

Corbo Bog (SAC 002349), Co.

Roscommon

Executive Summary

This survey, carried out in October and November 2012, aimed to assess the conservation status of habitats listed on Annex I of the European Habitats Directive (92/43EEC) on the high bog at Corbo Bog. Vegetation was described and mapped based on raised bog ecotope vegetation community complexes (Kelly and Schouten, 2002). The following Annex I habitats occur: Active Raised Bog, Degraded Raised Bog and Depressions on peat substrates of the Rhynchosporion.

Active Raised Bog covers 15.52ha (16.01%) of the high bog area. High quality Active Raised Bog comprises only 3.69ha, consisting of both central ecotope (2.60ha) and active flushes (1.09ha). The micro-topography of central ecotope consists of low hummocks, high hummocks, hollows, lawns and pools. Pools occupy a substantial part of central ecotope, reaching 51-75% cover in the wettest areas. Most pools have a very high cover of *Sphagnum cuspidatum*, while *S. papillosum* and *S. magellanicum* are frequent at pool edges. Hummocks dominated by *Leucobryum glaucum*, *Racomitrium lanuginosum* or *Sphagnum austinii* are present in the interpool areas. Total *Sphagnum* cover is over 50% throughout the central ecotope, and in the range of 76-90% in the wettest parts. Active flushes consist of low hummocks, high hummocks, hollows and pools. Some of the flush pools are very large (up to approximately 10m x 10m) and may be better classed as soaks. The *Sphagnum* cover in these pools/soaks is in the range 76-90%, and is composed largely of *S. cuspidatum*, with *S. magellanicum* common at the edges. Also recorded in the *Sphagnum* layer were the typical flush species *Empetrum nigrum*, *Vaccinium oxycoccos* and *Andromeda polifolia*. The inter-pool vegetation is largely dominated by *Calluna vulgaris* (up to 51-75% cover) and *Sphagnum capillifolium* (34-50%), with scattered *Molinia caerulea* also present.

Degraded Raised Bog covers 81.43 ha (83.99%) of the high bog area. It is drier than Active Raised Bog and supports a lower density of *Sphagnum* mosses, although *Sphagnum* cover is in the range of 26-33% in the wetter of the sub-marginal community complexes recorded. It has a less developed micro-topography and permanent pools and *Sphagnum* lawns are mostly absent. Pools are present, however, at up to 10% cover, in some of the wetter community complexes. These pools are mostly

of an open water or algal type, with a very patchy cover of *Sphagnum cuspidatum*. Degraded Raised Bog at Corbo Bog also encompasses some inactive flushes, and other occasional small patches of flush vegetation that were mapped as isolated points, rather than labelled as distinct flush areas.

Depressions on peat substrates of the Rhynchosporion are found in both Active and Degraded Raised Bog, but tend to be best developed and most stable in the wettest areas of Active Raised Bog. At Corbo Bog, this habitat was most common in the sub-central community complex 4/15.

The current conservation objective for Corbo Bog is to restore the area of Active Raised Bog to the area present when the Habitats Directive came into force in 1994. In the case of Active Raised Bog, the objective also includes the restoration of all of the sub-marginal ecotope present at the time as this represents the area of Degraded Raised Bog most technically feasible to restore. The Area objective for Active Raised Bog is 27.59ha. The objective in relation to Structure and Functions (S&Fs) is that at least half of the Active Raised Bog area should be made up of the central ecotope and active flush (i.e. the wetter vegetation communities). These values have been set as Favourable Reference Values or FRVs until more site specific values can be set based on hydrological and topographical studies. The objective for Degraded Raised Bog is for the sub-marginal area to be restored to active peat forming communities as stated above and that no loss or degradation of any kind occurs. Although FRVs could not be established for the Rhynchosporion depressions, the objectives are to increase its extent and to improve its quality to values associated with a favourable conservation status of Active Raised Bog. Therefore, the habitat's objectives are indirectly associated with Active Raised Bog objectives.

There has been a slight decrease in the area of Active Raised Bog (-0.15ha) at Corbo Bog in the 2004 to 2012 period. This has mostly taken place around the centre of the site, where the decrease in area of a formerly very large tract of central ecotope habitat (C1), has been attributed, in part, to drying of the bog brought about by the relatively intensive turf cutting activity that has taken place in the current reporting period.

Some new peat forming areas have been described at the site, which are the result of a more comprehensive field mapping rather than actual changes. The locations of these new areas were particularly poorly surveyed in 2004, while the previous description of the larger area in which they are found indicated that high quality habitat was present, but probably underrated at the time of that survey.

The present survey has also noted possible further drying out processes in the south of the site, where the sub-central ecotope boundary has contracted in another area of relatively intensive turf cutting and associated drainage.

Peat cutting and drainage are the most threatening current activities at the site. 3.34ha of high bog have been lost in the reporting period due to peat cutting, which has taken place at 48 locations around the high bog margin. However, 3.34ha should be considered as a minimum value, as the loss of high bog is calculated using GIS techniques on aerial photography from 2004/05 and 2010, and information received from NPWS indicates that peat cutting continued post-2010, with the number of peat cutters in 2010/2011 put at 52, and 11 active turf plots identified as of September 2012. Peat cutting is considered to be one of the reasons for the decline in Active Raised Bog along the central and southern sections of high bog. 0.614km of drains remain functional and 0.225km reduced functional. No fire events have affected the bog in the reporting period.

Active Raised Bog has been given an overall **Unfavourable Bad-Declining** conservation status assessment. Habitat Area has slightly decreased and quality (S&Fs) declined in the reporting period. Both Area and S&Fs values are below favourable reference values, Future Prospects are considered Unfavourable Bad-Declining as impacting activities (peat cutting and drainage) continue to threaten the habitat.

Degraded Raised Bog has been given an overall **Unfavourable Bad-Declining** conservation assessment and **Rhynchosporion depressions** has been given an **Unfavourable Bad-Declining** conservation status assessment.

The **overall raised bog** at **Corbo SAC** has been given an **Unfavourable Bad-Declining** assessment.

A series of **recommendations** have been also given, these include: cessation of peat cutting; restoration works on the high bog and cutover areas, further hydrological and topographical studies to ascertain more accurate FRVs; and further botanical monitoring surveys.

Site identification

SAC Site Code	0002349	6" Sheet:	RN 36
Grid Reference:	M 94 69	1:50,000 Sheet:	40
High Bog area (ha):	96.95ha		
Dates of Visit:	30/10/2012 to 01/11/12		
Townlands:	Corbo, Cloonageeragh, Clooncashel Beg, Ballintober South, Coolshaghtena and Cloontimullan.		

¹ The current extent of the high bog is 96.95ha, while that reported in 2004 was 101.538ha (Fernandez *et al.*, 2005). This discrepancy is partially the result of more accurate mapping of the high bog edge by using the higher resolution 2010 aerial images compared to those used in 2004. High bog area has also decreased in the 2004/05-2010 period due to peat cutting by 3.34ha. The actual high bog extent in 2004 was 100.29ha (see tables 8.1 and 8.3 2004 (amended) figures).

Site location

Corbo Bog is approximately 5.5km northeast of Roscommon town, and 5km west of Lanesborough, Co. Roscommon. The bog is adjacent to the north side of the N63, and may be easily accessed on the western side, via a smaller road and track that lead to the edge of the high bog.

Description of the survey

The survey was carried out in October and November 2012 and involved a vegetation survey of the high bog at Corbo Bog and the recording of impacting activities affecting high bog vegetation. A similar survey was carried out in 2004 by Fernandez *et al.* (2005). High bog vegetation was described and mapped, based on raised bog ecotope vegetation community complexes developed by Kelly and Schouten (2002). Detailed notes were taken on each community complex and any flushed areas that were present. These included: species lists; estimation of % cover of dominant species; percentage *Sphagnum* cover; evidence of damage (due to burning, peat cutting or drainage); micro-topography; ground firmness; and presence of *Cladonia* species. A list of photographic records is given in Appendix II. The survey aimed to assess the conservation status of Habitats Directive (Council Directive 92/43/EEC) Annex I habitats on the high bog.

The entire high bog of Corbo Bog was re-surveyed. Sections mapped as sub-marginal, sub-central and central ecotope in 2004 were surveyed in more detail. These are the areas where changes were likely to have occurred. Quadrats, which describe the micro-topographical features and indicator species, recorded in the 2004 project (Fernandez *et al.* 2005) were re-surveyed (see Appendix III). The size of quadrats was 4m x 4m for Active Raised Bog.

A GeoExplorer handheld GPS minicomputer (Trimble GeoXT) was used in the field to record quadrats, ecotope boundaries, location of vegetation complexes and other points of interest. The GPS positions of these features were logged and stored on Terrasync software (Trimble). Additional comments were stored as text fields in the device. Post processing of data was carried out, based on the Active GPS Network from Ordnance Survey Ireland, to obtain sub-metre accuracy of the data.

A digital vector format ecotope vegetation map was produced based on the spatial data collected during the survey using ArcGIS 9.3 and 2010 aerial photography. The Irish National Grid was used as the co-ordinate reference system. Vegetation complex and ecotope maps are given in Appendix IV.

Description of the high bog

Corbo Bog has been classified geomorphically as a Basin Type Raised Bog (Kelly *et al.*, 1995) and as a Midland (northern) Type Raised Bog (Cross, 1990). The high bog is shaped approximately like an inverted 'L', with the northwest corner comprising only Degraded Raised Bog habitats, while peat forming habitat is present in parts of the remaining high bog area.

The bog has been extensively cutaway all around the margins, and Kelly *et al.* (1995) previously estimated that only 29.4% of the high bog remained since the 1840's.

Ecological Information

Raised Bog Annex I (Habitats Directive (92/43/EEC)) habitats

The following Raised Bog EU Annex I habitats, are found in Corbo Bog:

- Active Raised Bog (EU code 7110),
- Degraded Raised Bog (EU code 7120) and
- Depressions on peat substrates of the Rhynchosporion (EU code 7150).

Active Raised Bog (7110)

The current area of Active Raised Bog at Corbo Bog is 15.52ha (16.01% of the high bog), which is a decrease of 12.07ha since 1994.

Active Raised Bog at the site includes central ecotope, sub-central ecotope and active flushes.

Central ecotope was found at five locations; **C1, C2, C4, C5** and **C6** (the former **C3** has been reclassified as active flush) (see Appendix IV, Map 1). Two community complexes – 14 and 15 – were recorded. Complex 14 is a very wet complex with quaking ground, total *Sphagnum* cover of 76-90%, and a micro-topography consisting of low hummocks, hollows, pools and lawns. Pools cover 51-75% of the complex and are mostly filled with *Sphagnum cuspidatum*. *Menyanthes trifoliata* and *Drosera anglica* are also present in pools, while *Rhynchospora alba* is present at pool edges and in hollows. *S. capillifolium* dominates low hummocks in the interpool areas, while *S. papillosum* and *S. magellanicum* are present in lawns. Complex 15 is another wet complex, with very soft to quaking ground in places, although some drier patches in the interpool areas have firm ground. This complex has the best developed micro-topography on the high bog at Corbo Bog, with frequent tall hummocks and pools. Hummocks of *Leucobryum glaucum* are at least occasional, as are *Racomitrium lanuginosum* hummocks, while tall relic hummocks and smaller active hummocks of *Sphagnum austinii* are frequent. Pool cover is in the range 11-25%, and most of the pools had an almost complete cover of *S. cuspidatum*, with *S. papillosum* and *S. magellanicum* dominating at the pool edges.

Sub-central ecotope was found at four locations (**Sc1 to Sc4**), and four community complexes (plus an additional variant of one of the four) were recorded. Complex 4/15 is the wettest and best quality of the sub-central complexes recorded at the site. It covers much of Sc3 in the south part of the site, and is characterised by ground that is generally very soft (quaking in places), an overall *Sphagnum* cover of 51-75%, and the widespread and common occurrence of *Rhynchospora alba*. Pools cover 4-10% of the complex area, although in some of the wetter areas, this is in the range of 11-25%. The pools generally have a high cover of *Sphagnum cuspidatum*, while other common *Sphagnum* species, occurring at pool edges and forming interpool hummocks, are *S. capillifolium* and *S. papillosum*. In the eastern part of Sc3, complex 4/15 grades into the central complex 15, which comprises the adjacent C4. Complex 9/10 is also a wet complex, forming part of Sc3, with soft to very soft ground and high overall *Sphagnum* cover (51-75%). Pools are absent and the micro-topography consists mostly of low hummocks and hollows. *Sphagnum cuspidatum* dominates the hollows, while *S. capillifolium* and *S. papillosum* are the main hummock forming species. *Eriophorum vaginatum* cover is in the range of 11-25%, while other common species include *Calluna vulgaris*, *Narthecium ossifragum*

and *Erica tetralix*. 9a/10 was recorded here as a variant of complex 9/10, and differs significantly only in being somewhat wetter and with *Eriophorum angustifolium* more common than *E. vaginatum*. Complex 9a/10 occupies only a small area on the site (part of the southwest corner of Sc1) and is a very wet complex, with very soft ground and total *Sphagnum* cover of 51-75%. Pools cover 26-33% of the complex area, although such was the poorly defined micro-topography of the area, and its extremely wet nature (water appeared to be pooling here), that the entire area occupied by the complex could almost have been considered as a single large pool. *Sphagnum cuspidatum* generally covers a substantial part of the pools and hollows, and accounts for the greater part of the total *Sphagnum* cover. The other common *Sphagnum* species (mostly in low hummocks) are *S. capillifolium*, *S. papillosum* and *S. magellanicum*. The complex is also partly defined by the high cover (in the range 11-25%) of *Eriophorum angustifolium*, while other common species include *E. vaginatum* and *Calluna vulgaris*. The vegetation here also has a flushed element with *Andromeda polifolia* and *Vaccinium oxycoccos* both present, although uncommon. Complex 9/7+P was recorded in a number of the sub-central areas at the site. Typically, the ground is very soft, pool cover is in the range of 11-25% and total *Sphagnum* cover is 34-50%. The pools within this complex are variable. In some areas where the complex grades into sub-marginal ecotope, some of the pools are algal and support only a patchy cover of *Sphagnum* (mostly *S. cuspidatum*), but where the complex is of better quality (sometimes grading into central ecotope), the pools have an almost complete cover of *S. cuspidatum*. *S. denticulatum* is also present, although only occasional, in pools, while *S. capillifolium* and *S. papillosum* are the dominant hummock forming species. Active hummocks of *S. austinii* and *S. fuscum* are also present in some of the better quality areas. *Calluna vulgaris* and *Eriophorum vaginatum* co-dominate in the interpool areas, while flush indicators, including *Empetrum nigrum*, *Aulacomnium palustre*, *Vaccinium oxycoccos*, *Dicranum scoparium* and *Polytrichum commune*, are present in Sc4, the small sub-central area adjoining the active flush W, in the east side of the site.. Tall *Leucobryum glaucum* hummocks were also recorded in this area.

Four small active peat forming flushes, labelled V, W, X and Z, are also present at Corbo Bog. They are all broadly similar in character, with soft to very soft ground, total *Sphagnum* cover in each case of 51-75%, and a number of typical flush indicators, including *Molinia caerulea*, *Aulacomnium palustre*, *Dicranum scoparium*, *Empetrum nigrum*, *Polytrichum strictum* and *Vaccinium oxycoccos*.

Degraded Raised Bog (7120)

The current area of Degraded Raised Bog at Corbo Bog is 81.43ha (83.99% of the high bog).

Degraded Raised Bog includes the sub-marginal, marginal and face bank ecotope, as well as inactive flushes. Although some areas of Degraded Raised Bog have a relatively well-developed

Raised Bog flora, they are affected by water loss to varying degrees, and are usually devoid of permanent pools.

The sub-marginal ecotope features the most developed micro-topography within Degraded Raised Bog. Although pools are mostly absent, they are found within some of the wetter sub-marginal ecotope community complexes, including 9a/7/3+P and 9/7/6+P (described here as a variant of 9/7/6). However, these pools generally have only a low *Sphagnum* cover and are mostly open water or algal in nature. Both 9a/7/3+P and 9/7/6+P have a total pool cover of 5-10% and total *Sphagnum* of 26-33%, and in addition to pools, the micro-topography consists of high hummocks, low hummocks and hollows. The *Sphagnum* hummocks mostly consist of *S. capillifolium* and *S. papillosum*. Other common species throughout sub-marginal ecotope include *Calluna vulgaris*, *Erica tetralix*, *Eriophorum vaginatum*, *Narthecium ossifragum* and *Carex panicea*.

Marginal ecotope is slightly drier than sub-marginal ecotope and mainly occurs as a narrow band around the margins of the high bog, although it also occupies a substantial part of the northwest lobe of the high bog. The micro-topography consists of *Calluna vulgaris* hummocks, low *Sphagnum* hummocks, flats and occasional hollows and tear pools. The *Sphagnum* cover is even lower here than in the sub-marginal ecotope (generally <10%) and the vegetation is characterised by a higher cover of *Calluna vulgaris*, *Carex panicea*, *Narthecium ossifragum* and *Trichophorum germanicum*,

Face bank ecotope is characterised by firm ground, tall *Calluna vulgaris*, poor *Sphagnum* cover and a flat micro-topography. This ecotope is present intermittently on the margin of the high bog.

Five inactive flushes (**A**, **B**, **C**, **D** and **W**) were mapped. Flush **Y** is also described, although it is mapped as only two individual points, rather than as a distinct flushed area.

Depressions on peat substrates of the Rhynchosporion (7150)

Rhynchosporion vegetation is widespread on Corbo Bog. It is found in both Active and Degraded Raised Bog, but tends to be best developed and most stable in the wettest areas of Active Raised Bog. It was most frequent in the central complexes 14 and 15, the sub-central complex 4/10 and in flush W. In these areas, the Rhynchosporion vegetation occurs within *Sphagnum* hollows and along *Sphagnum* pool edges and on lawns.

Typical plant species include *Rhynchospora alba*, *Sphagnum cuspidatum*, *S. magellanicum*, *S. papillosum*, *Drosera anglica* and *Eriophorum angustifolium*.

R. alba was also found within degraded raised bog, but always associated with wet features such as hollows and run-off or erosion channels.

Rhynchospora fusca was found in a pool in complex 6/3 within the sub-marginal ecotope (E 194718/N268579).

Detailed vegetation description of the high bog

A detailed description of high bog vegetation recorded during the 2012 survey of Corbo Bog is given in Appendix I. Vegetation is divided into a number of community complexes, which are listed and described based on the dominant species. These community complexes are grouped into ecotope types. The distribution of the ecotopes is shown on the ecotope map (Appendix IV, Map 1). The community complexes are shown on the community complex map (Appendix IV, Map 2) and the quadrat details are given in Appendix III and their location in Appendix IV (Map 1).

Impacting activities

Table 6.1 below provides a list of activities impacting high bog vegetation at Corbo Bog, according to their occurrence on the high bog or adjacent to the high bog; area or length affected, and whether they influence negatively (i.e. drainage, peat extraction) or positively (i.e. restoration works):

Table 6.1 Impacting activities

Code	Activity	Ranking	Influence	Area (ha) /Length(km)	Location	Habitat affected
C01.03	Peat extraction	H	-1	3.34ha of the high bog cut away	Inside High Bog: 48 different locations: 29 along west side, 12 in the east, 2 in north and 5 in south	7110/7120/7150
J02.07	Drainage	M	-1	0.839km ¹	Inside High Bog	7110/7120/7150
J02.07	Drainage	H	-1	n/av	Outside High Bog	7110/7120/7150

HB: High Bog; Ranking: H: High importance/impact; M: Medium importance/impact; L: Low importance/impact.

¹ This figure only includes functional and reduced-functional drains.

n/a: not applicable, n/av: not available

Peat cutting

Peat cutting has taken place at 48 locations on the high bog margin in the period 2004-2010. Of these 48 locations (plots), 29 were in the western side of the bog, 2 to the north, 5 to the south, and 12 along the east side. This has reduced the area of high bog by 3.34ha. The loss of high bog is calculated using GIS techniques on aerial photography from 2004/05 and 2010. Information from the NPWS indicates that 11 plots were cut on Corbo Bog in 2012 and 6 plots were cut in 2013. As aerial photography is not available post 2010, further high bog has been lost and the figure quoted should be considered a minimum value.

The bog has been extensively cutaway all around the margins over time, and Kelly *et al.* (1995) estimated that only 29.4% of the high bog remained since the 1840's. They also estimated that 4.02ha (or 52%) of the high bog margin was being actively cut in 1994. Fernandez *et al.* (2005) reported a probable significant decrease in peat cutting intensity in the period 1994 to 2003, with the proportion of bog margin cut in 2003 measured at 20%.

Information received from the NPWS puts the number of active turf plots in 2012 at 11, further suggesting that the intensity of the activity has substantially declined in recent years. Nevertheless, the loss of a significant area of bog and the continuation of the practice during the current reporting period indicates that the impact should be regarded as being of high importance. Peat cutting and associated drainage in the east and southeast of the bog are likely to have directly caused the decline in Active Raised Bog in both **C1** and **Sc3**.

In addition to the high importance/impact of turf cutting on high bog habitats, associated negative impacts on the high bog habitats continue to be caused by the high bog and cutover drainage associated with cutting and the presence of old face banks.

Drainage

High bog drainage

Table 6.2 shows some minor changes in the status of high bog drains. The status of functional drains remains unchanged, with 0.614km recorded in both 2004 and 2012. The total length of reduced functional drains has declined to 0.225km, a change of (-) 0.060km since 2004, while the total length of non-functional drains has decreased to 0.477km, a change of (-) 0.020km.

Reduced functional drains are still impacting on high bog habitats and will continue to do so until they are blocked and become completely in-filled and thus non-functional.

High bog drainage is considered to have medium importance/impact on high bog habitats, as the total length of functional and reduced functional drainage is relatively small for a site of almost 100ha.

No blockage of drains has occurred to date.

Table 6.2 High bog drainage summary

Status	2004 (km) ¹	2012 (km)	Change
NB: functional	0.614	0.614	0.000
NB: reduced functional	0.285	0.225	(-)0.060
NB: non-functional	0.497	0.477	(-)0.020
B: functional	0.000	0.000	0.000
B: reduced functional	0.000	0.000	0.000
B: non- functional	0.000	0.000	0.000

B: Blocked; NB: Not blocked n/a: not applicable

¹ High bog drainage has been revised (e.g. re-digitised in cases) and figures above may vary slightly from those given by Fernandez *et al.* (2005)

Table 6.3 (below) provides a more detailed description of the drainage present on the high bog at Corbo Bog including any change in their functionality in the 2004 – 2012 reporting period (see Map 3). The changes outlined in table 6.2 (losses of (-)0.060km in reduced functional drains and (-)0.020km in non-functional drains are due to peat cutting, as no changes were recorded in the status of any of the remaining drains

Table 6.3 High bog drainage detail

Drain Name	Length (km)	2004 status	2012 status	Change	Comment
bC1	0.035	NB: reduced functional	NB: reduced functional	No	This drain was wrongly classified as non-functional in 2004
bC2	0.052	NB: reduced functional	NB: reduced functional	No	
bC3	0.049	NB: non-functional	NB: non- functional	No	
bD	0.405	NB: functional	NB: functional	No	Drain complex
D1	0.044	NB: reduced functional	NB: reduced functional	No	This drain was wrongly classified as functional in 2004
D2	0.200	NB: non-functional	NB: non- functional	No	
D3	0.062	NB: functional	NB: functional	No	This drain was wrongly classified as non-functional in 2004

D4	0.157	NB: non-functional	NB: non- functional	No	
D4	0.041	NB: functional	NB: functional	No	Drain section near bog margin
D5	0.073	NB: functional	NB: functional	No	Drain already present in 2004 but not mapped
D6	0.055	NB: reduced functional	NB: reduced functional	No	""
D7	0.071	NB: non-functional	NB: non- functional	No	""
D8	0.039	NB: reduced functional	NB: reduced functional	No	""
D9	0.033	NB: functional	NB: functional	No	""

Bog margin drainage

The cutover areas were not surveyed for drains during 2012.

Drains associated with either currently active or no longer active peat cutting are present along the entire cutover. These drains continue to drain the high bog and impacting on high bog habitats.

Drainage maintenance on land adjacent to the high bog is only obvious on the 2010 aerial photograph to the north of flush B, over a distance of 120m (E193953/N269378). Maintenance on cutover drains (in the areas where turf cutting was carried out in the reporting period) also took place.

Bog margin drainage is considered to have a high importance/impact on high bog habitats.

Fire history

No fire events have been reported on the high bog in the 2005-2011 reporting period.

Fernandez *et al.* (2005) recorded recent (no more than 5 years before that survey) fire damage along the western arm of the high bog, in what was marginal ecotope then and also in 1994. Some possible indications of older damage were also noted in other areas. Kelly *et al.* (1995) noted that the bog showed evidence of past fires, as few large hummocks were present, while indications of old fire damage, in the form of bare peat and the presence of *Campylopus* sp., were seen in some marginal areas. Douglas and Mooney (1984) also noted recent fire damage over much of the site.

Invasive species

There is currently no significant presence of invasive species on the high bog.

Fernandez *et al.* (2005) reported a single *Rhododendron ponticum* bush in the south east of the high bog

Afforestation and forestry management

There are no forestry plantations on the high bog, or on the adjacent land.

Other impacting activities

No other significant impacting activities were noted or recorded in 2012 impacting high bog habitats in the 2005-2012 reporting period. A number of impacts pertaining to the site were recorded in the Natura 2000 data form for the site, one of which was 'cultivation'. The dumping of old cars in the north and east of the site was also reported in the NPWS 'Site Synopsis' for the SAC, although neither of these impacts were recorded in the present survey.

Conservation activities

Although no physical management actions such as the blocking of drains have been carried out to improve the conservation status of the high bog habitats, the NPWS has engaged in negotiation with landowners in relation to the cessation of peat cutting at the site.

Information from the NPWS indicates that 11 active turf plots were identified in 2012, which would represent a continuing decline in turf cutting intensity over recent years.

Conservation status assessment

The assessment of the conservation status of Annex I Active and Degraded Raised Bog and Bog Woodland is based on the following (a more detailed description of conservation status assessment methods is given within the methods section of the project's Summary Report (Volume 1) :

AREA - comparison of current habitat area with favourable reference values and its change in the reporting period to assess trends.

STRUCTURE & FUNCTION - comparison of central ecotope and active flush area (i.e. the higher quality wetter vegetation communities) for Active Raised Bog, and marginal and face bank ecotope

area (i.e. the lower quality and drier vegetation communities) for Degraded Raised Bog against favourable reference values to assess their status and changes in their area in the reporting period to assess their trend. Community complex descriptions were also taken into account to evaluate changes in ecotope quality together with an analysis of the indicators recorded in the quadrats.

FUTURE PROSPECTS - an assessment of the influence of current and future activities both negative and positive (e.g. restoration works) affecting these habitats. Future Prospects for Active and Degraded Raised Bog are assessed at status and trend level based on the prospects for the habitat to reach favourable reference values in a two reporting period (12 years).

Active Raised Bog (7110)

Area

C1 has decreased substantially in area, at least partly due to the fact that the 2005 map is likely to have greatly exaggerated the actual extent of central ecotope here, particularly as two very isolated mapping points in the western side of the habitat were joined to a larger cluster in the eastern side, despite the presence of a very broad swathe of unsurveyed habitat in between. However, the present survey has also resulted in a significant portion in the south of the former C1 being excluded from central ecotope, reflecting a significant decline in habitat quality in this part of the site. Parts of this now excluded portion of C1 were variously reclassified here in sub-central ecotope, sub-marginal ecotope, or inactive flush. This decline in habitat quality is mirrored in a similar decline in the adjacent Degraded Raised Bog habitat (to the east of this part of C1), where marginal ecotope has expanded by an estimated 1.0ha, at the expense of sub-marginal ecotope.

C2 has seen slight boundary changes that have resulted in a smaller area. This change is the result of more comprehensive surveying in 2012 which resulted in more accurate mapping.

The former central ecotope area, **C3**, has now been reclassified as active flush, and added to the existing, adjacent flush **W**. This is, therefore, a re-interpretation of vegetation. More comprehensive surveying in 2012 has also resulted in changes to the previous boundary, particularly at the northern end, where the boundary has been slightly extended to encompass a greater area of active bog.

C4, in the southern part of the site, has seen slight boundary changes that have resulted in a larger area. This change is the result of more comprehensive surveying in 2012 which resulted in more accurate mapping; and also some re-interpretation of vegetation, as a number of sub-central (**Sc3**) mapping points from 2004 are now within the new **C4** boundary.

C5 and **C6** are adjacent, newly-mapped peat forming areas, near the centre of the site. The area in which they are located was not comprehensively surveyed in 2004 and the former (2004) description of sub-central 1 (**Sc1**), in which **C5** and **C6** are now mapped, indicated the presence of some very good quality habitat, at least some of which is likely to have been of central ecotope standard then. The addition of these two central ecotope areas can, therefore, be attributed to the more comprehensive surveying in 2012 which resulted in more accurate mapping.

Slight boundary changes have resulted in an increase in the mapped area of **Sc1**. This change is the result of more comprehensive surveying in 2012 which resulted in more accurate mapping. Part of the newly extended area of **Sc1** lies immediately to the north of **C2**, and although not actually contiguous with the main body of **Sc1**, this area is included under that label as they are separated by only a very small distance.

Changes in the **Sc2** boundary have resulted in a slightly smaller area. This change is the result of more comprehensive surveying in 2012 which resulted in more accurate mapping. There is the possibility of a decline here, as the habitat was not of the finest quality, and a substantial area of central ecotope was mapped in this area by Kelly *et al.* (1995). However, the habitat extent is very similar to that mapped in the 2004 survey, so a decline in habitat is logged here only as a possibility, and no figures for real change are recorded.

Sc3, in the southern end of the high bog, has decreased in area by (-) 0.15ha, a loss most evident along its southern boundary, where a number of sub-central mapping points from the 2004 survey (Fernandez *et al.*, 2005) are no longer within sub-central ecotope, and are instead within sub-marginal habitat, which has expanded in area, corresponding to a decline in quality in **Sc3**.

Sc4 is a small, previously unmapped area of sub-central ecotope, contiguous with the northern boundary of the active flush **W**. This area was not surveyed in 2004 and the change is, therefore, likely to be the result of the more comprehensive surveying in 2012, which resulted in more accurate mapping, rather than a real change in occurrence of peat forming habitat at the site.

Slight boundary changes have seen the area of flush **V**, in the south part of the site, slightly increased. This change is the result of more comprehensive surveying in 2012 which resulted in more accurate mapping. The flush was described by Fernandez *et al.* (2005) as being 50m x 50m in dimension, but was mapped then as only a single point.

Flush **W** has increased in size, principally because the adjacent **C3** has now been re-classified as active flush and amalgamated with the existing flush **W** to form a larger flushed area. This change is, therefore, the result of a re-interpretation of vegetation. Other small boundary changes here are the result of more comprehensive surveying in 2012, which resulted in more accurate mapping.

Flush **X** was mapped in 04/05 as a single active flush point in the south of the central **C2** area. There was a wide surrounding area which had been apparently unsurveyed, so the change recorded here is attributed to more comprehensive surveying.

Flush **Z** was previously mapped as a single flush point within **C1**. There was 1 adjacent central ecotope mapping point (complex 14), but otherwise a very wide area that had been insufficiently surveyed. The increased area of the flush can, therefore, be attributed to more comprehensive surveying in 2012.

In summary, parts of the central **C1** area (estimated as 0.30ha) have declined to sub-central quality, while 0.15ha of sub-central habitat in **Sc3** has declined and been re-classified as sub-marginal ecotope. The net decline in sub-central ecotope is therefore 0.15ha, and this is also therefore, the total of Active Raised Bog habitat lost to degradation in habitat quality.

The favourable reference value (FRV) for Area is considered to be the sum of Active Raised Bog (central and sub-central ecotopes and active flush) plus sub-marginal ecotope when the Habitats Directive came into force in 1994 (see table 8.4). Therefore, Active Raised Bog Area FRV is 27.59ha (based on 1994/5 Kelly (1995) figures amended by Fernandez *et al.* (2005), see tables 8.1 and 8.3 below). This FRV is only approximate until further hydrological and topographical studies are carried out in order to assess the maximum potential capacity of the high bog to support Active Raised Bog. The current habitat Area value (15.52ha) is 43.75% below the FRV. A current Area value more than 15% below FRV falls into the **Unfavourable Bad** assessment category, and that is therefore, the assessment that applies to ARB Area. It should be considered also, that the FRV of 27.59ha is likely to be something of an underestimate, as Kelly *et al.* (1995) did not map or record any sub-marginal ecotope, and it is likely that at least some of the habitat mapped as marginal ecotope in that survey would have been of sub-marginal quality.

A long term (1994/5-2012) trend indicates a reduction in the area of Active Raised Bog at the site of (-) 12.07ha (see table 8.1). A more recent and short term trend analysis (8 years; 2004-2012) also indicates a reduction in the area, in this case (-) 0.15ha or (-) 0.96%, of Active Raised Bog. Therefore, the habitat Area is given a **Decreasing** trend assessment.

The Area of Active Raised Bog at Corbo Bog is assessed as Unfavourable Bad-Decreasing (see table 8.5).

Structure & Functions

The FRV for S&Fs is for at least half of the active raised bog area to be made up of central and active flush, i.e. the higher quality wetter vegetation communities. This value is 7.76ha (half of 15.52ha, the

current area of Active Raised Bog). The current value is 3.69ha which is 52.45% above the FRV. A current value more than 25% below FRV falls into the **Unfavourable Bad** assessment category, and that, therefore, is the assessment that applies to S&Fs.

Both a long term (1994/5-2012) and short term (8 years; 2004-2012) trend indicate a decrease in the combined area of central ecotope and active flush and therefore the S&Fs are given a **Declining** trend.

Quadrats analysis (**Qc3**, **Qc4**, **Qc5** and **Qsc3**) indicates the following:

Qc3: this quadrat was recorded in central ecotope, complex 14, in both 2005 and 2012, with relatively minor differences between the two versions. Total *Sphagnum* cover was 76-90% in both 2005 and 2012. However, while pools and lawns both covered 26-33% of the quadrat in 2012, the corresponding 2005 figures were 51-75% and 4-10%, respectively. These differences would largely account for the variations in individual *Sphagnum* species, as *S. cuspidatum* (generally the dominant pool *Sphagnum*) had 34-50% cover in 2005, and only 26-33% cover in 2012, while *S. papillosum* (often a significant element of *Sphagnum* lawns) was more common in 2012, with 26-33% cover, compared to 4-10% in 2005. These differences can probably be explained by a minor discrepancy in quadrat location. The vegetation in 2012 also had a flushed element with *Aulacomnium palustre*, *Molinia caerulea* and *Vaccinium oxycoccos* all recorded.

Qc4: this quadrat was recorded in central ecotope, complex 15 in 2012, but in sub-central ecotope, complex 14, in 2005. The overall *Sphagnum* cover value was 76-90% in 2012, but 51-75% in 2005, while pool cover was 34-50% in both quadrats. However, *S. cuspidatum* cover was higher in 2012, at 51-75%, compared to 34-50% in 2005, possibly a reflection of superior quality habitat in 2012. One difference which may at least partly account for the overall higher *Sphagnum* cover in 2012, was the greater cover of *Sphagnum* hummocks in 2012, 34-50%. Despite the possible indications of superior quality habitat in 2012, the quadrat was close to the **C4/Sc3** boundary in 2005, and in many respects, the quality of habitat shown in the quadrat, such as *Sphagnum* cover of 51-75% and pool cover of 34-50%, is typical of central ecotope. The re-classification of the quadrat is, therefore, most likely to reflect a re-interpretation of the vegetation there, rather than a significant change in habitat quality.

Qc5: this quadrat was classified as complex 15 in both 2005 and 2012, although in 2012 this was considered to represent central ecotope, whereas in 2005, it was assigned to sub-central ecotope. A number of differences were noted, including total *Sphagnum* cover in 2012 of 76-90%, compared to 34-50% in 2005, and pool cover of 34-50% in 2012 compared to 11-25% in 2005. The cover of *S. cuspidatum* mirrored pool cover in that it was 34-50% in 2012 and 11-25% in 2005. *S. papillosum* was

also more common in 2012 (11-25%, compared to 4-10% in 2005), which may reflect the higher cover of low hummocks in 2012.

Qsc3: classified as sub-central ecotope complex 15 in 2005 and as sub-central complex 4/15 in 2012, some variations in quadrat data were noted. Total *Sphagnum* cover in 2012 was 51-75%, but 34-50% in 2005. However, pool cover was 34-50% in 2005 and 11-25% in 2012, although *S. cuspidatum* still had a higher cover of 26-33% in 2012 (compared to 11-25% in 2005). *Sphagnum* hummocks had a total cover of 11-25% in 2005 and 34-50% in 2012.

Typical good quality indicators and typical plant species are still found in sub-central and active flush throughout the entire bog.

The Structure & Functions of Active Raised Bog at Corbo Bog are assessed as Unfavourable Bad-Declining (see table 8.5).

Future Prospects

Habitat Area and S&Fs have decreased and declined in the current reporting period, largely due to peat cutting and associated high bog and cutover drainage. 48 active turf cutting plots were identified and there are still functional and reduced functional drains on the high bog, and others in the bog margins, such as those associated with cutover plots. The high bog has been cutaway extensively and the current ARB area represents only a small percentage of the total high bog area. Although turf cutting intensity has declined in recent years, information from the NPWS suggests that 11 plots were still active in 2012. There are also no restoration measures at the site which could override the negative influence of impacting activities.

Habitat **Area** is currently 43.75% below FRV (see table 8.4) and a Decreasing trend is foreseen due to the overriding influence of negatively impacting activities. The habitat Area is expected to be more than 15% below FRV in the following two reporting periods (12 years). Thus, habitat's **Area Future Prospects** are assessed as **Unfavourable Bad-Decreasing**. Habitat's **S&Fs** are currently 52.45% below FRV (see table 8.4) and a Declining trend is also foreseen. Therefore S&Fs are expected to be more than 25% below FRV in the following two reporting periods. **S&Fs Future Prospects** are assessed as **Unfavourable Bad-Declining**. **The overall habitat's Future Prospects are Unfavourable Bad-Declining** (see table 8.5).

There is potential for the restoration of cutover along the entire site cutover, and this may be important as it may prove impossible or unfeasible to reach the ARB target only on the high bog. Blocking of the remaining functional and reduced-functional drains both on the high bog and cutover, and the cessation of peat cutting is necessary in order to improve the quality of habitats on

the bog, although the potential for restoration from the blocking of high bog drains is limited, as there are only a few (mostly short) drains

The overall conservation status of Active Raised Bog at Corbo Bog is assessed as Unfavourable Bad-Declining (see table 8.5).

Table 8.1 Changes in Active Raised Bog area

Active Ecotopes	1994 ¹	2004	2004 (amended)	2012	Change (2004-2012)	
	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	%
Central	10.02	3.77	2.90	2.60	(-)0.30	(-)10.34
Sub-central	16.15	11.04	11.68	11.83	(+)0.15	(+)1.28
Active flush	1.42	0.31	1.09	1.09	0.00	0.00
Total	27.59	15.12	15.67	15.52	(-)0.15	(-)0.96

¹These are the figures calculated from the vegetation map drawn by Kelly *et al.*, (1995) that was geo-referenced, digitised and in some cases adjusted as part of Fernandez *et al.* (2005) project.

Note: Table 8.1 includes 2004 figures and 2004 amended figures. The latter shows the ecotope area believed to be present in 2004 after surveying improvements in 2012. The comparison between 2004 (amended) and 2012 illustrates the actual changes in ecotope area in the 2004-2012 period. Any change in ecotope area between the 2004 and the 2004 (amended) values is due to improvement in mapping accuracy and/or the result of a more comprehensive survey in 2012 (see table 8.2 for further detail).

Table 8.2 Assessment of changes in individual Active Raised Bog areas

Area	Quadrats	Trend	Comment	Quadrats analysis
C1	None	Declining	Significant boundary changes have resulted in a much smaller C1. This change is partly the result of more comprehensive surveying in 2012 which resulted in more accurate mapping. However, some parts of the former C1 (particularly on the eastern side) that were definitively mapped as central ecotope in 2004, have now been reclassified as sub-central ecotope, indicating a real decline.	
C2	Qc3	Stable	Slight boundary changes have resulted in a smaller C2. This change is the result of more comprehensive surveying in 2012 which resulted in more accurate mapping.	Recorded as complex 14 in 2005 and 2012. Total <i>Sphagnum</i> 76-90% in 2005 and 2012; greater cover of pools in 2005, greater cover of lawns in 2012; flushed element recorded in 2012 with

				<i>Aulacomnium palustre</i> and other indicators recorded. Minor differences probably due to discrepancy in quadrat location
C3	None	No longer present	This former central ecotope area has now been reclassified as active flush, and added to the adjacent Flush W. This is, therefore, a re-interpretation of vegetation. More comprehensive surveying in 2012 has also resulted in changes to the previous boundary, particularly at the northern end, where the boundary has been slightly extended.	
C4	Qc4	Stable	Slight boundary changes have resulted in a larger area. This change is the result of more comprehensive surveying in 2012 which resulted in more accurate mapping, and also some re-interpretation of vegetation, as a number of sub-central (Sc3) mapping points from 2004 are now within the new C4 boundary.	Recorded in central ecotope complex 15 in 2012, but sub-central ecotope, complex 14 in 2005; <i>Sphagnum</i> cover 76-90% in 2012, 51-75% in 2005; greater cover of <i>Sphagnum</i> hummocks in 2012; greater cover of <i>S. cuspidatum</i> in 2012. Differences likely due to minor discrepancy in quadrat location; re-classification of habitat ecotope likely due to re-interpretation of habitat, rather than actual change
C5	None	Unknown	This specific area was not comprehensively surveyed in 2004. The former (2004) description of Sc1, in which C5 is now mapped, indicated the presence of some very good quality habitat, at least some of which is likely to have been of central ecotope standard. The addition of C5 can, therefore, be attributed to the more comprehensive surveying in 2012 which resulted in more accurate mapping.	
C6	Qc5	Unknown	This specific area (near C5; see comments above) was not comprehensively surveyed in 2004. This is likely to be due to more comprehensive surveying in 2012 which resulted in more accurate mapping.	Recorded in complex 15 in 2005 and 2012, although classified as central ecotope in 2012 and sub-central in 2005; <i>Sphagnum</i> cover 76-90% in 2012, 34-50% in 2005; pool cover greater in 2012. Differences likely due to minor discrepancy in quadrat location;
Sc1	None	Stable	Slight boundary changes have resulted in a larger area. This change is the result of more comprehensive surveying in 2012 which resulted in more accurate	

			mapping. Sc1 now stretches towards the NW above C2.	
Sc2	None	Stable (possibly declining)	Changes in the boundary have resulted in a slightly smaller area. This change is the result of more comprehensive surveying in 2012 which resulted in more accurate mapping. There is the possibility of a decline here, as the habitat was not of the finest quality, and a substantial area of central ecotope was mapped here by Kelly <i>et al.</i> (1995). However, the habitat extent is very similar to that mapped in the 2004 survey, so a decline in habitat is logged only as a possibility, and no figures for real change are recorded.	
Sc3	Qsc3	Decreasing	Decrease in area due to a decline in habitat quality on the southern side. Also additional slight changes in boundary (larger) as a result of more comprehensive surveying in 2012 which resulted in more accurate mapping.	Complex 15 in 2005, complex 4/15 in 2012; total <i>Sphagnum</i> 51-75% in 2012, 34-50% in 2005; pool cover 11-25% in 2012, 34-50% in 2005; greater cover of <i>Sphagnum</i> hummocks in 2012. Differences probably due to minor discrepancy in quadrat location
Sc4	None	Unknown	This specific area was not surveyed in 2004. The change is, therefore, likely to be the result of more comprehensive surveying in 2012 which resulted in more accurate mapping.	
V	None	Stable	Slight changes in boundary (larger). This change is the result of more comprehensive surveying in 2012 which resulted in more accurate mapping.	
W	None	Stable	This active flush was previously mapped as central ecotope C3. This is the result of re-interpretation of vegetation and also more comprehensive surveying in 2012.	
X	None	Stable	This active flush was previously mapped as a single point within central ecotope C2. The amended area is the result of more comprehensive surveying in 2012.	
Z	None	Stable	This active flush was previously mapped as a single point in central ecotope C1. The amended area here is the result of more comprehensive surveying in 2012.	

Degraded Raised Bog (7120)

Area

The Degraded Raised Bog FRV for Area is 69.36ha at Corbo Bog. This value corresponds with the difference between the current high bog area (96.95ha) and the Active Raised Bog FRV (27.59ha) for area. Degraded Raised Bog is a particular habitat type, for which a FRV smaller than the current value, may be desirable in many sites. However any decrease in habitat area would only be considered positive, when it is the result of restoration to Active Raised Bog. Current habitat area is 17.40% bigger than FRV and as this exceeds the 15% threshold above which FRV automatically falls into the **Unfavourable Bad** assessment category, which is the assessment that applies to DRB area (see table 8.4).

Table 8.3 shows a decrease of (-) 0.85ha in sub-marginal ecotope in the reporting period. This is the net result of a loss of (-) 1ha of sub-marginal habitat through a decline in quality to marginal ecotope (mostly in the east and southwest of the high bog), and an increase of 0.15ha, brought about by the re-classification of some former sub-central habitat in **Sc3** that has declined in quality to sub-marginal.

The overall decline of (-)1ha in marginal ecotope is due to the fact that 2ha of marginal habitat have been lost through peat cutting, while 1ha of former sub-marginal ecotope has been re-classified as marginal following a decline in habitat quality. The total face bank area has declined by 0.74ha, while 0.6ha of inactive flush has been lost, all of which is attributed to direct losses through peat cutting.

Table 8.3 indicates an overall decrease of (-) 3.19ha in the area of Degraded Raised Bog. The decrease is the result of direct losses of habitat through peat cutting. As a result the habitat is given a **Decreasing** trend.

The Area of Degraded Raised Bog at Corbo Bog is assessed as Unfavourable Bad-Decreasing.

Structure & Functions

The FRV for S&Fs is for a maximum 25% of the Degraded Raised Bog area to be made up of marginal and face bank, i.e. the lower quality and drier vegetation communities. This value is 20.36ha (25% of 81.43, the current area of Degraded Raised Bog). The current marginal and face bank ecotopes area value (46.01ha) is 126.01% above the FRV (in the particular case of Degraded

Raised Bog a current area value equal or smaller than FRV is desirable) (see Table 8.4). A current value more than 25% above FRV falls into the **Unfavourable Bad** assessment category.

S&Fs trend is assessed based on actual changes within marginal and face banks ecotope (e.g. decreases due to rewetting processes or increases as a result of further drying out). Table 8.3 shows decreases in the areas of both marginal and face bank ecotopes of (-) 1ha and (-) 0.74ha, respectively. 2 ha of marginal ecotope were lost directly to peat cutting, while at the same time 1ha of former sub-marginal ecotope was re-classified as marginal ecotope following a decline in habitat quality. The decrease in face bank area is attributed entirely to a direct loss from peat cutting. Thus, the DRB's S&Fs at Corbo Bog are given a **Declining** trend.

Typical good quality indicators and typical plant species are still found throughout the entire bog on sub-marginal ecotope.

The Structure & functions of Degraded Raised Bog at Corbo Bog are assessed as Unfavourable Bad-Declining (see table 8.5).

Future Prospects

Degraded Raised Bog has decreased as a result of peat cutting and this activity continues at the site. This activity also damaged the habitats S&Fs. Furthermore, drainage on the high bog and within the adjacent cutover continues to damage the habitat and to hinder its recovery to FRVs, as well as minimising the chances to convert face bank and marginal ecotope into sub-marginal and/or Active Raised bog. There are currently no remediation works at the site that might contribute to the restoration of good quality habitat.

Habitat **Area** is currently 17.40% above FRV (see table 8.4) and a Decreasing trend is expected in the following two reporting periods (12 years) due to further habitat losses to peat cutting. As a result habitat Area is expected to remain more than 15% above FRV. Thus, habitat's **Area Future Prospects** are assessed as **Unfavourable Bad-Decreasing**. Habitat's **S&Fs** are currently 126.01% above FRV (see table 8.4). A Declining trend is foreseen in the following two reporting periods and thus **S&Fs** are expected to remain more than 25% above FRV. As a result, habitat's **S&Fs Future Prospects** are assessed as **Unfavourable Bad-Declining**.

Therefore the Future Prospects for Degraded Raised Bog are considered Unfavourable Bad-Declining (see table 8.5).

Table 8.3 Changes in Degraded Raised Bog area

Inactive Ecotopes	1994 ¹	2004	2004 (amended)	2012	Change (2004-2012)
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	Area (ha)	Area (ha)	Area (ha)	Area (ha)	Area (ha)	%
Sub-marginal	0.00	27.02	29.22	28.37	(-)0.85	(-)2.91
Marginal ²	76.62	57.75	43.18	42.18	(-)1.00	(-)2.32
Face bank ²	Na	0.20	4.57	3.83	(-)0.74	(-)16.19
Inactive flush	0.31	1.44	7.65	7.05	(-)0.60	(-)7.84
Total	76.93	86.41	84.62	81.43	(-)3.19	(-)3.77

¹These are the figures calculated from the vegetation map drawn by Kelly *et al.*, (1995) that was geo-referenced, digitised and in some cases adjusted as part of Fernandez *et al.* (2005) project.

² Any 2012 marginal and face bank ecotope value given within the report should be taken as a maximum value. Their extent is based in the 2012 habitat survey and 2010 aerial photographs. It cannot be ruled out that further marginal and/or face bank ecotope losses may have taken place at the margin of the high bog in the 2011-2012 period associated with peat cutting.

Note: Table 8.3 includes 2004 figures and 2004 amended figures. The latter shows the ecotope area believed to be present in 2004 after surveying improvements in 2012. The comparison between 2004 (amended) and 2012 illustrates the actual changes in ecotope area in the 2004-2012 period. Any change in ecotope area between the 2004 and the 2004 (amended) values is due to improvement in mapping accuracy and/or the result of a more comprehensive survey in 2012.

The overall conservation status of Degraded Raised Bog at Corbo Bog is assessed as Unfavourable Bad-Declining (see table 8.5).

Depressions on peat substrates of the Rhynchosporion (7150)

Rhynchospora alba depressions are found across the entire bog in both Active and Degraded Raised Bog. The species is more frequently found and reaches its finest quality associated within wet features (*Sphagnum* pools, lawns and hollows) on Active Raised Bog.

The physical structure and distribution of the habitat across large sections of the high bog makes the process of calculating its area unfeasible and as a consequence makes the process of calculating realistic FRVs unfeasible. Thus, the assessment of the habitat's Area conservation status is indirectly based on the assessment of Active Raised Bog habitat Area (a favourable assessment indicates that all sub-marginal ecotope has turned Active Raised Bog). The habitat Area is given an **Unfavourable Bad** assessment.

The Area trend assessment is based on the variation on Active Raised Bog and sub-marginal ecotope within Degraded Raised Bog in the reporting period. The area of Active Raised Bog has

decreased slightly in the reporting period; similarly sub-marginal ecotope (in which the habitat is also commonly found) has also decreased. As result habitat Area is given a **Decreasing** trend.

The habitat's Area Future Prospects status is equally based on the Active Raised Bog Area Future Prospects status assessment and the Area Future Prospects trend is based on the trend expected for Active Raised Bog and sub-marginal ecotope in the following two reporting periods. Impacting activities such as peat cutting and drainage continue to threaten Active and Degraded Raised Bog. Logically this has to have a long term negative effect on Rhynchosporion depressions. Therefore, the habitat's Area Future Prospects are given an **Unfavourable Bad-Decreasing** assessment.

The S&Fs conservation assessment is also indirectly based on the Active Raised Bog S&Fs status and trend assessments, as Active Raised Bog supports the finest habitat quality type. Therefore, the habitat's S&Fs are given an **Unfavourable Bad-Declining** assessment.

The habitat's S&Fs Future Prospects status and trend are equally based on the Active Raised Bog S&Fs Future Prospects status and trend assessments in the following two reporting periods. Therefore, the habitat's S&Fs Future Prospects are given an **Unfavourable Bad-Declining** assessment.

The overall habitat's Future Prospects assessment is Unfavourable Bad-Declining.

The conservation status of depressions on peat substrates of the Rhynchosporion at Corbo Bog is assessed as Unfavourable Bad-Declining (see table 8.5).

Table 8.4 Habitats favourable reference values

Habitat	Area Assessment			Structure & Functions Assessment		
	FRV Target (ha) ¹	2012 value (ha) ²	% below target	FRV 2012 Target (ha) ³	2012 value (ha) ⁴	% below target
7110	27.59	15.52	43.75	7.76	3.69	52.45
¹ 1994 central, sub-central, active flush, bog woodland and sub-marginal ecotope area.						
² 2012 central, sub-central ecotope, active flush and bog woodland area.						
³ Half of the current central, sub-central ecotope and active flush area. The target is that the area of the highest vegetation quality (i.e. central ecotope and active flush) should be at least this figure.						
⁴ 2012 central ecotope and active flush area.						
	FRV Target (ha) ⁵	2012 value (ha) ⁶	% above target	FRV 2012 Target (ha) ⁷	2012 value (ha) ⁸	% above target
7120	69.36	81.43	17.40	20.36	46.01	126.01
⁵ Current high bog area minus 7110 area FRV.						
⁶ 2012 Degraded Raised Bog area.						

⁷ 25% of the current Degraded Raised Bog habitat area. The target is that the extent of marginal and face bank ecotopes should not be larger than 25% of the current Degraded Raised Bog habitat area.

⁸ Current marginal and face bank ecotopes area.

As table 8.5 below indicates, each individual EU habitat present on the high bog has been given the following overall conservation status assessment based on the three main parameters (Area, S&Fs and Future Prospects) individual assessments:

- **Active Raised Bog is assessed as being Unfavourable Bad–Declining.**
- **Degraded Raised Bog is assessed as being Unfavourable Bad–Declining.**
- **Rhynchosporion depressions is assessed as being Unfavourable Bad–Declining.**

Table 8.5 Habitats conservation status assessments

Habitat	Area Assessment	Structure & Functions Assessment	Future Prospects Assessment	Overall Assessment
7110	Unfavourable Bad-Decreasing	Unfavourable Bad-Declining	Unfavourable Bad-Declining	Unfavourable Bad-Declining
7120	Unfavourable Bad-Decreasing	Unfavourable Bad-Declining	Unfavourable Bad-Declining	Unfavourable Bad-Declining
7150	Unfavourable Bad-Decreasing	Unfavourable Bad-Declining	Unfavourable Bad-Declining	Unfavourable Bad-Declining

Conclusions

Summary of impacting activities

- Peat cutting still continues at the site and has taken place at 48 locations in the 2004/05-2010 reporting period. 3.34ha of high bog have been lost in this period due to peat cutting and this activity is considered to be the primary reason for the decline in Active Raised Bog in the east and southwest of the high bog, where areas of both central and sub-central ecotope have decreased in area.
- 0.614km of drains on the high bog remain functional and 0.22km reduced-functional. This is a relatively small amount of drains on a high bog area of almost 100ha, although some, such as the bD complex in the south of the site, are very close to Active Raised Bog, and this is one of the areas in which a decline in ARB has been recorded.
- Cutover drainage (peripheral drainage) associated with either currently active or no longer active peat cutting continue to impact on the high bog habitats. In addition, some

maintenance works have been carried out in the reporting period on drains in agriculture land to the north of the site.

- No fire events have damaged the high bog in the reporting period, although other recent surveys, such as those of Douglas and Mooney (1984), Kelly *et al.* (1994) and Fernandez *et al.* (2005) all reported evidence of recent fire damage of varying severity.

Changes in active peat forming areas

- Although figures indicate only a small (-) 0.15ha decrease in Active Raised bog, the distribution of the habitat has changed somewhat and a number of habitat losses have taken place. **C1** is estimated to have decreased in area by 0.30ha along its south-eastern side, a decline which is mirrored in the more general degradation of this area, where some former sub-marginal ecotope has also declined and been re-classified as marginal ecotope. The area of **C1** has also contracted considerably on its western side, although that change is attributed to more comprehensive surveying rather than a real change in habitat, as much of this area had been very sparsely surveyed in 2004 (Fernandez *et al.*, 2005).
- **Sc3**, in the southern section of the high bog, has also seen a decline in area and habitat quality. 0.15ha of the former **Sc3** has been re-classified as sub-marginal ecotope, in a change attributed to damage from continuing peat cutting and associated drainage. The change has been recorded along the southern side of **Sc3**, mostly near the active flush **V**.
- Three new peat forming areas (**C5**, **C6** and **Sc4**) have been described at the site. **C5** and **C6** are both within the former boundary of **Sc1**, in the northern part of the site. The parts of the high bog occupied by these newly-described areas were not comprehensively surveyed in 2004, and their addition to the total central ecotope area is likely to be the result of more comprehensive surveying in 2012 which resulted in more accurate mapping. The description of **Sc1** in the report by Fernandez *et al.* (2005) also includes reference to high quality habitat within the area, which could justifiably have been mapped then as central ecotope. The area occupied by **Sc4** (contiguous with flush **W**, in the southeast of the site) was not surveyed in 2004 and its inclusion here is, therefore, attributed also to more comprehensive surveying.
- The former **C3**, in the east of the site, is no longer present, as it has been re-classified as active flush and incorporated into the adjacent flush **W**. This is the result of more comprehensive surveying in 2012, as there were no mapping points in **C3** in 2004, but also re-interpretation of vegetation, as a quadrat was recorded here (as central ecotope) in that survey (Fernandez *et al.*, 2005).

- **C2** and **C4** have seen slight boundary changes resulting from the more comprehensive surveying in 2012 which resulted in more accurate mapping.
- **Sc1** has seen some boundary changes and is now somewhat larger, notwithstanding the fact that parts of it have been re-classified as central ecotope (**C5** and **C6**). Other changes in this area are attributed to more comprehensive surveying in 2012 which resulted in more accurate mapping.
- **Sc2** is now slightly smaller following minor boundary changes and these are also attributed to the more comprehensive surveying that took place in 2012. However, there are suggestions of a decline here as Kelly *et al.* (1995) mapped central ecotope in this area, while much of the area (dominated now by the complex 9/7+P) was considered borderline sub-central/sub-marginal when surveyed in the present project. However, as the extent of ARB here is practically unchanged over this time, it is noted only as a possible decline.
- The active flushes **V**, **W**, **X** and **Z**, have all seen some minor boundary changes, attributable to more comprehensive surveying and/or re-interpretation of vegetation. The mapped area of **W** has been considerably expanded with the incorporation of the former **C3** area, which is now entirely re-classified as active flush.

Other changes

- In addition to the incorporation of the former **C3** within active flush **W**, some inactive flush has been added to the southern part of the flush, in an area that was insufficiently surveyed previously.
- The inactive flushes, **B** and **C** are also newly recorded at the site as a result of more comprehensive surveying and mapping.
- The boundaries of the other inactive flushes, **A** and **D**, which were previously mapped at the site, have changed slightly due to more comprehensive surveying and mapping.

Quadrats analysis

- **Qc3**: recorded in complex 14 in both 2005 and 2012, with relatively minor differences between the two. Total *Sphagnum* cover was 76-90% in both 2005 and 2012. Pools and lawns both 26-33% in 2012, but 51-75% and 4-10%, respectively, in 2005. These differences can probably be explained by a minor discrepancy in quadrat location. The vegetation in 2012 also had a flushed element with *Aulacomnium palustre*, *Molinia caerulea* and *Vaccinium oxycoccos* all recorded.

- **Qc4:** this quadrat was recorded in central ecotope, complex 15 in 2012, but in sub-central ecotope, complex 14, in 2005. The overall *Sphagnum* cover value was 76-90% in 2012 and 51-75% in 2005, while pool cover was 34-50% in both quadrats. *S. cuspidatum* cover 51-75% in 2012 and 34-50% in 2005. Greater cover also of *Sphagnum* hummocks in 2012.
- **Qc5:** this quadrat was classified as complex 15 in both 2005 and 2012, although in 2012 this was considered to represent central ecotope, whereas in 2005, it was assigned to sub-central ecotope. Total *Sphagnum* cover in 2012 was 76-90% and 34-50% in 2005. Pool cover in 2012 was 34-50%, and 11-25% in 2005. The cover of *S. cuspidatum* mirrored pool cover in that it was 34-50% in 2012 and 11-25% in 2005. *S. papillosum* was also more common in 2012 (11-25%, compared to 4-10% in 2005), which may reflect the higher cover of low hummocks in 2012.
- **Qsc3:** classified as sub-central ecotope complex 15 in 2005 and as sub-central complex 4/15 in 2012, some variations in quadrat data were noted. Total *Sphagnum* cover in 2012 was 51-75%, but 34-50% in 2005. Pool cover was 34-50% in 2005 and 11-25% in 2012, although *S. cuspidatum* still had a higher cover of 26-33% in 2012 (compared to 11-25% in 2005). *Sphagnum* hummocks had a total cover of 11-25% in 2005 and 34-50% in 2012.

Restoration works

- No restoration works have been undertaken at the site.
- NPWS has engaged in negotiation with landowners in relation to the cessation of peat cutting at the site. Despite negotiations peat cutting continues at Corbo Bog, although the intensity of the activity has been declining in recent years.

Summary of conservation status

- **Active Raised Bog** has been given an **Unfavourable Bad–Declining** conservation status at Corbo Bog. Habitat Area has slightly decreased and quality (S&Fs) declined in the reporting period and both values are below the FRVs. The decline in habitat Area and quality is attributed primarily to turf cutting and associated drainage, and Future Prospects are considered **Unfavourable Bad–Declining** as these activities continue to threaten the habitat.
- **Degraded Raised Bog** has been given an **Unfavourable Bad–Declining** conservation status at Corbo Bog. Habitat Area has decreased due to direct losses of habitat from turf cutting, while minor additions to the area of Degraded Raised Bog were due to a decline in sub-central ecotope. Habitat's S&Fs have also declined due to peat cutting. Habitat Area is

above the FRV. Future Prospects are considered **Unfavourable Bad-Declining** due to threatening impacting activities (primarily turf cutting and associated drainage).

- **Depressions on peat substrates of the Rhynchosporion** has been given an **Unfavourable Bad-Declining** conservation status at Corbo Bog. Habitat Area has slightly decreased and quality (S&Fs) declined unchanged in the reporting period. Future Prospects are considered **Unfavourable Bad-Declining** as a result of threatening impacting activities.

The conservation status of the **overall raised bog** at **Corbo SAC** is assessed as being **Unfavourable Bad-Declining**.

Recommendations

- **Cessation of peat cutting.**
- **Restoration works** including the blocking of high bog reduced-functional and functional drains, as well as cutover drains. The blocking of cutover drains may prove particularly important, as there is limited scope for improvement through the blocking of the relatively small amount of high bog drains. There is potential for the restoration of cutover around the entire site, as the bog has been extensively exploited for peat extraction over a long period.
- **Further hydrological and topographical studies** to ascertain the capacity of the high bog to support Active Raised Bog and thus estimate a more accurate favourable reference value.
- **Further botanical monitoring surveys** on the high bog in order to assess changes in the conservation status of habitats, and potential monitoring surveys of cutover areas if they become part of future restoration programmes at the site.

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Appendix I Detailed vegetation description of the high bog

Active Raised Bog (7110)

COMPLEX 14

- **Location:** in C2 and C4
- **Ground:** quaking
- **Physical indicators:** absent
- ***Calluna* height:** 21-30cm
- ***Cladonia* cover:** 1-4%
- **Macro-topography:** depression
- **Pools:** 51-75%
- ***Sphagnum* cover:** 76-90%
- ***Narthecium* cover:** 1-4%
- **Micro-topography:** low hummocks/hollows/pools/lawns
- **Tussocks:** absent
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 5-10%), *S. cuspidatum* (P; 51-75%), *S. papillosum* (H&L; 5-10%), *S. magellanicum* (L; 1-4%), *Calluna vulgaris* (5-10%, (11-25% in places)), *Rhynchospora alba* (1-4%), *Narthecium ossifragum* (1-4%), *Eriophorum vaginatum* (5-10%), *Eriophorum angustifolium* (1-4%), *Erica tetralix* (5-10%), *Menyanthes trifoliata* (1-4%), *Drosera anglica* (1-4%), *Hypnum jutlandicum* (1-4%), *Andromeda polifolia* (1-4%).
- **Additional comments:** This complex graded into the active flush X, where flush species such as *Aulacomnium palustre*, *Molinia caerulea* and *Vaccinium oxycoccos* were recorded.

COMPLEX 15

- **Location:** this community complex characterises C1, C5 and C6
- **Ground:** firm on hummocks; quaking beside pools
- **Physical indicators:** absent
- ***Calluna* height:** 21-30cm
- ***Cladonia* cover:** 5-10%
- **Macro-topography:** gentle slope to south

- **Pools:** 11-25%
- **Sphagnum cover:** 51-75%
- **Narthecium cover:** 1-4%
- **Micro-topography:** high hummocks/low hummocks/hollows/pools
- **Tussocks:** absent
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 11-25%), *S. cuspidatum* (P; 11-25%), *S. papillosum* (H; 11-25%), *S. magellanicum* (H,L&P; 5-10%), *S. austinii* (H; 1-4%), *S. fuscum* (H; 1-4%), *Calluna vulgaris* (34-50%), *Rhynchospora alba* (1-4%), *Eriophorum vaginatum* (5-10%), *E. angustifolium* (1-4%), *Erica tetralix* (1-4%), *Menyanthes trifoliata* (1-4%), *Drosera anglica* (1-4%), *Racomitrium lanuginosum* (1-4%), *Andromeda polifolia* (1-4%), *Vaccinium oxycoccos* (1-4%), *Hypnum jutlandicum* (1-4%).
- **Additional comments:** This complex comprised the entire Central 1 (C1) area, which had the best developed microtopography on the high bog at Corbo Bog, with frequent tall hummocks and pools. This was the only area where hummocks of *Leucobryum glaucum* were at least occasional. There were also hummocks of *Racomitrium lanuginosum* as well as frequent tall relic hummocks of *Sphagnum austinii* and smaller active ones. *Hypnum jutlandicum* and *Empetrum nigrum* were usually found on the taller hummocks, as were *Dicranum scoparium* and *Pleurozium schreberi*. Most of the pools had an almost complete cover of *S. cuspidatum*, with *S. papillosum* and *S. magellanicum* dominating at the pool edges, although there were occasional pools which supported only a patchy cover of *S. cuspidatum*. In the north-east part of C1, there are fewer tall hummocks and the cover of *Rhynchospora alba* increases (4-10%) while *Sphagnum* cover decreases slightly (still c. 50%), so that this area has some sub-central characteristics.

Two previously unmapped areas of central ecotope, entirely comprised of this community complex, and now labelled as C5 and C6, were recorded in partial depressions, where the cover of pools was in the range 26-33%. Although *Sphagnum cuspidatum* dominated in most of these pools, there were some where the cover was quite patchy. *Aulacomnium palustre* was also recorded, indicating that there was some flushing in the area.

Sub-Central Ecotope Complexes

COMPLEX 4/15

- **Location:** Sc3, in the south part of the bog
- **Ground:** very soft (quaking in places)

- **Physical indicators:** absent
- ***Calluna* height:** 21-30cm
- ***Cladonia* cover:** 4-10%
- **Macro-topography:** partial depression; also sloping to adjacent high bog margin
- **Pools:** 4-10% (11-25% in places)
- ***Sphagnum* cover:** 51-75% (34-50% in places)
- ***Narthecium* cover:** 4-10%
- **Micro-topography:** occasional high hummocks, low hummocks, pools, hollows, lawns and flats
- **Tussocks:** absent
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Calluna vulgaris* (11-25%), *Erica tetralix* (4-10%), *Eriophorum vaginatum* (4-10%), *E. angustifolium* (<4%), *Rhynchospora alba* (11-25%), *Narthecium ossifragum* (4-10%), *Carex panicea* (<4%), *Sphagnum capillifolium* (11-25%), *S. cuspidatum* (4-10%), *S. papillosum* (11-25%), *Cladonia portentosa* (4-10%).
- **Additional comments:** This complex was recorded in **Sc3**, in the south part of the bog. It was mostly recorded in the eastern side of **Sc3**, where it graded into complex 15, in the adjacent **C4**, central ecotope area.

COMPLEX 9A+P

- **Location:** southwest of **Sc1**
- **Ground:** very soft; extremely wet
- **Physical indicators:** absent
- ***Calluna* height:** 21-30cm
- ***Cladonia* cover:** 1-4%
- **Macro-topography:** partial depression (higher ground to the south and west)
- **Pools:** 26-33%
- ***Sphagnum* cover:** 51-75%
- ***Narthecium* cover:** 1-4%
- **Micro-topography:** low hummocks/hollows/pools
- **Tussocks:** *Eriophorum vaginatum* (5%)
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 5-10%), *S. cuspidatum* (P; 34-50%), *S. papillosum* (H; 5-10%), *S. magellanicum* (H; 1-4%), *Calluna vulgaris* (11-25%), *Rhynchospora alba* (1-4%), *Narthecium*

ossifragum (1-4%), *Eriophorum vaginatum* (5-10%), *Eriophorum angustifolium* (11-25%), *Erica tetralix* (1-4%), *Trichophorum germanicum* (1-4%), *Andromeda polifolia* (1-4%), *Vaccinium oxycoccus* (1-4%).

- **Additional comments:** Water appeared to be pooling here and the entire area was extremely wet. The microtopography was poorly defined, such that the entire area could almost be considered as a single large pool.

COMPLEX 9/7+P

- **Location:** this complex characterises **Sc1**, **Sc2** and **Sc4**
- **Ground:** very soft
- **Physical indicators:** absent
- **Calluna height:** 21-30cm
- **Cladonia cover:** 5-10%
- **Macro-topography:** partial depression (higher ground to the south and west)
- **Pools:** 11-25%
- **Sphagnum cover:** 34-50%
- **Narthecium cover:** 5-10%
- **Micro-topography:** high hummocks/low hummocks/Pools
- **Tussocks:** absent
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 5-10%), *S. cuspidatum* (P; 11-25%), *S. papillosum* (H; 5-10%), *S. denticulatum* (P; 1-4%), *Calluna vulgaris* (34-50%), *Eriophorum vaginatum* (11-25%), *Eriophorum angustifolium* (1-4%), *Rhynchospora alba* (1-4%), *Narthecium ossifragum* (5-10%), *Rhynchospora alba* (1-4%), *Andromeda polifolia* (1-4%), *Drosera anglica* (1-4%).
- **Additional comments:** The pools within this complex were variable. Where the complex graded into sub-marginal ecotope, some of the pools were algal and supported only a patchy cover of *Sphagnum*, but where the complex graded into central ecotope, the pools had an almost complete cover of *S. cuspidatum*.
- This complex dominated in sub-central 2 (**Sc2**). However, the quality was poor here and the area was considered borderline sub-marginal/sub-central. The area was very wet with a pool cover of 11-25%, but these were mostly open water or algal pools, with very few pools having any substantial cover of *S. cuspidatum* or *S. magellanicum*. The overall *Sphagnum* cover here - composed of *S. capillifolium* (11-25%), *S. papillosum* (4-10%), *S. magellanicum* (1-4%) and *S. cuspidatum* (4-10%) - was 26-33%, although there were areas where it was higher.

- This complex was also found in **Sc4**, to the north-west of flush W. Here the quality of the active raised bog was better, with *Sphagnum* cover of 51-75%, consisting of *S. capillifolium* (4-10%), *S. papillosum* (11-25%), *S. magellanicum* (4-10%) and *S. cuspidatum* (11-25%), as well as active hummocks of *S. austinii* and *S. fuscum*. Flush indicators, including *Empetrum nigrum*, *Aulacomnium palustre*, *Vaccinium oxycoccos*, *Dicranum scoparium* and *Polytrichum commune*, were also present in this area. Tall *Leucobryum glaucum* hummocks were also recorded in this area.

Active flushes

FLUSH V

- **Location:** south-western corner of the high bog
- **Ground:** very soft
- **Physical indicators:** absent
- **Calluna height:** 31-40cm
- **Cladonia cover:** 1-4%
- **Macro-topography:** partial depression; slope to bog margin
- **Pools:** absent
- **Sphagnum cover:** 51-75%
- **Narthecium cover:** 1-4%
- **Micro-topography:** low hummocks/lawns/hollows
- **Tussocks:** *Molinia caerulea* (5-10%)
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 11-25%), *S. cuspidatum* (HL; 11-25%), *S. papillosum* (H; 11-25%), *Calluna vulgaris* (34-50%), *Molinia caerulea* (5-10%), *Rhynchospora alba* (1-4%), *Narthecium ossifragum* (1-4%), *Eriophorum vaginatum* (5-10%), *Erica tetralix* (5-10%), *Empetrum nigrum* (5-10%), *Dicranum scoparium* (1-4%), *Polytrichum strictum* (1-4%), *Andromeda polifolia* (1-4%), *Hypnum jutlandicum* (1-4%), *Aulacomnium palustre* (1-4%).
- **Additional comments:** This flush was previously mapped as a single point, despite being described as 50m x 50m in size (Fernandez *et al.*, 2005). More comprehensive mapping in the present survey has produced a more accurate representation of the flush dimensions.

FLUSH X

- **Location:** north-central part of the bog, adjacent to **C2**
- **Ground:** soft

- **Physical indicators:** absent
- **Calluna height:** 31-40cm
- **Cladonia cover:** 1-4%
- **Macro-topography:** depression
- **Pools:** 11-25%
- **Sphagnum cover:** 51-75%
- **Narthecium cover:** 1-4%
- **Micro-topography:** High hummocks/low hummocks/lawns/pools
- **Tussocks:** *Molinia caerulea* (5-10%)
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 11-25%), *S. cuspidatum* (P; 11-25%), *S. papillosum* (H; 11-25%), *S. magellanicum* (H&L; 1-4%), *Calluna vulgaris* (34-50%), *Molinia caerulea* (5-10%), *Rhynchospora alba* (1-4%), *Narthecium ossifragum* (1-4%), *Eriophorum vaginatum* (5-10%), *Eriophorum angustifolium* (1-4%), *Erica tetralix* (1-4%), *Empetrum nigrum* (1-4%), *Dicranum scoparium* (1-4%), *Polytrichum strictum* (1-4%), *Andromeda polifolia* (1-4%), *Hypnum jutlandicum* (1-4%), *Aulacomnium palustre* (Abundant) *Vaccinium oxycoccos* (Abundant).
- **Additional comments:** none

FLUSH W

- **Location:** eastern edge of the high bog
- **Ground:** soft to very soft
- **Physical indicators:** absent
- **Calluna height:** 31-40cm
- **Cladonia cover:** 1-4%
- **Macro-topography:** Partial depression with a slope to the south-east
- **Pools:** scattered large pools/soaks
- **Sphagnum cover:** 51-75%
- **Narthecium cover:** 1-4%
- **Micro-topography:** high hummocks/low hummocks/hollows/pools
- **Tussocks:** *Molinia caerulea*
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (11-25%), *S. cuspidatum* (5-10%), *S. papillosum* (11-25%), *S. denticulatum* (<1%), *S. tenellum* (1-4%), *Calluna vulgaris* (11-25%), *Rhynchospora alba* (11-25%),

Narthecium ossifragum (5-10%), *Eriophorum vaginatum* (11-25%), *E. angustifolium* (1-4%), *Racomitrium lanuginosum* (1-4%).

- **Additional comments:** Some of the pools here were very large (up to 10m x 10m) and may be better classed as soaks. The *Sphagnum* cover in these pools was 76-90%, composed largely of *S. cuspidatum* with *S. magellanicum* at the edges. Also recorded in the *Sphagnum* layer were *Empetrum nigrum*, *Vaccinium oxycoccos* and *Andromeda polifolia*. The pools were surrounded by tall *Calluna vulgaris* on hummocks of *Sphagnum capillifolium*, with *Molinia caerulea* also common. A 2m tall *Betula pubescens*, surrounded by *Eriophorum vaginatum*, *Aulacomnium palustre*, *Molinia caerulea* and *Empetrum nigrum* as well as lawns of *Sphagnum magellanicum* and *S. papillosum*, was recorded here. The inter-pool vegetation was dominated by *Calluna vulgaris* (51-75%) and *Sphagnum capillifolium* (34-50%), with scattered *Molinia caerulea* (4-10%). This flush was considered inactive in the south-east, as it was dominated by *M. caerulea* (51-75%) and *Calluna vulgaris* (26-33%) and had lower *Sphagnum* cover (26-33%), composed mostly of *S. capillifolium*. Along the eastern boundary of the flush there was a 2m x 2m area dominated by *Ulex europaeus* and *M. caerulea*.

FLUSH Z

- **Location:** north-central part of the bog, adjacent to C2
- **Ground:** very soft
- **Calluna height:** 21-40cm
- **Cladonia cover:** 1-4%
- **Macro-topography:** depression
- **Pools:** 11-25%
- **Sphagnum cover:** 51-75%
- **Narthecium cover:** 1-4%
- **Micro-topography:** Pools/lawns/low hummocks
- **Tussocks:** *Molinia caerulea* (5-10%)
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 11-25%), *S. cuspidatum* (P; 26-33%), *S. papillosum* (H; 11-25%), *S. magellanicum* (H&L; 1-4%), *Calluna vulgaris* (34-50%), *Molinia caerulea* (5-10%), *Rhynchospora alba* (1-4%), *Narthecium ossifragum* (1-4%), *Eriophorum vaginatum* (5-10%), *Eriophorum angustifolium* (1-4%), *Erica tetralix* (1-4%), *Aulacomnium palustre* (1-4%) *Vaccinium oxycoccos* (1-4%).

- **Additional comments:** This flush was previously mapped as a single point, with much of the surrounding habitat not comprehensively surveyed (Fernandez *et al.*, 2005). More comprehensive mapping in the present survey has produced a more accurate representation of the flush dimensions.

Degraded Raised Bog (7120)

Sub-Marginal Ecotope Complexes

COMPLEX 9/7

- **Location:** north-central and southwest parts of the high bog
- **Ground:** soft
- **Physical indicators:** absent
- **Calluna height:** 21-30cm
- **Cladonia cover:** 5-10%
- **Macro-topography:** flat
- **Pools:** 1-4%
- **Sphagnum cover:** 34-50%
- **Narthecium cover:** 1-4%
- **Micro-topography:** high hummocks/low hummocks
- **Tussocks:** absent
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 26-33%), *S. cuspidatum* (H&P; 5-10%), *S. papillosum* (H; 5-10%), *Calluna vulgaris* (34-50%), *Eriophorum vaginatum* (5-10%), *E. angustifolium* (1-4%), *Narthecium ossifragum* (1-4%), *Molinia caerulea* (4-10%), *Erica tetralix* (1-4%), *Aulacomnium palustre* (1-4%), *Vaccinium oxycoccos* (1-4%), *Andromeda polifolia* (1-4%), *Hypnum jutlandicum* (1-4%), *Pleurozium schreberi* (1-4%).
- **Additional comments:** This complex grades into an active flush (Flush X) to the north, and the presence and cover of flush species such as *Molinia caerulea*, *Aulacomnium palustre* and *Vaccinium oxycoccos* increased towards the north of the complex.
 - Variant 1: 9a/7: Mapped in the northern part of the site, this variant of 9/7 differs in that it is generally wetter, with *Eriophorum angustifolium* more common than *E. vaginatum* and characteristic of the vegetation.

- Variant 2: 9/7/3: Where *Carex panicea* formed a significant and characteristic element of the vegetation, in what was otherwise substantially similar to complex 9/7, the variant 9/7/3 was used.
- Variant 3: 9a/7/3: Similar to the variant 9/7/3, but somewhat wetter, and with *Eriophorum angustifolium* characteristic of the vegetation, and more abundant than *E. vaginatum*.

COMPLEX 9A/7/3+P

- **Location:** northeast of C1
- **Ground:** soft
- **Physical indicators:** absent
- **Calluna height:** 21-30cm
- **Cladonia cover:** 11-25%
- **Macro-topography:** flat
- **Pools:** 5-10%
- **Sphagnum cover:** 26-33%
- **Narthecium cover:** 5-10%
- **Micro-topography:** high hummocks/low hummocks/hollows/pools
- **Tussocks:** absent
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 5-10%), *S. cuspidatum* (P; 5-10%), *S. papillosum* (H; 11-25%), *Calluna vulgaris* (26-33%), *Rhynchospora alba* (1-4%), *Narthecium ossifragum* (5-10%), *Eriophorum angustifolium* (11-25%), *E. vaginatum* (1-4%).
- **Additional comments:** The pools within this complex were mostly of an open water or algal type, with only a very patchy cover of *Sphagnum cuspidatum*.

COMPLEX 9/7/6

- **Location:** widespread across the entire high bog
- **Ground:** soft
- **Physical indicators:** absent
- **Calluna height:** 21-30cm
- **Cladonia cover:** 5-10%
- **Macro-topography:** flat
- **Pools:** 1-4%, tears
- **Sphagnum cover:** 26-33%

- **Narthecium cover:** 11-25%
- **Micro-topography:** low hummocks/hollows/flats
- **Tussocks:** absent
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 11-25%), *S. cuspidatum* (Hl; 1-4%), *S. papillosum* (H; 5-10%), *Calluna vulgaris* (26-33%), *Narthecium ossifragum* (11-25%), *Eriophorum vaginatum* (5-10%), *E. angustifolium* (1-4%), *Carex panicea* (5-10%), *Andromeda polifolia* (1-4%).
- **Additional comments:** This complex graded into an active flush to the north and thus the presence and cover of species such as *Molinia caerulea*, *Aulacomnium palustre* and *Vaccinium oxycoccos*, increased towards the north of this complex.
- Variant 1: 9/7/6+P: This variant form of 9/7/6 was mostly recorded in the northern parts of the high bog. It differed from 9/7/6 in having small pools covering approximately 10% of the complex area. *Sphagnum cuspidatum* was present, but at a generally low cover value, in many of the pools. Total *Sphagnum* cover in this complex variant was in the range 20-25%.

COMPLEX 6/3

- **Location:** north of flush X
- **Ground:** soft
- **Physical indicators:** absent
- **Calluna height:** 11-20cm
- **Cladonia cover:** 5-10%
- **Macro-topography:** flat
- **Pools:** 5-10% (absent in some places)
- **Sphagnum cover:** 11-25%
- **Narthecium cover:** 11-25%
- **Micro-topography:** low hummocks/hollows/Algal pools
- **Tussocks:** absent
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 11-25%), *S. cuspidatum* (Hl&P; 1-4%), *S. papillosum* (H; 1-4%), *S. tenellum* (H; 1-4%), *Calluna vulgaris* (26-33%), *Rhynchospora alba* (1-4%), *Narthecium ossifragum* (11-25%), *Eriophorum vaginatum* (1-4%), *E. angustifolium* (1-4%), *Carex panicea* (5-10%), *Pleurozia purpurea* (1-4%), *Andromeda polifolia* (1-4%), *Hypnum jutlandicum* (1-4%).
- **Additional comments:** *Rhynchospora fusca* was recorded from one pool in this complex.

Marginal Ecotope Complexes

COMPLEX 3/6

- **Location:** south-west part of the southern lobe
- **Ground:** firm; occasionally soft
- **Physical indicators:** absent
- **Calluna height:** 21-30cm
- **Cladonia cover:** 11-25%
- **Macro-topography:** gentle to steep slope to bog margin
- **Pools:** absent
- **Sphagnum cover:** 5-10% (11-25% in places)
- **Narthecium cover:** 5-10% (11-25% in places)
- **Micro-topography:** Low hummocks/hollows/flats
- **Tussocks:** *Trichophorum germanicum* <4%
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 5-10%), *S. cuspidatum* (HL; 1-4%), *S. papillosum* (H; 1-4%), *S. tenellum* (H; 1-4%), *Calluna vulgaris* (34-50%), *Carex panicea* (11-25%), *Narthecium ossifragum* (5-10%), *Eriophorum vaginatum* (1-4%), *Erica tetralix* (1-4%), *Trichophorum germanicum* (1-4%), *Rhynchospora alba* (1-4%).
- **Additional comments:**
 - Variant 1: 3/6+My (Myrica): There were patches of marginal ecotope in which *Myrica gale* was present, in what was otherwise essentially complex 3/6. This was termed 3/6+My and treated as a variant of 3/6. This complex variant tended to be slightly softer underfoot with a lower cover of *Carex panicea* (4-10%) and a higher cover of *Narthecium ossifragum* (26-33%). This variant was found mostly in the western parts of the site, but was not commonly recorded.

COMPLEX 3/7

- **Location:** found in small pockets in the southern middle section of the high bog
- **Ground:** firm
- **Physical indicators:** absent
- **Calluna height:** 21-30cm
- **Cladonia cover:** 5-10%
- **Macro-topography:** steep slope

- **Pools:** absent
- **Sphagnum cover:** 5-10%
- **Narthecium cover:** 1-4%
- **Micro-topography:** low hummocks/hollows/flats
- **Tussocks:** *Trichophorum germanicum*
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 5-10%), *S. tenellum* (H; 1-4%), *Calluna vulgaris* (51-75%), *Rhynchospora alba* (1-4%), *Narthecium ossifragum* (1-4%), *Eriophorum vaginatum* (1-4%), *Carex panicea* (5-10%), *Erica tetralix* (1-4%), *Trichophorum germanicum* (1-4%).
- **Additional comments:** The cover of *Rhynchospora alba* in this complex was higher in places where there were run-off channels.
 - Variant 1: 3/7/6: This variant of complex 3/7 was recorded a number of times in the south-eastern part of the site. It differed significantly from complex 3/7, only in having a substantial cover (15% +) of *Narthecium ossifragum*.

COMPLEX 6/7

- **Location:** north-west lobe of the bog
- **Ground:** firm
- **Physical indicators:** absent
- **Calluna height:** 11-20cm
- **Cladonia cover:** <1%
- **Macro-topography:** flat
- **Pools:** absent
- **Sphagnum cover:** 5-10%
- **Narthecium cover:** 26-33%
- **Micro-topography:** low hummocks/hollows
- **Tussocks:** absent
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Calluna vulgaris* (26-33%), *Narthecium ossifragum* (26-33%), *Sphagnum capillifolium* (1-4%), *S. tenellum* (1-4%), *S. cuspidatum* (1-4%), *Eriophorum vaginatum* (5-10%), *E. angustifolium* (5-10%), *Rhynchospora alba* (<4%), *Trichophorum germanicum* (5-10%), *Carex panicea* (1-4%).
- **Additional comments:** This marginal complex was adjacent to flush **B**, in the north-west lobe of the site, and the inclusion of species such as *Myrica gale* and *Schoenus nigricans* in 6/7 marginal indicated a transitional zone around the boundary of the ecotopes. In some parts of

the site, this complex was somewhat transitional between marginal and sub-marginal ecotopes, but it was mapped exclusively as marginal ecotope, as only small, isolated patches of habitat were more characteristic of sub-marginal habitat.

Inactive flushes

FLUSH A

- **Location:** central area of high bog
- **Ground:** soft
- **Physical indicators:** absent
- ***Calluna* height:** 21-30cm
- ***Cladonia* cover:** 11-25%
- **Macro-topography:** flat
- **Pools:** absent
- ***Sphagnum* cover:** 34-50%
- ***Narthecium* cover:** 1-4%
- **Micro-topography:** hummocks/hollows
- **Tussocks:** *Molinia caerulea*
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Sphagnum capillifolium* (H; 26-33%), *S. cuspidatum* (Hl; 1-4%%), *S. papillosum* (H; 5-10%), *Calluna vulgaris* (26-33%), *Molinia caerulea* (11-25%), *Eriophorum vaginatum* (11-25%), *Andromeda polifolia* (1-4%), *Empetrum nigrum* (1-4%), *Vaccinium oxycoccos* (1-4%), *Polytrichum strictum* (1-4%), *Pleurozium scheberi* (1-4%).
- **Additional comments:** Although there was a relatively high *Sphagnum* cover within this flush, it was composed largely of *S. capillifolium* and was thus considered inactive.

FLUSH B

- **Location:** north-west lobe of the high bog
- **Ground:** firm
- **Physical indicators:** absent
- ***Calluna* height:**
- ***Cladonia* cover:** <1%
- **Macro-topography:** flat
- **Pools:** absent

- **Sphagnum cover:** 5-10%
- **Narthecium cover:** 11-25%
- **Micro-topography:** low hummocks/tall *Calluna* hummocks
- **Tussocks:** absent
- **Degradation or regeneration evidence:** absent
- **Species cover:** *Molinia caerulea* (26-33%), *Calluna vulgaris* (26-33%), *Narthecium ossifragum* (11-25%), *Eriophorum vaginatum* (11-25%), *Sphagnum capillifolium* (5-10%), *S. tenellum* (1-4%), *Rhynchospora alba* (1-4%), *Carex panicea* (1-4%), *Erica tetralix* (1-4%), *Myrica gale* (1-4%), *Schoenus nigricans* (<1%).
- **Additional comments:** This flush was not mapped during the 2004/2005 survey by Fernandez *et al.* (2005).

FLUSH C

- **Location:** south western edge of the high bog
- **Ground:** firm to soft
- **Physical indicators:** absent
- **Calluna height:** 31-40cm
- **Cladonia cover:** 11-25%
- **Macro-topography:** steep slope to high bog margin
- **Pools:** absent
- **Sphagnum cover:** 5-10%
- **Narthecium cover:** 5-10%
- **Micro-topography:** hummocks/hollows
- **Tussocks:** absent
- **Degradation or regeneration evidence:**
- **Species cover:** *Sphagnum capillifolium* (H; 5-10%), *Calluna vulgaris* (34-50%), *Molinia caerulea* (11-25%), *Eriophorum vaginatum* (1-4%), *Carex panicea* (5-10%).
- **Additional comments:** none

FLUSH D

Flush D is a very small *Molinia caerulea*-dominated inactive flush on the western edge of the high bog. It was not mapped in the survey by Fernandez *et al.* (2005).

FLUSH W

The inactive Flush W is a small area to the south of the larger active Flush W, extending almost to the margin of the high bog. *Sphagnum* cover here was significantly lower here than in the active part of the flush, and the vegetation was dominated by *Molinia caerulea* and tall *Calluna vulgaris* (see active Flush W (above)).

FLUSH Y

Flush Y was mapped as only two points in the north of the site, both closely adjacent to Sc2. At the more northerly of the points, there were several *Betula pubescens*, one of which was approximately 4m tall, and also a small 2m tall clump in shrub form and a single *Pinus*, approximately 4m tall, but almost dead. Under the trees was a hummock with *Aulacomnium palustre*, *Pleurozium schreberi*, *Empetrum nigrum*, *Vaccinium oxycoccos*, *Dicranum scoparium* and tall *Calluna vulgaris*.

The more southerly of the two points of flush Y had a number of 2m *Betula pubescens* stems, all apparently from a single stool, while a hummock beneath the *Betula* had *Aulacomnium palustre*, *Vaccinium oxycoccos*, *Dicranum scoparium*, *Thuidium tamariscinum* and tall *Calluna vulgaris*.

Face bank Complexes

COMPLEX 1

- **Location:** present intermittently around much of the margin of the bog, and around drain complex bD
- **Ground:** firm
- **Physical indicators:** absent
- ***Calluna* height:** > 60cm
- ***Cladonia* cover:** 5-10%
- **Macro-topography:** slope to bog margin
- **Pools:** absent
- ***Sphagnum* cover:** 1-4%
- ***Narthecium* cover:** 1-4%
- **Micro-topography:** Tall *Calluna vulgaris*/low hummocks
- **Tussocks:** *Trichophorum germanicum*
- **Degradation or regeneration evidence:**
- **Species cover:** *Sphagnum capillifolium* (1-4%), *Calluna vulgaris* (76-90%), *Hypnum jutlandicum* (1-4%), *Narthecium ossifragum* (1-4%), *Cladonia portentosa* (5-10%), *Carex panicea* (1-4%).
- **Additional comments:** none

Depressions on peat substrates of the *Rhynchosporion* (7150)

The habitat occurs at Corbo Bog in both Active and Degraded Raised Bog, but it is only occasionally found on degraded habitat. In addition to the widespread and common occurrence of *Rhynchospora alba* at this site,

Rhynchospora fusca was also found, (though only in a single location) in sub-marginal ecotope, community complex 6/3.

R. alba is found in all ecotopes in Corbo Bog, such as: central ecotope (14; 15); active flush (W); sub-central ecotope (4/15; 9a+P; 9/7+P); sub-marginal ecotope (9a/7/3+P; 6/3), marginal ecotope (3/6; 3/7; 6/7) and face bank ecotope (1).

The species becomes very frequent within complexes 14 and 15 (central); 4/15 (sub-central) and in active flush (flush W).

The species is always found associated with wet features such as *Sphagnum* pools, *Sphagnum* lawns and hollows, along with *Sphagnum magellanicum*, *S. papillosum*, *S. cuspidatum*. It was also found in hollows and run-off channels in sub-marginal and marginal ecotope complexes.

Appendix II Photographical records

Photograph Number	Aspect	Type	Feature	Date
31102012149	NE	Overview	Qc3	31/10/2012
DSCF3596	NE	Overview	Qsc3	30/10/2012
DSCF3597	NE	Overview	Qc5 (was Qsc2)	31/10/2012
DSCF3595	NE	Overview	Qc4 (was Qsc7)	30/10/2012

Appendix III Quadrats

Ecotope type	Central	Central	Central	Central
Complex Name	14	14	14	14
Quadrat Name	Qc1	Qc2	Qc3	Qc3
Easting	194901.378	194716	194320.538	194322.243
Northing	268843.064	268927	269109.906	269114.205
Date	08/07/2004	08/07/2004	08/07/2004	31/10/2012
Firmness	Quaking	Quaking	Quaking	Quaking
Burnt	No	No	No	No
Algae in hollows %	Absent	1-3 (many indiv)	Absent	Absent
Algae in pools %	Absent	1-3 (many indiv)	1-3 (many indiv)	Absent
Bare peat %	Absent	Absent	Absent	Absent
High hummocks %	na	na	na	Absent
Low hummocks %	26-33	26-33	26-33	26-33
Hollows %	4-10	4-10	1-3 (many indiv)	4-10
Lawns %	Absent	Absent	4-10	26-33
Pools %	51-75	34-50	51-75	26-33
Pool type	Interconnecting	Interconnecting	Interconnecting	Interconnecting
S.austinii hum type	Absent	na	Absent	Absent
S.austinii hum %	Absent	1-3 (many indiv)	Absent	Absent
S.austinii height(cm)	Absent	na	Absent	Absent
S.fusum hum type	na	Absent	Absent	Absent
S.fusum hum %	1-3 (many indiv)	Absent	Absent	Absent
S.fusum height(cm)	na	Absent	Absent	Absent
Leucobryum glaucum	Absent	Absent	Absent	Absent

Ecotope type	Central	Central	Central	Central
Complex Name	14	14	14	14
Trichophorum type	Absent	Absent	Absent	Tussocks
Trichophorum %	Absent	Absent	Absent	1-3 (few indiv)
S.magellanicum %	4-10	4-10	1-3 (many indiv)	Absent
S.cuspidatum %	51-75	34-50	34-50	26-33
S.papillosum %	Absent	4-10	4-10	26-33
S.denticulatum %	1-3 (many indiv)	Absent	Absent	Absent
S.capillifolium%	Absent	4-10	4-10	4-10
S.tenellum %	na	na	na	Absent
S.subnitens %	Absent	Absent	Absent	Absent
R.fusca %	Absent	Absent	Absent	Absent
R.alba %	1-3 (many indiv)	4-10	4-10	1-3 (many indiv)
N.ossifragum %	1-3 (many indiv)	1-3 (many indiv)	1-3 (many indiv)	1-3 (many indiv)
Sphag pools %	51-75	34-50	51-75	26-33
Dominant pool Sphag	S.cuspidatum	S.cuspidatum	S.cuspidatum	S.cuspidatum
Sphag lawns %	Absent	Absent	4-10	26-33
Sphag humm %	11-25	11-25	11-25	11-25
Sphag holl %	Absent	Absent	Absent	1-3 (many indiv)
Total Sphag %	76-90	51-75	76-90	76-90
Hummocks indicators	S.fuscum	S.austinii	Absent	Absent
Cladonia portent %	1-3 (many indiv)	4-10	Absent	Absent
Other Cladonia sp	na	na	na	
C. panicea %	Absent	Absent	Absent	Absent
Calluna cover %	4-10	26-33	4-10	11-25
Calluna height(cm)	41-50	41-50	41-50	31-40
Other Notable Species			Molinia caerulea, Menyanthes trifoliata	Menyanthes trifoliata, Drosera anglica,

Ecotope type	Central	Central	Central	Central
Complex Name	14	14	14	14
				Aulacomnium palustre (4-10%), Vaccinium oxycoccos, Molinia caerulea
Other comment				Eriophorum vaginatum (4-10%) higher adjacent to quadrat

Ecotope type	Sub-central	Central	Sub-central	Central
Complex Name	14	15	15	15
Quadrat Name	Qsc7	Qc4	Qsc2	Qc5
Easting	194743	194750.656	194417.133	194412.433
Northing	268577	268575.427	269018.524	269021.948
Date	08/07/2004	30/10/2012	08/07/2004	31/10/2012
Firmness	very soft	Very soft	quaking	Very soft
Burnt	No	No	No	No
Algae in hollows %	4-10	Absent	1-3 (many indiv)	Absent
Algae in pools %	Absent	Absent	4-10	Absent
Bare peat %	Absent	Absent	Absent	Absent
High hummocks %	na	Absent	na	Absent
Low hummocks %	34-50	51-75	34-50	34-50
Hollows %	4-10	4-10	4-10	4-10
Lawns %	Absent	Absent	Absent	Absent
Pools %	34-50	34-50	11-25	34-50
Pool type	Regular	Interconnecting	Interconnecting	Interconnecting
S.austinii hum type	Absent	Absent	Absent	Absent
S.austinii hum %	Absent	Absent	Absent	Absent
S.austinii height(cm)	Absent	Absent	Absent	Absent

Ecotope type	Sub-central	Central	Sub-central	Central
Complex Name	14	15	15	15
S.fuscum hum type	Absent	Absent	Absent	Absent
S.fuscum hum %	Absent	Absent	Absent	Absent
S.fuscum height(cm)	Absent	Absent	Absent	Absent
Leucobryum glaucum	Absent	Absent	Absent	Absent
Trichophorum type	Absent	Absent	Tussocks	Tussocks
Trichophorum %	Absent	Absent	1-3 (few indiv)	1-3 (several indiv)
S.magellanicum %	Absent	Absent	Absent	Absent
S.cuspidatum %	34-50	51-75	11-25	34-50
S.papillosum %	4-10	4-10	4-10	11-25
S.denticulatum %	Absent	Absent	Absent	Absent
S.capillifolium%	4-10	4-10	4-10	4-10
S.tenellum %	na	1-3 (several indiv)	na	1-3 (many indiv)
S.subnitens %	Absent	Absent	Absent	Absent
R.fusca %	Absent	Absent	Absent	Absent
R.alba %	4-10	4-10	1-3 (many indiv)	4-10
N.ossifragum %	1-3 (many indiv)	1-3 (few indiv)	4-10	4-10
Sphag pools %	34-50	34-50	11-25	34-50
Dominant pool Sphag	S.cuspidatum	S.cuspidatum	S.cuspidatum	S.cuspidatum
Sphag lawns %	Absent	Absent	Absent	Absent
Sphag humm %	11-25	34-50	11-25	26-33
Sphag holl %	4-10	4-10	1-3 (many indiv)	1-3 (many indiv)
Total Sphag %	51-75	76-90	34-50	76-90
Hummocks indicators	Absent	Absent	Absent	Absent
Cladonia portent %	1-3 (many indiv)	1-3 (several indiv)	1-3 (many indiv)	4-10
Other Cladonia sp	na		na	C.uncialis
C. panicea %	Absent	Absent	Absent	1-3 (few indiv)

Ecotope type	Sub-central	Central	Sub-central	Central
Complex Name	14	15	15	15
Calluna cover %	11-25	26-33	4-10	11-25
Calluna height(cm)	21-30	11-20	21-30	21-30
Other NotableSpecies		Menyanthes trifoliata, Drosera anglica		Menyanthes trifoliata, Drosera anglica
Other comment		Interpretation change (Was Qsc7)		

Ecotope type	Sub-central	Sub-central	Sub-central	Sub-central
Complex Name	Flush W	15	4/15	9/10
Quadrat Name	Qsc1	Qsc3	Qsc3	Qsc4
Easting	194976	194648	194657.840	194490.922
Northing	268765	268507	268509.330	268494.331
Date	08/07/2004	08/07/2004	30/10/2012	08/07/2004
Firmness	soft	soft	Very soft	Very soft
Burnt	No	No	No	No
Algae in hollows %	Absent	Absent	Absent	Absent
Algae in pools %	Absent	4-10	Absent	Absent
Bare peat %	Absent	Absent	Absent	Absent
High hummocks %	na	na	Absent	na
Low hummocks %	na	34-50	51-75	34-50
Hollows %	na	4-10	4-10	4-10
Lawns %	Absent	Absent	Absent	11-25
Pools %	Absent	34-50	11-25	4-10
Pool type	Absent	Interconnecting	Regular	na
S.austinii hum type	Absent	Absent	Absent	Absent
S.austinii hum %	Absent	Absent	Absent	Absent
S.austinii height(cm)	Absent	Absent	Absent	Absent

Ecotope type	Sub-central	Sub-central	Sub-central	Sub-central
Complex Name	Flush W	15	4/15	9/10
S.fuscum hum type	Absent	na	Absent	Absent
S.fuscum hum %	Absent	1-3 (few indiv)	Absent	Absent
S.fuscum height(cm)	Absent	na	Absent	Absent
Leucobryum glaucum	1-3 (few indiv)	Absent	Absent	Absent
Trichophorum type	Absent	Tussocks	Absent	Tussocks
Trichophorum %	Absent	4-10	Absent	4-10
S.magellanicum %	Absent	Absent	Absent	11-25
S.cuspidatum %	Absent	11-25	26-33	4-10
S.papillosum %	1-3 (many indiv)	1-3 (many indiv)	4-10	1-3 (many indiv)
S.denticulatum %	Absent	Absent	Absent	Absent
S.capillifolium%	1-3 (many indiv)	4-10	4-10	4-10
S.tenellum %	na	na	1-3 (several indiv)	na
S.subnitens %	Absent	Absent	1-3 (several indiv)	Absent
R.fusca %	Absent	Absent	Absent	Absent
R.alba %	4-10	4-10	4-10	1-3 (many indiv)
N.ossifragum %	Absent	4-10	4-10	1-3 (many indiv)
Sphag pools %	1-3 (many indiv)	11-25	11-25	4-10
Dominant pool Sphag		S.cuspidatum	S.cuspidatum	
Sphag lawns %	Absent	Absent	Absent	11-25
Sphag humm %	1-3 (many indiv)	11-25	34-50	11-25
Sphag holl %	1-3 (many indiv)	1-3 (many indiv)	1-3 (many indiv)	4-10
Total Sphag %	1-3 (many indiv)	34-50	51-75	51-75
Hummocks indicators	Absent	S.fuscum	Absent	Absent
Cladonia portent %	1-3 (many indiv)	4-10	1-3 (several indiv)	1-3 (many indiv)
Other Cladonia sp	na	na	C. uncialis	na
C. panicea %	Absent	4-10	1-3 (several indiv)	Absent

Ecotope type	Sub-central	Sub-central	Sub-central	Sub-central
Complex Name	Flush W	15	4/15	9/10
Calluna cover %	11-25	11-25	26-33	4-10
Calluna height(cm)	41-50	21-30	21-30	21-30
Other NotableSpecies			Drosera anglica	Juncus effusus
Other comment		Old burnt tussocks		Classed as marginal before

Ecotope type	Sub-central	Sub-central	Sub-marginal	Sub-marginal
Complex Name	15	15	3 + P	7/4
Quadrat Name	Qsc5	Qsc6	Qsm1	Qsm2
Easting	194805.222	194388.978	194848.481	194420
Northing	269013.052	269292.89	268990.322	269339
Date	08/07/2004	08/07/2004	08/07/2004	08/07/2004
Firmness	firm-soft	soft	firm-soft	soft
Burnt	No	No	No	No
Algae in hollows %	1-3 (few indiv)	1-3 (few indiv)	1-3 (few indiv)	na
Algae in pools %	Absent	11-25	na	Absent
Bare peat %	1-3 (few indiv)	1-3 (few indiv)	Absent	Absent
High hummocks %	na	na	na	na
Low hummocks %	34-50	34-50	51-75	26-33
Hollows %	4-10	4-10	4-10	4-10
Lawns %	4-10	4-10	Absent	Absent
Pools %	11-25	26-33	11-25	Absent
Pool type	Interconnecting	Regular	Regular	Absent
S.austinii hum type	na	Absent	Absent	Absent
S.austinii hum %	4-10	1-3 (few indiv)	Absent	Absent
S.austinii height(cm)	na	Absent	Absent	Absent

Ecotope type	Sub-central	Sub-central	Sub-marginal	Sub-marginal
Complex Name	15	15	3 + P	7/4
S.fuscum hum type	Absent	Absent	Absent	Absent
S.fuscum hum %	Absent	Absent	Absent	Absent
S.fuscum height(cm)	Absent	Absent	Absent	Absent
Leucobryum glaucum	Absent	Absent	Absent	Absent
Trichophorum type	Absent	Tussocks	Tussocks	Tussocks
Trichophorum %	Absent	1-3 (few indiv)	1-3 (few indiv)	1-3 (few indiv)
S.magellanicum %	Absent	4-10	Absent	Absent
S.cuspidatum %	11-25	11-25	4-10	4-10
S.papillosum %	4-10	4-10	4-10	na
S.denticulatum %	Absent	Absent	Absent	Absent
S.capillifolium%	4-10	11-25	26-33	4-10
S.tenellum %	na	na	na	na
S.subnitens %	Absent	Absent	Absent	na
R.fusca %	Absent	Absent	Absent	Absent
R.alba %	4-10	11-25	4-10	11-25
N.ossifragum %	1-3 (many indiv)	11-25	1-3 (many indiv)	1-3 (many indiv)
Sphag pools %	11-25	11-25	4-10	Absent
Dominant pool Sphag	S.cuspidatum	S.cuspidatum	S.cuspidatum	Absent
Sphag lawns %	4-10	4-10	Absent	Absent
Sphag humm %	11-25	11-25	34-50	11-25
Sphag holl %	4-10	4-10	1-3 (many indiv)	4-10
Total Sphag %	34-50	34-50	34-50	26-33
Hummocks indicators	S.austinii	S.austinii	Absent	Absent
Cladonia portent %	4-10	4-10	11-25	Absent
Other Cladonia sp	na	na	na	na
C. panicea %	Absent	Absent	na	na

Ecotope type	Sub-central	Sub-central	Sub-marginal	Sub-marginal
Complex Name	15	15	3 + P	7/4
Calluna cover %	26-33	34-50	11-25	51-75
Calluna height(cm)	21-30	21-30	21-30	41-50
Other NotableSpecies				
Other comment				

Ecotope type	Sub-marginal	Sub-marginal	Sub-marginal	Marginal
Complex Name	3 + P	3 + P	3/2	6 + My + Mo
Quadrat Name	Qsm3	Qsm4	Qsm5	Qm1
Easting	194890	194793.962	194388.234	194044.919
Northing	268890	268843.1	268481.087	269133.477
Date	08/07/2004	08/07/2004	08/07/2004	08/07/2004
Firmness	firm-soft	firm-soft	firm-soft	firm
Burnt	No	Possible	ca. 10 years ago	No
Algae in hollows %	na	4-10	Absent	Absent
Algae in pools %	11-25	1-3 (few indiv)	Absent	Absent
Bare peat %	Absent	1-3 (few indiv)	Absent	Absent
High hummocks %	na	na	na	na
Low hummocks %	11-25	34-50	11-25	11-25
Hollows %	4-10	4-10	4-10	4-10
Lawns %	Absent	Absent	Absent	Absent
Pools %	11-25	na	Absent	Absent
Pool type	Regular	na	Absent	Absent
S.austinii hum type	Absent	Absent	Absent	Absent
S.austinii hum %	Absent	Absent	Absent	Absent
S.austinii height(cm)	Absent	Absent	Absent	Absent
S.fuscum hum type	Absent	Absent	Absent	Absent

Ecotope type	Sub-marginal	Sub-marginal	Sub-marginal	Marginal
Complex Name	3 + P	3 + P	3/2	6 + My + Mo
S.fuscum hum %	Absent	Absent	Absent	Absent
S.fuscum height(cm)	Absent	Absent	Absent	Absent
Leucobryum glaucum	Absent	1-3 (few indiv)	Absent	Absent
Trichophorum type	Tussocks	na	Flats	Absent
Trichophorum %	1-3 (few indiv)	na	4-10	Absent
S.magellanicum %	Absent	4-10	4-10	Absent
S.cuspidatum %	4-10	1-3 (few indiv)	1-3 (few indiv)	Absent
S.papillosum %	na	4-10	1-3 (few indiv)	Absent
S.denticulatum %	Absent	Absent	Absent	Absent
S.capillifolium%	4-10	1-3 (few indiv)	4-10	1-3 (few indiv)
S.tenellum %	na	na	na	na
S.subnitens %	na	na	Absent	Absent
R.fusca %	4-10	Absent	Absent	Absent
R.alba %	4-10	4-10	1-3 (many indiv)	1-3 (many indiv)
N.ossifragum %	4-10	1-3 (many indiv)	1-3 (many indiv)	34-50
Sphag pools %	1-3 (many indiv)	1-3 (many indiv)	1-3 (many indiv)	Absent
Dominant pool Sphag	S.cuspidatum	S.cuspidatum		Absent
Sphag lawns %	Absent	Absent	Absent	Absent
Sphag humm %	4-10	11-25	4-10	1-3 (many indiv)
Sphag holl %	1-3 (many indiv)	1-3 (many indiv)	1-3 (many indiv)	Absent
Total Sphag %	11-25	11-25	11-25	1-3 (many indiv)
Hummocks indicators	Absent	Absent	Absent	Absent
Cladonia portent %	1-3 (many indiv)	4-10	4-10	Absent
Other Cladonia sp	na	na	na	na
C. panicea %	na	11-25	11-25	na
Calluna cover %	11-25	11-25	11-25	4-10

Ecotope type	Sub-marginal	Sub-marginal	Sub-marginal	Marginal
Complex Name	3 + P	3 + P	3/2	6 + My + Mo
Calluna height(cm)	21-30	21-30	21-30	21-30
Other NotableSpecies				Schoenus nigricans
Other comment				

Ecotope type	Marginal	Marginal	Marginal	Marginal
Complex Name	3/2/6	3	2 + my	4
Quadrat Name	Qm2	Qm3	Qm4	Qm5
Easting	194526	194436.286	193636	193554.408
Northing	268462	268905.887	269219	269208.219
Date	08/07/2004	08/07/2004	08/07/2004	08/07/2004
Firmness	firm	firm	firm	firm
Burnt	ca. 10 years ago	Not recently	ca. 10 years ago	ca. 10 years ago
Algae in hollows %	4-10	1-3 (few indiv)	Absent	Absent
Algae in pools %	Absent	Absent	Absent	Absent
Bare peat %	1-3 (few indiv)	Absent	1-3 (few indiv)	4-10
High hummocks %	na	na	na	na
Low hummocks %	11-25	11-25	4-10	4-10
Hollows %	4-10	4-10	4-10	4-10
Lawns %	Absent	Absent	Absent	Absent
Pools %	Absent	Absent	Absent	Absent
Pool type	Absent	Absent	Absent	Absent
S.austinii hum type	Absent	Absent	Absent	Absent
S.austinii hum %	Absent	Absent	Absent	Absent
S.austinii height(cm)	Absent	Absent	Absent	Absent
S.fuscum hum type	Absent	Absent	Absent	Absent
S.fuscum hum %	Absent	Absent	Absent	Absent

Ecotope type	Marginal	Marginal	Marginal	Marginal
Complex Name	3/2/6	3	2 + my	4
S.fuscum height(cm)	Absent	Absent	Absent	Absent
Leucobryum glaucum	Absent	Absent	Absent	Absent
Trichophorum type	Tussocks	Tussocks	Tussocks	Tussocks
Trichophorum %	1-3 (few indiv)	1-3 (few indiv)	26-33	4-10
S.magellanicum %	1-3 (many indiv)	Absent	1-3 (many indiv)	Absent
S.cuspidatum %	Absent	Absent	Absent	Absent
S.papillosum %	1-3 (many indiv)	1-3 (many indiv)	Absent	Absent
S.denticulatum %	Absent	Absent	Absent	Absent
S.capillifolium%	1-3 (many indiv)	1-3 (many indiv)	1-3 (many indiv)	Absent
S.tenellum %	na	na	na	na
S.subnitens %	Absent	Absent	Absent	Absent
R.fusca %	Absent	Absent	1-3 (few indiv)	1-3 (few indiv)
R.alba %	1-3 (many indiv)	1-3 (many indiv)	1-3 (many indiv)	26-33
N.ossifragum %	11-25	1-3 (many indiv)	4-10	4-10
Sphag pools %	Absent	Absent	Absent	Absent
Dominant pool Sphag	Absent	Absent	Absent	Absent
Sphag lawns %	Absent	Absent	Absent	Absent
Sphag humm %	4-10	1-3 (many indiv)	1-3 (many indiv)	Absent
Sphag holl %	1-3 (many indiv)	1-3 (many indiv)	1-3 (many indiv)	Absent
Total Sphag %	4-10	4-10	1-3 (many indiv)	Absent
Hummocks indicators	Absent	Absent	Absent	Absent
Cladonia portent %	1-3 (many indiv)	34-50	Absent	1-3 (many indiv)
Other Cladonia sp	na	na	Cladonia floerkeana	Cladonia floerkeana
C. panicea %	4-10	26-33	na	4-10
Calluna cover %	11-25	11-25	na	na

Ecotope type	Marginal	Marginal	Marginal	Marginal
Complex Name	3/2/6	3	2 + my	4
Calluna height(cm)	21-30	21-30	41-50	41-50
Other NotableSpecies				Campylopus introflexus
Other comment				

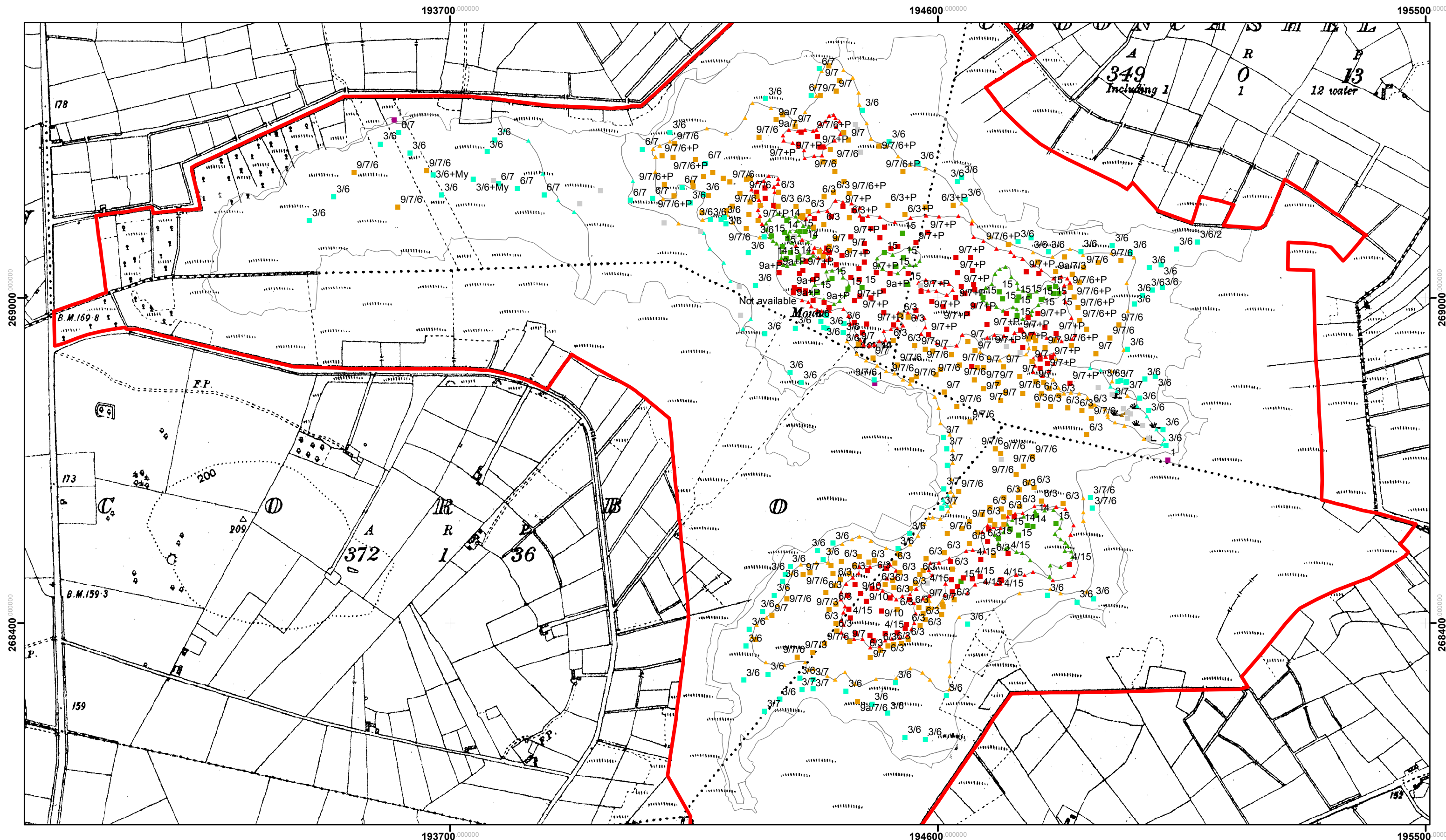
Ecotope type	Marginal	Marginal
Complex Name	3	3/2
Quadrat Name	Qm6	Qm7
Easting	195024	194024
Northing	268735	269273
Date	08/07/2004	08/07/2004
Firmness	firm	firm
Burnt	No	No
Algae in hollows %	1-3 (few indiv)	4-10
Algae in pools %	Absent	Absent
Bare peat %	1-3 (few indiv)	4-10
High hummocks %	na	na
Low hummocks %	11-25	11-25
Hollows %	4-10	4-10
Lawns %	Absent	Absent
Pools %	Absent	4-10
Pool type	Absent	na
S.austinii hum type	Absent	Absent
S.austinii hum %	Absent	Absent
S.austinii height(cm)	Absent	Absent
S.fuscum hum type	Absent	Absent

Ecotope type	Marginal	Marginal
Complex Name	3	3/2
S.fuscum hum %	Absent	Absent
S.fuscum height(cm)	Absent	Absent
Leucobryum glaucum	Absent	Absent
Trichophorum type	Tussocks	Tussocks
Trichophorum %	1-3 (few indiv)	4-10
S.magellanicum %	Absent	Absent
S.cuspidatum %	Absent	1-3 (many indiv)
S.papillosum %	Absent	1-3 (many indiv)
S.denticulatum %	Absent	Absent
S.capillifolium%	4-10	4-10
S.tenellum %	na	na
S.subnitens %	Absent	Absent
R.fusca %	Absent	1-3 (few indiv)
R.alba %	1-3 (many indiv)	4-10
N.ossifragum %	1-3 (many indiv)	1-3 (many indiv)
Sphag pools %	Absent	1-3 (many indiv)
Dominant pool Sphag	Absent	
Sphag lawns %	Absent	Absent
Sphag humm %	4-10	4-10
Sphag holl %	1-3 (many indiv)	1-3 (many indiv)
Total Sphag %	4-10	4-10
Hummocks indicators	Absent	Absent
Cladonia portent %	4-10	1-3 (many indiv)
Other Cladonia sp	na	na
C. panicea %	26-33	na
Calluna cover %	34-50	26-33

Ecotope type	Marginal	Marginal
Complex Name	3	3/2
Calluna height(cm)	21-30	21-30
Other NotableSpecies		
Other comment		

Note: Data for those 2004 quadrats re-surveyed in 2012 is given to the right of the original 2004 quadrat data in table above. Not all quadrats reported in 2004 were re-surveyed in 2012. Nonetheless, all 2004 quadrat data is given above. Additional quadrats were recorded where necessary. Some 2004 quadrats may have been classified under a different ecotope category in 2012; further detail is given within the report.

Appendix IV Survey maps



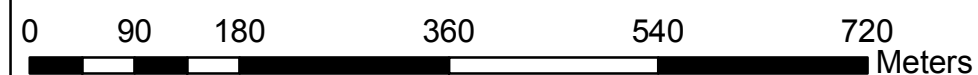
Raised Bog Monitoring & Assessment Survey 2013 **Map 2: Vegetation community complexes**

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Corbo SAC (002349) **Co. Roscommon**

1:6,500



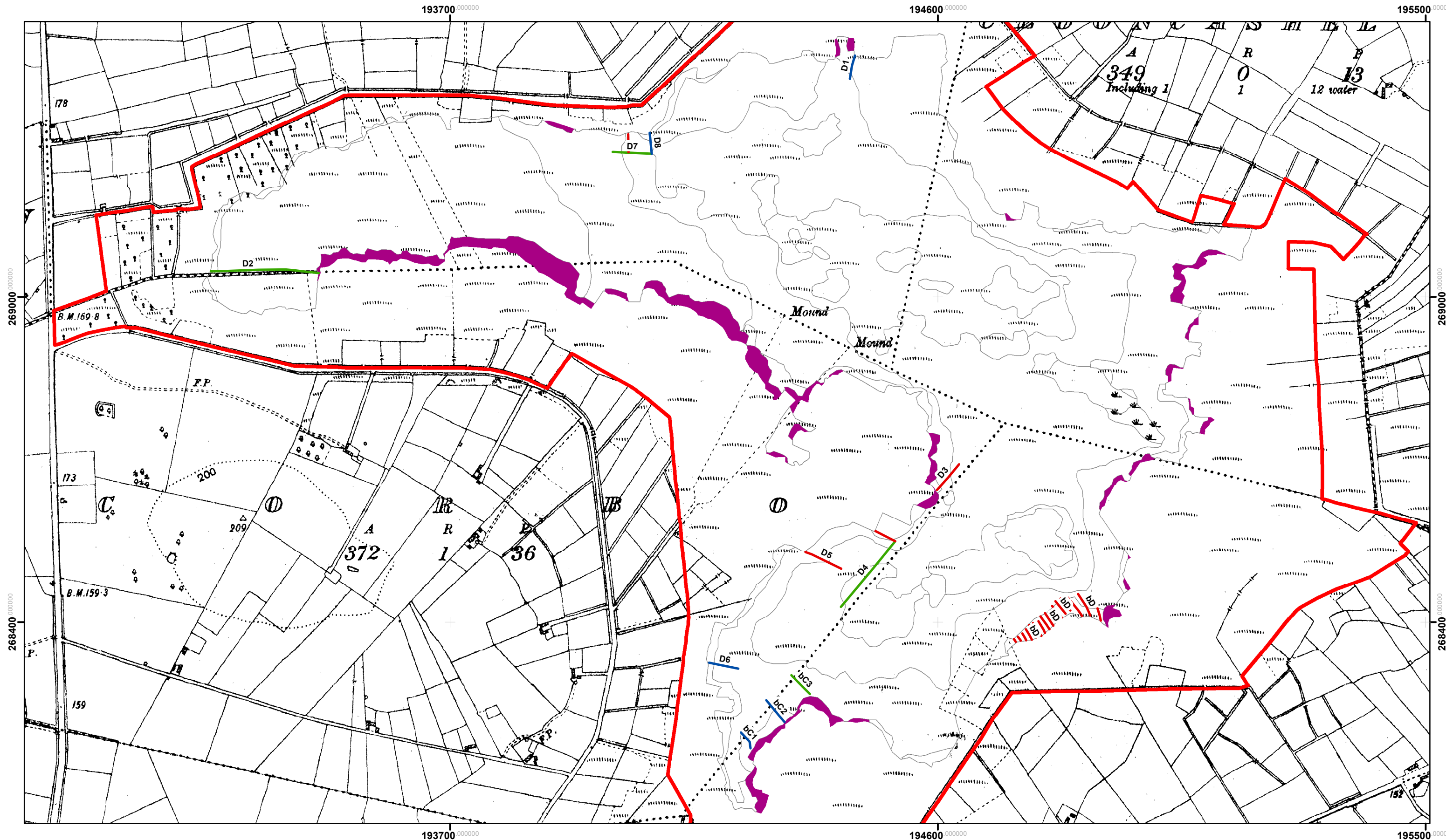
Legend

Ecotope type

- Central ecotope complex
- Sub-central ecotope complex
- Sub-marginal ecotope complex
- Marginal ecotope complex
- Face bank ecotope complex

Boundary type

- Flush
- SC/C
- F/C
- SM/C
- M/C
- F/SC
- SM/SC
- M/SC
- FB/SC
- F/SM
- M/SM
- SM/FB
- F/M
- M/FB
- F/FB
- Other
- SAC



Raised Bog Monitoring & Assessment Survey 2013
Map 3: Impacts (High bog drainage; Turf cutting; Fire events)

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1:6,500

0 90 180 360 540 720 Meters



Legend

High Bog drainage

Blocked: non-functional

Blocked: reduced functional

Not blocked: functional

Not blocked: non-functional

Not blocked: reduced functional

Burnt high bog (2004/05-12/13)

High bog cutaway (2004/05-10)

SAC