Lissinagroagh Mountain Wind Farm

Annex I Habitat Report

FuturEnergy Ireland

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Quality information

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1. Introduction

1.1 Background

AECOM was appointed by FuturEnergy Ireland Development Designated Activity Company (FuturEnergy Ireland) to carry out a survey of the condition of Annex I habitats[1] at the proposed location of Lissinagroagh Mountain Wind Farm, Co. Leitrim, approximately 3-5 km north-east of Manorhamilton.

The surveyed area comprises three zones (the Sites) that were defined by FuturEnergy Ireland, each of which contains extensive blanket bog. In this Report, the Sites are referred to (from north to south) as Site A, Site B and Site C. They lie within the townships of Shasmore, Faughary and Boleyboy, respectively, and are shown in Figure 1 in Appendix A. Site A is by far the largest and encompasses the summit and nearby surroundings of Saddle Hill. Site B, the smallest, is a rectangular strip within commercial forestry between Saddle Hill and Dough Mountain, approximately 200 m long. Site C is an irregularly shaped open area at the edge of and between commercial forestry blocks west of Dough Mountain. Altitude rises from Site C in the south to Site A in the north, and ranges from 250 m to 375 m above sea level.

1.2 Summary description of the Sites

Figure 1, showing a map of the Annex I habitats subject to condition assessment (and non-Annex I habitats as Fossitt categories) is provided in Appendix A. Figure 2 in Appendix A shows the condition of the surveyed Annex I habitats. Condition monitoring data is given in Appendix B.

The Annex I vegetation in Site A primarily comprises H7130 Blanket bog, in places degraded by peat cutting, in the majority of cases (approximately 70% of assessment stops) failing one or more condition criteria (commonly including species-richness). For these reasons, most is not considered H7130* priority blanket bog[2]. There are also small extents of unremarkable H4030 European dry heaths, and local occurrences of heavily over-grazed limestone pavement constituting degraded H8240 Limestone pavements*. Non-Annex I habitat comprises over-grazed acid grassland, sometimes in mosaic with H4030 Dry heath. Near the southern edge of Site A, and the eastern edge of Site C, there are several steep depressions in the blanket bog, presumably resulting from sink-holes in the underlying limestone.

Site B is almost entirely H7130 Blanket bog. Parts of this are degraded by drying, cutting or conifer encroachment, however Site B also contains the best quality bog found during this survey. There is also a small amount of H4010 North Atlantic wet heaths with *Erica tetralix*.

Site C is mostly H7130 Blanket bog, frequently degraded by past disturbance, peat removal or conifer encroachment. There is also a substantial area of non-Annex I acid flush.

1.3 NPWS Article 17 data

The National Parks and Wildlife Service (NPWS) Article 17 data include a polygon overlapping part of Site A classed as H4060 Alpine and subalpine heath. However, no H4060 was found during this Annex I condition assessment survey. Heathy vegetation in the Site is mainly H7130 Blanket bog or occasionally H4030 European dry heaths. H4060 is a montane habitat type that typically occurs at higher altitude than the Sites.

[1] Habitats in this Report preceded by an alphanumeric code in the format 'Hxxxx' are Annex I habitats. These are habitats of European Community interest listed in Annex I of *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna* (the Habitats Directive). In summary, habitats of Community interest are those that: i) are in danger of disappearance in their natural range, ii) have a small natural range, or iii) are outstanding examples of habitats in (for Ireland) the Atlantic biogeographic zone.

[2] Priority Annex I habitat (shown with an asterisk, e.g. H7130*) means that point i) is considered to apply and there is a particular responsibility to conserve it owing to the large proportion of its range within the EU.

2. Method

2.1 Field survey

The survey was carried out on foot in the period 23 to 24 September 2024 by an AECOM habitat specialist with extensive experience of upland as well as lowland habitats. The weather during the survey was mostly dry and there were no hinderances to the survey.

Condition of Annex I habitat was recorded by making observations at various points during a walk through the habitat and recording the relevant condition criteria. The location of condition assessment points was judged by the surveyor to obtain condition data representative of the vegetation in question in that particular area (rather than sampling atypical or transitional patches). The condition criteria were as described in Perrin *et al.* (2014), with the exception of limestone pavement. For limestone pavement, which is not covered in Perrin *et al.* (2014), reference was made to Murphy and Fernandez (2009).

Vegetation stands considered to be homogenous were assigned Annex I or non-Annex I Fossitt habitat types, as described in Fossitt (2000). The Annex I habitats are those listed in Annex I of the EC Habitats Directive, with guidance on interpretation provided in European Commission (2013). Vegetation types can occur in patches too small to map amongst more extensive communities, or in complexes that cannot be feasibly mapped within a reasonable timescale, and in these cases mosaic polygons were used, or target notes for extremely small habitats. The aerial imagery assisted with identification and separation of vegetation patches. Notes on habitat features were recorded using ESRI FieldMaps.

2.2 Digitising

Field data recorded in ESRI FieldMaps were subsequently imported into ESRI ArcGIS. The habitat maps provided in Figure 1 were finalised using ESRI ArcGIS, with reference to the field mapping, tablet target notes and aerial photography.

The GIS habitat polygons were assigned attributes for Site name, townland, Fossitt habitat type, whether Annex I habitat or not, Annex I habitat code, Structure and Functions (i.e. current condition) and Overall Conservation Status. A comment attribute was also used where considered appropriate, to give descriptive information. The GIS habitat dataset was produced as a feature class within a file geodatabase, which automatically provides unique identifier, polygon area and polygon perimeter attributes. A check was carried out for errors such as small gaps and slivers, missing attributes or non-standard/incorrect attributes.

The Structure and Functions and Overall Conservation Status attributes contain abbreviations of the standard status terms. The abbreviations are: F = Favourable, UI = Unfavourable Inadequate and UB = Unfavourable Bad.

2.3 Nomenclature

This Report gives the scientific name of vascular plants on first mention of a species, following Stace (2019), and thereafter common names only (except in the Appendices where scientific names are used for brevity). English names of bryophytes and lichens are not well known therefore only scientific names have been used for these in all cases, following Atherton *et al.* (2010) for bryophytes, and Hodgetts (1992) for *Cladonia* spp. lichens.

2.4 Limitations

It is not possible to walk over every square metre of a site. The surveyor employed professional experience to judge where their survey route would best be laid to identify possible changes of condition and vegetation, using aerial photography combined with factors such as angle of slope, aspect, texture and hue of vegetation, and occurrences of features such as streams and rock outcrops, all of which can indicate changes of vegetation type or condition. This is normal for such habitat surveys and is not considered to significantly limit the findings. However, it should be noted that some small habitats that are easily hidden by other vegetation and/or not clear from aerial photography may have gone undetected.

The survey was carried out in late-September. Although this is at the end of the optimal survey period for moorland habitats, it is not considered an issue for assessment of bog and heath by an experienced surveyor. For limestone pavement, the late-September survey period may have resulted in underestimation of floristic diversity. However, the obviously over-grazed state of the small examples of limestone pavement in Site A suggest that this would be unlikely to affect the assessment of poor condition, regardless of the time of year of survey.

The boundaries between habitats in more natural situations can be gradual rather than sharp. In such cases, the surveyor made a best professional judgement as to where the boundary should be placed. In particular, wet heath and blanket bog commonly grade into each other. If known peat depths from a peat probing survey should indicate peat of 0.5 m deep or more in areas classed as wet heath (or, generally, any non-bog open habitat), then those areas of deeper peat should be regarded as (degraded) blanket bog. Conversely, if areas of wet heath vegetation on peat estimated to be sufficiently deep to warrant classification as degraded blanket bog are subsequently found to be on less than 0.5 m peat, then those areas (if significant) should be regarded as wet heath.

3. Condition of Annex I habitats

Figure 1, showing a map of the Annex I habitats subject to condition assessment, is provided in Appendix A. Figure 2 in Appendix A shows the condition of the surveyed Annex I habitats. Condition monitoring data are given in Appendix B.

In the below descriptions of habitat condition, Structure and Functions and Overall Conservation Status are rated as Favourable, Unfavourable Inadequate or Unfavourable Bad (as per Perrin *et al.* (2014)). For Overall Conservation Status, account is taken of area and Future Prospects in addition to Structure and Functions, in particular whether the state of the habitat is likely to be maintained or improved, or could realistically degrade in condition or area.

It is important to note that Overall Conservation Status is often unfavourable even if Structure and Functions is not, owing to unfavourable future prospects arising from existing pressures or a realistic potential for them (since these habitats are not in protected sites or otherwise subject to conservation management, and indeed are frequently subject to existing adverse impacts). However, there is often potential for future prospects to be rendered favourable by appropriate management (for example, under a habitat management plan). Consequently, Structure and Functions, which equates to current habitat condition, is more relevant than Overall Conservation Status for the purposes of indicating Annex I habitat condition.

Whilst some blanket bog (and occasionally wet heath) can support beak-sedges *Rhynchospora* spp., and then constitutes H7150 Depressions on peat substrates of the *Rhynchosporion* as well as H7130 or H4010, no beak-sedges were recorded during the survey, therefore this Annex I type is absent.

3.1 Site A (Saddle Hill)

Site A is dominated by H7130 blanket bog (locally H7130* priority blanket bog) but also contains more localised H4030 dry heath and, very locally, H8240* limestone pavement. According to supplied information, there is a proposed turbine within Site A, located on what is described below as cut-over degraded blanket bog.

3.1.1 H4030 European dry heaths

H4030 dry heath was only recorded at Site A, locally on Saddle Hill.

At the eastern corner of Site A, H4030 dry heath occurs on steep slopes adjacent to grazed acid grassland. It is dominated by heather *Calluna vulgaris*, with scattered bell heather *Erica cinerea* and green-ribbed sedge *Carex binervis*. There is abundant pleurocarpous moss, mainly *Rhytidiadelphus loreus* and *Hylocomium splendens*. Of three condition assessment stops here, two passed all criteria and one failed on low ericoid diversity (only heather present) and grazing pressure (the vegetation at this stop was all fairly short)[3]. Consequently, condition is Moderate and Structure and Functions is **Unfavourable Inadequate**. Overall Conservation Status is also considered **Unfavourable Inadequate** since there is no guarantee that grazing pressure would not increase.

In the vicinity of the summit of Saddle Hill, and in bands leading up to it, H4030 dry heath occurs in mosaic with acid grassland, where grazing pressure is obviously significant. At the two representative stops taken in this dry heath, both failed on positive indicators (no ericoids other than heather, although sparse bilberry *Vaccinium myrtillus* was noted occasionally in the wider vicinity) and diversity of heather phases, and partially on ericoid browsing. In general, this dry heath is clearly not in good condition owing to grazing pressure, which is the reason it exists in a mosaic with acid grassland (which under less grazing pressure would be dry heath). Consequently, condition is Poor, Structure and Functions is **Unfavourable Bad**, and (given continuing grazing pressure with no guarantee that grazing will not increase) Overall Conservation Status is also considered **Unfavourable Bad**.

Towards the north corner of Site A, a small narrow bank of H4030 dry heath (too small to map) within blanket bog was sampled. It comprises the damp form of dry heath which, by virtue of shade afforded by northerly aspect, supports abundant *Sphagnum capillifolium* amongst the heather. Bell heather is also present and pleurocarpous mosses are also abundant. The condition assessment stop carried out is representative of the entire bank and passed all condition criteria. Therefore condition is Good, Structure and Functions is **Favourable**, and (given continued poor accessibility to livestock) Overall Conservation Status is also **Favourable**.

Within the extensive eastern area of cut-over bog, a wide strip has been mapped as dry heath. It is probably a large area of historic peat removal, but given that there is now almost no peat present and it is more than wide

[3] Note that the criterion regarding heather phases nevertheless passes because that criterion does not apply to 'sensitive areas', which includes slopes of greater than 1 in 2 steepness.

enough to map, it has been separated as dry heath rather than degraded blanket bog. This dry heath is subject to fairly heavy grazing pressure, and the condition assessment stop (which is considered representative of the entire stand) fails on ericoid diversity (only heather present) and heather phases (only short heather present). Therefore condition is Poor, Structure and Functions is **Unfavourable Bad**, and (given likely continued grazing pressure and no guarantee that this would not increase) Overall Conservation Status is also **Unfavourable Bad**.

The final occurrence of H4030 dry heath is in the southern part of Site A, comprising a substantial, heavily grazed habitat mosaic dominated by dry heath, but with patches of acid grassland (which would be dry heath under less grazing pressure) and poor quality blanket bog vegetation forming minor components. Grazing pressure here is very heavy, such that heather is the only ericoid and it is invariably very short and mixed on a fine scale with acid grasses (in addition to the mosaic patches of pure acid grassland without any ericoids at all). Consequently, condition is Poor, Structure and Functions is **Unfavourable Bad**, and (given likely continued heavy grazing pressure and no guarantee that this would not increase) Overall Conservation Status is also **Unfavourable Bad**.

If all the H4030 in Site A is considered as a whole, and given that only an unmappably small bank of dry heath was Favourable, and by far the majority Unfavourable, then both Structure and Functions (i.e. current condition) and Overall Conservation Status must be rated as **Unfavourable Bad**.

3.1.2 H7130 / H7130* blanket bog

Most of the blanket bog in Site A is regarded as H7130 (non-priority) blanket bog for the reasons given. One area towards the western corner, as described further below, was considered H7130* priority blanket bog.

H7130 blanket bog towards the north-eastern edge of Site A, on generally sloping ground, is of the drier sort dominated by heather and hare's-tail cottongrass *Eriophorum vaginatum*. Partly for this reason, rather than necessarily poor management, it is invariably lacking in a sufficient number of the positive indicators listed by Perrin *et al.* (2014). Other than the aforementioned two species, cross-leaved heath *Erica tetralix*, *Sphagnum capillfolium* and bilberry are typically the only other recorded indicators. In places, the heather is grazed very short. In addition to positive indicator failures, two out of five assessment stops in this area failed on excessive cover of heather. In three further assessment stops in contiguous blanket bog around the southern slopes of Saddle Hill, there were two failures on positive indicators for similar reasons, although one stop narrowly passed all condition criteria; a large part of this zone is however considered most similar to an assessment stop in which only three positive indicators were recorded. All this bog is in at best Moderate condition, but owing to almost invariable positive indicator failures Structure and Functions must be regarded as **Unfavourable Bad**, and Overall Conservation Status (since management is unlikely to decrease grazing levels and could increase it) is also **Unfavourable Bad**. However, as already noted, part of the reason for poor positive indicators is that this is sloping and naturally drier blanket bog.

West of the summit (in the vicinity of a proposed turbine), H7130 blanket bog occurs on generally shallow to nearly flat slopes. This area has been subject to extensive peat extraction in the past, and is evidently in overall poor condition, and is hence classed as cut-over blanket bog. A substantial zone now with apparently negligible peat has been classified and mapped as dry heath and is described above under H4030. Bog vegetation in the mapped cut-over bog again tends towards the drier type with much heather and hare's-tail cottongrass, although *Sphagnum papillosum* was noted at or near two assessment stops in small to very small quantity. Common cottongrass *Eriophorum angustifolium* is occasional throughout this area. Of five assessment stops, one passed all condition criteria but only narrowly passed on positive indicators (with a small amount of *Sphagnum papillosum*); another also passed on positive indicators but the amount of *Sphagnum papillosum* was extremely small, presence of heath rush *Juncus squarrosus* was a negative feature suggestive of grazing pressure, and there were drainage/trampling pressures. Another two of the stops also failed on drainage from trampling/cutting, two on excessive heather cover, and one on excessive bare peat. There are some standing islands of dried peat with consequent degraded bog vegetation. Overall, this zone is in Poor condition, Structure and Functions is **Unfavourable Bad**, and Overall Conservation Status (since management is unlikely to change positively) is also **Unfavourable Bad**.

Bog towards the western corner of Site A is in better condition overall. Three of four assessment stops passed all condition criteria. The one that failed showed insufficient positive indicators and excessive cover of heather. Positive indicators in this zone include bog asphodel *Narthecium ossifragum*, *Racomitrium lanuginosum*, *Sphagnum papillosum* (although not generally abundant) and *Cladonia* spp. Parts of this zone appear to have been more historically cut-over, but overall it now appears to be in reasonable condition with no sign of more recent cutting or the degree of damage exhibited by the zone further east towards the summit. Therefore it is considered H7130* priority blanket bog, and Structure and Functions is considered **Favourable**. Overall

Conservation Status is **Unfavourable Inadequate** since future degradation by increased grazing or possibly renewed peat extraction cannot be ruled out.

The H7130 blanket bog between the access track and southern corner of Site A is quite variable. Closer to the access track and away from the periphery, it exhibits signs of over-grazing with short heather and frequent heath rush; locally, there is also some excessive bare peat exposure resulting from grazing pressure. However, towards the southern edge, the bog vegetation is more natural and passed all condition criteria, near the southern boundary, there are also deep depressions in the blanket bog which appear likely to be the result of underlying sink-holes in the limestone beneath, and these may be regarded as notable features of interest. Overall, therefore, this zone is considered to be in Moderate condition, and Structure and Functions is **Unfavourable Inadequate**. Overall Conservation Status is also **Unfavourable Inadequate** because grazing pressure is unlikely to reduce and could increase.

Finally, there is a zone of relatively flat bog between Saddle Hill and the conifer plantation to the east. Part of this has been historically cut-over and has been classed as cut-over blanket bog – this exhibits reduced positive indicators, in particular at the southern end where peat depth is probably now shallow and hare's-tail cottongrass is rather sparse. The more northerly cut-over area in this zone is now quite wet in the lower-lying areas, with transitional vegetation containing mixed bog and acid sphagna (mainly *Sphagnum papillosum, Sphagnum palustre* and *Sphagnum fallax*, rarely *Sphagnum cuspidatum*) amongst hare's-tail cottongrass with scattered heather, cross-leaved heath and heath rush. Surrounding these historically cut-over areas is a band of blanket bog vegetation on obviously higher and deeper peat. The vegetation here failed on positive indicators on two out of three assessment stops, and it is evidently rather dry with the typical dominance in such situations of hare's-tail cottongrass and heather; however, there is rarely some *Sphagnum papillosum*, and cross-leaved heath is generally present as well as common cottongrass. The dryness probably results in part from the adjacent historically-cut areas, however it also seems likely to be drier as a result of underlying limestone which appears to have resulted in sink-holes with associated steep depressions in the blanket bog. Owing to the partial failure of positive indicators, Structure and Functions is regarded as **Unfavourable Inadequate**, and (since the vegetation and conditions affecting it are likely to remain the same) Overall Conservation Status also **Unfavourable Inadequate**. However, the presumed limestone sink-holes and associated blanket bog depressions may be regarded as notable features.

3.1.3 H8240* limestone pavement

There are several small to very small occurrences of H8240* limestone pavement (a priority Annex I habitat type, as indicated by the suffixed asterisk) on the southern slope of Saddle Hill and towards the southern edge of Site A. These are not the type of limestone pavement in which limestone is almost continuous aside from narrow gaps (grykes), but rather the sort where individual small, raised exposures of limestone rock (clints) are separated by a significant network of grazed grassland. The clints are often not particularly pavement-like but are quite irregular. The best example is the most southern mapped extent shown on the map in Figure 1. The clints here come closest to a pavement-like appearance, but the amount of grassland amongst the limestone is still substantial.

Limestone pavement is not included in Perrin *et al.* (2014) and it was not certain at the time of survey which method of assessment would be most appropriate for limestone pavement. Therefore notes were taken and condition assessment was in part carried out retrospectively using guidance in Murphy and Fernandez (2009). However, there is obvious over-grazing as vegetation on, around and in the grassland between the clints is invariably grazed very short. The only taller plants noted were thistles *Cirsium* spp., which are quite frequent and listed as negative species for exposed limestone pavement in Murphy and Fernandez (2009). Generally, the only notable plant recorded was thyme *Thymus drucei*, which occurs occasionally on the clints themselves and more commonly around their lower edges. Rarely, in one location just north of the access track, maidenhair fern *Asplenium trichomanes* was recorded. These were the only recorded positive indicator species from the list for exposed limestone pavement provided in Murphy and Fernandez (2009). Although the later season of survey could have caused some species to be missed (particularly vernal species), and very short-grazed grasses would also be difficult to identify, the surveyor is reasonably competent at recognising basal leaves of plants, and ferns can be identified late into the year. Together with the degree of over-grazing, as judged by the extreme shortness of vegetation, it is considered unlikely that any of the mapped limestone pavement fragments would support seven or more of the positive indicators listed in Murphy and Fernandez (2009) required for favourable condition. Consequently, all the mapped fragments of H8240* limestone pavement are in Poor condition, Structure and Functions is **Unfavourable Bad**, and given that heavy over-grazing is very likely to persist Overall Conservation Status is also **Unfavourable Bad**.

3.1.4 Non-Annex I habitat

Non-Annex I habitat in Site A comprises the following:

- GS3 Dry/humid acid grassland – short-grazed acid grassland comprising typical species (e.g. heath bedstraw *Galium saxatile*, common bent *Agrostis capillaris* and mat-grass *Nardus stricta*), sometimes with scattered soft-rush *Juncus effusus*, occurs along the existing access track and on more heavily-grazed ground adjacent to it and at various patches and strips across Site A. It also occurs in mosaic with H4030 dry heath on grazed strips without peat leading up to and near the summit of Saddle Hill; and,
- PF2 Poor (acid) flush – towards the east edge of Site A, an acid flush has been separately mapped. It is narrow, sloping and dominated by *Sphagnum fallax* with frequent bulbous rush *Juncus bulbosus* and scattered common sedge *Carex nigra* and star sedge *Carex echinata*.

3.2 Site B (small rectangle)

Site B mainly comprises H7130 blanket bog (both H7130* priority blanket bog and H7130 degraded blanket bog), but also a small amount of H4010 North Atlantic wet heaths with *Erica tetralix*. According to supplied information, the nearest proposed turbine is approximately 80 m to the north-east, with intervening conifer plantation. The intact H7130* priority blanket bog described below is further buffered from this turbine location by degraded H7130 blanket bog around the northern end of Site B.

3.2.1 Annex I H4010 North Atlantic wet heaths with *Erica tetralix*

H4010 wet heath was only found in the south-west corner of Site B. It lies between areas of conifer plantation and above flatter bog vegetation, on a fairly steep slope where peat depth was assumed to be shallow (and hence the vegetation classified as wet heath rather than degraded blanket bog). The dominant species are purple moor-grass *Molinia caerulea*, heather and the moss *Sphagnum capillifolium*, although the moss *Racomitrium lanuginosum* is frequent (not indicative of great wetness). The vegetation is not floristically rich, the only other species noted being cross-leaved heath, bell heather (also not indicative of wetness) and tormentil *Potentilla erecta*.

This small patch of H4010 was subject to one condition assessment stop, which is representative of the entirety of the stand. All condition criteria passed, therefore condition is Good, and Structure and Functions is **Favourable**. This area is within a conifer plantation and could well be planted with conifers in future, therefore future prospects is considered **Unfavourable Inadequate**. However, the extent of this patch is small, it is isolated, and it constitutes a common form of wet heath that is not floristically notable.

3.2.2 H7130 / H7130* blanket bog

The more low-lying part of Site B supports a substantial area of intact H7130 blanket bog in which (over five condition assessment stops) all condition criteria passed with the exception of a single failure for drainage. Eight to ten positive indicators were recorded at these assessment stops. This bog is of the heather/hares-tail cottongrass type, but cross-leaved heath is invariably present and often abundant, there is often also abundant bog asphodel, deer-grass *Trichophorum germanicum* is locally frequent, and frequent lower plants include the indicator species *Racomitrium lanuginosum*, *Sphagnum capillifolium*, *Sphagnum papillosum*, *Sphagnum tenellum* and *Cladonia* spp., as well as (notably) *Polytrichum strictum* at one stop (this is a species commonly associated with sphagnum in blanket bog). This zone of intact bog constitutes H7130* priority blanket bog, and is in Good condition. Consequently, Structure and Functions is **Favourable**; since it is not known whether this zone will remain unplanted by conifers, Overall Conservation Status is considered **Unfavourable Inadequate**.

The other blanket bog in Site B is in reduced condition and is considered non-priority H7130 blanket bog. Low-lying bog to the south-west is colonised by encroaching conifers to an unfavourable degree, and one of two condition assessment stops exhibited insufficient positive indicators. The strip adjacent to the Sitka spruce *Picea sitchensis* plantation to the north resembles wet heath (dominated by purple moor-grass with heather/cross-leaved heath) but appears to be on deep peat and is therefore classed as degraded bog. Similar vegetation, but with sporadic hare's-tail cottongrass, occurs in the degraded bog in the northern section. Of five condition assessment stops in these degraded bog areas, three exhibited insufficient positive indicators, and there were three failures in separate stops of tree cover (conifer encroachment), drainage and erosion. There are also some previously cut-over patches in which either purple moor-grass or hare's-tail cottongrass overwhelmingly dominate and positive indicators are clearly lacking, or conifer encroachment is excessive. All these areas are therefore in Poor condition, Structure and Functions is **Unfavourable Bad**, and Overall Conservation Status (since

management and the negative aspects leading to degradation are likely to continue, with possible decreased bog extent if encroaching conifers continue to develop) is also considered **Unfavourable Bad**.

3.2.3 Non-Annex I habitat

The only non-Annex I habitat in Site B comprises peripheral strips of conifer plantation.

3.3 Site C (southern Site)

The only Annex I habitat in Site C is H7130 blanket bog; none is considered H7130* priority blanket bog. According to supplied information, the nearest proposed turbine is approximately 90 m to the west, in conifer plantation.

3.3.1 H7130 blanket bog

Vegetation in H7130 Blanket bog at the southern end of Site C is very thick and tussocky. The only vascular indicators are heather, hare's-tail cottongrass, cross-leaved heath and bilberry, and there is abundant purple moor-grass. The only sphagnum is *Sphagnum capillifolium* and most of the bryophyte component is pleurocarpous moss such as *Hylocomium splendens*. Although overall there is less than 10% tree cover, there is a lot of developing immature Sitka spruce, and there is drainage arising from peripheral forestry ditches. Of three condition assessment stops carried out here, all failed on positive indicators and drainage, and one on tree cover. Therefore condition is Poor, Structure and Functions is **Unfavourable Bad** and (since drainage and further tree encroachment is likely to continue) Overall Conservation Status is **Unfavourable Bad**.

In the central part of Site C there is a separately-mapped zone of extremely badly degraded blanket bog where most (perhaps almost all, but would require peat probing data to demonstrate it) of the peat has been cut and removed, the ground is heavily disturbed by people and vehicles, and peat turves are stored (presumably extracted somewhere nearby, but not from any of the Sites). The vegetation does not in any way resemble blanket bog (short rushes, sedges and grasses), and if peat probing data are available that indicate peat depth of less than 0.5 m (which seems possible), then this zone would be better reclassified as non-bog. As assessed (as bog), it is very evidently in extremely Poor condition, Structure and Functions is **Unfavourable Bad** and Overall Conservation Status is **Unfavourable Bad** (since this zone is likely to continue to be used for local peat turf storage).

The central zone north of the peat storage area has probably been partly cut-over historically but it is difficult to be certain of the extent. It is again very tussocky, and generally similar to the vegetation described at the south end of Site C, except that Sitka spruce colonisation is mostly absent. One of four condition assessment stops in this zone was exceptional in that there were sufficient positive indicators (including bog asphodel, *Sphagnum papillosum* and *Sphagnum cuspidatum*) and all condition criteria passed. However, the other three stops are representative of the vast majority of this zone, and these all failed on positive indicators, and two failed on excessive cover of purple moor-grass. Consequently, condition is Poor, Structure and Functions is **Unfavourable Bad** and (since management and/or the nature of the vegetation is unlikely to change) Overall Conservation Status is **Unfavourable Bad**. However, it should be noted that the eastern section adjacent to the conifer plantation includes a couple of deep depressions which presumably result from sink-holes in the underlying limestone, and these may be regarded as a notable features.

The centre-north part of Site C is separated at the north and south ends by east-west livestock fences running between the plantation blocks. Therefore livestock do not access this area, although deer will still do so. Parts of this area have been historically cut-over although it is difficult to be certain of the extent. It is very tussocky and again generally similar to the blanket bog vegetation described previously, and is quite species-poor with much purple moor-grass; however there is a zone of rushy, acid flush (poor fen) in the east, and the bog next to the flush appears to have been disturbed in historically, supporting fairly species-poor hare's-tail cottongrass with much soft-rush and wavy hair-grass *Avenella flexuosa*, as well as about 30% acid flush vegetation with soft-rush – four condition assessment stops here all failed on positive indicators, mostly by a considerable margin. This zone is evidently in Poor condition, and management is unlikely to change, thus Structure and Functions and Overall Conservation Status are **Unfavourable Bad**.

The northern-most strip that is accessible to livestock is less tussocky but also failed in four condition assessment stops on number of positive indicators (no more than five instead of the required seven or more, with the sphagnum component mainly represented by *Sphagnum capilifolium* and uncommonly *Sphagnum papillosum*). No other criteria failed. There is a substantial amount of further additional acid flush vegetation in this northern strip (separately mapped), and a small amount of transitional bog-flush. Condition is considered Moderate, but

since positive indicators always failed Structure and Functions must be rated as **Unfavourable Inadequate**, and Overall Conservation Status (given the management is unlikely to change, and grazing pressure could increase) is also **Unfavourable Inadequate**.

3.3.2 Non-Annex I habitat

Non-Annex I habitat in Site C comprises the following:

- PF2 Poor (acid) flush – there are two substantial swathes of wet, acid, rush-dominated vegetation in the northern part of Site C, which join together. Most of the vegetation is dominated by soft-rush, *Sphagnum fallax* and *Polytrichum commune*. A minority is essentially the same but sharp-flowered rush *Juncus acutiflorus* replaces the soft-rush. There is also a small amount of species-poor hare's-tail cottongrass within this flush, and an unmappably-small amount of acid grassland on a peat ridge; and,
- GS3 Dry/humid acid grassland – disturbed grassy and rushy vegetation closest to acid grassland occupies a narrow zone used to access the peat storage area in the centre-south of Site C. There is also an unmappably-small amount of acid grassland (with typical species such as heath bedstraw, common bent and mat-grass) on a peat ridge within the above-described acid flush vegetation.

4. References

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Appendix A Figures

Revision: 0 Drawn: ND Checked: TM Approved: EB Date: 2024-07-31

591000

844000

SITE A

N

1:3,000 @ A3

0 50 100 200 m

bing

AECOM

PROJECT

Lissinagroagh Wind Farm

CLIENT

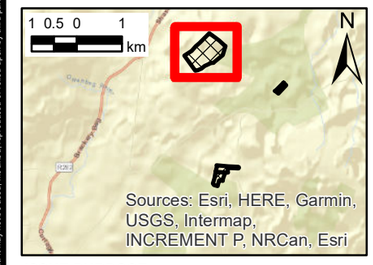
FuturEnergy Ireland

CONSULTANT

AECOM Ireland Limited
4th Floor Adelphi Plaza
George's Street Upper
Dun Laoghaire, A96 T927
www.aecom.com

LEGEND

- Proposed turbine
- Survey sites
- Annex I H4030 (part); HH1/GS3 dry heath/acid grassland mosaic
- Annex I H4030; HH1 dry heath
- Annex I H7130*; PB2 blanket bog
- Annex I H7130; PB2deg blanket bog (other degraded)
- Annex I H7130; PB4 blanket bog (cut-over)
- Annex I H8240; ER2 limestone pavement
- Non-Annex I GS3 dry/humid acid grassland
- Non-Annex I PF2 poor (acid) flush
- Locations of steep depressions in blanket bog, presumed to arise from underlying limestone sink-holes



ISSUE PURPOSE

FINAL

PROJECT NUMBER

60728407

FIGURE TITLE

Annex I and Fossitt habitats

FIGURE NUMBER

Figure 1 Sheet 1 of 3

Revision: 0 Drawn: ND Checked: TM Approved: EB Date: 2024-07-31

593000

844000

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SITE B

1:2,000 @ A3

0 50 100 200 m

bing

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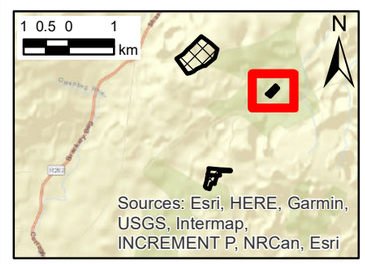
LEGEND

- Proposed turbine
- Survey sites
- Annex I H4010; HH3 wet heath
- Annex I H7130*; PB2 blanket bog
- Annex I H7130; PB2deg blanket bog (other degraded)
- Annex I H7130; PB4 blanket bog (cut-over)
- Non-Annex I WD4 conifer plantation



ISSUE PURPOSE

FINAL

PROJECT NUMBER

60728407

FIGURE TITLE

Annex I and Fossitt habitats

FIGURE NUMBER

Figure 1 Sheet 2 of 3

Revision: 0 Drawn: ND Checked: TM Approved: EB Date: 2024-07-31

592000

842000

SITE C

N

1:3,000 @ A3

0 50 100 200 m

bing

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CONSULTANT

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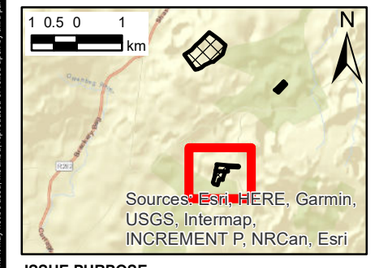
LEGEND

- Proposed turbine
- Survey sites
- Annex I H7130; PB2deg blanket bog (other degraded)
- Annex I H7130; PB4 blanket bog (cut-over)
- Non-Annex I GS3 dry/humid acid grassland
- Non-Annex I PF2 poor (acid) flush
- Non-Annex I WD4 conifer plantation
- Locations of steep depressions in blanket bog, presumed to arise from underlying limestone sink-holes



ISSUE PURPOSE

FINAL

PROJECT NUMBER

60728407

FIGURE TITLE

Annex I and Fossitt habitats

FIGURE NUMBER

Figure 1 Sheet 3 of 3

Revision: 0 Drawn: ND Checked: TM Approved: EB Date: 2024-07-31

591000

844000

SITE A

N

1:3,000 @ A3

0 50 100 200 m

bing

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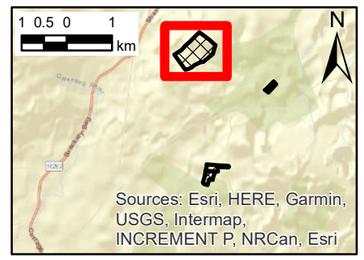
LEGEND

- Proposed turbine
- Survey sites
- Favourable
- Unfavourable Inadequate
- Unfavourable Bad
- Non-Annex I habitat



ISSUE PURPOSE

FINAL

PROJECT NUMBER

60728407

FIGURE TITLE

Condition ('Structure and functions') of Annex I habitats

FIGURE NUMBER

Figure 2 Sheet 1 of 3

Revision: 0 Drawn: ND Checked: TM Approved: EB Date: 2024-07-31

844000

593000

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SITE B

1:2,000 @ A3

0 50 100 200 m

bing

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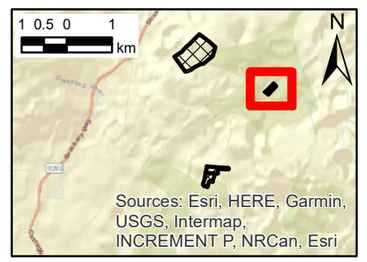
www.aecom.com

LEGEND

- Proposed turbine
- Survey sites
- Favourable
- Unfavourable Bad
- Non-Annex I habitat



ISSUE PURPOSE

FINAL

PROJECT NUMBER

60728407

FIGURE TITLE

Condition ('Structure and functions') of Annex I habitats

FIGURE NUMBER

Figure 2 Sheet 2 of 3

Revision: 0 Drawn: ND Checked: TM Approved: EB Date: 2024-07-31

592000

842000

SITE C

N

1:3,000 @ A3

0 50 100 200 m

bing

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Lissinagroagh Wind Farm

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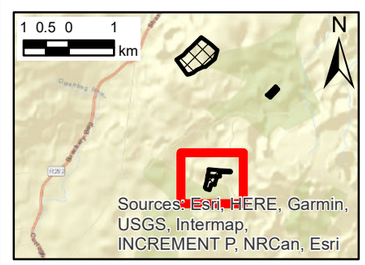
LEGEND

- Proposed turbine
- Survey sites
- Unfavourable Inadequate
- Unfavourable Bad
- Non-Annex I habitat



ISSUE PURPOSE

FINAL

PROJECT NUMBER

60728407

FIGURE TITLE

Condition ('Structure and functions') of Annex I habitats

FIGURE NUMBER

Figure 2 Sheet 3 of 3

Appendix B Condition monitoring data

Unless otherwise stated, the extent over which the condition criteria for Annex I habitats in the following tables are assessed is indicated as follows (as per Perrin *at al.* (2014)):

- plain text = assessed in quadrat area;
- **bold** = assessed over wider surrounding area; and,
- ***bold italic*** = assessed over both of the above extents.

The first row below the headers in the below tables indicates the location of the assessment stops, where ‘A’, ‘B’ and ‘C’ mean ‘Site A’, ‘Site B’ and ‘Site C’.

H4010 North Atlantic wet heaths with *Erica tetralix*

Condition criterion: **Stop: 1**

[Location]	B, SW corner
Erica tetralix present in 20 m radius	**Pass**
* At least 50% cover positive indicators	**Pass**
At least 10% cover *Cladonia* / *Sphagnum* / *Racomitrium lanuginosum* / pleurocarpous moss	**Pass**
At least 15% cover ericoids / *Empetrum nigrum*	**Pass**
<50% cover dwarf shrubs	**Pass**
<1% cover TOGETHER *Agrostis capillaris*, *Holcus lanatus*, *Phragmites australis*, *Pteridium*, *Ranunculus repens*	**Pass**
<1% cover non-native species	**Pass**
<20% cover trees/scrub	**Pass**
<10% cover *Pteridium aquilinum* / *Juncus effusus*	**Pass**
<10% crushed/broken/pulled-up sphagnum	**Pass**
<33% ericoid / *E. nigrum* / *Myrica gale* shoots browsed	**Pass**
No burning into bryophyte/lichen layer or bare peat	**Pass**
**** No burning of sensitive areas**	**Pass**
<10% cover disturbed bare ground	**Pass**
<10% drainage by cutting/ditches/tracking/trampling	**Pass**

* Positive vascular indicators = *Eriophorum angustifolium, Trichophorum germanicum, Calluna, Erica tetralix, Myrica, Potentilla erecta, Carex spp., Rhychospora spp., Schoenus spp., Drosera spp., Narthecium, Pedicularis spp., Polygala spp., Salix repens, Succisa*.

Positive bryophyte/lichen indicators = *Sphagnum spp.*, pleurocarpous mosses, *Pleurozia, Breutelia, Diplophyllum albicans,* non-crustose lichens.

** Sensitive areas = slopes >1 in 3, gully sides, areas with abundant bryophytes/lichens or pools etc, <10 m from watercourses, <50 m from drains, >400 m altitude, severely wind-clipped vegetation, and soils <5 cm deep.

H4030 European dry heaths

Condition criterion:	Stop:	1	2	3	4	5	6	7	8
[Location]		A, eastern corner			A, vicinity of summit of hill		A, very small bank in north	A, zone within cut-over bog	A, zone in southern part
>2 bryophytes / non-crustose lichens (excluding *Campylopus* spp. or *Polytrichum* spp.)		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Fail**
* At least 2 positive indicators		**Fail**	**Pass**	**Pass**	**Fail**	**Fail**	**Pass**	**Fail**	**Fail**
At least 50% cover positive indicators (50-75% if basic heath)		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<50% cover TOGETHER *Myrica / Salix repens / Ulex gallii*		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<1% cover TOGETHER *Cirsium arvense/vulgaris, Ranunculus repens,* large *Rumex* spp., *Jacobaea vulgaris* or *Urtica dioica*		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<1% cover non-native species		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<20% cover trees/scrub		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<10% cover *Pteridium aquilinum* or *Juncus effusus*		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<50% cover senescent *Calluna*		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<33% ericoid / *Empetrum nigrum* shoots browsed		**Fail**	**Pass**	**Pass**	**Fail**	**Pass**	**Pass**	**Pass**	**Pass**
**** No burning of sensitive areas**		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
Outside sensitive areas all *Calluna* phases present throughout + at least 10% cover mature *Calluna*		**Pass**	**Pass**	**Pass**	**Fail**	**Fail**	**Pass**	**Fail**	**Fail**
<10% cover disturbed bare ground		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

* Positive indicators (all are vascular) = *Calluna, Erica cinerea, Vaccinium myrtillus, Vaccinium vitis-idaea, Empetrum nigrum, Arctostaphylos* spp.*, Ulex gallii, Daboecia*.

** Sensitive areas = soil <5 cm deep, slopes >1 in 2, gully sides, areas with abundant bryophytes/lichens (including equivalents of NVC H21/22), areas with clear unevenness in heather, pools/erosion areas, <10 m from watercourses.

H7130*/H7130 Blanket bog

Condition criterion:	Stop:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
[Location]		C, southern-most square area			C, peat store	C, centre, either side of north-south grassy access path leading to peat storage area				C, centre-north, livestock-fenced to north and south				C, northern east-west strip, accessible to livestock			
* At least 7 positive indicator species		Fail	Fail	Fail	Fail	Fail	Fail	Pass	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail	Fail
At least 10% cover bryophytes/lichen (excluding *Sphagnum fallax*)		Pass	Pass	Pass	Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
<75% cover EACH *Calluna, Eriophorum vaginatum, Molinia, Trichophorum germanicum, Schoenus*, *Eleocharis multicaulis*		Pass	Pass	Pass	Pass	Fail	Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
<1% cover TOGETHER *Agrostis capillaris*, *Holcus lanatus*, *Phragmites australis*, *Pteridium*, *Ranunculus repens*		Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
<1% cover non-native species		Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
<10% cover trees/scrub		Pass	Pass	Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
<10% crushed/broken/pulled-up sphagnum		Pass	Pass	Pass	Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
<33% ericoid, *Empetrum nigrum* or *Myrica gale* shoots browsed		Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
No burning into bryophyte/lichen layer or bare peat		Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
**** No burning of sensitive areas**		Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
<10% cover disturbed bare ground		Pass	Pass	Pass	Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
<10% drainage by cutting/ditches/tracking/trampling		Fail	Fail	Fail	Fail	Pass	Pass	Pass	Pass	(Pass)	(Pass)	Pass	Pass	Pass	Pass	Pass	Pass
<5% cover erosion gullies/areas within bog mosaic		Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Condition criterion:	Stop:	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
[Location]		B, intact bog	B, degraded bog to SW			B, intact bog			B, degraded bog to NE		B, intact bog	A, bog towards north-eastern edge					
* At least 7 positive indicator species		**Pass**	**Pass**	**Fail**	**Fail**	**Pass**	**Pass**	**Pass**	**Pass**	**Fail**	**Pass**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
At least 10% cover bryophytes/lichen (excluding *Sphagnum fallax*)		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<75% cover EACH *Calluna, Eriophorum vaginatum, Molinia, Trichophorum germanicum, Schoenus*, *Eleocharis multicaulis*		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Fail**	**Pass**	**Fail**	**Fail**	**Pass**	**Pass**
<1% cover TOGETHER *Agrostis capillaris*, *Holcus lanatus*, *Phragmites australis*, *Pteridium*, *Ranunculus repens*		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<1% cover non-native species		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<10% cover trees/scrub		**Pass**	**Fail**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<10% crushed/broken/pulled-up sphagnum		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<33% ericoid, *Empetrum nigrum* or *Myrica gale* shoots browsed		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
No burning into bryophyte/lichen layer or bare peat		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
**** No burning of sensitive areas**		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<10% cover disturbed bare ground		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<10% drainage by cutting/ditches/tracking/trampling		**Pass**	**Pass**	**Pass**	**Fail**	**Fail**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<5% cover erosion gullies/areas within bog mosaic		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Fail**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

Condition criterion:	Stop:	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
		A, cut-over bog west of summit						A, bog in south-west corner below access track				A, partially cut-over bog towards southern corner of Site, local presumed sink-holes				
* At least 7 positive indicator species		**Pass**	**Fail**	**Pass**	**Fail**	**Fail**	**Fail**	**Fail**	**Pass**	**Pass**	**Pass**	**Fail**	**Fail**	**Pass**	**Pass**	**Pass**
At least 10% cover bryophytes/lichen (excluding *Sphag. fallax*)		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<75% cover EACH *Calluna, Eriophorum vaginatum, Molinia, Trichophorum germanicum, Schoenus*, *Eleocharis multicaulis*		**Pass**	**Pass**	**Pass**	**Pass**	**Fail**	**Fail**	**Fail**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<1% cover TOGETHER *Agrostis capillaris*, *Holcus lanatus*, *Phragmites australis*, *Pteridium*, *Ranunculus repens*		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<1% cover non-native species		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<10% cover trees/scrub		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<10% crushed/broken/pulled-up sphagnum		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<33% ericoid, *Empetrum nigrum* or *Myrica gale* shoots browsed		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
No burning into bryophyte/lichen layer or bare peat		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
**** No burning of sensitive areas**		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<10% cover disturbed bare ground		**Pass**	**Pass**	**Pass**	**Pass**	**Fail**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Fail**
<10% drainage by cutting/ditches/tracking/trampling		**Pass**	**Fail**	**Fail**	**Fail**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<5% cover erosion gullies/areas within bog mosaic		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

Condition criterion:	Stop:	48	49	50	51	52	53	54
		A, bog south/south-west of summit			A, flatter bog between Saddle Hill and plantation to east			
* At least 7 positive indicator species		**Pass**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Pass**
At least 10% cover bryophytes/lichen (excluding *Sphag. fallax*)		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<75% cover EACH *Calluna, Eriophorum vaginatum, Molinia, Trichophorum germanicum, Schoenus*, *Eleocharis multicaulis*		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<1% cover TOGETHER *Agrostis capillaris*, *Holcus lanatus*, *Phragmites australis*, *Pteridium*, *Ranunculus repens*		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<1% cover non-native species		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<10% cover trees/scrub		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<10% crushed/broken/pulled-up sphagnum		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<33% ericoid, *Empetrum nigrum* or *Myrica gale* shoots browsed		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
No burning into bryophyte/lichen layer or bare peat		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
**** No burning of sensitive areas**		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<10% cover disturbed bare ground		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<10% drainage by cutting/ditches/tracking/trampling		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**
<5% cover erosion gullies/areas within bog mosaic		**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

* Positive vascular indicators = *Eriophorum angustifolium, Eriophorum vaginatum, Trichophorum germanicum, Calluna, Erica tetralix, Vaccinium myrtillus, Empetrum nigrum, Myrica, Rhynchospora* spp*., Schoenus* spp*., Drosera* spp*., Narthecium, Menyanthes, Andromeda, Carex bigelowii, Pedicularis* spp*., Pinguicula* spp*., Polygala* spp*.*

Positive bryophyte/lichen indicators = *Sphagnum* spp*., Pleurozia, Odontoschisma, Racomitrium lanuginosum, Breutelia, Diplophyllum albicans, Scapania gracilis*, non-crustose lichens.

** Sensitive areas = slopes >1 in 3, gully sides, areas with abundant bryophytes/lichens or pools etc, <10 m from watercourses, <50 m from drains, >400 m altitude.