	10/05/08	20/05/08	12/05/08	12/05/08
Eastings	44176	43848	37824	43649	43914
Northings	73074	61370	67191	56723	57356
Surveyor	K. Proctor	N. Dayton	K. Proctor	T. Rafferty	T. Rafferty
Slope (degrees)	2	3	5		
Aspect (degrees)	020	315	250		
Height (heath/herb/moss)	14/14/10	18/15/6	12/12/8	20/25/5	20/30/5
% cover (heath/herb/moss)	60/30/90	80/10/50	65/20/10	60/30/40	50/30/30

Species:

<i>Calluna vulgaris</i>	7	9	8	8	7	V		(7-9)
<i>Juncus squarrosus</i>	6	5	5	6	5	V		(5-6)
<i>Hylocomium splendens</i>	6	6	4	5	5	V		(4-6)
<i>Rhytidiadelphus loreus</i>	5	3	3	5	4	V		(3-5)
<i>Hypnum jutlandicum</i>	3	4	3	4	4	V		(3-4)
<i>Nardus stricta</i>	3		3	3	3	IV		(3)

<i>Empetrum nigrum</i>	3	3	3		3	IV	(3)
<i>Sphagnum capillifolium</i>	6	7				II	(7)
<i>Racomitrium lanuginosum</i>		3			3	II	(3)
<i>Scapania gracilis</i>	2			3		II	(3)
<i>Sphagnum palustre</i>	4					I	(4)
<i>Pleurozium schreberi</i>	4					I	(4)
<i>Potentilla erecta</i>	3					I	(3)
<i>Lophocolea bidentata</i>	3					I	(3)
<i>Rhytidiadelphus squarrosus</i>			3			I	(3)
<i>Polytrichum juniperinum</i>	2					I	(2)
<i>Mnium hornum</i>	2					I	(2)
<i>Barbilophozia sp.</i>	2					I	(2)
<i>Erica cinerea</i>			2			I	(2)
<i>Carex bigelowii</i>			2			I	(2)
<i>Deschampsia flexuosa</i>			2			I	(2)
Bare			4			I	(4)

M17a

Quadrat No.	34	35	36	37	38
Quadrant	Nesting	Collafirth	Nesting	Delting	Nesting
Date	12/05/08	12/05/08	09/05/08	27/05/08	14/05/08
Eastings	42924	42067	42073	39377	45176
Northings	66113	64679	60308	68785	56933
Surveyor	K. Proctor	N. Dayton	N. Dayton	K. Proctor	T. Rafferty
Slope (degrees)	0	1	0	0	
Aspect (degrees)	N.A.	90	N.A.	N.A.	
Height (heath/herb/moss)	10/20/5	20/20/3	12/15/15	15/25/10	25/40/8
% cover(heath/herb/moss)	30/70/95	30/60/80	30/40/90	30/35/95	20/30/90

Species:

<i>Sphagnum papillosum</i>	8	7	8	9	9	V	(7-9)
<i>Calluna vulgaris</i>	6	6	6	6	6	V	(6)
<i>Sphagnum capillifolium</i>	5	5	4	4	5	V	(4-5)
<i>Eriophorum angustifolium</i>	8	5	6	5	3	V	(3-8)
<i>Eriophorum vaginatum</i>	3	5	4	4	5	V	(3-5)
<i>Cladonia portentosa</i>		4	1		3	III	(1-4)
<i>Racomitrium lanuginosum</i>		3			4	II	(3-4)
<i>Empetrum nigrum</i>		3		3		II	(3)

<i>Rhytidiadelphus loreus</i>	3	3				II	(3)
<i>Trichophorum cespitosum</i>				3	3	II	(3)
<i>Erica tetralix</i>	3		2			II	(2-3)
<i>Cladonia arbuscula</i>		5				I	(5)
<i>Hypnum jutlandicum</i>		5				I	(5)
<i>Pleurozia purpurea</i>		4				I	(4)
<i>Sphagnum cuspidatum</i>					4	I	(4)
<i>Sphagnum palustre</i>	4					I	(4)
<i>Hylocomium splendens</i>			3			I	(3)
<i>Nartheccium ossifragum</i>					3	I	(3)
<i>Sphagnum tenellum</i>		3				I	(3)
<i>Cladonia uncialis</i>		2				I	(2)
<i>Juncus squarrosus</i>				2		I	(2)
<i>Pinguicula vulgaris</i>				2		I	(2)
<i>Dactylorhiza maculata</i>	1					I	(1)

M17b

Quadrat No.	39	40	41	42	43
Quadrant	Nesting	Delting	Nesting	Nesting	Nesting
Date	11/05/08	19/05/08	19/05/08	26/05/08	27/05/08
Eastings	43231	40653	46301	44314	42424
Northings	62251	70223	58000	56635	56252
Surveyor	K. Proctor	N. Dayton	T. Rafferty	T. Rafferty	T. Rafferty
Slope (degrees)	3	2			
Aspect (degrees)	350	200			
Height (heath/herb/moss)	10/15/4	10/15/10	15/25/5	15/25/8	20/30/3
% cover(heath/herb/moss)	65/50/80	60/30/40	70/20/60	80/5/50	20/10/80

Species:

<i>Racomitrium lanuginosum</i>	8	5	6	6	9	V	(5-9)
<i>Calluna vulgaris</i>	7	8	8	8	5	V	(5-8)
<i>Eriophorum angustifolium</i>	6	3	4	3	3	V	(3-6)
<i>Eriophorum vaginatum</i>	5	4	3	3	5	V	(3-5)
<i>Cladonia portentosa</i>	4	6	4	3		IV	(2-6)
<i>Hypnum jutlandicum</i>		2	4	6		III	(1-6)
<i>Huperzia selago</i>	3	1			3	III	(3)
<i>Erica cinerea</i>				4	4	II	(3-4)
<i>Rhytidiadelphus loreus</i>			3	6		II	(6)
<i>Trichophorum cespitosum</i>	5		3			II	(3-)

									5)
<i>Cladonia uncialis</i>	3		3					II	(3)
<i>Sphagnum capillifolium</i>					5			I	(5)
<i>Pleurozium schreberi</i>			4					I	(4)
<i>Erica tetralix</i>	4							I	(4)
<i>Empetrum nigrum</i> spp. <i>nigrum</i>			3					I	(3)
<i>Carex nigra</i>					3			I	(3)
<i>Carex panicea</i>	2							I	(2)
<i>Cladonia arbuscula</i>			2					I	(2)

M17c

Quadrat No.	44	45	46	47	48
Quadrant	Nesting	Delting	Nesting	Kergord	Kergord
Date	08/05/08	15/05/08	26/05/08	02/06/08	03/06/08
Eastings	41639	40530	44162	37187	40001
Northings	60045	71616	55935	55567	55011
Surveyor	N. Dayton	K. Proctor	T. Rafferty	T. Rafferty	T. Rafferty
Slope (degrees)	0	1			
Aspect (degrees)	085	080			
Height (heath/herb/moss)	6/6/4	15/10/5	10/30/5	10/10/3	6/30/4
% cover (heath/herb/moss)	70/30/70	30/40/80	5/40/70	20/60/50	1/30/80

Species:

<i>Calluna vulgaris</i>	8	6	5	6	3	V	(3-8)
<i>Sphagnum papillosum</i>		6	8	5	9	IV	(5-9)
<i>Sphagnum capillifolium</i>	6	6	4	6		IV	(4-6)
<i>Eriophorum vaginatum</i>		3	5	4	3	IV	(3-5)
<i>Juncus squarrosus</i>	6	6		7		III	(6-7)
<i>Eriophorum angustifolium</i>		4	3	3		III	(3-4)
<i>Anthoxanthum odoratum</i>			5		4	II	(4-5)
<i>Potentilla erecta</i>			3		3	II	(3)
<i>Empetrum nigrum</i> spp. <i>nigrum</i>	2	2				II	(2)
<i>Festuca rubra</i>					4	I	(4)
<i>Racomitrium lanuginosum</i>	4					I	(4)
<i>Rhytidiadelphus loreus</i>	4					I	(4)
<i>Sphagnum palustre</i>		4				I	(4)
<i>Cardamine pratensis</i>					3	I	(3)
<i>Carex panicea</i>					3	I	(3)
<i>Equisetum fluviatile</i>					3	I	(3)

<i>Erica tetralix</i>		3					I	(3)
<i>Festuca vivipara</i>						3	I	(3)
<i>Luzula multiflora</i>						3	I	(3)
<i>Mnium hornum</i>		3					I	(3)
<i>Narthecium ossifragum</i>			3				I	(3)
<i>Pinguicula vulgaris</i>						3	I	(3)
<i>Polygala serpyllifolia</i>			3				I	(3)
<i>Sphagnum cuspidatum</i>		3					I	(3)
<i>Succisa pratensis</i>						3	I	(3)
<i>Trichophorum cespitosum</i>					3		I	(3)
<i>Vaccinium myrtillus</i>	3						I	(3)
<i>Campylopus introflexus</i>	2						I	(2)
<i>Carex dioica</i>						2	I	(2)
<i>Cladonia portentosa</i>	2						I	(2)
<i>Nardus stricta</i>						2	I	(2)
<i>Plantago lanceolata</i>						2	I	(2)

M19

Quadrat No.	49	50	51	52	53
Quadrant	Delting	Nesting	Delting	Nesting	Nesting
Date	13/05/08	7/05/08	15/05/08	13/05/08	19/05/08
Eastings	43100	44307	40872	45855	45427
Northings	72484	55826	72002	56639	57959
Surveyor	K. Proctor	N. Dayton	K. Proctor	T. Rafferty	T. Rafferty
Slope (degrees)	5	0	5		
Aspect (degrees)	270	200	020		
Height (heath/herb/moss)	20/22/3	25/30/15	20/25/5	25/30/8	20/30/8
% cover(heath/herb/moss)	75/20/60	40/40/90	50/35/70	90/<5/70	70/20/80

Species:

<i>Calluna vulgaris</i>	8	7	7	9	8	V	(7-9)
<i>Hylocomium splendens</i>	4	8	7	8	7	V	(4-8)
<i>Rhytidiadelphus loreus</i>	5	4	5	4	7	V	(4-7)
<i>Eriophorum vaginatum</i>	5	6	6	3	5	V	(3-6)
<i>Eriophorum angustifolium</i>	3	4	4	3	3	V	(2-4)
<i>Empetrum nigrum</i>	3	2	3		3	IV	(2-3)
<i>Sphagnum capillifolium</i>	5	3		4		III	(3-5)
<i>Pleurozium schreberi</i>		4	4			II	(4)
<i>Sphagnum palustre</i>	4					I	(4)
<i>Hypnum jutlandicum</i>		3				I	(3)

<i>Erica tetralix</i>		3	I	(3)
<i>Mnium hornum</i>	2		I	(2)
<i>Luzula multiflora</i>		2	I	(2)
<i>Juncus squarrosus</i>	2		I	(2)
<i>Cladonia portentosa</i>	2		I	(2)

M23b

Quadrat No.	54
Quadrant	Collafirth
Date	12/05/08
Eastings	43023
Northings	64866
Surveyor	N. Dayton
Slope (degrees)	0
Aspect (degrees)	220
Height (heath/herb/moss)	0/40/3
% cover(heath/herb/moss)	0/100/20

Species:

<i>Juncus effusus</i>	8	II	(8)
<i>Agrostis canina</i>	4	II	(4)
<i>Ranunculus ficaria</i>	3	II	(3)
<i>Potentilla erecta</i>	3	II	(3)
<i>Anthoxanthum odoratum</i>	3	II	(3)
<i>Polytrichum commune</i>	3	II	(3)
<i>Rumex acetosa</i>	3	II	(3)
<i>Plagiomnium rostratum</i>	2	II	(2)
<i>Holcus lanatus</i>	2	II	(2)
<i>Cirsium palustre</i>	2	II	(2)
<i>Viola palustris</i>	2	II	(2)
<i>Galium saxatile</i>	2	II	(2)

M32

Quadrat No.	55	56
Quadrant	Collafirth	Delting
Date	14/05/08	18/05/2008
Eastings	41933	39131
Northings	66069	70431
Surveyor	N. Dayton	N. Dayton
Slope (degrees)	2	2
Aspect (degrees)	010	270
Height (heath/herb/moss)	0/5/3	0/11/3
% cover(heath/herb/moss)	0/10/90	0/20/100

Species:

<i>Philonotis fontana</i>	7	8	III	(7-8)
<i>Agrostis capillaris</i>	3	4	III	(3-4)
<i>Cardamine pratensis</i>	5	2	III	(2-5)
<i>Cardamine flexuosa</i>	2	2	III	(2)
<i>Potentilla erecta</i>	1	3	III	(1-3)
<i>Calliergon cuspidatum</i>	7		II	(7)
<i>Ranunculus flammula</i>	4		II	(4)
<i>Plagiomnium rostratum</i>	4		II	(4)
<i>Sphagnum papillosum</i>		4	II	(4)
<i>Rhytidiadelphus squarrosus</i>		4	II	(4)
<i>Rhytidiadelphus loreus</i>		4	II	(4)
<i>Pseudobryum cinclidioides</i>		4	II	(4)
<i>Potamogeton polygonifolius</i>	3		II	(3)
<i>Sphagnum denticulatum</i>	3		II	(3)
<i>Polytrichum formosum</i>		3	II	(3)
<i>Carex nigra</i>		3	II	(3)
<i>Anthoxanthum odoratum</i>		3	II	(3)
<i>Viola palustris</i>		3	II	(3)
<i>Caltha palustris</i>	2		II	(2)
<i>Mnium hornum</i> (? <i>stellare</i>)		2	II	(2)

H10a

Quadrat No.	57	58
Quadrant	Delting	Nesting
Date	20/05/08	13/05/08
Eastings	37939	46506
Northings	66920	55857
Surveyor	K. Proctor	T. Rafferty
Slope (degrees)	15	
Aspect (degrees)	200	
Height (heath/herb/moss)	20/25/10	5/15/4
% cover (heath/herb/moss)	80/3/50	90/1/5

Species:

<i>Calluna vulgaris</i>	9	9	III	(9)
<i>Hylocomium splendens</i>	6	7	III	(6-7)
<i>Dicranum scoparium</i>		4	II	(4)

<i>Pleurozium schreberi</i>	4					II	(4)
<i>Rhytidiadelphus loreus</i>	4					II	(4)
<i>Potentilla erecta</i>	3					II	(3)
<i>Rhytidiadelphus squarrosus</i>	3					II	(3)
<i>Juncus squarrosus</i>			3			II	(3)
<i>Eriophorum vaginatum</i>			3			II	(3)
<i>Eriophorum angustifolium</i>	2					II	(2)
<i>Carex panicea</i>	2					II	(2)
<i>Deschampsia flexuosa</i>	2					II	(2)
<i>Cerastium fontanum</i>	1					II	(1)

H10b

Quadrat No.	59	60	61	62	63
Quadrant	Delting	Delting	Nesting	Kergord	Kergord
Date	19/05/08	30/05/08	14/05/08	05/06/08	12/07/08
Eastings	40529	38963	45781	38928	38168
Northings	69675	67290	56993	61176	55339
Surveyor	N. Dayton	T. K. Proctor	T. Rafferty	K. Proctor	T. Rafferty
Slope (degrees)	0	10		5	
Aspect (degrees)	N.A.	330		250	
Height (heath/herb/moss)	5/12/5	10/12/5	25/0/20	8/10/2	10/20/4
% cover (heath/herb/moss)	50/10/50	40/8/80	80/0/50	25/20/15	90/1/40

Species:

<i>Calluna vulgaris</i>	7	7	9	5	9	V	(5-9)
<i>Racomitrium lanuginosum</i>	8	8	6	5	5	V	(5-8)
<i>Hypnum jutlandicum</i>	5	3	5	3	3	V	(3-5)
<i>Hylocomium splendens</i>	4	4	3		3	IV	(3-4)
<i>Deschampsia flexuosa</i>	4	3		3	3	IV	(3-4)
<i>Empetrum nigrum</i> spp. <i>nigrum</i>	3	2	3		3	IV	(2-3)
<i>Nardus stricta</i>	4	3		5		III	(3-5)
<i>Erica cinerea</i>		2		5	4	III	(2-5)
<i>Agrostis capillaris</i>		3		2		III	(2-3)
<i>Cladonia uncialis</i>		3		2		III	(2-3)
<i>Festuca vivipara</i>	1			3		III	(1-3)
<i>Carex bigelowii</i>	1			2		III	(1-2)

<i>Carex panicea</i>			4	II	(4)
<i>Potentilla erecta</i>		3	3	II	(3)
<i>Vaccinium myrtillus</i>	3	3		II	(3)
<i>Cladonia portentosa</i>		3		II	(3)
<i>Rhytidiadelphus loreus</i>		3		II	(3)
<i>Juncus squarrosus</i>	3			II	(3)
<i>Vaccinium vitis-idaea</i>	1			II	(1)
<i>Huperzia selago</i>	1			II	(1)
<i>Carex binervis</i>				3 I	(3)
Bare ground			8	I	(8)

H12a/H12c

Quadrat No.	64	65
Quadrant	Kergord	Kergord
Date	01/06/08	11/07/08
Eastings	36804	38392
Northings	54433	57093
Surveyor	T. Rafferty	T. Rafferty

Slope (degrees)		
Aspect (degrees)		
Height (heath/herb/moss)	30/40/4	20/30/4
% cover (heath/herb/moss)	95/5/50	70/25/40

Species:

<i>Calluna vulgaris</i>	10	8	III	(8-10)
<i>Hylocomium splendens</i>	7	5	III	(5-7)
<i>Rhytidiadelphus loreus</i>	4	4	III	(4)
<i>Vaccinium myrtillus</i>	3	3	III	(3)
<i>Carex nigra</i>	2	4	III	(2-4)
<i>Juncus squarrosus</i>		5	II	(5)
<i>Thuidium tamariscinum</i>	3		II	(3)
<i>Nardus stricta</i>		3	II	(3)
<i>Anthoxanthum odoratum</i>		3	II	(3)
<i>Potentilla erecta</i>		3	II	(3)
<i>Luzula multiflora</i>		3	II	(3)
<i>Polytrichum commune</i>		3	II	(3)
<i>Hypnum jutlandicum</i>		3	II	(3)
<i>Eriophorum angustifolium</i>	2		II	(2)

H14

Quadrat No.	66
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Quadrant	Kergord
Date	12/07/08
Eastings	39058
Northings	58288
Surveyor	K. Proctor

Slope (degrees)	3
Aspect (degrees)	225
Height (heath/herb/moss)	7/8/3
% cover (heath/herb/moss)	30/25/50

Species:

<i>Calluna vulgaris</i>	6	II	(6)
<i>Racomitrium lanuginosum</i>	6	II	(6)
<i>Juncus squarrosus</i>	5	II	(5)
<i>Sphagnum capillifolium</i>	5	II	(5)
<i>Nardus stricta</i>	3	II	(3)
<i>Vaccinium myrtillus</i>	3	II	(3)
<i>Eriophorum angustifolium</i>	3	II	(3)
<i>Empetrum nigrum</i>	3	II	(3)
<i>Cladonia portentosa</i>	3	II	(3)
<i>Hypnum jutlandicum</i>	3	II	(3)
<i>Listera cordata</i>	2	II	(2)
<i>Cladonia uncialis</i>	2	II	(2)

U6a

Quadrat No.	67	68	69
Quadrant	Delting	Kergord	Kergord
Date	19/05/08	12/07/08	12/07/08
Eastings	40554	39123	39053
Northings	70489	60301	60423
Surveyor	N. Dayton	K. Proctor	K. Proctor
Slope (degrees)	3	10	5
Aspect (degrees)	330	080	020
Height (heath/herb/moss)	0/12/5	10/15/4	10/20/5
% cover (heath/herb/moss)	0/80/50	2/50/60	5/35/75

Species:

<i>Juncus squarrosus</i>	8	7	6	IV	(6-8)
<i>Sphagnum papillosum</i>	4	7	8	IV	(4-8)
<i>Nardus stricta</i>	4	3	3	IV	(3-4)

<i>Sphagnum capillifolium</i>	7		4		III	(4-7)
<i>Eriophorum angustifolium</i>		4	4		III	(4)
<i>Sphagnum palustre</i>		4	4		III	(4)
<i>Calluna vulgaris</i>		3	4		III	(3-4)
<i>Festuca vivipara</i>	3	2			III	(2-3)
<i>Luzula multiflora</i>	1	1			III	(1)
<i>Potentilla erecta</i>	4				II	(4)
<i>Polytrichum commune</i>	4				II	(4)
<i>Rhytidiadelphus squarrosus</i>	4				II	(4)
<i>Agrostis canina</i>	4				II	(4)
<i>Polytrichum juniperinum</i>		4			II	(4)
<i>Mnium hornum</i>	3				II	(3)
<i>Deschampsia flexuosa</i>		3			II	(3)
<i>Agrostis capillaris</i>		3			II	(3)
<i>Rhytidiadelphus loreus</i>		3			II	(3)
<i>Viola riviniana</i>			3		II	(3)
<i>Carex echinata</i>			3		II	(3)

U6d

Quadrat No.	70	71	72	73	74
Quadrant	Delting	Delting	Kergord	Kergord	Kergord
Date	13/05/08	19/05/08	05/06/08	12/07/08	13/07/08
Eastings	43065	39666	39029	38675	41095
Northings	72382	70195	56549	58353	63709
Surveyor	K. Proctor	N. Dayton	T. Rafferty	K. Proctor	T. Rafferty
Slope (degrees)	2	0		0	
Aspect (degrees)	030	N.A.		N.A.	
Height (heath/herb/moss)	0/10/2	0/3/1	25/20/3	5/20/3	15/30/4
% cover (heath/herb/moss)	0/90/30	0/100/20	10/95/5	<1/90/25	1/70/60

Species:

<i>Juncus squarrosus</i>	9	6	10	9	5	V	(5-10)
<i>Hylocomium splendens</i>	4	5		3	6	IV	(3-6)
<i>Rhytidiadelphus loreus</i>	3		4	5	6	IV	(3-6)
<i>Nardus stricta</i>	3	5		4	4	IV	(3-5)
<i>Anthoxanthum odoratum</i>	4	4			3	III	(3-4)
<i>Potentilla erecta</i>	3	3			3	III	(3)
<i>Rhytidiadelphus</i>	4	4		2		III	(2-4)

<i>squarrosus</i>							4)
<i>Empetrum nigrum</i>			3	2	3	III	(2-3)
<i>Polytrichum commune</i>	3	6				II	(3-6)
<i>Festuca ovina</i>	3	4				II	(3-4)
<i>Agrostis capillaris</i>		4		3		II	(3-4)
<i>Galium saxatile</i>	3	3				II	(3)
<i>Mnium hornum</i>	3			3		II	(3)
<i>Deschampsia flexuosa</i>				3	3	II	(3)
<i>Calluna vulgaris</i>			4	2		II	(2-4)
<i>Rumex acetosa</i>	4					I	(4)
<i>Polytrichum juniperinum</i>	4					I	(4)
<i>Dicranum scoparium</i>		4				I	(4)
<i>Pleurozium schreberi</i>				4		I	(4)
<i>Trichophorum cespitosum</i>					4	I	(4)
<i>Aulacomnium palustre</i>					4	I	(4)
<i>Hylocomium splendens</i>	3					I	(3)
<i>Luzula multiflora</i>		3				I	(3)
<i>Eriophorum angustifolium</i>				3		I	(3)
<i>Agrostis canina</i>					3	I	(3)
<i>Nathecium ossifragum</i>					3	I	(3)
<i>Campanula rotundifolia</i>		2				I	(2)
<i>Plagiothecium undulatum</i>				2		I	(2)
<i>Carex spp.</i>		1				I	(1)
Bare peat				4		I	(4)